

# *UniSpec-SC* Spectral Analysis System



PP   
SYSTEMS

*Data Sheet*

## Introduction

### *Laboratory results from a field portable instrument*

The **UniSpec-SC**, commonly referred to as a "Reflectometer", is a single channel, field portable instrument designed for measurement of leaf/canopy reflectance. It features an innovative user interface with integral computer and large, full color LCD, built-in light source and extensive range of accessories for measurement on individual leaves (including needles) and vegetation. It is a truly, self-contained system that does not require an external PC for operation.

In addition to revealing dynamic features related to the physiological condition of vegetation, spectral reflectance can also be used to derive basic canopy structure, nutritional status and pigment content. Leaf chlorophyll content and nitrogen status are both indicators of integrated leaf physiology. As "health" and photosynthetic performance decline with stress or age, tissue nitrogen and chlorophyll content also decline. Both chlorophyll and nitrogen content can be readily estimated from empirically calibrated leaf reflectance data.

Our "**UniSpec**" range of products have become the industry standard for measurement of reflectance from individual leaves to whole canopies and large transects. Our customers are made up of research scientists and students from universities and colleges, government research institutes and research laboratories throughout the world.

### Applications

- Plant Physiology & Ecology
- Forestry
- Field crop monitoring
- Remote sensing
- Ground truthing
- Atmospheric science
- Aquatic plants



### High Precision Detector

The heart of the **UniSpec-SC** is a high precision, miniature "photo-diode" array detector that features high sensitivity, repeatability and never requires recalibration. It is compact, sensitive to light and minimally insensitive to external influences (i.e. temperature) making it an ideal unit for field applications. The design of the detector allows for full spectrum measurements in less than a second.

### Ergonomic System

The entire system weighs just 1.7 kg, making it an ideal choice for field measurements.

### Enhanced Power For Field Use

A built-in, rechargeable 6V Li-Ion battery provides power to the entire system. Battery life is dependent on the intensity of the light source and the time it is on. Typically, a fully charged battery will ensure at least 4-6 hours of continuous operation in the field. An optional battery pack (external) is also available for extended operation in the field.

### Wide Range Of Accessories

A wide selection of accessories are available for use with the **UniSpec-SC** including fiber optics, leaf clips, FOV lens, cosine receptor, external battery pack and reference standards.

### Powerful Software

Easily configure the system to meet your application. The **UniSpec-SC** is supplied with a powerful software package that allows you to measure and analyze reflectance with on-line help to guide you every step of the way.

### Leaf level reflectance



### Optical sampling from flux towers



Photo courtesy of San Diego State University

### Ground truthing

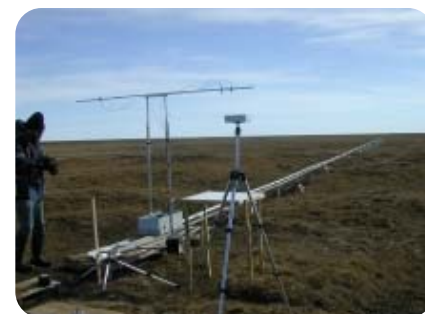
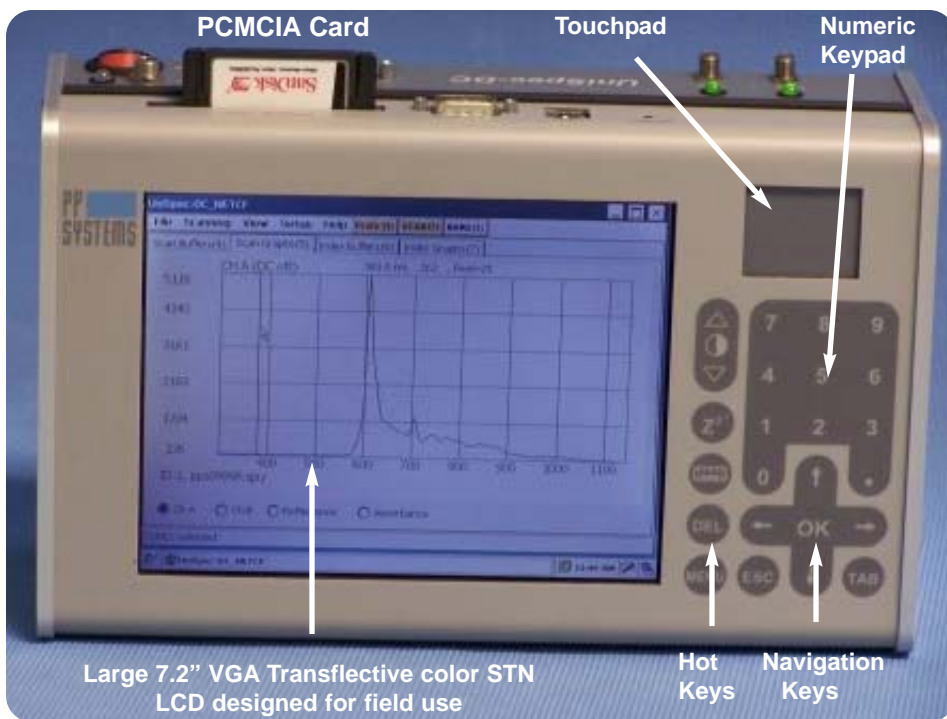


Photo courtesy of California State University-LA

The fiber optic inputs, power switch, charger socket and all user interface connections (including PCMCIA slot) are conveniently located on the back panel of the instrument.



