

Spectrum[®] Technologies, Inc.

"To Measure Is To Know"

MARKETS SERVED

Agriculture

Row Crops
Small Grains

Horticulture

Fruit/Nut/Vegetable Farming
Greenhouse Growers

Research & Education

University Agriculture &
Horticulture Programs

Turf

Golf Courses
Sports Fields

PRODUCT SOLUTIONS

Weather Monitoring

Weather Stations
Sensors
Environmental Meters

Soil Measurement

TDR Soil Moisture Meters
Soil Compaction Meters
Soil Moisture Profiler
Soil EC Probes

Light Measurement

Quantum Meters
DLI Meters
UV Sensors

Plant Health

Chlorophyll Meters
pH/EC Meters
Nutrient Meters
Disease Monitoring

WatchDog Weather Stations



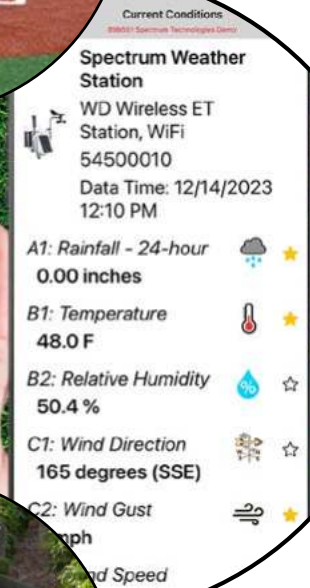
LightScout PAR/DLI Meters



Fieldscout Wireless pH Probes



Fieldscout Portable Soil Moisture Meters



**TECHNOLOGY IN THE
PALM OF YOUR HAND**

37 YEARS IN BUSINESS!

Spectrum[®] Technologies, Inc.



At Spectrum Technologies, we pride ourselves on helping our valued partners transform plant measurements into more profitable growing decisions. Since 1987, we have manufactured and distributed affordable, leading-edge plant measurement technology to agricultural, horticultural, greenhouse and turf markets globally, serving more than 14,000 customers in 80+ countries.

We proudly work alongside growers, researchers, golf course superintendents and industry suppliers to provide a broad line of measurement devices and software solutions to make viewing data simple and straightforward. Our technology allows for better environmental monitoring, soil moisture measurement, irrigation scheduling, as well as nutrient and pest management. We address common pain points throughout our markets: inconsistent crop yield, irregular blooms, micro-climates affecting playability on the golf course as well as insect and disease infestation.

Our knowledgeable and friendly sales team works closely to understand and address your needs in order to identify the right product match. Ensuring our customers are satisfied with our products and services is top priority. We stand behind every product with our 100% Satisfaction Guarantee!

Thank you for your support and continued commitment to innovation. We look forward to partnering to grow your business!

Sincerely,

A handwritten signature in black ink that reads "Mike Thurow". The signature is written in a cursive, flowing style.

Mike Thurow
CEO & Founder

WEATHER MONITORING SOLUTIONS - Pages 4-23**WatchDog® Wireless Weather Stations - Pages 4-14**

Measure any combination of Wind Speed/Direction, Temperature, Relative Humidity, Rainfall and Solar Radiation based on your specific needs and choose your communication method.

- Cellular (LTE-CAT4 or LTE-M Modem)
- WiFi Modem
- 900 Mhz Radio Communication
- Data Recorder (No Modem)

WatchDog Micro Weather Stations - Page 15

Cost effective options to record multiple environmental conditions using external sensors of your choice. **WatchDog A & B Series**

Data Loggers - Pages 16-17

Most economical method of tracking environmental conditions with continuous interval logging.

Weather Station Sensors - Pages 18-21

Choose from a variety of available sensors to measure what is important.

WatchDog Portable Wind Sensor - Page 22

Measure and record wind speed/direction with a portable, ultrasonic, bluetooth sensor that attaches to your phone, no mounting required.

WatchDog Sprayer Station - Page 23

Mount the station on your equipment for on the go monitoring and logging of wind speed/direction.

WatchDog Weather Station Comparison Chart - Pages 24-25

Compare all of your options!

SOIL MONITORING SOLUTIONS**FieldScout® TDR Series Soil Moisture Meters - Pages 26-28**

Measure soil moisture (VWC - volumetric water content %), salts (EC - electrical conductivity) and surface temperature with three handheld device options, perfect for spot measurements.

- TDR350
- TDR250
- TDR150

WaterScout® Soil Moisture Sensors - Pages 29-30

Permanently install or use with a WatchDog Weather Station to measure soil moisture (VWC), salts (EC), surface temperature.

WaterScout Profiler - Page 31

Measure soil moisture (VWC) and temperature at up to 10 different depths in one probe!

Irrigation Stations - Page 32

Choose a pre-packaged solution to measure soil moisture (VWC) at different depths.

FieldScout Direct Soil EC Meter - Page 33

Instant and accurate direct electrical conductivity (EC) and temperature measurements.

FieldScout SC900 - Page 34

Measure soil compaction through penetration resistance.

FieldScout TruFirm - Page 35

Measure the firmness of turf, bunker sands and other playing surfaces.

LIGHT MONITORING SOLUTIONS - Pages 36-38**LightScout® Light Meters - Pages 36-38**

Measure the amount of light your plants are receiving.

- LightScout Full Spectrum Quantum PAR Light Sensor
- LightScout Full Spectrum Quantum PAR Light Meters
- LightScout Quantum PAR/DLI Light Meter
- LightScout External Light Sensor Reader
- LightScout Red/Far-Red Meter
- LightScout UV Meter
- LightScout Foot-Candle Meter

PLANT HEALTH SOLUTIONS - Pages 39-42**Chlorophyll Meters - Page 39-40**

Measure the chlorophyll content of your plants.

- SPAD Meters
- FieldScout CM1000 Chlorophyll Meter

NDVI Meters - Page 40

Measure red and near infrared spectral bands to estimate the density of green on an area of land.

- FieldScout CM1000 NDVI Meter
- FieldScout TCM500 NDVI Turf Color Meter

FieldScout Wireless ISFET pH/EC Probe - Page 41

Measure and track pH levels in plants

LAQUA Nutrient Meters - Pages 42-43

"Lab in Hand" meters to measure pH, EC, Sodium, Potassium, Nitrate and Calcium.

Water Quality Meters - Page 44**DATA VIEWING OPTIONS****Mobile Apps - Pages 46-47**

Many of our product solutions provide the ability to connect to an app to view real time data from anywhere!

SpecWare - Pages 48-51

A downloadable software that allows you to view and analyze data collected from your compatible WatchDog and FieldScout products.

SpecConnect - Pages 52-55

A robust cloud based service that allows you view and analyze the data collected from your compatible WatchDog and FieldScout products on demand from your phone, PC or tablet. Data automatically syncs to SpecConnect and is viewable in real time.

OUR BRANDS MEASURE UP!



WHAT MAKES YOU SUCCESSFUL?

Consistent, healthy crops, hearty flower blooms and dependable turf playing conditions make your business successful and easier to manage. Understanding current weather conditions in your field, greenhouse or on your golf course is vital to ensure these goals are met and addressed proactively.

Our *FULLY INTEGRATED* WatchDog Weather Stations provide the ability to record and communicate weather data so you have real time data access. Allow the information to guide your decisions regarding irrigation, frost, insect and disease control and nutrient management.

WHAT WEATHER STATION FITS MY NEEDS?

Step 1: Determine the measurements most important to you and choose the WatchDog model that has the integrated sensors you need.

3550/3250 Models: Temperature, Relative Humidity, Rainfall, Wind Speed/Direction, Solar Radiation

3540/3240 Models: Temperature, Relative Humidity, Rainfall, Wind Speed/Direction

3230 Models: Temperature, Relative Humidity, Quantum (PAR) Light

3220 Models: Temperature, Relative Humidity, Rainfall

3210 Models: Temperature, Relative Humidity

3580 Models: 8 Open Ports + 1 dedicate to Rain, choose the sensors you want

Step 2: Determine your preferred communication method based on where your weather station will be placed, signal strength and how you want to receive data.



