Welcome!
Thank you to our valued customers and our talented team of employees for contributing to another successful year in business. Since 1987, we have been committed to meeting your needs. It’s our mission to turn plant measurements into information for profitable decisions around the world.

Spectrum continues to be an industry leader in plant measurement technology, working closely with researchers, growers, golf course superintendents and industry suppliers to provide a broad line of professional, quality products in crop environmental monitoring, nutrient management, soil moisture measurement/irrigation scheduling and pest management.

We stand behind every product with our 100% Satisfaction Guarantee and are committed to providing a friendly and knowledgeable customer support team to answer your questions.

Thank you for your support and commitment to innovation.

Sincerely,

Mike Thurow
CEO & Founder
Spectrum Technologies, Inc.
COMPANY OVERVIEW
Spectrum Technologies, Inc. manufactures affordable, leading-edge measurement information technology for the agricultural market throughout the world.

We develop peak plant performance tools for better field output. Using the most advanced plant measurement technology, we provide growers with actionable plant health data that translates into more profitable decisions.

INDUSTRY FUTURE
With consumers demanding higher quality food and environmental conditions, the need for measurement and monitoring technology will continue to grow. The need to conserve resources such as soil and water will drive the need to CREATE more measurement information technology.

PRODUCTS

1 WEATHER
Temperature, Light, Wind, Rain, Relative Humidity and Leaf Wetness Monitoring

2 INTEGRATED PEST MANAGEMENT (IPM) TOOLS
Insect and Disease Models, IPM Scopes

3 SOIL MOISTURE & QUALITY MEASUREMENT
Soil Moisture, Soil Compaction and Water Quality Meters

4 NUTRIENT MANAGEMENT
Nutrient, Chlorophyll, pH, EC and Nitrogen Meters

Award Winning Products
Since 1987, Spectrum Technologies has received 24 AE50 Awards from the American Society of Agricultural and Biological Engineers, which demonstrates our deep commitment to innovation and quality. Our most recent AE50 award:

2018 FieldScout® TDR 350 Soil Moisture Meter
See website for a complete list of awards.

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Wireless Rain+Temp Station

Wireless Communication

WatchDog® Wireless Rain+Temp Station

Features

- Measures temperature and rainfall
- Affordable station cost
- SigFox communication
- Highly accurate
- Remote/Wireless communication
- Radiation Shield
- Bird Guard
- Instantaneous rainfall notifications (with alerts active)

 president of the United States

Benefits

- Send data from every field directly to the cloud
- Deploy as many units as needed, with the option to move or add more
- Reduces communication cost
- Allows user to access data in near real time from anywhere
- Provides accurate temperature data hourly
- Bird Guard reduces debris in the rain collector
- Immediately updates with the first .01 inches of rain
- Continues to update every 10 minutes while raining

3200R2  WatchDog Wireless Rain+Temp Station
3024  SpecConnect 1-year subscription

Specifications

- Operating Temperature: -40° to 140°F (-40° to 60°C)
- Event type: Periodic hourly data logging with alarm based event checking every minute
- Event intervals: 1 hour maximum, packet on .01 inches of rain then every 10 minutes until rain stops
- Communication: Sigfox LPWA network
- Temperature Sensor
  - Range: -67° to 257°F (-55° to 125°C)
  - Accuracy: ± 1°F(0.5°C)
- Rain Sensor
  - Diameter: 8 inches (20.3cm)
  - Resolution: .01 inch (0.25 mm)
  - Accuracy: ± 2% with rainfall at < 2 in (5 cm) per hour

What is Sigfox Network?

Sigfox is the world’s leading IoT services provider. The company’s Low Power Wide Area (LPWA) network provides the lowest energy consumption for secure device-to-cloud connection. We are proud to partner with Sigfox to offer an affordable IoT connectivity solution to our customers.
Manage your site data whenever, wherever.

Use this powerful tool as a central point for viewing and evaluating real-time data instantaneously for better decisions. SpecConnect can help improve yield and quality, conserve resources, increase profits and decrease risk by viewing current weather conditions and factors.

- Configure your network from your computer, smart phone, or tablet
- Easy and simple to navigate
- 100% customizable dashboard
- Supports multiple user logins
- Send customized alerts via text message or email
- Download your data for offline analysis
- Create custom reports and charts for full analyses of your data
- Map view allows you to see all station locations and current conditions
- Optional plant disease and insect models

SpecConnect Reporting Features
- Daily/Hourly
- Multi Station/Sensor
- Equipment Inventory & Activity
- Rainfall and Soil Moisture (product specific)
- And More!

SpecConnect Compatible Items
- WatchDog® Retriever & Pups
- WatchDog® 2000 Series Weather Stations
- WatchDog® 2000 Series Mini Station
- FieldScout® TDR350/150
- FieldScout® TruFirm® Turf Firmness Meter

Current Conditions At Your Fingertips
Example WatchDog Station Pup dashboard
Daily Report

- Track the key growing factors of temperature, humidity, and rainfall
- Generate formal reports for permanent records
- Flexible date selection for reports you need: week, month or growing season

Degree Days Report

- Track plant growth stage through the growing season
- Use degree-days for pest management decisions, not the calendar
- Time the application of pesticide spray more effectively with degree day information
- Aids growers and researchers in tracking the development of plants and pests
- Project the growth and development of plants and insects during the growing season

Disease Models

- Monitor disease pressure based on field-tested and validated algorithms along with data collected by sensors on your field
- Reduce the number of pesticide applications when disease risk is low
- Models available for Apple/Pear, Grape, Cherry, Potato, Tomato, Nut, and Turf diseases
Rainfall Report

- Monitor rainfall throughout the growing season
- See the monthly rainfalls superimposed on the cumulative total in one place
- Click on Monthly bars to see daily rain events

Soil Moisture Graph Report

- Maintain optimal levels of soilwater content in the root zone
- Avoid flushing nutrients beyond the bottom of the root zone
- Anticipate water stress by estimating water deficit
- Set the desired moisture thresholds based on your field needs and improve your irrigation efficiency

Wind Rose Report

- Analyze and display distributions of wind speeds and directions at your locations
- Protect your plants from wind damage and adjust the direction of planting
- Anticipate soil erosion or deposition caused by intense and heavy wind
- Manage pesticide drift risk
Disease & Insect Forecast Model Packages

1-YEAR SUBSCRIPTIONS

Be proactive in your management of diseases and insects by adding forecast models to your SpecConnect subscription

• Each package uses field-tested and validated algorithms along with your data to forecast the potential for the appearance of your crop’s most notorious enemies
• Save money by spraying only when necessary
• Quickly produce the documentation needed to support your IPM decisions
• 1-year subscriptions

Pro WatchDog Subscriptions

3030 SpecConnect Pro 1-yr Subscription - WiFi
3000 SpecConnect Initial Set Up Fee

Additional Devices and Services

3046 Additional WatchDog Device - Low-Cellular (1-yr)
                          (15-60 minute, interval mean sensor values only)
3055 Additional WatchDog Device - WiFi (1-yr)
                          Needed per Pup or Station
3040 Additional Login (1-yr)
                          Limit of three users per subscription
3070 Alerts Function (1-yr) Up to 4 phone numbers and emails
                          Needed per Pup or station
3065 API Service - (one-time-charge)

Pro FieldScout Subscriptions

3035A SpecConnect FieldScout Pro (1-yr) 1-3 devices
3035B SpecConnect FieldScout Pro (1-yr) 4-7 devices
3035C SpecConnect FieldScout Pro (1-yr) 8+ devices

SpecConnect WATCHDOG SUBSCRIPTION FEATURES

• Web Portal connection requires a WatchDog Retriever & Pup network or any 2000 Series Weather Station to collect and log data, and DataScout Modem to send data to the internet
• FieldScout subscriptions require a TDR or TruFirm Meter and the free FieldScout Mobile App
• For more information about the FieldScout Mobile App (see page 33)

SpecConnect For Real Time Data
SpecWare For Logged Data

SpecWare 9 Basic

- Easily download, analyze and produce basic reports from the weather data collected on your WatchDog Micro Stations and data loggers
- Eliminate valuable time exporting the data and performing calculations in tedious spreadsheet programs
- SpecWare 9 Basic automatically assigns each WatchDog Data Logger Station to its own “logger location” directory, which is appended every time you download new data
- Includes USB cable and manual
- Download the software from specmeters.com (activation required)
- Only one activation per purchase

SpecWare 9 Basic does not support disease models, 2000 Series Full Weather Stations, or Retriever & Pups

3654B9 Spec 9 Basic Software
3654B9X Spec 9 Basic Extra User License
3654B9U Spec 9 Basic Upgrade*
3661U USB-to-3.5mm-Stereo-Plug Adapter

* Does not include USB cable

SpecWare 9 Pro

Powerful analysis tools that are easy to use.
- Graph on-the-fly with an interactive graphing window
- Build, customize and save your most important report formats or choose from 15 standard reports
- Add optional insect and disease models to forecast pest pressures and reduce pesticide costs; produce reports with graphs for each pest
- Set a frost alarm that will call your phone at frost temperatures or other sensor conditions
- Automate logger downloads with wireless or directly connected stations
- Generate scheduled log files for data-to-web applications or create an XML file that can be posted on the web
- Find and use data easily with an open file management system - all logger data is stored in one file per month, simplifying data sharing and exporting
- Import data files from other applications
- International features include handling date, time, and numbers with regional formats and Metric or US measurements
- Includes USB cable and manual
- Download the software from specmeters.com (activation required)
- Only one activation per purchase

3654P9 SpecWare 9 Pro Software
3654P9X SpecWare 9 Pro Extra User License
3654P9U SpecWare 9 Pro Upgrade*
3661U USB-to-3.5mm-Stereo-Plug Adapter

* Does not include USB adapter cable

COMPARING SPEC 9 BASIC TO SPEC 9 PRO

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SpecWare™ 9 software is compatible with Windows XP and later.

VISIT SPECMETERS.COM/UPDATES TO ENSURE YOUR SOFTWARE VERSION IS COMPATIBLE WITH OUR NEWEST WATCHDOG MODELS.

Disease & Insect Forecast Model Packages

3656AP SpecWare Apple/Pear Alert Package
3656CH SpecWare Cherry Alert Package
3656GA SpecWare Grape Alert Package
3656PO SpecWare Potato Alert Package
3656TO SpecWare Tomato Alert Package
3356TU SpecWare Turf Alert Package

For more information, visit our website.
Our Retriever & Pups+ Network sends real time data to your laptop, tablet or smartphone; anywhere you can access the internet. Trust the data and eliminate the guesswork! Each Retriever can support up to 12 Pups. Each Pup can support four different sensors and you can receive customized threshold alerts. Our sensors measure everything from soil moisture to light, wind, rain, humidity and more. Expand your network by adding weather stations to bring data from every nook and cranny of your property directly to you.

Retriever & Pups+ Enhancements

- Added ability to remotely download firmware updates for Retrievers, Sensor & Station Pups
- Improved data transfer performance
- Pups save all data until the Retriever affirms that it has received and processed it
- Added acknowledgement feature, successful receipt sent to pup to ensure data is received
- Added flash memory feature on Pups to ensure over 10 months of unacknowledged data is saved pending the Retriever’s response
- Added protection logic to prevent data spikes from occurring
- Increased number of Pup data records that can be stored on the Retriever
- Improved battery life
- If battery level gets too low to transmit data, the Pup shuts down the radio to dedicate all remaining battery power to collecting and saving data (for about 1 week)
In-Field Applications

Easily detect frost and be alerted of conditions in your crops, monitor and note site-specific conditions for insect and disease pressures and monitor soil moisture remotely.

Capture site-specific conditions remotely for insect and disease pressures, soil moisture monitoring, weather conditions, light and more.

Flexibly monitor both soil moisture and EC in a variety of soil textures for better irrigation decisions.

Measure DLI (Daily Light Interval), light duration and intensity for consistently better plant quality across greenhouse and high-tunnel structures. For outdoor growing monitor soil moisture, temperature and EC for efficient irrigation practices.
Pups

SETUP A NETWORK

Multiple Pups with a variety of sensors to choose from give you unlimited measurement options within a single network. Follow steps 1-5

3 models

WatchDog Sensor Pup
- Connect up to 4 external sensor inputs per Pup
- Transmits data to Retriever (directly or via other Pups)
- Includes 6 lithium AA batteries (solar-power option below)
- Available as Pre-Packaged Pup Stations, including sensors
  3900  WatchDog Sensor Pup

WatchDog Station Pup
- Connects to WatchDog 2000 Series Full or Mini Weather Stations and transmits all station sensor data to the network
- No external sensors
- Includes 6 lithium AA batteries (solar-power option below)
  3901  WatchDog Station Pup

WatchDog Repeater Pup
- Serves as “signal booster” to help provide a path for the transmission signal around obstacles or to extend range; no sensor inputs of its own
- Includes 6 lithium AA batteries (solar-power option below)
  3902  WatchDog Repeater Pup

Additional Pup Information
- Single button operation: check battery status, signal strength, and join sensor network
- Tri-colored LEDs indicate battery level, signal strength, and data communication status
- Communication range of 2,500 ft (about 750 meters), line-of-sight installation between devices
- Pups act as repeaters to get data to the Retriever
- 900 MHz radios in this catalog; 868 MHz and 2.4 GHz also available for international use - Contact for details

STEP 2

CHOOSE YOUR SENSORS

WHAT ARE YOU MEASURING?
WHAT INFLUENCES YOUR CROP MOST?
WHAT ELSE DO YOU WANT TO KNOW?

