

v s instrument pvt. ltd.

INSTRUMENTATION FOR AGRICULTURAL RESEARCH

An ISO 9001:2015 Certified Company

PRODUCT OVERVIEW



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IFL INTEGRATED FLUOROMETER AND GAS EXCHANGE SYSTEM

- Light weight, battery operated with Graphical Display
- Measured Parameters : CO₂, Water Vapour, PAR, Leaf & Air Temp., Stomatal Conductance, Transpiration, Photosynthetic Rate, Ci, Atmospheric Pressure and all chlorophyll fluorescence parameters
- Measurement of leaf absorptance, transmittance and chamber leakage for more accurate and reliable data
- Data Storage : 2 GB SD Card, downloading through USB or Card reader
- Battery backup for 10 hours
- Large touch screen, colour, graphic display
- Gas exchange measurements can be presented in either ppm/mbar or $\mu\text{mol mol}^{-1}/\text{mmol mol}^{-1}$



AP4 AUTOMATIC POROMETER

- Portable Instrument for Measurement of Stomatal conductance/Resistance, PAR, RH & Leaf Temp
- Inbuilt Data Storage for 1500 data sets with facility for 30 character note with each reading
- Conductance : 5.0-1200 mmol/m²/s & Resistance : 0.2- 40.0 s/cm
- RH : 0-100% PAR : 0-2500 micromol /m²/s
- Display : 8x40 Character LCD display
- Battery Back up : 20 Hours duration
- Qwerty Keypad for easy operation
- Calibration Plate as standard accessory

SUNSCAN CANOPY ANALYSIS SYSTEM (CANOPY ANALYSER)

- Battery operated PAR base instrument to measure and calculate the Leaf Area Index PAR (Photosynthetically Active Radiation) & related parameters
- Direct display of LAI, PAR, Transmitted PAR, Diffused PAR, Zenith Angle
- Usable in clear, cloudy and changeable weather conditions
- Active Area : 1m x 13 mm wide sensor spacing 15.6mm
- Spectral Range : 400-700 nm
- Max Reading : 2500 $\mu\text{mol}/\text{m}^2/\text{s}$
- Data Storage : 1 Million Readings
- Display : 1/4 VGA sunlight Readable colour screen
- Data Download through USB Cable/ Direct USB Drive port using any Pen drive
- Operating System : windows mobile 6.5



THE GREENSEEKER® HANDHELD CROP SENSOR

The GreenSeeker® handheld crop sensor is an active light source optical sensor that is used to measure plant biomass and display as NDVI (Normalized Difference Vegetation Index).

Specification

- Optical - RED 660 nm NIR 780 nm
- Field of View 10" at 24" , 20" at 48"
- Operating Height 24" – 48"
- Power -: Battery 3.7V DC nominal, Charging 5V DC, 320 mA max
- Mechanical- Dimensions 3.5" x 10.5" (9 cm x 27 cm) Weight (310 g), including battery
- Connectors Remote Trigger Switch Port 2.5 mm Stereo phone jack
- Operational Range - (10°C-50°C)
- Connectivity-: Bluetooth Low Energy (BLE) 5.1



LCi-T PORTABLE PHOTOSYNTHESIS SYSTEM (IRGA)



- Light weight, battery operated with color touch screen LCD display
- Measured Parameters : CO₂, Water Vapour, PAR, Leaf & Air Temp., Stomatal Conductance, Transpiration, Photosynthetic Rate, Ci, Atmospheric Pressure, GPS Location etc.
- Wide Variety of Leaf Chambers to suit all type of samples like for Broad, Narrow, Conifer, Canopy, Soil CO₂, Fruits Chamber
- Data Storage : 16 GB SD Card, downloading through USB or Card reader.
- Battery backup for 10 hours
- Range CO₂ : 0-2000ppm H₂O : 0-75mb
- Supplied with light source as standard accessory
- GPS to pinpoint your data

LCpro-T PORTABLE PHOTOSYNTHESIS SYSTEM (IRGA)