Communication Options	Communication Description	How is Data Viewed?
C4/CA/CE/CG Cellular (LTE-CAT4 Modem)	Strongest cellular connection, best for less populated areas where an LTE-M connection can be a concern	Requires SpecConnect Cloud Service Subscription
MU/ME Cellular (LTE-M Modem)	Best for well populated areas where there is a strong, consistent LTE-M connection	Requires SpecConnect Cloud Service Subscription
WF Wireless (WiFi Modem)	Wireless connection where connectivity is strong and consistent, when the weather station will be installed within service range of the WiFi network	Requires SpecConnect Cloud Service Subscription
DU/DA/DE 900Mhz Radio Communication (Mesh Network)	Radio communication uses a combination of WatchDog Pups/Retrievers in a mesh network. Ideal when data needs to be collected from micro climates within a larger field. A 1/2 mile line of sight view is required between devices. (see pages 10-13 for more information on the Pup/Retriever Network)	Requires SpecConnect Cloud Service Subscription OR SpecWare Software Purchase
DR Data Recorder (No Modem)	Ideal when real time data and constant monitoring is not required. Gather data in increments specified and then transfer data via USB flash drive or direct connect from the station to your PC. (see pages 14 for more information on Data Recorders)	Requires SpecWare Software Purchase

See pages 46-53 for details about SpecWare & SpecConnect

Step 3: Add additional sensors for measurements you would like to monitor that are not already integrated into the weather station you choose.

- Soil Moisture Sensors
- Environmental Sensors
- Light Sensors
- Digital Sensors

See pages 18-21 for a comprehensive list of sensors available to add on to your weather station

Step 4: Place your order! Order directly on our website or contact your sales rep.

HOW DO I SET UP MY WEATHER STATION?

Your weather station will arrive with a quick start guide to get your station up and running instantly. Our WatchDog app will guide you through set up and allow you to immediately start tracking data as soon as your station is connected! Technology in the palm of your hand!

HOW DO I VIEW THE DATA?



Real time data is always viewable directly from the app if you choose a model with wireless data connection. Additionally, a subscription to SpecConnect, our cloud based service, is required with these models. This allows data to be sent to the cloud, where you can view current conditions or historical data using a broad selection of standard or customized analytical reports from anywhere in the world! Manipulate the data you collect to tell a story and guide your decisions on irrigation, fertilizing, labor needs, frost and pest control. **See pages 52-55 for details about SpecConnect.**

**SpecWare
Software**

For weather stations that do not include a modem, data can be downloaded to a USB Flash Drive and processed with SpecWare Software to view and analyze the previously collected data.

See pages 48-51 for details about SpecWare.



ANATOMY OF A WEATHER STATION



CELLULAR PADDLE

Used with cellular communication
(varies based on communication method)

RAIN BUCKET WITH BIRD GUARD

Measures rainfall,
keeps birds away

TEMP/RH SENSOR

Measures temperature
and humidity



ANEMOMETER

Measures wind
speed and direction

SOLAR RADIATION

Measures the intensity of the
sun's radiation, used to calculate
evapotranspiration (ET)

SOLAR PANEL

Uses sunlight to supply
power to the station

The durable enclosure provides
moisture, corrosion and UV protection for
increased reliability in harsh environments





WIRELESS ET WEATHER STATION OPTIONS (Models 3550 & 3250)

Measures: Temperature, Relative Humidity, Rainfall, Wind Speed/Direction and Solar Radiation (ET)

Additional Sensor Ports Available: 5 for 3550 Models and 1 for 3250 Models

MOST POPULAR! Evapotranspiration (ET) is calculated from the data collected, provides the greatest amount of data to guide your decision making.

3550 Models - 5 Available Sensor Ports		
Item #	Location	Communication Option
3550C4	US/Canada/Mexico	Cellular (LTE-CAT4 4G Modem)
3550CA	APAC	
3550CE	Europe	
3550CG	Latin America	
3550MU	US/Canada/Mexico	Cellular (LTE-M Modem)
3550ME	GLOBAL (Outside US/Canada/Mexico)	
3550WF	GLOBAL	WiFi Modem
3550DU	North America and Other	900Mhz Radio
3550DA	Australia/New Zeland	917Mhz Radio
3550DE	Europe	868Mhz Radio
3550DR	GLOBAL	No Modem

3250 Models - 1 Available Sensor Port		
Item #	Location	Communication Option
3250C4	US/Canada/Mexico	Cellular (LTE-CAT4 4G Modem)
3250CA	APAC	
3250CE	Europe	
3250CG	Latin America	
3250MU	US/Canada/Mexico	Cellular (LTE-M Modem)
3250ME	GLOBAL (Outside US/Canada/Mexico)	
3250WF	GLOBAL	WiFi Modem
3250DU	North America and Other	900Mhz Radio
3250DA	Australia/New Zeland	917Mhz Radio
3250DE	Europe	868Mhz Radio
3250DR	GLOBAL	No Modem

WIRELESS STANDARD WEATHER STATION OPTIONS (Models 3540 & 3240)

Measures: Temperature, Relative Humidity, Rainfall, Wind Speed/Direction

Additional Sensor Ports Available: 6 for 3540 Models and 2 for 3240 Models

3540 Models - 6 Available Sensor Ports		
Item #	Location	Communication Option
3540C4	US/Canada/Mexico	Cellular (LTE-CAT4 4G Modem)
3540CA	APAC	
3540CE	Europe	
3540CG	Latin America	
3540MU	US/Canada/Mexico	Cellular (LTE-M Modem)
3540ME	GLOBAL (Outside US/Canada/Mexico)	
3540WF	GLOBAL	WiFi Modem
3540DU	North America and Other	900Mhz Radio
3540DA	Australia/New Zeland	917Mhz Radio
3540DE	Europe	868Mhz Radio
3540DR	GLOBAL	No Modem

3240 Models - 2 Available Sensor Port		
Item #	Location	Communication Option
3240C4	US/Canada/Mexico	Cellular (LTE-CAT4 4G Modem)
3240CA	APAC	
3240CE	Europe	
3240CG	Latin America	
3240MU	US/Canada/Mexico	Cellular (LTE-M Modem)
3240ME	GLOBAL (Outside US/Canada/Mexico)	
3240WF	GLOBAL	WiFi Modem
3240DU	North America and Other	900Mhz Radio
3240DA	Australia/New Zeland	917Mhz Radio
3240DE	Europe	868Mhz Radio
3240DR	GLOBAL	No Modem

WIRELESS PLANT GROWTH STATION (Model 3230)

Measures: Temperature, Relative Humidity, Quantum (PAR) Light

Additional Sensor Ports Available: 1

Choose from three models that match your supplemental lighting

STANDARD: Includes the 3668S PAR light sensor to measure broadband light sources such as Sunlight, HPS, HID and Fluorescent

PRO: Includes the 3668A Full Spectrum PAR light sensor to measure all light sources, including LED

ASPIRATED: Includes an aspirated radiation shield for the Temp/RH sensor and the 3668A Full Spectrum PAR light sensor to measure all light sources, including LED

3230 Models - 1 Available Sensor Port

Standard	Pro	Aspirated	Location	Communication Option
3230C4	3230C4P	3230C4A	US/Canada/Mexico	Cellular (LTE-CAT4 4G Modem)
3230CA	3230CAP	3230CAA	APAC	
3230CE	3230CEP	3230CEA	Europe	
3230CG	3230CGP	3230CGA	Latin America	Cellular (LTE-M Modem)
3230MU	3230MUP	3230MUA	US/Canada/Mexico	
3230ME	3230MEP	3230MEA	GLOBAL (Outside US/Canada/Mexico)	WiFi Modem
3230WF	3230WFP	3230WFA	GLOBAL	
3230DU	3230DUP	3230DUA	North America and Other	900Mhz Radio
3230DA	3230DAP	3230DAA	Australia/New Zeland	917Mhz Radio
3230DE	3230DEP	3230DEA	Europe	868 Mhz Radio
3230DR	3230DRP	3230DRA	GLOBAL	No Modem



WatchDog 3550/3250 Model Cellular Communication



WatchDog 3540/3240 Model WiFi Communication



WatchDog 3230 Aspirated Model Radio Communication

WIRELESS RAIN STATION OPTIONS (Model 3220)

Measures: Temperature, Relative Humidity, Rainfall

Additional Sensor Ports Available: 2

Monitor rainfall, temperature and humidity in remote fields to effectively manage irrigation scheduling and adjust field activities to avoid soil compaction.