Most Popular Sensors

Choose sensors for what you will measure. Choose up to 4 per Sensor Pup.

- 3613ARS  Temperature/RH Sensor with Aspirated Radiation Shield
- 3613THS  Temperature/RH Sensor with Passive Radiation Shield
- 3665RD   Digital Rain Collector with Bird Guard
- 3305ADD  Digital Anemometer
- 6470-20  WaterScout SMEC 300 Sensor with 20 ft (6.1 m) Cable
- 6460-20  WaterScout SM 100 Sensor with 20 ft (6.1 m) Cable
- 6450WD20 Watermark Sensor with 25 ft (7.6 m) Cable
- 3667    External (Soil) Temperature Sensor with 6 ft (1.8 m) Cable
- 3666    Leaf Wetness Sensor
- 3670I LightScout Silicon Pyranometer
- 3668I LightScout Quantum Light Sensor

OPTIONAL ACCESSORIES

POWER UP

Solar Power

3999  Solar Power Package for Pups & Retrievers
Includes 5W solar panel and 6V 4.5Ah rechargeable battery
Retriever

GATHER THE DATA
WatchDog Retriever

- Receives all data from Pup network, each Retriever supports up to 12 Pups
- Includes USB Flash Drive and USB data cable
- Includes 6 lithium AA batteries. Can also be powered by DataScout modem, Direct-Connect cable or Solar Power Package
- Single button operation: switch modes, download data, upload configuration, and check battery status
- Tri-colored LEDs indicate mode, battery level, data communication status, and configuration status
- Non-volatile memory preserves your logged data, even when the batteries are removed
- 900 MHz radios; 868 MHz and 2.4 GHz also available for international use - Contact for details

3910 WatchDog Retriever

Optional Accessories

3999 Solar Power Package
Includes 5W solar panel and 6V 4.5Ah rechargeable battery

3396TPS Tripod Mount with Stakes

3925 Antenna Extension Cable - 10 ft (3 m)
Includes Mounting Bracket and Hardware

3388USB Replacement/additional USB Flash Drive

3927C75 PC Direct Connection Cable - 75 ft (22.9m)
Connect your Retriever directly to your PC. Includes power and data cables, AC/DC power adapter, and DC plug adapter
Has 9-pin serial connection on PC end, may require USB adapter (Item 366IU9)

3926 AC/DC Power Adapter

SpecWare Software

- SpecWare Pro software version 9.6 or later may be used to view Pup data on PC
- If using the SpecConnect Web Portal all data can be viewed online (SpecWare software not required)

3654P9 Spec 9 Pro Software
Modems

- Communicate data to the web using either a Cellular or Wi-Fi signal
- Single button operation: test communications, pair with station, and check battery status
- Tri-colored LEDs indicate battery level, data communication, and wireless signal/connection status
- Power options: Choose between Solar power package which includes rechargeable battery and 5W solar panel, or the AC/DC power adapter (Max 17VDC)
- Required for connection to SpecConnect, sold separately
- Provides power to attached Watchdog Stations and Retrievers

Compatibility Requirements

- WatchDog Retriever - Item 3910 WatchDog Retriever (with non-rechargeable batteries). The DataScout Modem and the Retriever can share the power from the solar power package
- 2000 Series Full Weather Stations - the station must be running firmware version 7.6 or above
- WatchDog 2000 Series Mini Stations - The station must be running firmware version 4.1 or above

Cellular Modems

3923M 3G HSPA+ Cellular Modem
GSM 3G HSPA+ Cellular (Canadian, US and Mexico customers). Requires power selection from options below

3924M 3G HSPA+ Cellular Modem
GSM 3G HSPA+ Cellular (for all other international markets). Requires power selection from options below

Wi-Fi Modems

3920 Wi-Fi Modem - AC/DC Powered
Includes AC/DC Power Cord

Power Options

3999 Solar Power Package
Includes 5W solar panel and 6V 4.5Ah rechargeable battery

3926 AC/DC Power Cord
Monitor, record and analyze over a dozen environmental parameters directly from your field, orchard, vineyard or golf course

What makes our WatchDog® Weather Stations different?
• Expand your measurement options with customizable external sensor ports
• Use the onboard LCD display to check your current and daily readings
• Choose measurement intervals from 1 to 60 minutes
• Log your data in fail-safe, non-volatile memory
• Powered by four AA batteries (included), also compatible with lithium batteries
• Compatible with WatchDog Retriever & Pups Network

How do you access the data?
1. SpecConnect: Wireless or Cellular Communication: Access real time data from your PC, tablet or smart phone
2. Direct Connect: Download from the station to your PC. Requires SpecWare Basic or Pro
3. Data Shuttle: Transport data from your station to your PC. Requires SpecWare Basic or Pro

Model 2900ET
• The most powerful package for optimizing your irrigation and IPM decisions
• Measures wind direction, wind speed, air temperature, relative humidity, dew point, rainfall, solar radiation, evapotranspiration, with 5 available external sensor ports

3350WD2 WatchDog® 2900ET Weather Station

Additional Models

Model 2700
• Affordable and versatile solution for growers, researchers, and consultants
• Measures wind direction, wind speed, air temperature, relative humidity, dew point, rainfall, with 6 available external sensor ports
3340WD2 WatchDog® 2700 Weather Station

Model 2550
• Ideal for fast, on-demand deployment without measuring rainfall
• Measures wind direction, wind speed, air temperature, relative humidity, dew point, with 6 available external sensor ports
3320WD2 WatchDog® 2550 Weather Station

Model 2800
• Ideal where multiple sensor measurements are required for temperature, soil moisture, crop canopy light, or leaf wetness data
• Plug in up to 8 external sensors, plus 1 optional rainfall sensor
3345WD2 WatchDog® 2800 Weather Station

Spectrum Technologies, Inc.
2000 Series Mini Stations

Monitor microclimates with up to 4 external sensor ports. You can customize your WatchDog network, using different sensors based on the data you want to collect and analyze for optimal system performance.

- Same power, flexibility, and accuracy as the 2000 Series Weather Stations
- Measure temperature, humidity, quantum light, and more (varies by model)
- Customize your Mini Station with 1 to 4 plug-in sensors to meet your needs
- Custom measurement intervals
- Reliable NEMA-4 type IP 66 enclosure and weatherproof connectors
- 12-month battery power source (four AA alkaline batteries included)

How do you access the data?

1. SpecConnect: Wireless or Cellular Communication: Access real time data from your PC, tablet or smart phone
2. Direct Connect: Download from the station to your PC. Requires SpecWare Basic or Pro
3. Data Shuttle: Transport data from your station to your PC. Requires SpecWare Basic or Pro

Model 2475 Plant Growth Station
- Ideal for greenhouses - includes sensors for quantum (PAR) light, air temperature, dew point, relative humidity, with 1 available external sensor port
- Computes and displays Daily Light Integral (DLI), dew point and degree days; live display of current light and cumulative light over the day
- Computes and displays DIF – Average day/night temperatures differences
- Computes and displays VPD – Vapor Pressure Deficit

3686WD Model 2475
WatchDog® Weather Station

Model 2450 Temperature/RH Station
- Measures air temperature, relative humidity, dew point, with 2 available external sensor ports
- Computes and displays dew point

3684WD Model 2450
WatchDog® Weather Station

Model 2450 Temperature/RH Station
- Measures air temperature, relative humidity, dew point, with 2 available external sensor ports
- Computes and displays dew point

3684WD Model 2450
WatchDog® Weather Station

SpecConnect compatible

Model 2400 External Sensor Station
- Ideal where multiple sensor measurements are required for temperature, soil moisture, crop canopy light, or leaf wetness data
- Plug in up to 4 external sensors

3685WD Model 2400
WatchDog® Weather Station

Model 2425 Temperature Station
- Measures air temperature with 3 available external sensor ports
- Plug in up to 3 external sensors

3683WD  Model 2425
WatchDog® Weather Station

SpecConnect compatible

| WATCHDOG® 2000 SERIES MINI WEATHER STATION FEATURES |
|---------------------------------|-----|-----|-----|-----|-----|-----|
| **Sensors** | **2475** | **2450** | **2425** | **2400** | **Specifications** | **Accuracy** |
| Air Temperature | ✓ | ✓ | ✓ | OPT | -40° to 257°F (-40° to 125°C) | ±0.5°F at -40° to 185°F (±0.3°C at -40° to 85°F) |
| Relative Humidity | ✓ | ✓ | | | 0% to 100% | ±2% at 32° to 176°F (0° to 80°C) |
| Dew Point | ✓ | ✓ | | | -99° to 140°F (-73° to 60°C) | ±4°F (±2°C) |
| Quantum Light (PAR) | ✓ | OPT | OPT | OPT | 0 to 2500 µmol·m⁻²·s⁻¹ | ±5% |
| External Sensor Ports | 1 | 2 | 3 | 4 | | |
| Available ports for SMEC 300 Sensors | 1 | 2 | 3 | 4 | | |
| Operating temperature range: | -22 to 130°F (-30 to 55°C) | | | | |

SMARTGROWTH™

+1 815-436-4440 - www.specmeters.com 17
WatchDog® 1000 Series Micro Stations

Micro Stations offer a cost-effective way to record multiple environmental conditions.

- Internal sensors can include temperature and humidity (radiation shield required)
- Up to 4 external sensor ports
- Up to 8 sensor values with the Model 1650 using up to two WaterScout SMEC 300 Soil Moisture/EC/Temperature Sensors
- LCD displays sensor readings and battery level
- Select measurement intervals from 1 to 60 minutes
- Log 10,584 (8,064 with SMEC 300) intervals (220 days at 30 minute intervals)
- Water-resistant case (radiation shield or enclosure recommended for outdoor use)
- 12-month battery life (CR2450, included)

How do you access the data?
1. Direct Connect: Download from the station to your PC. Requires SpecWare Basic or Pro
2. Data Shuttle: Transport data from your station to your PC. Requires SpecWare Basic or Pro

### Data-Logging Rain Gauge

**1120 Data-Logging Rain Gauge**

High accuracy, low-maintenance tipping bucket rain collector
- Meets NWS guidelines with an 8 in (20.5 cm) diameter collector
- The included data logger can log up to 10,584 intervals
- Select intervals from 1 to 60 minutes [maximum 10.23 in (26.0 cm) per interval]
- Rain collector mounting bracket and hardware included
- Record rainfall in either metric (mm) or US (in) units
- Accuracy: ±2% at < 2 in (5 cm) per hour
- Requires SpecWare 9 Basic or Pro
- Includes Bird Guard to reduce maintenance

**3554WD1 Data-Logging Rain Gauge**
Pre-Packaged Stations

WatchDog® 2000 Series Plant Disease Station
- Includes WatchDog Mini Station Model 2450, leaf wetness sensor and rainfall sensor
- View current conditions on LCD screen, as well as track severity indicators from onboard plant disease models
- University published disease models (sold separately) can be added to Specware 9 Pro or SpecConnect for more accurate disease and pest monitoring

Buy this station as a package and save
3684WDPD WatchDog® 2000 Series Plant Disease Station

WatchDog® 1000 Series Plant Disease Micro Station
- Includes Watchdog Model 1450 Micro Station, leaf wetness sensor, tipping bucket rain gauge, and radiation shield
- Data log current conditions and historical plant disease severity indicators
- University published disease models (sold separately-requires SpecWare 9 Pro) can be added for more accurate disease and insect monitoring

Buy this station as a package and save
3684PD1 WatchDog® Plant Disease Micro Station

Soil/Air Temperature Station
- Study soil and air temperature trends across multiple microclimates
- Includes Model A125 Data Logger, external temperature sensor and radiation shield

Buy this station as a package and save
3617ARS Soil/Air Temperature Station

Plant Growth Micro Stations
- Includes a WatchDog Model 1450 Micro Station, Quantum/PAR light sensor and radiation shield
- Monitor conditions crucial to growing high quality plants

Buy this station as a package and save
3684PAR1 WatchDog® Plant Growth Micro Station

How do you access the data?

<table>
<thead>
<tr>
<th></th>
<th>3684WDPD</th>
<th>3684PD1</th>
<th>3684PAR1</th>
<th>3617ARS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Connect: Download from the station to your PC. Requires SpecWare Basic or Pro</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Data Shuttle: Transport data from your station to your PC. Requires SpecWare Basic or Pro</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>SpecConnect: Wireless or Cellular Communication: Access real time data from your PC, tablet or smart phone</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
WatchDog® A-Series & B-Series Data Loggers

A-Series Data Loggers

The most affordable way to track environmental conditions for analysis.