- Light weight, battery operated with Graphical Display and Micro climate control for CO₂, Water Vapour, Light & Temperature
- Controls - CO : 0-2000ppm, RH : 0-75mb, PAR : upto 2000 $\mu\text{mols m}^{-2} \text{sec}^{-1}$
- Temp Control : $\pm 15^{\circ}\text{C}$ from ambient
- Measured Parameters : CO₂, Water Vapour, PAR, Leaf & Air Temp., Stomatal Conductance, Transpiration, Photosynthetic Rate, Ci, Atmospheric Pressure
- Wide Variety of Leaf Chambers to suit all type of samples like for Broad, Narrow, Conifer, Canopy, Soil CO₂, Fruits Chamber
- Data Storage : 16 GB SD Card, downloading through USB port or Card reader
- Range CO₂ : 0-3000ppm H₂O : 0-75mb PAR : 0-3000 $\mu\text{mols m}^{-2} \text{sec}^{-1}$
- GPS to pinpoint your data



CCM300 CHLOROPHYLL CONTENT METER



- Light weight, field portable, battery operated instrument for measurement of relative chlorophyll content (mg/m^2)/CFR (Chlorophyll Fluorescence Ratio)
- Colour Display, Touch Screen, 2GB internal Memory, Data Averaging facility
- CCM300 is suitable for all type of samples like leaves, stems, flowers, fruits, mosses, small grasses, Cactus, Algae etc.
- Each measurement takes only 5 seconds to perform and is presented as Chlorophyll. Fluorescence Ratio (CFR) or relative chlorophyll content in mg/m^2
- Resolution : 0.01 or 1mg/m^2
- Measurement area : Fiberoptic Probe with 3mm diameter

CCM200 Plus CHLOROPHYLL CONTENT METER with In-built GPS

- Light weight, field portable, battery operated instrument for measurement of relative chlorophyll content as Index value In-built GPS Facility
- LCD Graphic Display, internal Memory for 1,60,000 data sets
- Data Averaging facility, Data Download through USB port
- Measurement area : 1cm dia circle
- Battery : 9v Alkaline Battery
- Resolution : 0.1 CCI
- Sample Acquisition time : 2-3 Seconds
- Repeatability : $\pm 1\%$
- Weight : 162 g



OS5p + MODULATED CHLOROPHYLL FLUOROMETER

Field Potable, Battery Operated, Light Weight for Measurement Of Fluorescence Parameters

- **Y(II)**: Quantum Photosynthetic Yield of PSII (or F/F_M' or Y)
- **ETR**: Electron transport rate
- **PAR**: Photosynthetically Active Region value
- **T**: Leaf temperature
- F_v/F_m : Maximum Photochemical efficiency of PSII
- F_v/F_o : A more sensitive detector of stress F_o : Minimum fluorescence
- F_m : Maximal fluorescence F_v : Variable fluorescence
- F_{ms} (or F_m'): Maximal fluorescence with actinic illumination at steady state fluorescence
- F_s (or **F**): Fluorescence under steady state conditions (prior to saturation pulse)
- $rETR_{MAX}$: A measure of a leaf's photosynthetic capacity or maximum electron transport rate as is the initial slope of line at low PAR values created by relating ETR to PAR. It provides a measure of quantum efficiency
- $I_k = rETR_{MAX}/\alpha$: A measurement of the light intensity where light saturation dominates, or the minimum saturation level
- **Hendrickson Quenching with NPQ (standard)**: Y(NPQ), Y(NO), Y(II), NPQ, F_v/F_m .
- **OJIP - Strasser Protocol**:
Data storage: 1GB removable SD card
Battery backup: 12 Hours continuous operation
Universal PAR clip suitable to wide variety of Leaf samples



OS1p MODULATED CHLOROPHYLL FLUOROMETER

Field Potable, Battery Operated, Light Weight for Measurement Of Fluorescence Parameters