3220 Models - 2 Available Sensor Ports		
Item #	Location	Communication Option
3220C4	US/Canada/Mexico	Cellular (LTE-CAT4 4G Modem)
3220CA	APAC	
3220CE	Europe	
3220CG	Latin America	
3220MU	US/Canada/Mexico	Cellular (LTE-M Modem)
3220ME	GLOBAL (Outside US/Canada/Mexico)	
3220WF	GLOBAL	WiFi Modem
3220DU	North America and Other	900Mhz Radio
3220DA	Australia/New Zeland	917Mhz Radio
3220DE	Europe	868Mhz Radio
3220DR	GLOBAL	No Modem



**WatchDog 3220 Model
Cellular Communication**

WIRELESS TEMP/RH STATION OPTIONS (Model 3210)

Measures: Temperature, Relative Humidity

Additional Sensor Ports Available: 2

Prevent frost damage with temperature alerts sent directly to your phone (requires separate SpecConnect Alert Package Subscription). Monitor site-specific conditions for insect and disease pressure with an optional leaf wetness sensor.

3210 Models - 2 Available Sensor Ports		
Item #	Location	Communication Option
3210C4	US/Canada/Mexico	Cellular (LTE-CAT4 4G Modem)
3210CA	APAC	
3210CE	Europe	
3210CG	Latin America	
3210MU	US/Canada/Mexico	Cellular (LTE-M Modem)
3210ME	GLOBAL (Outside US/Canada/Mexico)	
3210WF	GLOBAL	WiFi Modem
3210DU	North America and Other	900Mhz Radio
3210DA	Australia/New Zeland	917Mhz Radio
3210DE	Europe	868Mhz Radio
3210DR	GLOBAL	No Modem



**WatchDog 3210 Model
Data Recorder**

WIRELESS SENSOR STATION OPTIONS (Model 3580)

Measures: YOU CHOOSE WHAT YOU WANT TO MEASURE!

Additional Sensor Ports Available: 8 + 1 for optional rain collector

*Our most versatile model! Choose every sensor and measure what you need. Monitor the plant inputs that are important to you!
Perfect when multiple sensors of the same type are needed at different depths.*

3580 Models - 2 Available Sensor Ports

Item #	Location	Communication Option
3580C4	US/Canada/Mexico	Cellular (LTE-CAT4 4G Modem)
3580CA	APAC	
3580CE	Europe	
3580CG	Latin America	
3580MU	US/Canada/Mexico	Cellular (LTE-M Modem)
3580ME	GLOBAL (Outside US/Canada/Mexico)	
3580WF	GLOBAL	WiFi Modem
3580DU	North America and Other	900Mhz Radio
3580DA	Australia/New Zeland	917Mhz Radio
3580DE	Europe	868Mhz Radio
3580DR	GLOBAL	No Modem





HOW DOES RADIO COMMUNICATION WORK?

Our Retriever and Pups Solution is the right answer if you want to collect multiple data points in one field, vineyard or golf course. Monitor the factors important to keeping your crops and greens healthy and fruitful! When you set up the network, included devices talk to each other as long as each is within a 1/2 mile (0.8km) line of sight of another device. Information is transmitted to the retriever. You can download the data via USB or view it live in the WatchDog App and through SpecConnect if you incorporate a modem into your network. Sound complicated?

LET'S BREAK IT DOWN!

WHAT IS A PUP STATION?

A pup station is a weather station that uses radio communication. They are distinguished by DU or DA in the part number. The pre-determined measurements described on the previous two pages allow you to pick what station is the right choice based on what you want to measure.



WHAT IS A SENSOR PUP?

A sensor pup allows you to connect up to four external sensor inputs each. Choose the sensors you want based on the measurements you are trying to obtain. The sensor pup transmits data to the retriever directly or via other pups.

- Includes 6 lithium AA batteries, solar power optional
- Single Button Operation - check battery status, signal strength and join sensor network
- Tri-colored LED indicates battery level, signal strength and data communication status



WHAT IS A REPEATER PUP?

A repeater pup serves as a "signal extender" to provide a path for signal transmission around obstacles or to extend range. It looks the same as a sensor pup but has no sensor inputs. It merely helps transmit data from the other devices in the network to the retriever.

- Includes 6 lithium AA batteries, solar power optional



WHAT IS A SENSOR?

A sensor is a device that plugs into a pup station or sensor pup to measure data such as Rainfall, Temp/RH, Soil Moisture, Leaf Wetness, Light, Wind, etc.



WHAT IS A RETRIEVER?

A retriever is the vehicle used to collect all the data from the network of pup stations and/or sensor pups. Every retriever can support up to 12 pups. All devices in the network must be placed within a 1/2 mile (0.8km) line of sight of each other to keep data flowing through the network to the retriever.

- 900/868 MHz radio
- Includes USB flash drive and USB data cable to easily download data and view on your computer
- Includes 6 lithium AA batteries, solar power optional
- Single Button Operation - switch modes, download data, upload configuration, check battery status
- Tri-colored LED indicates mode, battery level, data communication status and configuration status
- Non-volatile memory preserves your logged data even when the batteries are removed



WHAT ABOUT A MODEM?

A DataScout modem communicates the data to the web using either a cellular or wifi signal.

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WatchDog
Retriever & Pups
Network

You DO NOT Need a Modem IF...you only want to download data from the Retriever onto the included USB drive and then view on your computer using our SpecWare Software

You DO Need a Modem IF...you want to send data to the SpecConnect Cloud to view and manipulate into relevant reports.

- Single Button Operation - test communications, pair with station and check battery level
- Tri-Colored LED indicates battery level, data communications and wireless signal/connection status
- Power Options - choose between solar power or AC/DC power

HOW DO I VIEW THE DATA?

Real time data is always viewable directly from the WatchDog app on your phone.

SpecWare
Software

If you prefer to not use a modem and decide to download the data to a USB, you can purchase our SpecWare Software to view and analyze the previously collected data.

See pages 48-51 for details about SpecWare.

 **SpecConnect**

If you use a modem, a subscription to our cloud based service called SpecConnect is required. This allows data to be sent to the cloud, where you can view current conditions or historical data using a broad selection of standard or customized analytical reports from anywhere in the world!

Manipulate the data you collect to tell a story and guide your decisions on irrigation, fertilizing, labor needs, frost and pest control.

See pages 52-55 for details about SpecConnect.