• Log 4,000 to 8,000 intervals in fail-safe EEPROM data memory
• Water-resistant case (IP65 for A150 and A110, IP54 for A125 and A130); A160 is for indoor use only and must be protected from moisture
• Removable soft caps keep ports clear of debris
• Includes CR2 battery, 12-month life (except A160, which requires AC power; international adapter included)

How do you access the data?
• LCD display confirms logger operation and displays last sensor readings
• Hook up A-Series Loggers to your computer with PC Connection cable (see below), requires SpecWare Basic or Pro
  • Select measurement intervals from 1 to 120 minutes
  • Direct connect requires SpecWare Basic or Pro plus A-Series PC Cable (see below)

B-Series Data Loggers

Space efficient and inexpensive logging technology.

• Ideal for shipping containers or situations where multiple areas need to be monitored
• Choose from temperature-only or temperature/humidity models
• Water resistant (IP56) stainless steel case
• Select measurement intervals from 1 to 120 minutes
• Log 2,000 to 8,000 intervals
• Integral non-replaceable battery

How do you access the data?
• Snap the B-Series Data Loggers into the Docking Station and connect it to your PC to see data. Requires SpecWare Basic or Pro

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>INTERNAL SENSOR</th>
<th>INTERVALS</th>
<th>RADIATION SHIELD</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODEL A160</td>
<td>AIR TEMPERATURE</td>
<td>5,333</td>
<td>INDOOR USE ONLY</td>
<td></td>
</tr>
<tr>
<td>3611A</td>
<td>RH, CO₂</td>
<td></td>
<td>(NO SHIELD AVAILABLE)</td>
<td></td>
</tr>
<tr>
<td>MODEL A150</td>
<td>AIR TEMPERATURE</td>
<td>5,333</td>
<td>OPTIONAL</td>
<td></td>
</tr>
<tr>
<td>3612A</td>
<td>RELATIVE HUMIDITY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MODEL A130</td>
<td>AIR TEMPERATURE</td>
<td>4,000</td>
<td>INCLUDED</td>
<td></td>
</tr>
<tr>
<td>3610A</td>
<td>EXTERNAL LEAF WETNESS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MODEL A125</td>
<td>AIR TEMPERATURE</td>
<td>4,000</td>
<td>RECOMMENDED</td>
<td></td>
</tr>
<tr>
<td>3617A</td>
<td>EXTERNAL TEMPERATURE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MODEL A110</td>
<td>AIR TEMPERATURE</td>
<td>8,000</td>
<td>OPTIONAL</td>
<td></td>
</tr>
<tr>
<td>3618A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3661A WatchDog® A-Series PC Connection Cable - USB Port
(required to download data)

3663A Radiation Shield (needed for outdoor use)

Docking Station

3655K1 WatchDog® B-Series Docking Station - USB Port
(required to download data)

Operating temperature range: -22 to 140°F (-30 to 60ºC); A160: 32 to 122°F (0 to 50°C)
Temperature range: -40 to 185°F (-40 to 85ºC); A160: 14 to 140°F (-10 to 60°C)
Accuracy: ±1.1°F (±0.6°C) at -4 to 122°F (-20 to 50°C), else ±2.2°F (±1.2°C); A160: ±1.0°F (±0.6°C)
RH range: 0 to 100%, Accuracy: ±3% from 10-90% at 77°F (25°C), else ±5%
CO₂ range: 0 to 9999 ppm, Accuracy: ±50 ppm ±5% of reading (0 to 2000 ppm), else unspecified

Ideal for soil temperature
AVOID DRIFT COMPLAINTS

Don’t let misapplication of herbicides cost you. Let our sprayer station with ultrasonic anemometer help you put pesticides where they belong and nowhere else.

Pesticide drift is increasingly important to commercial applicators. Accurate data helps pesticide applicators make important decisions regarding weather conditions that affect safety, drift and proper application. With the WatchDog Sprayer Station you can provide evidence of suitable conditions for pesticide application by logging your data. Mount the station directly on your equipment to monitor and log weather conditions on-the-go.

All-in-one Weather Station Measures
• Wind Speed/Direction & Chill
• Air Temperature
• Barometric Pressure
• Humidity
• Dew Point
• Computes True Wind Speed

Additional Information
• Continuously log your weather parameters at a user-selectable rate or hit the snapshot button to capture current conditions at a specific moment
• Station uses an internal compass and GPS to adjust the wind sensor values by subtracting the vehicle speed and direction to compute the true values
• Handles adverse conditions with a UV-stabilized, compact housing that is fully waterproof and resistant to chemicals

SPECIFICATIONS FOR SPRAYER STATION

<table>
<thead>
<tr>
<th>Specification</th>
<th>3349SSCH</th>
<th>3349SSH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind Resolution - Speed</td>
<td>0.1 mph (0.2 km/h); Direction 1°</td>
<td>0 to 90 mph (0 to 145 km/h)</td>
</tr>
<tr>
<td>Wind Speed Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wind Speed Accuracy</td>
<td>&lt;12 mph (19 km/h): ±1.1 mph (1.7 km/h) ±10%; &gt;12 mph (19 km/h): ±2.3 mph (3.7 km/h) or ±5%</td>
<td></td>
</tr>
<tr>
<td>Wind Direction Accuracy</td>
<td>4 to 11 mph (6 to 18 km/h): ±5°; &gt;12 mph (19 km/h): ±2°</td>
<td></td>
</tr>
<tr>
<td>Wind Accuracy Temperature Range</td>
<td>32° to 131°F (0° to 55°C)</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-13° to 131°F (-25° to 55°C)</td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>22°F (±1.1°C) with wind above 4.6 mph (7.4 km/h)</td>
<td></td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>10 to 95%</td>
<td></td>
</tr>
<tr>
<td>Relative Humidity Accuracy</td>
<td>±5% with wind above 4.6 mph (7.4 km/h)</td>
<td></td>
</tr>
<tr>
<td>Barometric Pressure Range</td>
<td>24 to 33 in-Hg (800 to 1100 hPa)</td>
<td></td>
</tr>
<tr>
<td>Barometric Pressure Accuracy</td>
<td>±0.029 in-Hg (±1 hPa)</td>
<td></td>
</tr>
<tr>
<td>Power Supply Voltage</td>
<td>9 to 40 VDC; Current: &lt;90 mA at 12VDC</td>
<td></td>
</tr>
</tbody>
</table>

Choose your console:

- WatchDog® Sprayer Station Console
- Raven Viper 4, ViperPro or Envizio Pro (not available through Spectrum)
- AGCO Accu Terminal (not available through Spectrum)

WatchDog® Sprayer Station with Console
Buy as a Package & Save! See data on the display and/or download directly from console [requires SpecWare Mobile for WatchDog® Sprayer Station]

WatchDog® Sprayer Station
Includes sensor unit with magnetic base, 21 ft (7 m) cable with vehicle power and 9-pin serial connectors, and display/logging program for Windows Mobile PDA or Windows Laptop
Integrates Raven & AGCO

WatchDog® Sprayer Station Console
Includes console with built-in data logger, USB-to-3.5mm stereo cable, and software CD

Replacement Humidity Sensor
USB-to-9-Pin-Serial Adapter
WatchDog® Weather Stations & Data Loggers Comparison Chart

### 2000 Series Weather Stations

<table>
<thead>
<tr>
<th>Item #</th>
<th>Model</th>
<th>Item #</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>3350WD2</td>
<td>2900ET</td>
<td>3345WD2</td>
<td>2800</td>
</tr>
<tr>
<td>TEMP/RH/WIND/RAIN/ET</td>
<td>8 PORTS+OPT RAIN</td>
<td>TEMP/RH/WIND</td>
<td>TEMP/RH/WIND/RAIN</td>
</tr>
</tbody>
</table>

**STANDARD FEATURES**
- SpecConnect Compatible
- LCD Display
- Wireless
- Evapotranspiration
- Alarm Output-Ready
- Air Temperature Sensor
- Relative Humidity Sensor
- Dew Point
- Wind Speed & Direction
- Tipping Bucket Rain Collector
- Solar Radiation Sensor
- Available Sensor Ports
- Quantum Light Sensor
- Ext. (Soil) Temperature Sensor
- Leaf Wetness Sensor
- WaterScout Soil Moisture Sensor
- Digital Sensor Compatible
- Radiation Shield

**OPTIONAL SENSORS & ACCESSORIES**
- P = Passive
- A = Aspirated

### 2000 Series Mini Station

<table>
<thead>
<tr>
<th>Item #</th>
<th>Model</th>
<th>Item #</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>3672</td>
<td></td>
<td>3671</td>
<td></td>
</tr>
<tr>
<td>TEMP/RH/WIND</td>
<td>TEMP/RH/PAR</td>
<td>TEMP/RH/PAR+1 PORT</td>
<td>TEMP/RH/PAR+2 PORTS</td>
</tr>
</tbody>
</table>

### Retriever & Pups Wireless Sensor Network

<table>
<thead>
<tr>
<th>Item #</th>
<th>Model</th>
<th>Item #</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>3900ET</td>
<td>ET Pup Station</td>
<td>3900WS</td>
<td>Pup Weather Station</td>
</tr>
<tr>
<td>3900PD</td>
<td>Plant Disease Pup Station</td>
<td>3900PG</td>
<td>Plant Growth Pup Station</td>
</tr>
<tr>
<td>3900</td>
<td>Sensor Pup</td>
<td>3901</td>
<td>Station Pup</td>
</tr>
<tr>
<td>3902</td>
<td>Repeater Pup</td>
<td>3903</td>
<td>Plant Disease Station</td>
</tr>
<tr>
<td>3904</td>
<td>Plant Growth Station</td>
<td>3905</td>
<td>Temperature Station</td>
</tr>
</tbody>
</table>

### 1000 Series Micro Stations

<table>
<thead>
<tr>
<th>Item #</th>
<th>Model</th>
<th>Item #</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>3672</td>
<td></td>
<td>3671</td>
<td></td>
</tr>
<tr>
<td>TEMP/RH/WIND</td>
<td>TEMP/RH</td>
<td>TEMP/RH/PAR+1 PORT</td>
<td>TEMP/RH/PAR+2 PORTS</td>
</tr>
</tbody>
</table>

### A-Series Loggers

<table>
<thead>
<tr>
<th>Item #</th>
<th>Model</th>
<th>Item #</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>3611A</td>
<td>A160 Temp/RH/CO₂</td>
<td>3612A</td>
<td>A150 Temp/RH</td>
</tr>
<tr>
<td>3610A</td>
<td>A130 Leaf Wetness/Temp</td>
<td>3617ARS</td>
<td>A125 Soil/Air Temp Station</td>
</tr>
<tr>
<td>3617A</td>
<td>A125 Soil/Air Temp</td>
<td>3618A</td>
<td>A110 Temperature</td>
</tr>
</tbody>
</table>

### Sprayer Station

<table>
<thead>
<tr>
<th>Item #</th>
<th>Model</th>
<th>Item #</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>3349SSCH</td>
<td>Sprayer Station with Console</td>
<td>3350WD2</td>
<td>2900ET</td>
</tr>
</tbody>
</table>

**REFERENCE:**
- ✔ STANDARD
- ☐ Opt
- ☐ OPTIONAL
- BLANK: NOT AVAILABLE
1000 Series Micro & 2000 Series Weather Station Recertification Program

Our products are designed to provide the highest level of accuracy, reliability and ruggedness you deserve. We make every effort to produce the most durable and long-lasting products available today. Over time, certain components are subject to wear and tear. Lightning, rain, snow, salt spray and extreme temperatures all take their toll. Because of this, and because we know how important accurate data is to you, we offer a Recertification Program for weather stations. Our Recertification Program enables you to send your hardware to our Aurora, Illinois facility where it undergoes a complete diagnostic check-up.

Diagnostic Check-Up

Each check-up includes an inspection of the complete module and wiring, updates to the latest firmware and accuracy checks on all stations. You will receive a Weather Station Functionality Report detailing our testing. If any components of the weather station are found not to be within the published specifications, you will be notified for recommended replacement*. After authorization for replacement is received, each component will be calibrated and tested.

One-Year Warranty & Turnaround Time

After the station has been recertified, a one-year warranty will apply to all parts replaced during the recertification process. The turnaround time for recertification of a weather station is estimated at 14 days from the time we receive it.