- **Y**: Quantum Photosynthetic Yield of PSII (or $\Delta F/F_m'$ or Y(II))
- **ETR**: Electron transport rate (w/optional clip)
- **PAR**: Photosynthetically Active Region value (with optional PAR clip)
- **T**: Leaf temperature (with optional PAR clip)
- F_v/F_m : Maximum Photochemical efficiency of PSII
- F_v/F_o : A more sensitive detector of stress F_o : Minimum fluorescence
- F_m : Maximal fluorescence F_v : Variable fluorescence
- F_{ms} (or F_m'): Maximal fluorescence with actinic illumination
- F_s (or **F**): Fluorescence under steady state conditions (prior to saturation pulse)
- **Multi-Flash with F_m' correction and ETR correction**
- **Optional PAR Clip** provides PAR and leaf temperature. It should be purchased for Y(II) and ETR measurements
- Data storage: 1GB removable SD card
- Battery backup: 12 Hours continuous operation
- Universal PAR clip suitable to wide variety of Leaf samples

ACM-200Aplus ANTHOCYANIN METER

- Light weight, field portable, battery operated instrument for measurement of ANTHOCYANIN in Leaves and Flowers
- LCD Graphic Display, internal Memory for 1,60,000 data sets
- Data Averaging facility
- Data Download through USB port
- Measurement area : 1cm dia circle
- Battery : 9v Alkaline Battery
- Resolution : 0.1 CCI
- Sample Acquisition time : 2-3 Seconds



OS30p+ STRESS SCREENING DEVICE (Chlorophyll Fluorometer)

- Hand held battery operated instrument for the measurement of Photochemical efficiency (Fv/Fm) Fv/F0 and OJIP analysis
- Measured parameters: Fo, Fm, Fv/Fm, Fv/Fo, O, K, J, I, P, tFm, A, Mo and PI/ABS
- Sampling rate: Variable from 10µS to seconds
- Storage capacity: Up to 160,000 data sets and hundreds of experimental traces
- Detection system: Related pulse excitation detection with high resolution sampling mode for Kautsky induction curve recording

FV/FM METER

A compact and affordable Fv/Fm meter for dark adapted measurements Fv/Fm is a test that allows the measurement of the maximum potential quantum efficiency of Photosystem II if all capable reaction centres are open.

Technical Specifications

- **Fast measurements** : Fv/Fm, Fv/Fo, Fo, & Fm
- **Lighting conditions** : Dark adapted conditions only
- **Light sources** : Red LED Saturation flash array up to 6,000 umoles
- **Red modulated light source** : Modulated frequency is set at the factory. The red LEDs peak at 660nm with a cut off filter at 690nm
- **Sensors** : Pin Photodiode with a 700nm to 750nm band pass filter
- **Storage Capacity** : 2 Gigabyte of non-volatile flash memory, supporting almost unlimited data sets
- **Output** : USB comma delineated files may be opened in Excel
- **User Interface** : Menu driven with arrows
- **Display** : Graphic black and white display 132 x 32 pixels
- **Power Supply** : 8 hour USB lithium ion battery is standard, but any USB battery can be used



MPM 100 MULTI PIGMENT METER

- Measures: Chlorophyll Content, Anthocyanin Content, Flavonol Content & NFI (Nitrogen-Flavonol Index)
- The MPM-100 or “Multi-Pigment-Meter”, uses a combination of techniques to measure these very different parameters, in proven ways, at the same time
- Standard LED wavelengths
- Chlorophyll content: T850nm / T720nm
- Flavonol content: F660nm / F325nm
- Anthocyanin content: F660nm / F525nm
- NFI: (T850nm/T720nm) / (F660nm/F325nm)

Technical Specifications :

- Measurement Area: 9.5mm diameter circle
- Distance from edge of measuring head to measurement area: 9mm
- Repeatability: +/- 1%
- Noise: <+/- 2%
- Fluorescence Detector: Single channel Si Photodiode with detection from 720nm to 900nm range
- Transmittance Detectors: Single channel Si Photodiode with diffuser to measure from 405nm to 950nm
- Detection: Modulated light digitally controlled to minimize background detection
- Temperature compensation included for light source and detector
- Storage Capacity: 4GB of non-volatile flash memory
- Modes: Single point measurement, averaging of 2 to 8 measurements, median and mean values
- User Interface: 240 x 320px color touchscreen Output: USB 1.1
- GPS: Location accuracy range: 0.3m to 2.5m. Longitude, latitude, number of satellites and DOP