Item #	Item Description
STEP 1 - CHOOSE YOUR PUP(S)	
3550xx*	Wireless ET Pup Station - 5 Available External Sensor Ports <i>(Wind Speed/Direction, Temperature, Relative Humidity, Rainfall, Solar Radiation)</i>
3250xx*	Wireless ET Pup Station - 1 Available External Sensor Port <i>(Wind Speed/Direction, Temperature, Relative Humidity, Rainfall, Solar Radiation)</i>
3540xx*	Wireless Standard Pup Station - 6 Available External Sensor Ports <i>(Wind Speed/Direction, Temperature, Relative Humidity, Rainfall)</i>
3240xx*	Wireless Standard Pup Station - 2 Available External Sensor Ports <i>(Wind Speed/Direction, Temperature, Relative Humidity, Rainfall)</i>
3230xx*	Wireless Plant Growth Pup Station - 1 Available External Sensor Port <i>(Temperature, Relative Humidity, PAR Light)</i>
3220xx*	Wireless Rain Pup Station - 2 Available External Sensor Ports <i>(Temperature, Relative Humidity, Rainfall)</i>
3210xx*	Wireless Temp/RH Pup Station - 2 Available External Sensor Ports <i>(Temperature, Relative Humidity)</i>
3580xx*	Wireless Sensor Pup - 8 Available External Sensor Ports <i>(Choose Your Sensors)</i>
*Designations to Choose (xx): DU - 900MHz DA - 920MHz - Australia DE - 868MHz	
3901	900MHz Station Pup
3900	900MHz Sensor Pup - 4 Available External Sensor Ports
3930	868MHz Sensor Pup - 4 Available External Sensor Ports
3902	900MHz Repeater Pup - No Sensor Ports
3932	868MHz Repeater Pup - No Sensor Ports
STEP 2 - CHOOSE YOUR SENSORS	
3613ARS	Temperature/RH Sensor with Aspirated Radiation Shield
3613THS	Temperature/RH Sensor with Passive Radiation Shield
3665RD	Digital Rain Collector with Bird Guard <i>(For Sensor Pup Only)</i>
3305ADD	Digital Anemometer <i>(For Sensor Pup Only)</i>
6470-20	WaterScout SMEC300 Sensor with 20' (6.1m) Cable
6460-20	WaterScout SM100 Sensor with 20' (6.1m) Cable
6450WD20	Watermark Sensor with 25' (7.6m) Cable
3667	External Soil Temperature Sensor with 6' (1.8m) Cable
3666	Leaf Wetness Sensor
3670I	LightScout Silicon Pyranometer
3668S	LightScout Quantum Light Sensor
STEP 3 - ADD YOUR RETRIEVER (REQUIRED)	
3910	900MHz WatchDog Retriever
3912	868MHz WatchDog Retriever

Item #	Item Description
STEP 4 - CHOOSE YOUR MODEM (NOT REQUIRED)	
3929M	DataScout LTE-M Modem - Global
3939H	DataScout LTE-M Modem - Global (Hologram SIM Card - Australia/Telstra)
3933M	DataScout LTE CAT-4 Modem - US/Canada
3934M	DataScout LTE CAT-4 Modem - Europe
3935M	DataScout LTE CAT-4 Modem - APAC
3936M	DataScout LTE CAT-4 Modem - Latin America
STEP 5 - ADD OPTIONAL ITEMS	
3999	Solar Power Package for Pups & Retrievers (Includes 5W solar panel and 6V 4.5Ah rechargeable battery)
3396TPS	Tripod Mount with Stakes
3925	Antenna Extension Cable - 10' (3m) (Includes mounting bracket and hardware for use with Pups/Retrievers)
3927C75	PC Direct Connection Cable - 75' (23m) (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 - see page 21)
3926	AC/DC Power Adapter for WatchDog Retriever 12V/0.7a

PUP NETWORK PRODUCT CONFIGURATION EXAMPLES

Wireless ET Pup Station

(Item #3250DU)

Monitor evapotranspiration (ET) to effectively manage irrigation with respect to soil moisture loss. Includes sensor for Rain, Temp/RH, Solar Radiation and Wind Speed and Direction.

Wireless Standard Pup Station + SMEC300 Soil Moisture/EC/Temp Sensor

(Item #3240DU + Item #6470-20)

Monitor weather above and soil moisture below ground to effectively manage irrigation, plan spray applications and schedule field activity.

Wireless Rain Pup Station + Leaf Wetness Sensor

(Item #3220DU + Item #3666)

Monitor rainfall for more effective irrigation scheduling and to adjust field activities to avoid soil compaction. Monitor and note site-specific conditions for disease and insect pressure.

Wireless Temp/RH Pup Station + SMEC300 Soil Moisture/EC/Temp Sensor + SM100 Soil Moisture Sensor

(Item #3210DU + Item #6470-20 + Item #6460-20)

Detect frost and be alerted to conditions in your crops. Monitor and note site-specific conditions for insect pressure. Remotely monitor soil moisture at two depths.

Wireless Sensor Pup + SMEC300 Soil Moisture/EC/Temp Sensor + SM100 Soil Moisture Sensor

(Item #3900+ Item #6470-20 + Item #6460-20)

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



WHAT IS A DATA RECORDER?

Spectrum's WatchDog Station Data Recorders are ideal when real time data and around the clock monitoring is not needed. This economical option is



perfect to gather measurements and data that is important to you, but on your own schedule. Data can be transferred from the internal recorder to a USB flash drive and processed with SpecWare Pro Software. The 3000 Series Data Recorders offer all-in-one simple setup. With Bluetooth connectivity and the free WatchDog mobile app, they are perfect for fields, orchards, vineyards and greenhouses.

HOW DO I VIEW THE DATA?

SpecWare: SpecWare Software is required to view and analyze the collected data

Direct Connect: Download from the station to your PC via 75' (22.9m) cable or short range modem pair

USB Flash Drive: Transport data from your station to your PC (USB not provided)

PLANT GROWTH STATIONS

In addition to our 3230 Model plant growth stations (see page 7), we also have an option that is ideal for greenhouses. Our 2475 mini station is more compact and computes and displays daily light integral (DLI), dew point and degree days. There is a live display of current light and cumulative light over the day. It computes and displays average day/night temperature differences (DIF) and vapor pressure deficit (VPD).

Plant Growth Station Data Recorder (Item #3230DR)



Item #	Item Description
WatchDog Station Data Recorders	
3550DR	ET Station Data Recorder - 5 Available External Sensor Ports (Wind Speed/Direction, Temperature, Relative Humidity, Rainfall, Solar Radiation)
3250DR	ET Station Data Recorder - 1 Available External Sensor Port (Wind Speed/Direction, Temperature, Relative Humidity, Rainfall, Solar Radiation)
3540DR	Standard Station Data Recorder - 6 Available External Sensor Ports (Wind Speed/Direction, Temperature, Relative Humidity, Rainfall)
3240DR	Standard Station Data Recorder - 2 Available External Sensor Ports (Wind Speed/Direction, Temperature, Relative Humidity, Rainfall)
3230DR	Plant Growth Station Data Recorder - 1 Available External Sensor Port (Temperature, Relative Humidity, PAR Light)
3230DRP	Plant Growth Station Data Recorder Pro - 1 Available External Sensor Port (Temperature, Relative Humidity, PAR Light)
3230DRA	Plant Growth Station Data Recorder Aspirated - 1 Available External Sensor Port (Temperature, Relative Humidity, PAR Light)
3220DR	Rain Station Data Recorder - 2 Available External Sensor Ports (Temperature, Relative Humidity, Rainfall)
3210DR	Temp/RH Station Data Recorder - 2 Available External Sensor Ports (Temperature, Relative Humidity)
3580DR	Sensor Station Data Recorder - 8 Available External Sensor Ports (Choose Your Sensors)
3686WDS	2475 Plant Growth Station Data Recorder - 1 Available External Sensor Port (Temperature, Relative Humidity, PAR Light)



2475 Plant Growth Station
(Item #3686WDS)

WHAT IS A MICRO STATION?

Micro Stations offer a cost-effective way to record multiple environmental conditions over a period of time. Internal sensors can include temperature and humidity. Whether you need plant disease or soil moisture monitoring, the WatchDog 1000 Series Micro Station will deliver the information you need for timely, accurate data to make more informed decisions to help increase profits. The LCD display confirms station operation and provides current sensor readings. View the current temperature during a frost event, or soil moisture prior to irrigating – without downloading to a PC. Customizable with up to four unique external plug-in sensors. Change monitoring parameters from one season to the next by simply connecting a different sensor - keeping investment costs down while making more profitable decisions.