Pricing

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3300C</td>
<td>Weather Station Recertification 2000 Series</td>
</tr>
<tr>
<td>3600C</td>
<td>Weather Station Recertification 2000 Series Mini</td>
</tr>
<tr>
<td>3680C</td>
<td>Weather Station Recertification 1000 Series</td>
</tr>
</tbody>
</table>

* The fee for recertification does not include the cost for any recommended replacement parts or sensors, or shipping to return.
### Soil Sensors

**WaterScout® SMEC 300 Soil Moisture/EC/Temperature Sensor**
- Measures soil moisture (Volumetric Water Content), EC, and temperature. Range: VWC: 0 to saturation (typically 50%), Accuracy: ±3%; EC: 0 to 10 mS/cm, Accuracy: ±2%. Requires WaterScout Calibration Device. Compatible with WatchDog 2000 Series Stations (Full and Mini), 1000 Series Micro Stations, and Pups.
- **Accessories:**
  - 6470-6: WaterScout SMEC 300 Sensor with 6 ft (1.8 m) Cable
  - 6470-20: WaterScout SMEC 300 Sensor with 20 ft (6.1 m) Cable
  - 6470CAL3V: WaterScout Calibration Device
  - 2251: Conductivity Standard, 1.41 mS/cm, 250 mL

**WaterScout® SM 100 Soil Moisture Sensor**
- Measures soil moisture (Volumetric Water Content) with little or no disturbance to the root zone. Range: 0 to saturation (typically 50%), Accuracy: ±3%. Compatible with WatchDog 2000 Series Stations (Full and Mini), 1000 Series Micro Stations, and Pups.
- **Accessories:**
  - 6460: WaterScout SM 100 Sensor with 6 ft (1.8 m) Cable
  - 6460-20: WaterScout SM 100 Sensor with 20 ft (6.1 m) Cable

**Watermark Soil Moisture Sensor**
- Measures soil moisture tension from 0 to 200 centibars. Compatible with WatchDog 2000 Series Stations (Full and Mini), 1000 Series Micro Stations, and Pups.
- **Accessories:**
  - 6450WD: Watermark Sensor with 11 ft (3.3 m) Cable
  - 6450WD20: Watermark Sensor with 25 ft (7.6 m) Cable

**External (Soil) Temperature Sensor**
- Measures soil, air, or water temperature with a resistance-based sensor. Range: -25 to 212°F (-32 to 100°C). Accuracy: ± 1°F (±0.5°C). Compatible with WatchDog 2000 Series Stations (Full and Mini), 1000 Series Micro Stations, and Pups.
- **Accessories:**
  - 3667: External (Soil) Temperature Sensor with 6 ft (1.8 m) Cable
  - 3667-20: External (Soil) Temperature Sensor with 20 ft (6.1 m) Cable

**Pressure Transducer**
- Connects to Irrometer tensiometers and utilizes the dial gauge for measurements. Accuracy: ±2%. Compatible with WatchDog 2000 Series Stations (Full and Mini), 1000 Series Micro Stations, and Pups.
- **Accessories:**
  - 3669: Pressure Transducer

**Irrigation On/Off Sensor**
- Records and analyzes relationships between irrigation periods and soil moisture. Does not control irrigation system, but monitors on/off periods. Range: On at 5 psi. Compatible with WatchDog 2000 Series Stations (Full and Mini), 1000 Series Micro Stations, and Pups.
- **Accessories:**
  - 6451: Irrigation On/Off Sensor

### Light Sensors

**LightScout® Silicon Pyranometer**
- Measures solar radiation between 300 and 1100 nanometers. 2000 Series & Pups Range: 2000 Series & Pups: 0 to 1500 W/m², Accuracy: ±5%; Micro Stations: 0 to 1250 W/m², Accuracy: ±5%. Compatible with WatchDog 2000 Series Stations (Full and Mini), 1000 Series Micro Stations, and Pups.
- **Accessories:**
  - 3670I: LightScout Silicon Pyranometer

**LightScout® UV Light Sensor**
- Measures UV radiation between 250 and 400 nanometers. Range: 0 to 200 µmol m⁻² s⁻¹, Accuracy: ±5%. Compatible with WatchDog 2000 Series Stations (Full and Mini), 1000 Series Micro Stations, and Pups.
- **Accessories:**
  - 3676l: LightScout UV Light Sensor

**LightScout® Quantum Light Sensors**
- Measures PAR light between 400 and 700 nanometers. Sensor bars average PAR light readings to minimize the effects of small shadows. Sensor bars are 19 in (48 cm) long and include mounting brackets. 2000 Series & Pups Range: 0 to 3000 umol m⁻² s⁻¹, Accuracy: ±5%; Micro Stations: 0 to 2500 umol m⁻² s⁻¹, Accuracy: ±5%. Compatible with WatchDog 2000 Series Stations (Full and Mini), 1000 Series Micro Stations, and Pups.
- **Accessories:**
  - 3668I: LightScout Quantum Light Sensor
  - 3668I3: LightScout Quantum 3 Light Sensor Bar
  - 3668I6: LightScout Quantum 6 Light Sensor Bar
**Environmental Sensors**

**Temperature (Micro) Sensor**
Measure surface temperature of leaves, buds, and other tiny mediums. Range: -25 to 212°F (-32 to 100°C). Accuracy: ±1°F (±0.5 °C). Compatible with WatchDog 2000 Series Stations (Full and Mini), 1000 Series Micro Stations, and Pups

3667S Temperature (Micro) Sensor

**Tipping Bucket Rain Collector**
Measure rainfall in 1/100 inch increments. Self-emptying and freeze resistant. Range: 0.01", 0.25 mm, Accuracy: ±2% at < 2 in (5 cm) per hour. Compatible with WatchDog 2800 Series Station and 1000 Series Micro Stations

3665R Tipping Bucket Rain Collector

**Leaf Wetness Sensor**
Measure leaf wetness with a resistance-based sensor designed to replicate a leaf. Range: 0 (dry) to 15 (wet). Compatible with WatchDog 2000 Series Stations (Full and Mini), 1000 Series Micro Stations, and Pups

3666 Leaf Wetness Sensor

**Barometric Pressure Sensor**
Measure atmospheric pressure. Standard Sensor: Range: 26 to 32 inHg, 880-1080 hPa, Accuracy: ±0.05 inHg, ±1.7 hPa; High Altitude Sensor: 18.75 to 33.1 inHg, 635-1121 hPa, Accuracy: ±0.057 inHg, ±1.9 hPa
Compatible with WatchDog 2000 Series Stations (Full and Mini), 1000 Series Micro Stations, and Pups

3671 Barometric Pressure Sensor - Standard
3671M Barometric Pressure Sensor - High Altitude

**CO₂ Sensor**
Measure CO₂ levels in ppm using NDIR technology. Requires AC power. Not waterproof. Range: 0 to 4000 ppm, Accuracy: ±5% or 50 ppm. Compatible with WatchDog 2000 Series Stations (Full and Mini), 1000 Series Micro Stations, and Pups

2655 CO₂ Sensor

**Digital Temperature/RH Sensor with Aspirated Radiation Shield**
Digital temperature and RH sensor with 6 ft (2 m) cable, includes solar charging system to power internal fan. Range: -40 to 212°F (-40 to 100°C), 0 to 100% RH, Accuracy: ±0.54°F from 50 to 131°F (0.3°C from 10 to 55°C), ±2.5% RH Compatible with WatchDog Pups only. Operating temperature 14 to 140°F (-10 to 60°C)

3613ARS Temperature/RH Sensor with Aspirated Radiation Shield

**Digital Temperature/RH Sensor with Passive Radiation Shield**
Digital temperature and RH sensor with 6 ft (2 m) cable. Range: -40 to 212°F (-40 to 100°C), 0 to 100% RH, Accuracy: ±0.54°F from 50 to 131°F (0.3°C from 10 to 55°C), ±2.5% RH Compatible with WatchDog Pups only

3613THS Temperature/RH Sensor with Passive Radiation Shield

**Digital Rain Collector**
Measure rainfall in 1/100 inch increments. Self-emptying and freeze resistant. Range: 0.01", 0.25 mm, Accuracy: ±2% at < 2 in (5 cm) per hour. 6 ft cable. Compatible with WatchDog Pups only

3665RD Digital Rain Collector
3665DC Digital Cable - 6 ft
Cable with tinned wire termination - for Pup connection to existing rain collectors only

**Digital Anemometer**
Measure wind speed and direction. 40 ft cable. Range: 0 - 359°, Accuracy: ±3°, Range: 0, 1 to 200 mph (0, 1 to 322 km/h, Accuracy: ±2 mph (±3 km/h), ±5%. Compatible with WatchDog Pups only

3305ADD Digital Anemometer
Mid Range Wireless Communications - up to 2 mi (3 km)

Experience the advantages of real-time weather information by connecting your 2000 Series Remote Weather Stations to a PC up to 2 mi (3 km) away (requires line of sight from Station to Base). Base station features a weatherproof case and 50 ft (15 m) cable (terminating in a 9-pin serial connection) to allow high mounting for the greatest range. Remotes include whip antenna, solar panel, and rechargeable batteries. 900 MHz

- 3393B Mid Range Wireless Base Station
- 3393W Mid Range Wireless for Remote Station
- Optional Yagi antennas increase line of sight range to 7 mi (11 km); see website for details

WatchDog® 1000/2000 Series Data Shuttle

Transport weather data from your 2000 Series Stations or 1000 Series Micro Stations to your host PC. Holds data for multiple stations (up to 5 Full, 10 Mini, or 12 Micro Stations). Includes soft-sided case (also available separately as Item 7500, see page 39). Requires SpecWare 9 Basic or Pro.

- 3679WD1 WatchDog 1000/2000 Data Shuttle

Communication Options

Short Range Modem Pair

Use short-range modems to maintain signal on wired connections up to 4,000 ft (1.2 km). Has 9-pin serial connection on PC end.

- 3365WD2 Short Range Modem Pair

Direct Connect Cables for Weather Stations

Connect your WatchDog Weather Station directly to your PC with a 75 ft (22.8 m) cable. Has 9-pin serial connection on PC end, may require USB adapter (Item 3661U9)

- 3660-75SP 75 ft (22.8 m) Direct Connect Cable
  Includes surge protectors for both ends of the cable connection
- 3660DP 75 ft (22.8 m) Powered Direct Connect Cable
  Includes AC adapter; no surge protectors

USB-to-3.5mm-Stereo-Plug Adapter

Connect WatchDog and FieldScout® devices directly to your computer’s USB port

- 3661U USB-to-3.5mm-Stereo-Plug Adapter

USB-to-9-Pin-Serial Adapter

Connect 9-pin Serial cables (such as Item 3660-75SP) directly to your computer’s USB port

- 3661U9 USB-to-9-Pin-Serial Adapter

Cables & Adapters
Multi-Parameter U-50 Series Meters

Simultaneously monitor, collect, and store up to 11 water quality parameters with these high-performance meters. Measured parameters include pH, ORP, dissolved oxygen, salinity, TDS, seawater specific gravity, temperature, turbidity, and water depth. The waterproof control unit is designed to be both rugged and easy to operate, making it a perfect match for fieldwork – ideal for sampling rivers, groundwater, wells, lakes, runoff / drainage, and a myriad of other ecological and agricultural applications. Refer to the chart below to help decide which model best fits your needs.

Control Unit Features:
• Easy to read, backlit display
• Display up to 11 parameters simultaneously
• Auto-calibration feature for pH, dissolved oxygen, turbidity, and depth provides hassle-free calibration
• One-hand operation
• Quick-connect connector (cable to control unit)
• Shock resistant cover

Sensor Probe Unit Features:
• Ultra-sensitive turbidity sensor
• Minimum dissolved oxygen sensor maintenance with screw-on type membrane cap
• Chemical resistant construction materials
• Field replaceable sensors

<table>
<thead>
<tr>
<th>Item</th>
<th>Model Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2195-2</td>
<td>U51-2 Meter with 2m Cable</td>
</tr>
<tr>
<td>2195-10</td>
<td>U51-10 Meter with 10m Cable</td>
</tr>
<tr>
<td>2196-2</td>
<td>U52-2 Meter with 2m Cable</td>
</tr>
<tr>
<td>2196-10</td>
<td>U52-10 Meter with 10m Cable</td>
</tr>
<tr>
<td>2196-30</td>
<td>U52-30 Meter with 30m Cable</td>
</tr>
<tr>
<td>2197-2</td>
<td>U52G-2 Meter with 2m Cable</td>
</tr>
<tr>
<td>2197-10</td>
<td>U52G-10 Meter with 10m Cable</td>
</tr>
<tr>
<td>2197-30</td>
<td>U52G-30 Meter with 30m Cable</td>
</tr>
<tr>
<td>2198-2</td>
<td>U53-2 Meter with 2m Cable</td>
</tr>
<tr>
<td>2198-10</td>
<td>U53-10 Meter with 10m Cable</td>
</tr>
<tr>
<td>2198-30</td>
<td>U53-30 Meter with 30m Cable</td>
</tr>
<tr>
<td>2199-2</td>
<td>U53G-2 Meter with 2m Cable</td>
</tr>
<tr>
<td>2199-10</td>
<td>U53G-10 Meter with 10m Cable</td>
</tr>
<tr>
<td>2199-30</td>
<td>U53G-30 Meter with 30m Cable</td>
</tr>
</tbody>
</table>

Water quality monitor displays 11 parameters simultaneously
Frost Alerts

Frost Cellular Alert
Ideal for temperature-sensitive fruits and vegetables - be alerted when frost conditions are near.