PLANT STRESS KIT

Compact and affordable Y (II)/ETR & Fv/Fm meters One case, two instruments. One for measuring light adapted Quantum Yield of PSII or Y(II) and one for dark adapted Maximum Potential Quantum Efficiency of PS (II) or Fv/Fm



Features

- Y(II) and ETR corrected for absorbance
- Leaf absorbance using RGB sensors
- PAR and leaf temperature measured
- Fm' correction according to Loriaux 2013
- Long-term fluorescence monitoring mode
- Rapid measurement of large populations
- Lightweight dark adaption clips
- Graphic Fv/Fm trace display
- Compact, ergonomic design
- Measurements from the same known state

Parameters measured Y(II) and Fv/Fm

- Y(II): Quantum Photosynthetic Yield of PS(II)
- ETR: Electron transport rate
- PAR: Photosynthetically active radiation
- T: Leaf temperature
- FMS (or FM'): Maximum fluorescence at steady state
- FS (or F): Fluorescence under steady state
- Loriaux 2013 correction of ETR and FM'
- α : Leaf absorptance & transmittance
- RH: Relative humidity 5% to 95% (+/-2% over the range)
- Monitor mode: Fv/Fm, Y(II), ETR, absorptance, PAR, T, RH and ETR
- Fv/Fm: Maximum potential quantum efficiency of PSII
- Fv/Fo: A normalised ratio that may be used to improve stress detection
- Fo: Fluorescence after dark adaption
- Fm: Maximum fluorescence during a saturating pulse following a period of dark adaption
- Ft: Instantaneous fluorescence



Y (II) Meter

A compact and affordable light adapted Y(II) & ETR meter Quantum Yield of PSII or Y (II) is a test that allows the measurement of the efficiency of Photosystem II under actual light adapted



Features

- Y(II) and ETR corrected for absorptance
- Leaf absorptance using RGB sensors
- PAR and leaf temperature measured
- Fm' correction according to Loriaux 2013 environmental and physiological conditions
- Long-term fluorescence monitoring mode
- 2Gb of on-board memory with USB output

Parameters Measured

- Y(II): Quantum Photosynthetic Yield of PS(II)
- ETR: Electron transport rate
- PAR: Photosynthetically active radiation
- T: Leaf temperature
- FMS (or FM'): Maximum fluorescence at steady state
- FS (or F): Fluorescence under steady state
- Loriaux 2013 correction of ETR and FM'
- α : Leaf absorptance & transmittance
- RH: Relative humidity 5% to 95% (+/-2% over the range)
- Monitor mode: Fv/Fm, Y(II), ETR, absorptance, PAR, T, RH and ETR

AUTOMATIC WEATHER STATION GP1 Type

- GP1 Data Logger : battery operated, easy to install and easy to handle. Pre-wired ready to use
- Fix for Air Temp, RH, Wind speed, Wind Direction, Rainfall, Radiation
- Data Logger GP1 stores 6,00,000 data sets with option of recording from 1 sec to 24 hours
- Option to record minimum/ maximum/ average data
- Data downloading through RS 232-USB or GPRS modem with cloud facility
- 2 meter tripod mast
- Pre-loaded sensor library in the programme for easy operation
- Can be operated through 9 volt battery without solar panel or through 12v battery and solar charging option



AUTOMATIC WEATHER STATION GP2 Type & DATA LOGGER

- GP2 Data Logger : 16 channel data logger, 12 analog and 4 digital channels
- Sensors for Air Temp, RH, Wind speed, Wind Direction, Rainfall, Solar Radiation, Soil Temperature, Soil Moisture, Surface wetness, sunshine, atmospheric pressure, net radiation etc.
- Data Logger GP2 stores 2.5 million (4mb) data sets with option of recording from 1 sec to 24 hours
- Option to record minimum/ maximum/ average data
- Data downloading through USB, GPRS modem and cloud facility
- 2 meter mast and cross arm accessories
- Pre-loaded sensor library in the programme for easy operation
- Can be operated through 12v battery and solar charging option