Up to 4 external sensor ports and ability to measure up to 8 sensor values depending on the model chosen

- LCD screen displays sensor readings and battery level
- Choose measurement intervals from 1 to 60 minutes
- Log up to 10,584 intervals
- 12 month battery life (CR2450 battery included)



HOW DO I VIEW THE DATA?

Data is stored in the Micro Station until you download it from the station to your PC

SpecWare: Requires purchase of SpecWare Software to view and analyze the data

Direct Connect: Download from the station to your PC

Data Shuttle: Download data from the unit and then direct connect to your PC

Model/Item Number	Internal Sensor	External Ports	Maximum # SMEC300 Sensors
1650/3688WD1	Temperature, Relative Humidity	4	2
1525/3687WD1	Temperature	4	2
1450/3684WD1	Temperature, Relative Humidity	2	1
1425/3583WD1	Temperature	3	1
1400/3685WD1	None (External Only)	4	2
1250/3682WD1	Temperature, Relative Humidity	None	0
1225/3681WD1	Temperature	1	0
1200/3680WD1	None (External Only)	2	1
1120/3554WD1	Rainfall	None	0
1115/3635WD1	Requires External Rainfall (see website)	1	0



WHAT IS A DATA LOGGER?

Spectrum's WatchDog Data Loggers are ideal when real time data and constant round the clock monitoring is not needed. This economical option is perfect to gather data that is important to you, but on your own schedule. Data Loggers are perfect for areas where multiple measurements may be needed on one plot of land, but having multiple stations is not feasible or is cost prohibitive. Requires purchase of SpecWare Software to view and analyze the data.

A-SERIES DATA LOGGERS

The most affordable way to track environmental conditions for analysis!

- Log 4,000-8,000 intervals
- Removable soft caps keep ports clear of debris
- Water resistant (IP65/IP54) case (*Model A160/3611A is for indoor use only*)
- 12 month battery life (CR2 battery included)



HOW DO I VIEW THE DATA?

- The LCD display on the logger confirms operation and displays last sensor reading
- Download the data by connecting the logger directly to your computer with the PC connection cable
- Requires purchase of SpecWare Software to view and analyze the data

B-SERIES DATA LOGGERS

Pocket sized, efficient and inexpensive logging technology

- Log 2,000-8,000 intervals
- Water resistant (IP56) stainless steel case
- Integral non-replaceable battery



HOW DO I VIEW THE DATA?

- Snap the B-Series Data Logger into the Docking Station and connect it to your PC to see the data
- Requires purchase of SpecWare Software to view and analyze the data

DATA LOGGING RAIN GAUGE

High accuracy, low maintenance tipping bucket rain collector

- Meets NWS guidelines with an 8" (20.5cm) diameter collector
- The included data logger can log up to 10,584 intervals
- Select intervals from 1 to 60 minutes (maximum 10.23" (26cm) per interval)
- Record rainfall in either metric (mm) or US (in) units
- Rain collector mounting bracket and hardware included
- Includes Bird Guard to reduce maintenance
- Accuracy: $\pm 2\%$ at $< 2"$ (5cm) per hour









HOW DO I VIEW THE DATA?

SpecWare: Requires purchase of SpecWare Software to view and analyze the data









Direct Connect: Download from the station to your PC

Data Shuttle: Download data from the unit and then direct connect to your PC



Model #	Item #	Internal Sensor	Intervals	Radiation Shield
A-SERIES DATA LOGGERS				
A160	3611A	Air Temperature, Relative Humidity, CO ₂	5,333	Indoor Use Only (No Shield Available)
A150	3612A	Air Temperature, Relative Humidity	5,333	Optional
A130	3610A	Air Temperature, External Leaf Wetness	4,000	Included
A125	3617A	Air Temperature, External Temperature	4,000	Included
A125	3617ARS	Air Temperature, External Temperature	4,001	Included
A110	3618A	Air Temperature	8,000	Optional
-----	3661A	WatchDog A-Series PC Connection Cable USB Port <i>(required to download data)</i>		
-----	3663A	Radiation Shield <i>(needed for outdoor use)</i>		
Model #	Item #	Internal Sensor	Intervals	LCD Display
B-SERIES DATA LOGGERS				
B102	3621WD	Temperature, Relative Humidity	4,000	No
		Temperature Range: -40°F to 85°F (-20°C to 85°C) Humidity: 0 to 100%, ±5% Temperature Accuracy: ±1.1°F from 5°F to 149°F (±0.6°C from -15°C to 65°C)		
B101 8K	3620WD	Temperature	8,000	No
		Temperature Range: -40°F to 85°F (-20°C to 85°C) Temperature Accuracy: ±1.1°F from 5°F to 149°F (±0.6°C from -15°C to 65°C)		
B100 2K	3619WD	Temperature	2,000	No
		Temperature Range: -40°F to 85°F (-20°C to 85°C) Temperature Accuracy: ±1.8°F from -22°F to 158°F (±1°C from -30°C to 70°C)		
-----	3655K1	WatchDog B-Series Docking Station USB Port <i>(required to download data)</i>		
Item #	Item Name			
RAIN GAUGE DATA LOGGER				
3554WD1	WatchDog 1120 Data Logging Rain Gauge			

SOIL SENSORS		
Item Description	Item #	Item Description
WATERSCOUT SMEC300 Measures: VWC/EC/Temperature VWC: 0 to Saturation (typically 50%) Accuracy: ±3% EC: 0 to 10mS/cm Accuracy: ±2% COMPATIBILITY: WatchDog Pups, 3000, 2000 and 1000 Stations <i>*Requires purchase of WaterScout calibration device for accurate EC</i>	6470-6	WaterScout SMEC300 with 6' (1.8m) Cable
	6470-20	WaterScout SMEC300 with 20' (6.1m) Cable
	6470CAL3V	WaterScout Calibration Device
	2251	Conductivity Standard 1.41mS/cm, 250mL
 WATERSCOUT SM100 Measures: VWC VWC: 0 to Saturation Accuracy: ±3% COMPATIBILITY: WatchDog Pups, 3000, 2000 and 1000 Stations	6460	WaterScout SM100 Sensor with 6' (1.8m) Cable
	6460-20	WaterScout SM100 Sensor with 20' (6.1m) Cable
WATERMARK SOIL MOISTURE SENSOR Measures: Soil Moisture Tension  Tension: 0 to 200 Centibars COMPATIBILITY: WatchDog Pups, 3000, 2000 and 1000 Stations	6450WD	Watermark Sensor with 11' (3.3m) Cable
	6450WD20	Watermark Sensor with 25' (7.6m) Cable
EXTERNAL SOIL TEMPERATURE SENSOR Measures: Soil, Air or Water Temperature Range: -25°F to 212°F (-32°C to 100°C) Accuracy: ±1°F (0.5°C) COMPATIBILITY: WatchDog Pups, 3000, 2000 and 1000 Stations 	3667	External Soil Temperature Sensor with 6' (1.8m) Cable
	3667-20	External Soil Temperature Sensor with 20' (6.1m) Cable
ENVIRONMENTAL SENSORS		
Item Description	Item #	
TEMPERATURE (MICRO) SENSOR Measures: Surface Temperature of leaves, buds or other tiny mediums Range: -25°F to 212°F (-32°C to 100°C) Accuracy: ±1°F (0.5°C) COMPATIBILITY: WatchDog Pups, 3000, 2000 and 1000 Stations	3667S	
LEAF WETNESS SENSOR Measures: Leaf wetness with a resistance based sensor designed to replicate a leaf Range: 0 (Dry) to 15 (Wet) COMPATIBILITY: WatchDog Pups, 3000, 2000 and 1000 Stations	3666	
TIPPING BUCKET RAIN COLLECTOR Measures: Rainfall in 1/100" increments, self emptying and freeze resistant Range: 0.01" (0.25mm) Accuracy: <2" (5cm) per hour COMPATIBILITY: WatchDog 3210, 3230, 2000 Mini and 1000 Stations	3665R	