• LCD display (current settings, signal strength, etc.)
• Key pad for user set up: user-defined thresholds, system test operation
• Relay terminal connections to control an external device
• NEMA 4 (IP66) enclosure
• GSM 3G/HSPA+ cellular module included (user provides SIM card and service plan Pay-As-You-Go recommended)
• Set a second limit to periodically send texts with current conditions
• Makes voice call or sends text message (or both) to up to 4 phone numbers
• Makes voice call again, if calls go unanswered (if answered, will not call again)
• Requires 6-volt lantern battery (not included)
• Includes 6 ft (1.8 m) external temperature sensor

Temperature range: -22 to 130°F (-30 to 55°C)
Accuracy: ±1.1°F (±0.6°C) at -4 to 122°F (-20 to 50°C), else ±2.2°F (±1.2°C)

3453 WatchDog® Frost Cellular Alert Pro - GSM 3G HSPA+

Color Frost Alert
Protect your high-value crops.

• Easy visual signal for drones, helicopter pilots or distance viewing
• When temperatures approach freezing, the high-powered LED light (visible from about two miles) changes color and flash frequency to indicate temperature conditions at-a-glance
• Shuts off above 37°F (2.8°C) to conserve power
• Requires 6V lantern battery (not included)

3430 WatchDog® Color Frost Alert

Color Frost Alert Warning Colors
Lights will warn you of falling temperatures and risk of frost.

Green – Above 34°F (1°C)
White – 32° to 34°F (0-1°C)
Red – Below 32°F (0°C)
Flashing Red – Below 30°F (-1°C)
IPM Scope
Portable digital microscope at an affordable price.

The IPM Scope combines a digital camera, precision optics, and LED lighting into a powerful handheld microscope that connects to your computer via USB
• 40x and 140x magnification
• View magnified image right on your computer screen
• Included software allows you to customize your images with labels, markers, time stamps, and measurement scales
• Archive still images or send files via e-mail
• Requires computer connection to operate
• Video software upgrade provides the ability to capture live videos and time lapse sequences of insect movement

SPECIFICATIONS FOR IPM SCOPE
Image Sensor: 1/3 in CMOS Pixels: 640 x 480
Power: USB Port Light Source: Super-bright LEDs
Field of View: @40x: 7.5 x 10 mm Resolution: 4 microns
@140x: 1.8 x 2.5 mm

Macrosopes
Identify pests and diseases up close.
• Macrooscope 25 provides 25X magnification over a wide 5 mm (3/16 in) field of view
• Macrooscope 45 provides 45X magnification over a wide 3 mm (2/16 in) field of view
• Positionally correct image includes an interchangeable scale
• Incorporates a measuring scale providing measurements in inches or millimeters
• Can be used for distance viewing when close-up lens is removed

Go to www.specmeters.com for more models and accessories
**Sunlight**

Consistent plant quality starts with light

Why measure light? Improve growth and quality of your plants. Shade cloths and hanging baskets reduce plant light more than you know!

Position the meters throughout your greenhouse to compare light levels and the effect those changes have on plant quality. You can also use multiple meters simultaneously to compare light levels and the impact on turf health, quality and aesthetics.

---

**DLI 100 Light Meter**

Light is one of the most important factors in plant and turf quality. The best way to quantify light for growing plants is to measure photosynthetically active radiation (PAR) light between 400 and 700 - the range that promotes photosynthesis. The daily light integral (DLI) measures the total amount of PAR within a 24-hour period.

- Affordable & simple, one button operation
- Meter runs for 24 hours to calculate DLI
- Real-time intensity levels are shown in \( \mu\text{mol} \cdot \text{m}^{-2} \cdot \text{s}^{-1} \) every 4 seconds over the course of a day
- Battery included
- Greenhouse & Turf models available

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3405G3</td>
<td>LightScout® DLI 100 Meter - Greenhouse (set of 3)</td>
</tr>
<tr>
<td>3405G</td>
<td>LightScout DLI 100 Meter - Greenhouse (1 unit)</td>
</tr>
<tr>
<td>3405T3</td>
<td>LightScout® DLI 100 Meter - Turf (set of 3)</td>
</tr>
<tr>
<td>3405T</td>
<td>LightScout DLI 100 Meter - Turf (1 unit)</td>
</tr>
</tbody>
</table>

---

“Measuring DLI inside the greenhouse can be very revealing, since growers usually rely on their eyes to determine the light levels and the human eye is a terrible light sensor because it is so effective at adjusting to different light environments.”

James E. Faust  
Associate Professor of Horticulture  
Clemson University

---

### Generalized Plant Responses to Different Light Levels

<table>
<thead>
<tr>
<th>Relative Light Level</th>
<th>DLI - Daily Light Integral</th>
<th>Light Intensity** at Noon</th>
<th>Generalized Plant Growth Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Low</td>
<td>2 to 5</td>
<td>100 to 200</td>
<td>Poor quality</td>
</tr>
<tr>
<td>Low</td>
<td>5 to 10</td>
<td>200 to 400</td>
<td>Minimum acceptable</td>
</tr>
<tr>
<td>Medium</td>
<td>10 to 20</td>
<td>400 to 800</td>
<td>Good quality</td>
</tr>
<tr>
<td>High</td>
<td>20 to 30</td>
<td>800 to 1,200</td>
<td>Excellent quality</td>
</tr>
<tr>
<td>Very High</td>
<td>30 to 60</td>
<td>1,200 to 2,000</td>
<td>Excellent quality</td>
</tr>
</tbody>
</table>

*Moles**  
**Micromoles (\( \mu\text{mol} \cdot \text{m}^{-2} \cdot \text{s}^{-1} \))

**Red/Far-Red Meter**

Red/Far-Red light ratio helps plants determine their proximity to each other, which affects how tall or full they grow.

- Cost-effective Red/Far-Red measurement
- Displays the Red/Far-Red ratio on the LCD screen
- Press a button to display 660 nm and 730 nm readings
- Includes soft-sided case (also available separately as Item 7500)

3412 LightScout® Red/Far-Red Meter

---

**UV Meter**

Handheld meter monitors critical UV radiation (250-400 nm).

- Determine UV filtering capacity of greenhouse shades and glass barriers
- Range is 0 to 200.0 µmol·m⁻²·s⁻¹ (full sunlight)

3414F LightScout® UV Meter
7500 Soft-Sided Carrying Case

---

**Quantum/PAR Meters**

Measure the light used for plant growth - PAR is a more valuable measurement than foot-candles, as it measures only the light used by plants for photosynthesis.

- Measures photosynthetically active radiation (PAR) from 400 to 700 nm
- Range of 0 to 2,000 µmol·m⁻²·s⁻¹
- Available in a variety of configurations for your convenience

3415F LightScout® Quantum Meter
3415FSE LightScout® Dual Solar/Electric Quantum Meter
3415FXSE LightScout® Dual Solar/Electric Quantum Meter - External Sensor
3415FQF LightScout® Quantum and Foot-Candle Meter
7500 Soft-Sided Carrying Case

---

**Foot-Candle Meter**

Displays immediate light level in units of foot-candles.

- An affordable light measurement solution
- Precision photodiode with cosine correction

3413F LightScout® Foot-Candle Meter
7500 Soft-Sided Carrying Case
**Light Meters & Growth Meters**

---

**LightScout** External Light Sensor Reader

Reads any of Spectrum’s external light sensors.

- Plug in a sensor, choose it on the LCD, and start measuring UV, Quantum Light, or Solar Radiation
- Sensors can also be used with WatchDog® Weather, Mini, and Micro Stations
- LightScout® External Light Sensor Reader includes soft-sided case (also available separately as Item 7500)

| 3415FX | LightScout® External Light Sensor Reader |
| 3668I  | LightScout® Quantum Light Sensor         |
| 3668I3 | LightScout® Quantum Light 3 Sensor Bar   |
| 3668I6 | LightScout® Quantum Light 6 Sensor Bar   |
| 3670I  | LightScout® Silicon Pyranometer Sensor   |
| 3676I  | LightScout® UV Sensor                    |

---

**WatchDog** Model 2475 Plant Growth Station

Ideal for Greenhouses - monitor microclimates with four sensor channels.

- Computes and displays Daily Light Integral (DJI), current light levels, dew point, degree day models, and chill hours
- Computes and displays DIF – Average day/night temperature difference
- Computes and displays VPD – Vapor Pressure Deficit
- Measure temperature, humidity and light conditions, plus 1 additional sensor port
- Check current conditions or 12 months of historical data on the LCD display
- Requires SpecWare Pro software or SpecConnect subscription

**How do you access the data?**
- Cellular/WiFi to SpecConnect, Direct Connect or Data Shuttle

**SpecWare plant growth report**

---

**Plant Growth Report**

<table>
<thead>
<tr>
<th>Template: Plant Growth (DIF/DJI) w/VPD</th>
<th>Equipment: North - Aspirated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timestamp</td>
<td>VPD</td>
</tr>
<tr>
<td>-----------</td>
<td>-----</td>
</tr>
<tr>
<td>6/1/2017</td>
<td>1.11</td>
</tr>
<tr>
<td>6/2/2017</td>
<td>.81</td>
</tr>
<tr>
<td>6/3/2017</td>
<td>.75</td>
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<tr>
<td>6/4/2017</td>
<td>.55</td>
</tr>
<tr>
<td>6/5/2017</td>
<td>.56</td>
</tr>
<tr>
<td>6/6/2017</td>
<td>.77</td>
</tr>
</tbody>
</table>

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* +1 815-436-4440   -   www.specmeters.com  
  Spectrum Technologies, Inc.
FIELDSCOUT® MOBILE APP
Data at your fingertips! We’ve made it easier for you to send data from the field to your smartphone.

Basic Features
Free Mobile App download from Apple App Store or Android Google Play.

Basic capabilities include:
• Handsfree data collection
• Visualize in-field, real time readings on a smartphone or tablet
• Color coded to represent a scale of moisture, EC, surface temperature or turf firmness
• E-mail relevant information to communicate results to others

Pro Features
Collect data, evaluate trends, log and analyze multiple data points. Wireless data can be sent via Bluetooth to an iOS or Android device and saved to the Cloud. Pull together soil moisture and EC data from your TDR meter and firmness data from your TruFirm to fine-tune agronomic and cultural practices for specific greens or other surfaces.

FieldScout Pro Mode requires the purchase of a SpecConnect FieldScout 1-yr subscription

Pro Mobile App capabilities include:
• Handsfree data collection
• Google Maps dynamic satellite image shows readings data overlaid on your property on mobile device and web portal
• Freeform Mode plots a point for each reading, and stores its data independently
• Automatic wireless upload to SpecConnect for further analysis from your personal web portal
• SpecConnect provides complete data overview at once, overlaid on a satellite map
• Color Gradient Mapping of data points within custom selected areas or groupings
• Map locations of sprinkler heads, pin locations and more

FieldScout® Mobile Compatible Items
• TDR350 Soil Moisture Meter
• TruFirm Turf Firmness Meter
• TDR150 Soil Moisture Meter (with optional GPS/Bluetooth upgrade)
• TDR300 Soil Moisture Meter (with optional Bluetooth device)

FieldScout® Mobile App FREE

3035A SpecConnect FieldScout Pro Subscription (1-yr) 1-3 Devices
3035B SpecConnect FieldScout Pro Subscription (1-yr) 4-7 Devices
3035C SpecConnect FieldScout Pro Subscription (1-yr) 8+ Devices

FIELDSCOUT MOBILE APP BASIC vs. PRO

<table>
<thead>
<tr>
<th>Feature</th>
<th>Basic</th>
<th>Pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Grid Map</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Change Number of Grid Zones</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Customizable Google Map Image</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Saves the Average Measurement by Zone</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Email the Map/Results View</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Freeform Notes</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Freeform Mode</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Guided Mode (Auto-Advancing through Zones)</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>SpecConnect Data Sharing</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Auto-Upload to SpecConnect</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Add User Note or Comment to Individual Reading or Zone</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Irrigation/Soil Moisture Audit</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>
Backed with proven time-domain measurement technology, the TDR350 accurately measures soil moisture across a full range of soil conditions. An ergonomic design and built-in display provide quick and easy measurements to validate your cultural practices.