DATA LOGGERS

The GP1 Data Logger is a compact research grade data logger with smart irrigation control capability

- High accuracy 7 channel data logging
- Smart relay suitable for irrigation control
- Waterproof IP67 enclosure
- 600,000 readings
- Operated through Internal 9V battery and option to connect with 12 V Battery and solar power charging
- Compatible with all Environmental sensors like RH/Temp, Wind speed, Wind direction, Rainfall, Solar radiation, Soil temperature, Soil moisture etc.
- Data downloading through RS232-USB, GPRS modem facility



GP2 DATA LOGGER AND CONTROLLER

The GP2 is a powerful, weatherproof, research grade data logger with unique features for recording and controlling field experiments

Features

- 12 differential channels
- High performance microvolt sensitivity
- 2.5 Million Data Storage Capacity
- Flexible configuration
- Versatile communication options
- Excellent analog accuracy
- Powerful Script Editor
- Virtual channels
- Unique program Simulator
- Data visualisation
- Operated through Internal 1.5V X 6 battery and option to connect with 12 V Battery 12 V Battery and solar power charging
- Compatible with all Environmental sensors like RH/Temp, Wind speed, Wind Direction, Rainfall, Solar Radiation, Soil Temperature , Soil Moisture, Net Radiometer, Albedometer, Sunshine sensors, Surface Wetness
- Data downloading through RS232-USB, GPRS modem facility



PROFILE PROBE SOIL MOISTURE METER

- Battery operated, research grade instrument for measurement of soil moisture at different depths down to 1 meter and 1/2 meter
- PR2/6 : 10,20, 30, 40, 60, 100 cm depth (1 meter probe)
- PR2/4 : 10, 20, 30, 40 cm depths. (1/2 meter probe)
- User selectable output : % Volumetric, m^3/m^3
- Facility to store 5 user specific soil calibration
- Single probe with independent sensors at different depths
- LCD display to view the data before you store it
- Access tube installation tool kit and Extraction tool kit supplied with the instrument
- Data storage and downloading facility

PROFILE PROBE SOIL MOISTURE METER - SDI-12 Version

The PR2 SDI-12 is a new digital alternative to the well-established analogue PR2 Profile Probe. It shares the many strengths of the analogue PR2 soil moisture probe, but with the addition of SDI-12 compatibility - allowing integration into new and existing SDI-12 systems.

- Multiple PR2 SDI-12 can be connected to a compatible data logger via a single cable
- Enables the creation of low cost highly flexible sensor networks
- Compatible with existing PR2 access tubes and auguring kits
- Conforms to industry standard SDI-12 (v1.3) spec
- Flexible integration with 3rd party SDI-12 hardware
- New low power design; ideal for remote sites



WET SENSOR KIT

- It measures Water content, EC, Temperature of the Soil
- User selectable output : % Volumetric , m^3/m^3 of water content
- Facility to store 5 user specific soil calibration
- LCD display to view the data before you store it
- Direct insertion in the soil
- Maximum Sensor length : 7 cm
- 3 Parameters with single insert



WET 150 KIT

- WET150 Kit is a portable and rugged solution for researchers who need to assess moisture and salinity conditions in soils and substrates
- The Kit makes fast soil/substrate measurements of three crucial variables that influence plant growth: moisture content, temperature*, and electrical conductivity (EC) – a strong indicator of the general nutrient level
- The WET150 Meter is a lightweight and easy to use readout-only device (no data recording or other complications). Operation of the kit is straightforward – the user inserts the WET150 into the soil or substrate and presses the “Read” button on the meter to take and display the measurement
- The WET150 Sensor comes complete with calibrations for mineral and organic soils plus perlite, coir, peat, and mineral wool substrates soils