LIGHT SENSORS		
Item Description	Item #	
FULL SPECTRUM QUANTUM PAR LIGHT SENSOR Measures: PAR light between 400-700nm across the full PAR spectrum Range: 0 to 3000 $\mu\text{mol}/\text{m}^2\text{s}^{-1}$ Accuracy: $\pm 5\%$ COMPATIBILITY: WatchDog Pups, 3000 and 2000 Stations	3668A	
LIGHTSCOUT QUANTUM LIGHT SENSORS Measures: PAR light between 400-700nm from broadband sources Sensor bars average PAR light readings to minimize effects of small shadows Sensor bars are 19" (48cm) long and include mounting brackets Range (Micro Stations): 0 to 2,500 $\mu\text{mol}/\text{m}^2\text{s}^{-1}$ Accuracy: $\pm 5\%$ Range (Other Stations/Pups): 0 to 3,000 $\mu\text{mol}/\text{m}^2\text{s}^{-1}$ Accuracy: $\pm 5\%$ COMPATIBILITY: WatchDog Pups, 3000, 2000 and 1000 Stations	3668S 3668S6	
LIGHTSCOUT SILICON PYRANOMETER Measures: Solar Radiation between 300-1,100nm Range (Micro Stations): 0 to 1,250W/m ² Accuracy: $\pm 5\%$ Range (Other Stations/Pups): 0 to 1,500W/m ² Accuracy: $\pm 5\%$ COMPATIBILITY: WatchDog Pups, 3000, 2000 and 1000 Stations	3670I	
LIGHTSCOUT UV LIGHT SENSOR Measures: UV Radiation between 250-400nm Range: 0 to 200 $\mu\text{mol}/\text{m}^2\text{s}^{-1}$ Accuracy: $\pm 5\%$ COMPATIBILITY: WatchDog Pups, 3000, 2000 and 1000 Stations	3676I	
DIGITAL SENSORS		
Item Description	Item #	Item Description
DIGITAL TEMPERATURE/RH SENSOR WITH ASPIRATED RADIATION SHIELD Measures: Temperature and Relative Humidity (includes 6' (2m) cable) and solar charging system to power internal fan) Range: -40°F to 212°F (-40°C to 100°C), 0 to 100% RH Accuracy: $\pm 0.54^\circ\text{F}$ from 50°F to 131°F ($\pm 0.3^\circ\text{C}$ from 10°C to 55°C), $\pm 2.5\%$ RH Operating Temperature: 14°F to 140°F (-10°C to 60°C) COMPATIBILITY: WatchDog Pups, 3500 Stations and 3200 Stations shipped after 2/1/24	3613ARS	
DIGITAL TEMPERATURE/RH SENSOR WITH PASSIVE RADIATION SHIELD Measures: Temperature and Relative Humidity (includes 6' (2m) cable) Range: -40°F to 212°F (-40°C to 100°C), 0 to 100% RH Accuracy: $\pm 0.54^\circ\text{F}$ from 50°F to 131°F ($\pm 0.3^\circ\text{C}$ from 10°C to 55°C), $\pm 2.5\%$ RH Operating Temperature: 14°F to 140°F (-10°C to 60°C) COMPATIBILITY: WatchDog Pups, 3500 Stations and 3200 Stations shipped after 2/1/24	3613THS	
DIGITAL RAIN COLLECTOR Measures: Rainfall in 1/100" increments, self emptying and freeze resistant Range: 0.01" (0.25mm) Accuracy: <2" (5cm) per hour COMPATIBILITY: WatchDog Sensor Pup (Item #3900) ONLY	3665RD	
DIGITAL ANEMOMETER Measures: Wind Speed/Direction [includes 40' (12.2m)] Range (Wind Direction): 0 to 359° Accuracy: $\pm 3^\circ$ Range (Wind Speed): 0,1 to 200mph Accuracy: $\pm 2\text{mph}$ ($\pm 3\text{km}/\text{h}$), $\pm 5\%$ COMPATIBILITY: WatchDog Sensor Pup (Item #3900) ONLY	3305ADD	
DIGITAL BAROMETRIC PRESSURE SENSOR Measures: Atmospheric Pressure Range: 8.86inHg to 36.9inHg (300hPa to 1250hPa) Accuracy: $\pm 0.03\text{inHg}$ ($\pm 1\text{hPa}$) COMPATIBILITY: WatchDog 3500 Stations and 3200 Stations shipped after 2/1/24	3671D	

MISCELLANEOUS SENSOR CABLES		
Item Description	Item #	
GENERAL INPUT CABLES Connect Non-WatchDog Sensors to your WatchDog Station Range (3673): 0 to 3V Accuracy: ±0.005V Range (3674): 0 to 20.1mA Accuracy: ±1% COMPATIBILITY: WatchDog Pups, 3000, 2000 and 1000 Stations	3673 0-3V Input Cable	
	3674 4-20mA Input Cable	
SENSOR EXTENSION CABLE 20' (6m) Extension for all sensors (except digital) Connect up to 3 cables per sensor to extend reach COMPATIBILITY: WatchDog Pups, 3000, 2000 and 1000 Stations	3664	
MISCELLANEOUS ACCESSORIES		
Item Description	Item #	
TRIPOD MOUNT Rugged galvanized steel folding tripod and 3' (1m) pole COMPATIBILITY: WatchDog Pups, 3000 and 2000 Stations	3396TPS <i>(with ground stakes)</i>	
	3396TP <i>(without ground stakes)</i>	
BIRD GUARD Reduce debris and maintenance and improve accuracy Adjustable to fit 8" (20.3cm) diameter rain collectors COMPATIBILITY: WatchDog Pups, 3000 and 2000 Stations, Rain Collectors for WatchDog Stations/Loggers/Pups (3665R, 3665RD)	3665BG	
RADIATION SHIELD Protect your Micro Station or Data Logger from rain and measurement distorting solar radiation COMPATIBILITY: WatchDog Micro Stations and A-Series Data Loggers	3663	
SLIDING ENCLOSURE Water resistant, mounts to pole or post COMPATIBILITY: WatchDog Micro Stations	3658A	
WATERPROOF ENCLOSURE Clamshell enclosure COMPATIBILITY: WatchDog Micro Stations (Models 1400/1200 plus soil sensors)	3659WD1	
ALARM OUTPUT MODULE Triggers an external device based on a sensor reading COMPATIBILITY: WatchDog 2000 Stations (Full and Mini)	3672	



COMMUNICATION OPTIONS		
Item Description	Item #	
<p>WATCHDOG DATA SHUTTLE Transport weather data from your 2000 Series Weather 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). Requires SpecWare Basic or Pro. COMPATIBILITY: WatchDog 1000 and 2000 Mini and Full Stations</p>	3679WD1	
COMMUNICATION CABLES		
Item Description	Item #	
<p>DIRECT CONNECT CABLES (3500/2000 MODELS) Connect your WatchDog Weather Station directly to your PC with a 75' (22.8m) cable that has a 9-pin serial connection on PC end May require USB adapter (Item #3661U9) COMPATIBILITY: WatchDog 3500 and 2000 Stations and 3200 Stations shipped after 2/1/24</p>	3660-75SP (includes surge protectors for both ends of the cable connection)	
	3660DP (includes AC adapter, no surge protectors)	
<p>DIRECT CONNECT CABLES (3200 MODELS) Connect your WatchDog Weather Station directly to your PC with a 75' (22.8m) cable that has a 9-pin serial connection on PC end May require USB adapter (Item #3661U9) COMPATIBILITY: WatchDog Retrievers and 3200 Stations shipped prior to 2/1/24</p>	3927C75	
<p>SHORT RANGE MODEM PAIR Use short range modems to maintain signal on wired connections up to 4,000' (1.2km) using a 9-pin serial connection on PC end May require USB adapter (Item #3661U9) COMPATIBILITY: WatchDog Retrievers, 3000 and 2000 Stations</p>	3365WD3	
<p>USB TO 3.5MM STEREO PLUG ADAPTER Connect WatchDog and FieldScout devices directly to your computer's USB port COMPATIBILITY: WatchDog 2000 and 1000 Stations and most FieldScout Devices except TDR's and TruFirms</p>	3661U	
<p>USB TO 9-PIN SERIAL ADAPTER Connect 9-pin serial cables (such as Item #3660-75SP) directly to your computer's USB port COMPATIBILITY: WatchDog Direct Connect Cables and Short Range Modem Pair</p>	3661U9	

MEASURE & RECORD WIND SPEED WITH THE WATCHDOG PORTABLE WIND METER

Pesticides can be harmful...to us, to surrounding crops, plants or livestock.....anything within range of the spray area.