**What does it measure?**
Soil moisture (Volumetric Water Content %), Salts (Electrical Conductivity) and surface temperature, plus optional Infrared Temperature sensor available on next page

**Common Applications**
- Reliable portable meter for instant, accurate and actionable rootzone moisture and soil EC readings average of rod length
- Irrigation scheduling, syringing practices, soil flushes and many other agronomic and cultural practices
- Track and trend data from day to day, month to month and season to season to optimize turf Health and Conditioning

**Features & Benefits**
- Backlit Display - Easy to see on early mornings and bright sunny days
- Improved Layout & Larger Digits - Clearly view readings, settings and icons
- Integrated Bluetooth & GPS - Greater accuracy with onboard components
- Internal Data Logger - Records approximately 50,000 measurements with GPS coordinates
- Improved Durability – Sturdy telescoping tubular frame encloses/protects cabling

**How do you access the data?**
- Manual – download the data with a USB flash drive, no special software or cable required
- Hands free – instantly view data on your smartphone or tablet via FieldScout Mobile App
- Cloud – SpecConnect FieldScout Pro subscription automatically uploads data to your personal web portal to view enhanced mapping and reporting features

**SPECIFICATIONS FOR TDR SOIL MOISTURE METERS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>VWC Range</td>
<td>0% to saturation</td>
<td>0.1%</td>
<td>±3.0% VWC</td>
</tr>
<tr>
<td>EC Range</td>
<td>0 to 5 mS/cm</td>
<td>0.01 mS/cm</td>
<td>±0.1 mS/cm</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>-22° to 140°F (-30° to 60°C)</td>
<td>0.1°</td>
<td>±1.8°F (1°C)</td>
</tr>
<tr>
<td>IR Temperature Range</td>
<td>32° to 140°F (0° to 60°C)</td>
<td>0.2°F (0.1°C)</td>
<td>±0.2°F (0.1°C)</td>
</tr>
</tbody>
</table>

**SMARTIRRIGATION:**
Maximize Irrigation Audits with TDR

6435 TDR350
Includes carrying case. Rods required for TDRs to function and sold separately.

6435TS Infrared Temperature Sensor for TDR350

6435SP Rod Spacer for 0.5” and 1” depths
FieldScout® TDR150 & Accessories

TDR150 Soil Moisture Meters

An affordable alternative to the TDR350, the TDR150 is a compact meter that allows you to obtain readings on-the-go. Ideal for measuring containers on benches, variable rod length options provide soil moisture measurements for your ideal root depth.

What does it measure?
Soil moisture, (Volumetric Water Content %), Salts (Electrical Conductivity) and Temperature (Surface thermistor)

Features & Benefits
• Backlit Display – Easy to see on early mornings and bright sunny days
• Easy-to-read Layout & Large Digits – Clearly view readings, settings and icons
• Integrated Bluetooth & GPS – Greater accuracy with onboard components
• Internal Data Logger – Records approximately 50,000 measurements with GPS coordinates

How do you access the data?
• Manual – download the data with a USB flash drive, no special software or cable required
• With optional GPS and Bluetooth upgrade (see details below)
• Hands free – instantly view data on your smartphone or tablet via FieldScout Mobile App
• Cloud – SpecConnect FieldScout Pro subscription automatically uploads data to your personal web portal to view enhanced mapping and reporting features

6445  TDR150
Includes carrying case. Rods sold separately (below).
6445TS  Infrared Temperature Sensor-TDR 150
6435SP  TDR Rod Spacer for 0.5” and 1” depths
6445GBU  Bluetooth and GPS Upgrade

TDR Rods

Multiple depth options for varying root zones.
• Sturdy stainless-steel construction
• Field replaceable
NOTE: Required for TDRs to function. Must be fully inserted for valid measurements.

6428FS4  Two 1.5 inch (3.8 cm) Rods
6429FS4  Two 3 inch (7.6 cm) Rods
6431FS4  Two 4.8 inch (12 cm) Rods
6432FS4  Two 8 inch (20 cm) Rods
6430PH  Pilot Hole Maker for TDR Meters
Includes two 3 inch (7.6 cm) rods

TDR Spacers

• Measure Soil Moisture at 0.5” to 1”
• Expand the measurement range of our FieldScout TDR Soil moisture probes
• Using 1.5” (3.9 cm) rods, the TDR Rod Spacer enables easy measurement of 0.5” and 1” depths
• Flip to switch between the two depths
• Easily attach and detach from any FieldScout TDR meters

FOR TDR350/TDR150
6435SP  Rod Spacer
Also available for TDR 300/100. See website for details.

Infrared Temperature Sensor

6435TS  Infrared Temperature Sensor for TDR350
6445TS  Infrared Temperature Sensor for TDR150

• Predict turf wilt with higher accuracy
• Easily correct a moisture deficit earlier and reduce heat stress to the green
• Quickly and accurately monitor canopy and soil temperatures
• Use IR temperature real-time - instantaneous readings
• Easy installation to our FieldScout TDR350 and TDR150
Based on USGA technology, the FieldScout® TruFirm® offers a quick, easy and affordable method to measure the firmness of turf, bunker sands and other playing surfaces. Data acquired from the device allows turf management professionals to measure the relationship between the compaction of the soil and the moisture level to quantify safety and performance of playing conditions.

What does it measure?
Surface Firmness/Hardness (depth of impact in inches)

Common Applications
- All-in-one portable meter for evaluating impacts of cultural practices, play and environmental conditions on putting greens and other athletic surfaces
- Golf course greens, approaches, bunker sands and fairway landing areas for achievement of optimal surface performance and consistency
- Natural and artificial turf playing surfaces, infield dirt, turf and clay tennis courts, cricket pitches, bowling greens, racing tracks, etc.
- Track and trend data over time to better understand effects of turf inputs and optimize conditioning, playability and safety

Features & Benefits
- Built-in Display – immediate digital results on a conveniently located screen
- Easy to Use – simply raise and drop the hammer in one motion
- Objective Values – analyze & compare impact of environmental and maintenance inputs on play
- Versatile Tool – perfect for golf courses and sports fields at schools, parks, etc.
- Self-Contained – one complete unit, no small pieces to keep track of or lose
- Very Affordable – designed to make measurement possible for every facility
- Bluetooth – wireless data collection with the FieldScout Mobile App and add satellite mapping with automatic cloud upload with SpecConnect FieldScout Pro

How do you access the data?
- Hands free – instantly view data on your smartphone or tablet via FieldScout Mobile App
- Cloud – SpecConnect FieldScout Pro subscription automatically uploads data to your personal web portal to view enhanced mapping and reporting features

6490S FieldScout® TruFirm® Turf Firmness Meter
with Bluetooth Low Energy

SPECIFICATIONS FOR TRUFIRM
- Range: 0.1 in - 1.5 in (2.54 mm - 38.1 mm)
- Resolution: 0.01 in at 1.00 in - 1.50 in (0.25 mm at 25.4 mm - 38.1 mm)
- Diameter of Hammer: 1.68 in (4.45 cm)
- Height: 27 in (69 cm)
- Weight: 4.3 lb (1.95 kg)
- Measurement Units: Depth of travel (inches)
- Power: 2 AA batteries (included)
FieldScout® SC 900 Soil Compaction Meter

Help make decisions regarding areas of the field that require tillage, changes to crop rotation, and planting of cover crops.

- Includes 1/2 in and 3/4 in cone tip
- Takes compaction readings every inch from 0 to 18 in (45 cm)
- Exclusive ultrasonic depth sensor captures readings in 1 in (2.5 cm) increments
- Penetration resistance measured by internal load cell
- Compaction data is displayed in PSI or kPa (1 psi = 6.9 kPa)
- Connects to any GPS receiver that has a serial output option*
- Equipped with internal data logger and RS-232 port
- Configure and download meter with FieldScout® software (included)**
- Upload your data to SpecConnect for maps of compaction by depth, or depth to hard pan layer
- Includes USB cable, carrying case, and depth target

* GPS interface requires two cables. The GPS/DGPS cable (item 2950CV5) is available from Spectrum. A PC serial interface cable supplied by the manufacturer of the GPS receiver is also required.
** PC cable connects to a computer USB port. See our website for other cable connection options.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6110FS</td>
<td>FieldScout® SC 900 Soil Compaction Meter</td>
</tr>
<tr>
<td>2950CV5</td>
<td>GPS/DGPS Cable</td>
</tr>
<tr>
<td>7250</td>
<td>GPS Unit Mounting Bracket</td>
</tr>
<tr>
<td>6110FST</td>
<td>Replacement Depth Target</td>
</tr>
<tr>
<td>6106</td>
<td>1/2 in Replacement Tip (Fine soils)</td>
</tr>
<tr>
<td>6107</td>
<td>3/4 in Replacement Tip (Coarse soils)</td>
</tr>
</tbody>
</table>

Soil Compaction Tester

Economical way to measure soil compaction with analog read out.

- Large and small tip included with convenient storage in tester housing
- 24 in stainless steel rod with adjustable shock collar to prevent damage to the gauge during transport or storage
- Easy to read, color-coded, stainless steel dial that is liquid filled to reduce shock
- Durable molded housing with rubber grip handles
- Penetration Depth: Up to 24 in (60 cm) in 3 in (7.6 cm) increments

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6120</td>
<td>Soil Compaction Tester</td>
</tr>
<tr>
<td>6121</td>
<td>1/2 in Replacement Tip (Fine Soils)</td>
</tr>
<tr>
<td>6122</td>
<td>3/4 in Replacement Tip (Coarse Soils)</td>
</tr>
</tbody>
</table>
SM 100 Soil Moisture Sensor

Place at multiple depths to help determine both when and how much to water.

- Measures Volumetric Water Content (VWC) of soil
- Capacitance-type sensor responds immediately to changes in soil moisture content for better irrigation decisions
- Calibrated for mineral soils or soilless media
- Installs easily into 3/4 in (1.9 cm) hole
- Install permanently or use to take spot measurements
- Can be read with the FieldScout® Soil Sensor Reader (Item 6466) or WatchDog 2000, 1000 Series Stations, and WatchDog Pups
- Connect up to 8 sensors to one station

6460 WaterScout® SM 100 Sensor - 6 ft (1.8 m)
6460-20 WaterScout SM 100 Sensor - 20 ft (6 m)

SPECIFICATIONS FOR WATERSCOUT SM 100 SENSOR

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Interface</td>
<td>WatchDog weather station, Pups, and FieldScout soil moisture reader</td>
</tr>
<tr>
<td>Range</td>
<td>0% VWC to saturation</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>3 to 5V @ 6 to 10 mA</td>
</tr>
<tr>
<td>Output</td>
<td>Analog voltage 0.5 - 1.5V for a 3V excitation (ratiometric for other excitation voltages)</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.1% VWC</td>
</tr>
<tr>
<td>Cable Length</td>
<td>6 ft (1.8 m) and 20 ft (6 m) standard, extendable up to 50 ft (15 m)</td>
</tr>
<tr>
<td>Accuracy</td>
<td>3% VWC @ EC &lt; 8 mS/cm</td>
</tr>
<tr>
<td>Sensing Area</td>
<td>2.4 in (6 cm) x 0.8 in (2 cm)</td>
</tr>
</tbody>
</table>

Shown measuring in soilless media mode to gather immediate data.
SMEC 300 Soil Moisture/EC/Temperature Sensor

Identify situations where soil salinity is an issue or where certain moisture and temperature conditions facilitate soil-borne diseases.

- Capacitance-type soil moisture sensor
- Carbon ink electrodes provide large measuring surface for electrical conductivity (EC)
- Easy, 1-step EC calibration process
- Can be read with the FieldScout® Soil Sensor Reader (Item 6466) or WatchDog 2000, 1000 Series Stations, and WatchDog Pups
- Connect up to 4 sensors per station
- Recommended placement of sensors is 10 feet separation to prevent EC interference when in the same medium
- WaterScout Calibration Device required unless using Soil Sensor Reader (Item 6466)

WatchDog Stations sold prior to 2012 must be upgraded (Contact for support)

6470-6 WaterScout SMEC 300 Sensor - 6 ft (1.8 m)
6470-20 WaterScout SMEC 300 Sensor - 20 ft (6 m)
6470CAL3V WaterScout Calibration Device
2251 Conductivity Standard, 1.41 mS/cm, 250 mL

SPECIFICATIONS FOR WATERSCOUT SMEC 300

Standard Interface: WatchDog weather station, Pups, and FieldScout soil moisture reader

Range: VWC: 0% VWC to saturation, EC: 0 to 10 mS/cm, Temp: 33 - 175°F (0.5 - 80°C)

Resolution: VWC: 0.1%, EC: 0.01 mS/cm, Temp: 0.1°F (0.1°C)

Accuracy: VWC: 3%, EC: ±2%, Temp: ±1°F (0.6°C)

Cable Length: 6 ft (1.8 m) and 20 ft (6 m) standard, extendable up to 50 ft (15 m)

Power Requirements: 3V @ 6 to 10 mA

Output: Analog voltage, time division multiplexed

Sensing Area: 2.25 in. x 0.75 in. (5.7 x 2 cm)

Soil Sensor Reader

Spot-check WaterScout SM 100 and SMEC 300 sensors in the field.
- Also reads Watermark sensors (requires separate adapter)
- Includes soft-sided case (also available separately)

6466 FieldScout® Soil Sensor Reader
6450FSADPT Watermark Adapter for Soil Sensor Reader
7500 Soft-Sided Carrying Case*

* Item 7500 will also fit the WatchDog 1000/2000 Series Data Shuttle (Item 3679WD), LightScout Red/Far-Red Meter (Item 3412), LightScout Quantum Light Meters (four models) and the LightScout External Light Sensor Reader (Item 3415FX)
WatchDog® Irrigation Stations