THETA PROBE SOIL MOISTURE METER

- Battery operated, portable instrument for measurement of Soil Moisture content
- Direct insertion in the soil
- Extension Tubes upto 1 meter used for deeper depth
- Inbuilt Data Storage facility
- Digital display. % Volumetric, m^3/m^3
- Operated through 9v battery
- Accuracy: $\pm 1\%$
- Frequency: 100MHz
- Maximum Sensor length: 6 cm



SM 150T SOIL MOISTURE PROBE

- Battery operated, portable instrument for measurement of Soil Moisture
- Digital Display
- Research grade sensor at a greater price
- Robust and Durable
- Moisture accuracy is 3% (after soil specific calibration)
- Built-in temperature sensor achieves 0.5°C accuracy



- Please note that the HH150 Meter supplied with the SM150 Kit is a readout-only device. If PC connectivity for data storage and download is a requirement, the SM150T should be used with the HH2 Moisture Meter instead.
- NB: When used in portable mode the SM150T Sensor does not provide temperature indication

ACE SOIL CO₂ EXCHANGE SYSTEM / SOIL RESPIRATION SYSTEM

- Automatic Soil CO₂ Soil Respiration measurement system. It Measures Soil CO₂ Exchange, (Respiration Rate)
- Soil Temp, Soil Moisture and PAR (Photosynthetically Active Radiation)
- IRGA located near to Soil Chamber for fast response
- Measurement Range CO₂ : 0-896ppm (differential open/close system)
- Measurement PAR : 0-3000 micromol/m²/s
- Option to measure Soil Temperature at 6 points & Moisture at 4 points
- Operated through 12v, 7Ah battery for portable use
- Data Storage: 2GB SD Card
- Chamber automatically opens and closes between measurements
- CE can be used for short term as well as long term measurements
- Data storage and download: through removable SD card Easy data download without any specific software
- **Zero / ambient option** : For more accurate NCER data, and absolute ambient CO₂ measurements each Station can be fitted with a Zero/ambient CO₂ concentration option. This includes a CO₂ stripper column that provides a zero CO₂ reference for each experiment
- **Complete system** : Each ACE Station is a complete, fully integrated soil flux measurement system comprising the aluminium soil chamber, heat reduction parasol and arm that pivots from the control console, where measurements are both displayed and recorded. Each ACE Station can operate fully independently for single point measurements. The power efficient ACE Station can be powered by battery



SOIL MOISTURE SENSOR WITH DATA LOGGER

For continuous Monitoring of Soil Moisture/Soil Temperature

- ML3-Theta Probe Can be buried or used as portable probe
- PR2/6 Profile Probe Soil Moisture Sensor – 2 analog or 10 SDI-12 sensors can be connected with one data logger.
- 4 MB of FLASH memory enable storage of 2.5 million readings (typical). Data can be collected by laptop locally via USB/RS232 or remotely using the cellular modem options. The GP2 has 6 alkaline AA internal batteries as standard. External 12 V battery and Solar Power charging options are available.
- Class leading $\pm 1\%$ soil moisture accuracy for ML3 Theta Probe Sensor
- $\pm 4\%$ soil moisture accuracy for Profile Probe PR2 Sensor
- Easy data logger connection (0 – 1 V DC)
- ML3 Theta Probe: Soil Moisture/ Soil Temp

Compatible Sensors:

- PR2 Soil Moisture Sensor (Analog and SDI-12)
- ML3 Theta Probe Sensor
- WET (Soil Water Content, EC, Soil Temperature) Sensor
- All Weather related sensors.





AM350 PORTABLE LEAF AREA METER

- Portable instrument for Leaf area, width, maximum length, perimeter, average area, ratio, shape factor
- Inbuilt Data storage for 2000 data sets.
Display : 64x240 LCD graphic display
- Maximum Measuring width: 103mm with 0.065mm resolution
- Measurement Units: user selectable (mm/cm)
- Long leaves can be measured on independent white board
- Leaf Image Display, storage and download facility through USB Port