Complaints, crop damage and livestock loss are all possible without documentation of wind speed and direction at the time of spraying. Avoid drift complaints with the WatchDog Portable Wind Sensor! This measurement tool uses ultrasonic technology and bluetooth connection so you can see the conditions when you are ready to spray. Not only does it display the wind speed and direction real time via the app, but it provides you with the ability to email data logs to keep a record of conditions each time you spray!



2023-05-19 08:44:14 CDT	
Lat: 41.739416	Long: -88.228052
Wind Speed: 4.5 mph	Direction: 34° NE
Temperature: 63.8 °F	Humidity: 78%
Barometer: 29.93 in Hg	DeltaT: 4.6 °F
Device: EF:A7:78:9D:47:76	Battery: 20%

Log Record

USE THE FREE APP!



- Scan to download the WatchDog Wind app
- Follow the prompts to calibrate the compass on your phone
- Once calibrated, complete set up instructions and start recording data
- Email records directly from the app

NO MOVING PARTS

- Immediate and precise measurements
- Portable design for spot measurements

CREATE SPRAY RECORDS

- Choose data by a specific day or date range
- Email records directly from the app
- Make informed pesticide application decisions

AVOID NEGATIVE IMPACT FROM DRIFT

- Improve pesticide coverage on targeted area
- Ensure safety of surroundings
- Address legal issues with accurate, *time stamped* data

DEMONSTRATE GOOD STEWARDSHIP

Item #	Item Description
3348P	WatchDog Portable Wind Sensor (includes mounting bracket, wireless charger, wall plug and stabilizer)
Product Specifications	
WIND SPEED: Range: 1 to 25m/s (2.24mph to 56mph) Accuracy: ±0.3m/s @ 10m/s (0.67mph @ 22.4mph)	WIND DIRECTION Range: 0° to 359° Accuracy: ±1°
ANEMOMETER DIMENSIONS: Diameter/Height: 1.69" (43mm) / 1.85" (47mm) Weight: 2.8oz (78g) Height with Phone Mount: 5.6" (144mm) Width with Phone Mount: 3.43" to 5.28" (87mm to 134mm) Phone Width Capacity: 2.28" to 4.13" (58mm to 105mm) Weight with Phone Mount: 5.4oz (152g)	MISCELLANEOUS: Sensors: 4 Ultrasonic Transducers Compatibility: WatchDog Wind App Power: Rechargeable Battery (Qi Wireless Charger Included) Battery Run Time: 150 Hours of Active Use IP Code: IPX8

AVOID DRIFT COMPLAINTS WITH THE WATCHDOG SPRAYER STATION

Don't let misapplication of herbicides cost you. Let our sprayer station with an ultrasonic anemometer help you put pesticides ONLY where they belong.



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 applications. 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

Measure Wind Speed/Direction and Chill, Air Temperature, Barometric Pressure, Humidity and Dew Point. The WatchDog Sprayer Station computes true wind speed.

HOW DOES IT WORK?

- Continuously log your weather parameters at a user selectable rate or select the snapshot button on the console 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

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)

2.75" (7 cm)

12.75" (33cm)



WatchDog

Item #	Item Description
3349SSCH	WatchDog Sprayer Station with Console <i>See data on the display and/or download directly from the console</i>
3349SSH	WatchDog Sprayer Station <i>Includes sensor unit with magnetic base, 21' (7m) cable with vehicle power and 9-pin serial connector integrates with Raven and AGCO controllers</i>
3349CN	WatchDog Sprayer Station Console <i>Includes console with built-in data logger, USB to 3.5mm stereo cable</i>
3349H	Replacement Humidity Sensor
3661U9	USB to 9-Pin Serial Adapter

Product Specifications	
WIND SPEED: Range: 0 to 90mph (0 to 145km/hr) Accuracy: <12mph (19km/h) = ±1.1mph (1.7km/h) or ±10% >12mph (19km/h) = ±2.3mph (3.7km/h) or ±5%	WIND DIRECTION Accuracy: 4 to 11mph (6 to 18km/h) = ±5° >12mph (19km/h) = ±2°
WIND RESOLUTION: Direction: 1° Speed: 0.1mph (0.2km/hr)	WIND ACCURACY TEMPERATURE RANGE: 32°F to 131°F (0°C to 55°C)
TEMPERATURE: Range: -13°F to 131°F (-25°C to 55°C) Accuracy: ±2°F (±1.1°C) with wind > 4.6mph (7.4km/h)	RELATIVE HUMIDITY: Range: 10% to 95% Accuracy: ±5% with wind > 4.6mph (7.4km/h)
BAROMETRIC PRESSURE: Range: 24in-Hg to 33in-Hg (800hPa to 1100hPa) Accuracy: ±0.029in-Hg (±1hPa)	



	ITEM #	ITEM DESCRIPTION	SpecConnect Compatible	LCD Display	Wireless	Evapotranspiration (ET)	Alarm Output Ready (Item #3672)	Temperature Sensor
3000 Series Wireless Stations	3550xx	ET Station (extra ports)	✓		✓	✓		✓
	3250xx	ET Station	✓		✓	✓		✓
	3540xx	Standard Station (extra ports)	✓		✓			✓
	3240xx	Standard Station	✓		✓			✓
	3230xx	Plant Growth Station	✓		✓			✓
	3230xxP	Plant Growth Station Pro	✓		✓			✓
	3230xxA	Plant Growth Station Aspirated	✓		✓			✓
	3220xx	Rain Station	✓		✓			✓
	3210xx	Frost Station	✓		✓			✓
	3580xx	Sensor Station	✓		✓			OPT
2000 Series Mini Stations	3686WDS	2475 Plant Growth Mini Station	✓	✓	OPT		✓	✓
	3684WD	2450 Frost Mini Station	✓	✓	OPT		✓	✓
	3683WD	2425 Temp Mini Station	✓	✓	OPT		✓	✓
	3685WD	2400 Sensor Mini Station	✓	✓	OPT		✓	
Retriever & Pups Wireless Network	3550DU	ET Pup Station	✓		✓	✓		✓
	3250DU	ET Pup Station	✓		✓	✓		✓
	3540DU	Standard Pup Station	✓		✓			✓
	3240DU	Standard Pup Station	✓		✓			✓
	3220DU	Rain Pup Station	✓		✓			✓
	3900PG	Plant Growth Pup Station	✓		✓			✓
	3900	Sensor Pup	✓		✓			OPT
	3902	Repeater Pup	✓		✓			
1000 Series Micro Stations	3685SM14	Irrigation Station		✓				
	3684PAR1	Plant Growth Station		✓			✓	✓
	3688WD1	1650 Frost Micro Station		✓			✓	✓
	3687WD1	1525 Temp Micro Station		✓			✓	
	3684WD1	1450 Frost Micro Station		✓			✓	✓
	3683WD1	1425 Temp Micro Station		✓			✓	
	3685WD1	1400 Sensor Micro Station		✓				
	3682WD1	1250 Frost Micro Station		✓			✓	✓
	3681WD1	1225 Temp Micro Station		✓			✓	
	3680WD1	1200 Sensor Micro Station		✓				
A-Series Data Loggers	3611A	A160 Temp/RH/CO ₂ Logger		✓			✓	✓
	3612A	A150 Temp/RH Logger		✓			✓	✓
	3610A	A130 Leaf Wetness/Temp Logger		✓			✓	
	3617A	A125 Soil/Air Temp Logger		✓			✓	
	3617ARS	A125 Soil/Air Temp Logger		✓			✓	
	3618A	A110 Temp Logger		✓			✓	
Sprayer Station	3349SSCH	Sprayer Station with Console		✓			✓	✓