Affordably monitor, compare and evaluate soil moisture levels from two, three, or four user-defined soil depths.
- Includes WatchDog Station and WaterScout Sensors with 20 ft (6 m) cables - save money when purchased as a system
- Micro Stations also include the Protective Sliding Enclosure
- Watermark Stations include Watermark Soil Moisture Sensors with 11 ft (3.3 m) cables
- Add soil moisture sensors to your WatchDog Pup network and see your data on SpecConnect.net
- Add a WaterScout SMEC 300 Soil Moisture/EC/Temp Sensor (Item 6470-20) and monitor soil temperature and EC levels
- Requires SpecConnect, SpecWare 9 Basic or Pro software
- Buy these stations as packages and save

<table>
<thead>
<tr>
<th>MODEL 1200 MICRO STATION</th>
<th>MODEL 1400 MICRO STATION</th>
<th>SENSOR PUP IRRIGATION STATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 WaterScout SM 100 Soil Moisture Sensors</td>
<td>3680SM12</td>
<td>3685SM12</td>
</tr>
<tr>
<td>3 WaterScout SM 100 Soil Moisture Sensors</td>
<td>3685SM13</td>
<td>3900SM13</td>
</tr>
<tr>
<td>4 WaterScout SM 100 Soil Moisture Sensors</td>
<td>3685SM14</td>
<td>3900SM14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MODEL 1200 MICRO STATION</th>
<th>MODEL 1400 MICRO STATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Watermark Soil Moisture Sensors</td>
<td>3680WM12</td>
</tr>
<tr>
<td>3 Watermark Soil Moisture Sensors</td>
<td>3685WM13</td>
</tr>
<tr>
<td>4 Watermark Soil Moisture Sensors</td>
<td>3685WM14</td>
</tr>
</tbody>
</table>
Watermark Soil Moisture Sensor

Economical way to measure soil moisture tension.
• Works with FieldScout Soil Sensor Reader and WatchDog Weather Stations
• Reads moisture tension from 0 (saturated) to 200 (dry) centibars

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6450</td>
<td>Watermark Sensor with 5 ft (1.5 m) cable</td>
</tr>
<tr>
<td>6450FSADPT</td>
<td>Watermark Adapter for Soil Sensor Reader</td>
</tr>
<tr>
<td>6450WD</td>
<td>Watermark Sensor for WatchDog® Stations &amp; Pups with 11 ft (3.3 m) cable</td>
</tr>
<tr>
<td>6450WD20</td>
<td>Watermark Sensor for WatchDog® Stations &amp; Pups with 25 ft (7.6 m) cable</td>
</tr>
<tr>
<td>6450AH</td>
<td>Watermark Adapter for WatchDog® Stations &amp; Pups</td>
</tr>
</tbody>
</table>

Irrometer Tensiometers

Schedule irrigation based on how hard plant roots are working to draw water from the soil.

• “SR” models (items 6419 thru 6423) are for general use with field or tree crops
• Low Tension (LT) models (see www.specmeters.com) are for coarse soils or soilless media
• Portable models for specialized applications (see www.specmeters.com)
• Can be connected to WatchDog Data Loggers and Stations with Pressure Transducer (Item 3669)
• Pressure gauge has a quarter inch pipe thread
• Service kit required (Item 6425)

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6425</td>
<td>Service Kit - Required</td>
</tr>
<tr>
<td>6419</td>
<td>SR Model 6 in (15 cm) Depth</td>
</tr>
<tr>
<td>6420</td>
<td>SR Model 12 in (30 cm) Depth</td>
</tr>
<tr>
<td>6421</td>
<td>SR Model 18 in (45 cm) Depth</td>
</tr>
<tr>
<td>6422</td>
<td>SR Model 24 in (60 cm) Depth</td>
</tr>
<tr>
<td>6423</td>
<td>SR Model 36 in (90 cm) Depth</td>
</tr>
<tr>
<td>9917</td>
<td>Replacement tip for SR models</td>
</tr>
<tr>
<td>3669</td>
<td>Pressure Transducer</td>
</tr>
</tbody>
</table>

Economy Soil Moisture Tester

Analog soil moisture meter measures any type of soil with just one calibration.
• Resistance-type sensor located at the tip of the shaft
• Provides instant results ranging from 0 (dry) to 10 (saturated)
• 3-month warranty

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6400</td>
<td>9 in (22 cm) Soil Moisture Tester</td>
</tr>
<tr>
<td>6405</td>
<td>24 in (60 cm) Soil Moisture Tester</td>
</tr>
</tbody>
</table>
LAQUA Twin Meters

Put the power of a laboratory right in your hands.

- Professional grade meters
- Measure samples in nutrient solutions, water, soils, and tissue sap (Two plant sap press options available on page 44)
- Waterproof pocket-sized meter with digital calibration
- Sensors store dry and are field replaceable
- Accuracy correlates well with laboratory analysis
- Unique flat sensor allows you to conveniently and accurately measure samples as small as 0.3 ml
- Automatic temperature compensation, waterproof, auto power-off
- Includes two CR2032 batteries, case and calibration standards

LAQUA Twin pH Meter
Ideal for testing irrigation water, leachate, pesticides, or dairy rumen pH.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2103ALP</td>
<td>LAQUA Twin pH meter</td>
</tr>
<tr>
<td></td>
<td>Includes case, batteries, and pH 4 &amp; 7 standards</td>
</tr>
<tr>
<td>2110</td>
<td>Refill Solutions - pH 4 and 7, 60 mL ea.</td>
</tr>
<tr>
<td>2143L</td>
<td>LAQUA Twin pH Replacement Sensor</td>
</tr>
<tr>
<td>2135L</td>
<td>Sampling Sheets - 100 pieces</td>
</tr>
</tbody>
</table>

LAQUA Twin EC Meter
Ideal for water quality and greenhouse applications.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2205LP</td>
<td>LAQUA Twin EC Meter</td>
</tr>
<tr>
<td></td>
<td>Includes case, batteries, and calibration standards</td>
</tr>
<tr>
<td>2210L</td>
<td>Conductivity Standard, 1.41 mS/cm</td>
</tr>
<tr>
<td></td>
<td>(6 - 14 mL bottles)</td>
</tr>
<tr>
<td>2242L</td>
<td>Replacement Sensor</td>
</tr>
</tbody>
</table>
### LAQUA Twin Sodium Na⁺

- **Model:** 2500GL
- **Description:** LAQUA Twin Sodium (Na⁺) Meter
- **Components:** Includes case, batteries, and calibration standards

- **Model:** 2540L
- **Description:** Replacement Sodium Sensor

- **Model:** 2514L
- **Description:** 150 ppm Na⁺ Standard, 6 - 14 mL bottles

- **Model:** 2518L
- **Description:** 2000 ppm Na⁺ Standard, 6 - 14 mL bottles

- **Model:** 2535
- **Description:** Na⁺ Soil Test Kit w/30 Samples
- **Components:** Includes filter paper, cups, and soil scoop

- **Model:** 2135L
- **Description:** Sampling Sheets - 100 pieces

### LAQUA Twin Potassium K⁺

- **Model:** 2400GL
- **Description:** LAQUA Twin Potassium (K⁺) Meter
- **Components:** Includes case, batteries, and calibration standards

- **Model:** 2440L
- **Description:** Replacement Potassium Sensor

- **Model:** 2414L
- **Description:** 150 ppm K⁺ DI Standard, 6 - 14 mL bottles

- **Model:** 2418L
- **Description:** 2,000 ppm K⁺ DI Standard, 6 - 14 mL bottles

- **Model:** 2434
- **Description:** K⁺ Soil Test Kit w/30 Samples
- **Components:** Includes solutions, filter paper, cups, and soil scoop

- **Model:** 2135L
- **Description:** Sampling Sheets - 100 pieces

### LAQUA Twin Nitrate NO₃⁻

- **Model:** 2305GL
- **Description:** LAQUA Twin Nitrate (NO₃⁻) Meter
- **Components:** Includes case, batteries, and calibration standards

- **Model:** 2345L
- **Description:** Replacement Nitrate Sensor

- **Model:** 2311
- **Description:** 450 ppm NO₃⁻-N Standard, 6 - 14 mL bottles

- **Model:** 2312
- **Description:** 34 ppm NO₃⁻-N Standard, 6 - 14 mL bottles

- **Model:** 2330
- **Description:** NO₃⁻ Soil Test Kit w/30 Samples
- **Components:** Includes solutions, filter paper, cups, and soil scoop

- **Model:** 2135L
- **Description:** Sampling Sheets - 100 pieces

### LAQUA Twin Calcium Ca²⁺

- **Model:** 2450L
- **Description:** LAQUA Twin Calcium (Ca²⁺) Meter
- **Components:** Includes case, batteries, and calibration standards

- **Model:** 2455L
- **Description:** Replacement Calcium Sensor

- **Model:** 2460L
- **Description:** 150 ppm Ca²⁺ Standard, 6 - 14 mL bottles

- **Model:** 2461L
- **Description:** 2000 ppm Ca²⁺ Standard, 6 - 14 mL bottles

- **Model:** 2135L
- **Description:** Sampling Sheets - 100 pieces

---

**LAQUA Twin pH Conductivity (EC) Sodium Potassium Nitrate Calcium**

<table>
<thead>
<tr>
<th>Measurement Principle</th>
<th>pH</th>
<th>Conductivity (EC)</th>
<th>Sodium</th>
<th>Potassium</th>
<th>Nitrate</th>
<th>Calcium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement Principle:</td>
<td>Glass electrode method</td>
<td>2 AC bipolar</td>
<td>Ion electrode method</td>
<td>Ion electrode method</td>
<td>Ion electrode method</td>
<td>Ion electrode method</td>
</tr>
<tr>
<td>Sample Volume Required</td>
<td>0.1 mL to 2.0 mL</td>
<td>0.12 mL to 2.0 mL</td>
<td>0.3 mL to 2.0 mL</td>
<td>0.3 mL to 2.0 mL</td>
<td>0.3 mL to 2.0 mL</td>
<td>0.3 mL to 2.0 mL</td>
</tr>
<tr>
<td>Measurement Range:</td>
<td>0 to 14 pH</td>
<td>0 to 199.9 mS/cm</td>
<td>2 to 9900 ppm</td>
<td>4 to 9900 ppm</td>
<td>6 to 9900 ppm</td>
<td>4 to 9900 ppm</td>
</tr>
<tr>
<td>Calibration:</td>
<td>pH 4 and pH 7</td>
<td>1.41 mS/cm</td>
<td>150 ppm and 2000 ppm*</td>
<td>150 ppm and 2000 ppm*</td>
<td>34 ppm and 450 ppm*</td>
<td>150 ppm and 2000 ppm*</td>
</tr>
<tr>
<td>Reproducibility:</td>
<td>± 0.1 pH</td>
<td>± 2%</td>
<td>± 10% or ± 10 ppm*</td>
<td>± 10% or ± 10 ppm*</td>
<td>± 20% or ± 20 ppm</td>
<td></td>
</tr>
<tr>
<td>Display:</td>
<td>4-digit digital LCD display with Backlight (New)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power:</td>
<td>CR2032 coin batteries (x2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery Life:</td>
<td>400 hours continuous operation with Backlight Off (New)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Range:</td>
<td>40°F (5°C) to 105°F (40°C), 85% relative humidity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions:</td>
<td>164mm x 29mm x 20mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* High and low calibration points can be changed (customer must provide custom solutions)
Handheld Plant Sap Press

- Use with LAQUA Twin meters or Brix meters (see below) for on-site testing
- Made of high quality, non-corrosive metal
- Includes cleaning device

Hydraulic Plant Sap Press

- Speed up collection of large or less succulent samples
- Hydraulic press extracts sap into a collection vial
- Includes plunger, grate, cylinder, expeller rod and six collection vials

Digital Refractometer

Easy and convenient way to measure Brix.
- Small sensor area allows measurement of minute samples
- Measures Brix from 0 to 53.0% (Accuracy ±0.2%)
- Automatic temperature compensation
- Large digital display of Brix and temperature
- Operates on two AAA batteries (included)

Handheld Refractometer

Compact meter ideal for field or lab use.
- Measures Brix from 0 to 32.0% (Accuracy ±0.2%)
- Place a couple drops of sample on the scale and read the results in Brix through the shaded area on the eyepiece
- Available with or without automatic temperature compensation
- Includes case and instructions
SoilStik™ pH Meter

Easy to use and cost-efficient meter.