WINDIAS IMAGE ANALYSIS SYSTEM

- Lab Model, operated through 220v AC power. compatible with Windows operating system
- Measures Leaf area, Length, width, perimeter, object count, hole area, disease area
- Conveyor Belt attachment facility for fast measurement
- Resolution : 1280 x 1024 pixels
- Throughout Leave/hour : approx 800 samples
- Maximum Object size : 1 pixel
- Maximum sample area : 250 x290 (conveyor attachment)
- 250 x 1000 mm long leaf mode
- Colour depth : 24bit colour space (16 million colours)
- Lower Price for conveyor belt systems
- LED lighting with adjustable brightness
- Improved seed counting capability
- Enhanced Area of Interest drawing tool



SPN1 SUNSHINE PYRANOMETER

- It measures Global (Total) Diffused and Sunshine hours
- WMO sunshine threshold : 120 W/m² direct beam
- No routine adjustment or pollar alignment
- No moving parts, shade rings, trackers
- Works at any altitude
- Spectral Range : 400 - 2700 nm
- Range : 0-2000W/m²
- Response time : <200ms
- Resolution : 0.6 W/m² = 0.6Mv
- Compatible with GP1 Data logger : 600,000 data storage capacity

BF5 SUNSHINE SENSOR

- It measures Global (Total) Diffused and Sunshine hours
- No routine adjustment or pollar alignment required
- No moving parts, shade rings, trackers works at any altitude
- Works at any altitude
- Spectral Range : 400 - 700nm
- Range : 0-2000W/m²
- Output : PAR / ENERGY / LUX (User selectable)
- PAR : 0-2500 micromol/m²/s Energy : 0-1250 W/m²
- Illuminance : 0-200klux
- Compatible with GP1 Data logger : 600,000 data storage capacity



NET RADIOMETER WITH DATA LOGGER

- Net radiometer is a thermopile sensor head which is exposed to both the downward and upward fluxes of radiation
- Measuring Range : -0.5 to +1(kW/m²)
- Spectral Range : 0.25-60µm
- Operating Temp: -40 to 60°C
- Sensitivity : 100mV per (kW/m²)
- Field of view- 180° upper and lower sensor
- Compatible with GP1 Data logger. Data Storage capacity for 6,00,000 data sets. Data logging interval option from 1 sec to 24 hours
- Includes data downloading software, data downloading cable, instructions manual and basic spares and accessories

NET RADIOMETER WITH DISPLAY

NR Lite2 is designed for routine measurement of net radiation which is the balance between incoming and outgoing radiation under outdoor conditions.

The design of the NR Lite2 is unique. The double-sided detector has black conical absorbers with an anti-stick weather resistant protective coating. In contrast to other sensor designs, NR Lite2 requires no fragile plastic domes. This results in a virtually maintenance free design. The vertical stick prevents birds from affecting the output signal.



Specifications

Spectral range (overall)	0.2 to 100 µm = 200 to 100.000 nm
Sensitivity	10 µV/W/m ²
Response time	< 20 s
Operational temperature range	-30 °C to +70 °C

ALBEDOMETER

- It consists of two identical pyranometers that measure the incoming global solar radiation and radiation from the surface below
- Measuring Range : 0 to 2 (kW/m²)
- Spectral Range : 305 - 2800nm
- Operating Temp : -40 to 80°C
- Sensitivity : 10-35mV per (kW/m²)
- Compatible with GP1 Data logger. Data Storage capacity for 6,00,000 data sets. Data logging interval option from 1 sec to 24 hours
- Includes data downloading software, data downloading cable, instructions manual and basic spares and accessories



SAP FLOW SYSTEM

For sap flow/xylam flow study. Usefull for Crops and Trees Different TDP Needles & Gauges are available to suit all type varieties.

- Easily inserted and removed for reuse
- Constant heat, thermal dissipation method; not heat pulse
- Continuous measurement method
- No waiting periods and no heat pulses
- Stainless steel needles that are Teflon coated
- Compatible with most data loggers
- Differentially wired T-type thermo couples
- Electronics & connectors sealed / weatherproofed
- Wires directly to data logger, one differential channel each
- Ten ft. cables, sensor insulation, and manuals included

HYDRAULIC CONDUCTANCE FLOW METER (HCFM)

HCFM is designed to perform quantitative root and stem analysis without having to dig up roots or drag limbs back to the lab. In most cases, the analysis of a sample root or shoot is completed in as little as 10 minutes. You can quickly measure the major components of the hydraulic conductance in the soil-plant-atmosphere continuum . One can measure the values of the individual hydraulic resistances, then compute the pattern of water flow and water potentials in the resistance network.