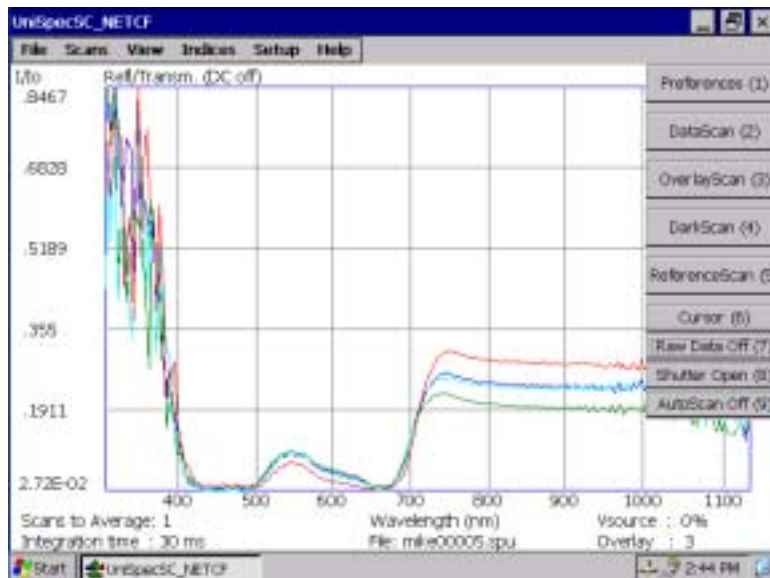


## Powerful User Interface

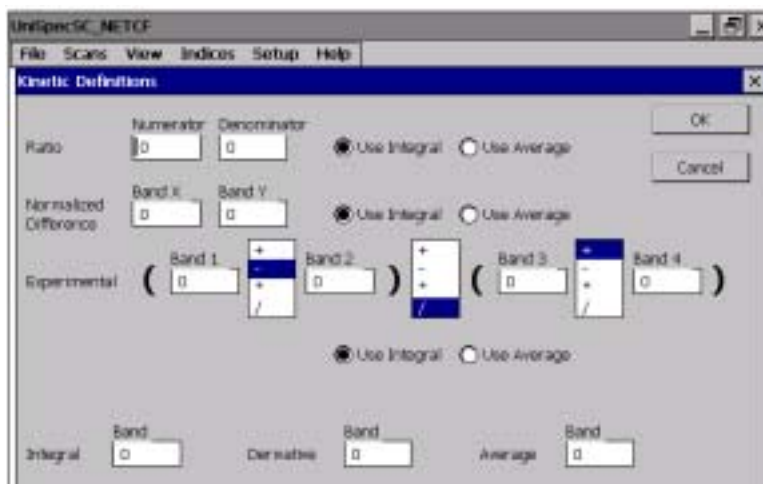
Unlike other remote sensing instruments, the **UniSpec-SC** features an innovative, ergonomic system console designed specifically for demanding field applications. It has a built-in user interface including integral computer, large, full color graphical LCD, keyboard and touchpad for user inputs, RS232 and USB serial ports and PCMCIA slot. **NO LAPTOP COMPUTER IS REQUIRED.**

## Software & Data Analysis

The **UniSpec-SC** is supplied complete with a powerful, yet user friendly, software package that runs under the Windows CE.NET operating system. System setup and programming is very simple. In addition to measuring, viewing and storing data, the user has all the facilities required for comparing stored records and calculation of common vegetation indices such as NDVI, mNDVI, PRI, WBI, Summed Green Reflectance and Red/Green Ratio.



Overlay multiple records for comparison purposes



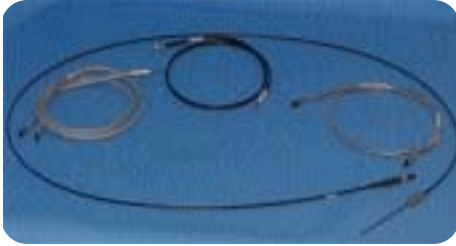
User-Definable Bands

## Software Features

- Manual or auto-scan capability
- User selectable integration time
- Manual or automatic graph scaling
- Switch from raw data to reflectance/absorbance data
- Calculation of common indices
- Perform mathematical functions on stored data
- Stored data can be exported to your PC and imported into your favorite spread sheet program.
- Manual or auto-save capability
- On-line help system

## Accessories

Range of Fiber Optics



Leaf Clips



FOV Lens



Cosine Receptor



Reference Standards



## Technical Specification

### Detector Types

	VIS/NIR	UV/VIS	UV
Wavelength Range	310-1,100 nm	190-730 nm	190-400 nm
Raleigh Resolution	< 10 nm	< 7 nm	< 3 nm
Bin Size (diode array)	3.3 nm	2.1 nm	0.8 nm
Absolute Accuracy	< 0.3 nm	< 0.2 nm	< 0.2 nm

Repeatability Within 0.1%

Scan Time < 1 second (plus integration time)

A/D Converter 16 bit (dynamic range of 65,000 A/D counts)

Integration time 4-3,200 ms

Light Source Integral 7.0 W halogen bulb for sampling under any light conditions

Foreoptic Inputs Standard SMA type connectors

### User Interface

Power Consumption

Display 7.2" VGA Transflective color STN LCD

Dot Format 640 x RGB x 480 dots

Dot Pitch 0.228 x 0.228 mm

User Input 24 keys plus touchpad for data input, keyboard, display contrast

Serial Port RS232 and USB

PCMCIA Type 1. For additional data storage. Memory dependent upon RAM card used.

Power Internal rechargeable 7.2V Li-Ion battery (including charger)

Operating Temperature 0-50° C

Dimensions 25 (L) x 15 (H) x 8.5 (D) cm

Weight 1.9 Kg (4.18 Lbs)

*PP Systems is continuously updating its products and reserves the right to amend product specifications without notice.*

Windows CE.NET is a registered trademark of Microsoft Corporation.

*Let PP Systems configure a system that is ideal for your application.*



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