

HandySpec Field®: Portable Spectrometer System

HandySpecField is specifically designed for the measurement of diffuse reflection characteristics of plants and soil. The portable 2-channel spectral sensor system has been used by several well-known scientific institutes for years and shows superior

performance within this demanding environment. tec5 is also the partner of Yara GmbH & Co. KG in Dülmen for the development of the Yara N-Sensor, the tractor based system for the site-specific N-fertilization.

Features

- Fully automated internal compensation of sunlight variation
- Short integration times for fast measurements
- High signal to noise ratio of spectrometer module and wide dynamic range (no averaging of spectra necessary)
- Outstanding wavelength accuracy and long-term stability (no re-calibration is required)
- No warm-up time of the device
- Robust, portable instrument design
- High battery runtime
- Online dark-current correction
- Specially adapted user-friendly software

Applications

- Remote sensing | ground-truthing
- Plant production | plant breeding
- Plant nutrition
- Biomass measurements
- Concentration analysis
- Evaluation of plant indices
- Agricultural engineering

HandySpec Field in China



The portable system consists of a measuring unit and a sensor head, which is connected to the main unit by flexible optical fibers. The main unit consists of high-quality spectrometer modules from Carl Zeiss, the tec5 operating electronics and an exchangeable battery pack. The sensor head contains two input windows with receiving optics. The measurement itself is controlled by a push button, located on top of the sensor head.

The sunlight is used as light source for generating the diffuse reflection of plants. As light intensity and spectral distribution varies a lot with changes of daytime and clouds, the system is designed as a 2-channel device. In this configuration a permanent referencing to present illumination conditions, synchronous to measurement, is realized as a key feature.

Customer Statement

"Compared to conventional spectroradiometers, the instrument shows its advantages especially at changing cloud coverage conditions"

(M. Gnyp, Institute of Geography, GIS & RS, University of Cologne)

Systems

Product Information HandySpec Field®

Technical Data

HandySpec Spectrometer Systems (USB)						
Spectral Sensors	Wavelength Range [nm]	Spectral Resolution [nm]	PDA Option with HySpec Software	PC Option with AgroSpec Software	Shoulder Carried	Back-pack
MMS1	360 – 900	Approx. 10	•	•	•	•
MMS1 NIR enh.	400 – 1100	Approx. 10	•	•	•	•
MMS1 NIR enh. + PGS1.7	400 – 1690	Approx. 10 Approx. 5	-	•	-	•
MMS1 NIR enh. + PGS2.2	400 – 2150	Approx. 10 Approx. 16	-	•	-	•
PGS1.7	960 – 1690	Approx. 5	•	•	-	•
PGS2.2	1000 – 2150	Approx. 16	•	•	-	•

	Shoulder Carried Version	Backpack Version
Dimensions of Main Unit [mm]	160 x 360 x 100	330 x 230 x 100
Weight	Approx. 4kg	Approx. 12kg
Battery (Ni/MH)	12V/4Ah, runtime approx. 6-8h	12V/9,5Ah, runtime approx. 6-8h
Operation Temperature	+5°C to +40°C	+5°C to +35°C (for NIR systems)
Protection Class	IP65 protection against dust and splash water	

Software Solutions

	HySpec Software	AgroSpec Software
Graphical Display of Raw and Reflectance Spectra	•	•
Multiple Measurement Channels	-	•
Online Referencing of Ambient Light	•	•
Online Dark Current Correction	•	•
Continuous and Manually Initiated Data Acquisition	•	•
Automatic Data Storage	ASCII-Format	ASCII-Format
White Reference Calibration	•	•
Automatic Adaptation of Integration Time to given Light Conditions	•	•
Automatic Creation of IDs / File Names	-	•
Integration of Chemometric Models (OLUP)	-	Optional
Collection of GPS Data	-	Optional

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Technology for Spectroscopy

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