Technical Specifications :

- Stem Ranges 1 mm to 36 mm diameters
- Flow Rates 0.01 to 350 grams/hr in 5 overlapping ranges
- Conductance 7.7E-08 to 3.5E-04 Kg s⁻¹ MPa⁻¹
- Data Interface USB, USB powered
- Capacity 24 oz. Degassed Water
- Maximum Pressure 90 psi (620 kPa)
- Air Gas Tank 6 cu. ft. (170 liter) with CGA-580 Valve & Connector



PYRANOMETER-MP 200

Pyranometer displays and stores measurements in W/m^2 . Spectral Range 360 to 1120nm, Field of view 180° . The sensor incorporates a silicon-cell photo-diode with a rugged, self-cleaning sensor housing design. Typical applications include shortwave radiation measurement in agricultural, ecological, and hydrological weather networks and solar panel arrays. The meter can store up to 99 averages, once full it will start to overwrite the oldest measurement with new ones.



Technical Specifications :

- Calibration Uncertainty $\pm 5\%$
- Measurement Repeatability Less than 1 %
- Non-stability (Long-term Drift)-Less than 2 % per year
- Non-linearity : Less than 1 % (up to $1750 W/m^2$)
- Response Time-Less than 1 ms
- **Model : MP-100 Sensor is integrated with meter**

LINE QUANTUM SENSOR-301

- Apogee line quantum sensors measure a spatial average of PAR (Photosynthetically Active Radiation). The sensor housing design features an integrated bubble level and is fully potted making the sensor weatherproof. Typical applications include PPF (Photosynthetic Photon Flux Density) measurement over plant (Photosynthetic Photon Flux Density) measurement over plant canopies in outdoor environments, greenhouses, and growth chambers, and reflected or under-canopy (transmitted) PPF measurements in the same environments. Quantum sensors are also used to measure PAR/PPFD in aquatic environments, including salt water aquariums where corals are grown

Models :

- MQ-306 has a separated sensor bar with 6 sensors connected to a hand-held meter via cable
- MQ-303 has a separated sensor bar with 3 sensors connected to a hand-held meter via Cable



INFRARED RADIOMETER MI-210

The MI-210 has a hand-held meter, attached via cable that displays and stores sensor measurements. The sensor has a 22° half-angle field of view and a response time of 0.6 seconds. Typical applications include plant canopy temperature measurement for use in plant water status estimation, road surface temperature measurement of determination of icing conditions, and terrestrial surface (soil, vegetation, water, snow) temperature measurement in energy balance studies.

Models :

- MI - 220 : 18° half-angle M-230 : 14° half-angle
- MI-2HO: 32° horizontal half angle, 13° vertical half angle



UV SENSORS MU-200

The UV Sensor is a hand-held meter, which displays and stores measurements. The sensor incorporates a photodiode that measures combined UVA and UVB radiation. Typical applications include UV radiation measurement in outdoor environments (sensor is not recommended for long-term continuous outdoor deployment), laboratory use with artificial light sources (e.g., germicidal lamps), and monitoring the filter ability and stability of various materials.

Technical Specifications :

- Spectral Range- 250-400nm
- Calibration Uncertainty- $\pm 10\%$
- Measurement Repeatability - Less than 1 %
- Response Time Less than 1 ms
- Non-stability (Long-term Drift) - Less than 3 % per year
- Non-linearity : Less than 1 % (up to $300 \mu mol/m^2/s$)
- Model : MU-100 Sensor is integrated with meter



Our Principals



ADC BioScientific Ltd., UK
www.adc.co.uk



Dynamax

Dynamax Inc., USA
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Delta-T Devices Ltd., UK
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