- Flat surface electrode measures pH in soils, semi-solids, solids, and liquids
- RENEW indicator tells you when it’s time to replace your electrode - eliminates guesswork
- CAL alert tells you it’s time to recalibrate to ensure accuracy
- Memory records and recalls 15 sequentially tagged readings, allowing detection of changes over time
- 1- or 2-point calibration: automatically recognizes buffer solutions
- Automatic temperature compensation
- Simultaneous display of pH and temperature
- Display indicates when the reading has stabilized
- Data Hold, auto power off, and low battery indication
- Water resistant design (IP57) floats in water and protects the meter in wet environments
- Includes protective sensor cap, rinse bottle, two CR2032 batteries, pH 4 & 7 standard solutions, and soft case

2105  FieldScout® SoilStik pH Meter
2106  Flat Sensor, Replacement
2110  Refill Solutions - pH 4 and 7, 60 mL ea.

SPECIFICATIONS FOR SOILSTIK pH METER

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>0.00 to 14.00 pH</td>
</tr>
<tr>
<td>Temperature</td>
<td>23°F to 194°F (-5°C to 90°C)</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.01 pH, 0.1°</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±0.01 pH, ±1.8°F/±1°C</td>
</tr>
<tr>
<td>Dimensions</td>
<td>1.4 x 6.8 x 1.6 in (35.6 x 172.7 x 40.6mm)</td>
</tr>
<tr>
<td>Weight</td>
<td>3.8 oz (110 g)</td>
</tr>
</tbody>
</table>

Measuring the pH of the pesticide spray solutions is important to ensure performance.
FieldScout® EC and pH Meters

pH 400 and 600 Meters

Fast, easy and accurate “direct” soil pH measurement.

Modern User Interface

• The FieldScout pH 400 & 600 Meters have a modern, intuitive, and user friendly interface that allows users to quickly access the meter’s advanced features and settings
• Temperature and pH data remain visible, so monitoring does not stop when settings are changed or options are selected
• Large backlit 3.2” LCD color display ensures measurement values and menu options are easy to read

Rugged and Ergonomic Design

• Both the FieldScout pH 400 & 600 Meters are lightweight, and their compact design makes them highly suitable for field use and handheld applications
• Dust and splash resistant – IP65 rating
• Meters are fitted with a rubber boot to help absorb shock
• The USB port is protected by a tightly sealed cover and the casing and battery door are fitted with rubber seals
• 1 year warranty on meter

ISFET (Ion Sensitive Field Effect Transistor) Probes

Glass Free and Durable Probe - 2 Options to Fit Your Needs

• Unlike glass electrodes, the FieldScout 400 and 600 pH Meters feature ISFET pH electrodes that will not shatter. Neither model requires wet storage
• Both come with a 6-month warranty
• Spectrum ISFET probes are made of high quality materials such as PEEK, ABS, and PVC
• Sample directly in plug trays, pots, containers, solutions, and soilless media

ISFET Probes

Blunt Tip ISFET Probe

• Uses patented non-glass ISFET technology for general purpose pH measurement
• Ideal for liquids, hydroponics, and soilless media

Pin Point Tip ISFET Probe

• Uses patented non-glass ISFET technology for the smallest pH measurement
• Sharp and to the point for pH measurement of materials that need to be penetrated
• Eliminates clogging from dirty samples or semi-solids

2107 FieldScout pH 400 Meter

Meter includes case, batteries, AC adapter, brush, and pH 4 & 7 standards
(Does not include pH Probe - order separately below)

2108 FieldScout pH 600 Meter

Meter includes case, batteries, AC adapter, brush, and pH 4 & 7 standards
(Does not include pH Probe - order separately below)

2127 FieldScout pH Meter Blunt Tip ISFET Probe

2128 FieldScout pH Meter Pin Point Tip ISFET Probe

2110 Refill Solutions - pH 4 and 7, 60 mL each

pH 400

• Professional grade quality
• Intelligent calibration wizard simplifies the calibration process
• Supports 1-and 2-point calibration
• Powered by 3 rechargeable AA-batteries
  (AC adapter included)

pH 600

Includes all features of the FieldScout pH 400 Meter, plus...

• Internal storage of measured data points, up to 65,000 measurements
• Ability to query both momentary pH value and temperature
• Supports up to 5-point calibration
Direct Soil EC Meter
Instant and accurate direct EC and temperature measurements.

- Professional-grade meter - Patented
- No need to prepare samples - simply sample through the profile
- Patented paired sensor tip provides maximum soil-sensor contact and higher accuracy
- Sample directly in plug trays, pots, containers, solutions, or ground soils
- 0 to 19.9 mS/cm (Accuracy ±1%, resolution 0.01 mS/cm)
- Automatic temperature compensation, long lasting, and waterproof
- Includes battery and EC calibration standard

8 in (20 cm) Probe Option

2265FS  FieldScout® Direct Soil EC Meter w/ 8 in Probe
         Includes Carrying Case and 2.76 Standard
2265PROBE FieldScout EC 8 in Probe (Replacement)
2254    Conductivity Standard, 2.76 mS/cm, 250 mL
2251    Conductivity Standard, 1.41 mS/cm, 250 mL

24 in (60 cm) Probe Option

2265FSTP FieldScout Direct Soil EC Meter w/ 24 in
         T-Handle Probe and Replaceable Tip
         Includes Carrying Case and 2.76 Standard
2265FST24P FieldScout T-Handle EC 24 in Probe
         w/ Replaceable Tip
2266    Replaceable Tip For T-Handle EC Probe
2254    Conductivity Standard, 2.76 mS/cm, 250 mL
2251    Conductivity Standard, 1.41 mS/cm, 250 mL
### Waterproof EC Meter

Economic meter for measuring salinity.
- Measures four parameters; conductivity, TDS, salinity, and temperature
- 6 units of measurement: µS/cm, mS/cm, ppm, ppt, mg/L, and g/L
- Internal memory stores up to 15 labeled readings for easy recall
- Adjustable conductivity-to-TDS ratio factor (0.4 to 1.0)
- Accuracy: ±2%
- Automatic temperature compensation
- Measurement ranges:
  - Conductivity: 0.00 to 199 µS/cm, 200 to 1,999 µS/cm, or 2.00 to 19.99 mS/cm
  - TDS: 0 to 99.9 mg/L, 100 to 999 mg/L, or 1.00 to 9.99 g/L
  - Salinity (fixed ratio of 0.5): 0 to 99.9 ppm, 100 to 999 ppm, or 1.00 to 9.99 ppt
  - Temperature: 32 to 194ºF (0.0 to 90.0ºC)
- Includes conductivity cell, protective sensor cap, sample cup with cap, four SR44W button batteries, and 48 in (1.2 m) neckstrap
- Calibration standard sold separately

**2246**  **Waterproof EC Meter**  
**2246SENSOR**  **Replacement Sensor**  
**2251**  **Conductivity Standard, 1.41 mS/cm, 250 mL**

### Economy pH/EC Meter

Affordable way to monitor pH and EC levels in any liquid.
- Combination pH and electrical conductivity (EC) probe
- 150-hour battery life
- Automatic temperature compensation
- 0.68 TDS ratio calculation
- Accuracy: ±0.2 pH and 2% EC scale
- Range: 0 - 6 mS/cm
- Includes handheld meter, probe, calibration solutions, and carrying case

**2182A**  **Economy pH/EC Meter**  
**2183A**  **Replacement pH/EC Probe**  
**2110**  **Refill Solutions - pH 4 and 7, 60 mL ea.**  
**2251**  **Conductivity Standard, 1.41 mS/cm, 250 mL**
Green = Nitrogen
Chlorophyll Meters

Research supports the correlation between SPAD measurements and the nitrogen in your leaf. Support and defend the health of your plants.

SPAD 502 Plus Chlorophyll Meter (2900P)
Quantifies the health of your crops.

- Instantly measures chlorophyll content or “greenness” of your plants on a scale of -9.9 to 199
- Non-invasive, non-destructive measurement
- Trend graph stores and displays up to 30 measurements
- Water resistant design (IPX4)
- Compare in-field SPAD readings to university guidelines
- Research shows a strong correlation between SPAD measurements and leaf Nitrogen content
- Available with or without a built-in data logger
- Includes hard carrying case and batteries

SPAD Data-Logging Model (2900PDL)
All the features of the 2900P, plus:

- Connects to any GPS receiver that has a serial output option*
- Equipped with internal data logger and RS-232 port
- Records 4,096 measurements (1,488 with added GPS/DGPS option)
- Configure and download meter with FieldScout® software (included)**

* GPS interface requires two cables. The GPS/DGPS cable (item 2950CV5) is available from Spectrum. A PC serial interface cable supplied by the manufacturer of the GPS receiver is also required.
** PC cable connects to a computer USB port. See our website for other cable connection options.

2900PDL  Minolta SPAD 502DL Plus Chlorophyll Meter with RS-232 Data Port and Built-In Data Logger (includes software and USB PC cable)

2900P  Minolta SPAD 502 Plus Chlorophyll Meter Basic version, no Data Logger

2950CV5  GPS/DGPS Cable

2900CASE  Replacement Hard Carrying Case

SPECIFICATIONS FOR SPAD 502 PLUS
- Optical Density Difference at two wavelengths: 650 nm and 940 nm
- Measurement Area: 2 mm x 3 mm (Approximately 3/32 in x 1/8 in)
- Light Source: 2 LEDs
- Receptor: Silicon Photodiode
- Power Source: 2 AA alkaline batteries (1.5V)
- Repeatability: Within ±0.3 SPAD unit
- SPAD Value: Index of relative chlorophyll content; -9.9 to 199
**CM 1000 Chlorophyll Meter**

“Point-and-shoot” technology to instantly measure relative chlorophyll content.

- Detects stress earlier than visual monitoring
- Technology based on an exclusive patent license from NASA
- Laser guides outline the edges of the measured sample area
- Calculates and displays a running average for multiple readings
- Connects to any GPS receiver that has a serial output option*
- Equipped with internal data logger and RS-232 port (Requires software to activate data logger)
- Records 3,250 measurements (1,350 with added GPS/DGPS option)
- Configure and download meter with FieldScout® software (not included)**
- Includes hard carrying case and batteries

* GPS interface requires two cables. The GPS/DGPS cable (item 2950CV5) is available from Spectrum.
A PC serial interface cable supplied by the manufacturer of the GPS receiver is also required.
** PC cable connects to a computer USB port. See our website for other cable connection options.

2950 FieldScout CM 1000 Chlorophyll Meter
2950S Software To Activate Data Logger (includes PC cable)
2950CV5 GPS/DGPS Cable

**CM 1000 NDVI Meter**

“Point-and-shoot” technology to instantly measure red (660 nm) and near infrared (840 nm) spectral bands.

- Detects stress earlier than visual monitoring
- Computes Normalized Difference Vegetative Index (NDVI)
- Laser guides outline the edges of the measured sample area
- Calculates and displays a running average for multiple readings
- Connects to any GPS receiver that has a serial output option*
- Equipped with internal data logger and RS-232 port
- Records 3,250 measurements (1,350 with added GPS/DGPS option)
- Configure and download meter with FieldScout® software (included)**
- Includes hard carrying case and batteries

* GPS interface requires two cables. The GPS/DGPS cable (item 2950CV5) is available from Spectrum.
A PC serial interface cable supplied by the manufacturer of the GPS receiver is also required.
** PC cable connects to a computer USB port. See our website for other cable connection options.

2953 FieldScout CM 1000 NDVI Meter
2950CV5 GPS/DGPS Cable
TCM 500 NDVI Turf Color Meter

Helps diagnose plant health based on color.

- Measures reflected light from approximately a 3 inch (7.6 cm) diameter section of turfgrass
- Uses an internal light source to negate the effect of sunny versus cloudy conditions
- Measures reflectance in the red (660 nm) and near infrared (850 nm) spectral bands
- Displays result as NDVI, percent reflectance, or as a user-adjustable grass index from 1 to 9
- Connects to any GPS receiver that has a serial output option*
- Equipped with internal data logger and RS-232 port
- Records 3,250 measurements (1,350 with added GPS/DGPS option)
- Includes hard carrying case, batteries, and TCM 500 T-Handle (item 2975H)

* GPS interface requires two cables. The GPS/DGPS cable (item 2950CV5) is available from Spectrum.
A PC serial interface cable supplied by the manufacturer of the GPS receiver is also required.
** PC cable connects to a computer USB port. See our website for other cable connection options.

2975NDVI  FieldScout TCM 500 NDVI Turf Color Meter
2975H  FieldScout TCM 500 Replacement T-Handle
2950CV5  GPS/DGPS Cable

Turf Color Index:
Displays Turf Color Index and NDVI on the LCD

NDVI: 
Displays NDVI on the LCD

SPECIFICATIONS FOR TCM 500

Measurement Sample: Turf grass canopy
Measurement System: Reflectance of red (660 nm) and NIR (850 nm) light
Measurement Area: Approx. 3.0 in (7.6 cm)
Measurement Units: Percent reflectance (0.0 to 99.9) of Red and NIR
NDVI (0.000 to 1.000)
Grass Index (1.00 to 9.00)
Power Source: 1 9 V alkaline battery (included); approx. 3,000 measurements
Repeatability: ± 5% of measurement