Relative Humidity Sensor
Dew Point (Computed)
Wind Speed/Direction
Tipping Bucket Rain Collector
Solar Radiation Sensor (Item #35700)
Available Sensor Ports
Quantum Light Sensor (Item #3688S)
Exterior Soil Temperature Sensor (Item #3667)
Leaf Wetness Sensor (Item #3666)
WaterScout SM100 Sensor (Item #6460)
WaterScout SMEC300 Sensor (Item #6470-6)
Digital Sensor Compatible (*see compatibility, page 19)
Radiation Shield

✓	✓	✓	✓	✓	5	OPT	OPT	OPT	OPT	OPT	✓	P
✓	✓	✓	✓	✓	1	OPT	OPT	OPT	OPT	OPT	*	P
✓	✓	✓	✓	OPT	6	OPT	OPT	OPT	OPT	OPT	✓	P
✓	✓	✓	✓	OPT	2	OPT	OPT	OPT	OPT	OPT	*	P
✓	✓	OPT	OPT	OPT	1	✓	OPT	OPT	OPT	OPT	*	P
✓	✓	OPT	OPT	OPT	1	3688A	OPT	OPT	OPT	OPT	*	P
✓	✓	OPT	OPT	OPT	1	3688A	OPT	OPT	OPT	OPT	*	A
✓	✓	OPT	✓	OPT	2	OPT	OPT	OPT	OPT	OPT	*	P
✓	✓	OPT	OPT	OPT	2	OPT	OPT	OPT	OPT	OPT	*	P
OPT		OPT	OPT	OPT	8	OPT	OPT	OPT	OPT	OPT	✓	
✓	✓		OPT	OPT	1	✓	OPT	OPT	OPT	OPT		P
✓	✓		OPT	OPT	2	OPT	OPT	OPT	OPT	OPT		P
			OPT	OPT	3	OPT	OPT	OPT	OPT	OPT		P
			OPT	OPT	4	OPT	OPT	OPT	OPT	OPT		
✓	✓	✓	✓	✓	5	OPT	OPT	OPT	OPT	OPT	✓	P
✓	✓	✓	✓	✓	1	OPT	OPT	OPT	OPT	OPT	✓	P
✓	✓	✓	✓	OPT	6	OPT	OPT	OPT	OPT	OPT	✓	P
✓	✓	✓	✓	OPT	2	OPT	OPT	OPT	OPT	OPT	✓	P
✓	✓		✓	OPT	2	OPT	OPT	✓	OPT	OPT	✓	P
✓	✓	OPT	OPT	OPT	2	✓	OPT	OPT	OPT	OPT	✓	A
OPT		OPT	OPT	OPT	4	OPT	OPT	OPT	OPT	OPT	✓	P
					0							
					0				✓ (4)			
✓					1	✓	OPT	OPT	OPT	OPT		P
✓			OPT	OPT	4	OPT	OPT	OPT	OPT	OPT		
			OPT	OPT	4	OPT	OPT	OPT	OPT	OPT		
✓			OPT	OPT	2	OPT	OPT	OPT	OPT	OPT		
			OPT	OPT	3	OPT	OPT	OPT	OPT	OPT		
			OPT	OPT	4	OPT	OPT	OPT	OPT	OPT		
✓					0							
			OPT	OPT	1	OPT	OPT	OPT	OPT			
			OPT	OPT	2	OPT	OPT	OPT	OPT	OPT		
✓					0					+CO ₂		
✓					0							
					0			✓				
					0			✓				P
					0							
✓	✓	✓			0							

WHAT IS A TDR?

TDR, short for Time Domain Reflectometry, accurately measures soil moisture across a full range of soil conditions. With multiple rod length options to suit various root zones, the TDR can be used anywhere.

WHAT DOES A TDR MEASURE?

A TDR accurately measures soil moisture as volumetric water content % (VWC), electrical conductivity (EC/salts), and surface temperature. When the TDR is inserted into the soil, the sensor on the bottom plate measures the surface temperature. The rods send an electromagnetic wave through the surrounding soil. Some energy is absorbed into the soil and the rest reflects back, capturing VWC and EC and providing an instantaneous reading on the display.

WHAT ARE THE BENEFITS OF USING A TDR?

- Portable design for instant, accurate and actionable root zone VWC and EC readings
- Drives informed, data based decisions for irrigation scheduling, syringing practices and soil flushes
- Allows trend tracking to optimize soil health and conditioning
- Improve turf health and save on labor costs with more knowledge about the state of your course
- Increase crop yield and profits by providing your crops with the best growing conditions possible



WHAT ACCESSORIES ARE AVAILABLE?

- **Rods:** Multiple lengths are available for various root zones 1.5" (3.8cm), 3" (7.6cm), 4.8" (12.2cm), 8" (20cm)
Rods are required and sold separately
- **TDR Spacer:** Optional for use in TDR300 Mode* on all TDR Models when using 1.5" (3.8cm) rods to measure 0.5" (1.3cm) and 1" (2.5cm) depths. Ideal when you want to measure VWC close to the surface, especially on turf when firmness is important.



*TDR300 Mode does not adjust VWC for EC

- **Infrared Temperature Sensor:** Optional for use with TDR350/150 models
 - Predict turf wilt with higher accuracy
 - Correct a moisture deficit earlier and reduce heat stress
 - Quickly and accurately measure surface temperature
 - Use IR temperature for real time, instantaneous readings



HOW DO I VIEW THE DATA?

Data viewing varies by TDR model and is an important factor to consider when choosing which one is the right fit.

Manual (TDR350/250/150): View readings on the TDR display screen. Download the raw data with a USB flash drive. No special software or cable is required.

Hands Free (TDR350/150): View data instantly as you take readings in the FieldScout App

SpecConnect (TDR350/150): Add a SpecConnect FieldScout Pro subscription and all of your data is automatically sent to the cloud where you can view it in your personal web portal and take advantage of enhanced mapping and reporting features.

TDR350 - Measures VWC/EC/Surface Temperature

Our most robust model, the TDR350's ergonomic design allows you to adjust the height of the meter to suit you and avoid unnecessary bending.

Equipped with integrated Bluetooth and GPS, view real time data on the backlit display and in the FieldScout app as measurements are taken. With a SpecConnect FieldScout Pro subscription, data is automatically uploaded to your portal. The internal data logger records approximately 50,000 measurements with GPS coordinates.

VWC Range: 0% to Saturation, **Resolution:** 0.1%, **Accuracy:** $\pm 3\%$ VWC

EC Range: 0 to 5mS/cm, **Resolution:** 0.01mS/cm, **Accuracy:** ± 0.1 mS/cm

Temperature Range: -22°F to 140°F (-30°C to 60°C), **Resolution:** 0.2°F (0.1°C), **Accuracy:** ± 1.8 °F (1°C)

IR Temperature Range: 32°F to 140°F (0°C to 60°C), **Resolution:** 0.2°F (0.1°C), **Accuracy:** ± 0.2 °F (0.1°C)



TDR150 - Measures VWC/EC /Surface Temperature

The TDR150 is a more compact meter, ideal for measuring plants in greenhouses and nurseries.

Equipped with integrated Bluetooth and GPS, view real time data on the backlit display and in the FieldScout app as measurements are taken. With a SpecConnect FieldScout Pro subscription, data is automatically uploaded to your portal. The internal data logger records approximately 50,000 measurements with GPS coordinates.

VWC Range: 0% to Saturation, **Resolution:** 0.1%, **Accuracy:** $\pm 3\%$ VWC

EC Range: 0 to 5mS/cm, **Resolution:** 0.01mS/cm, **Accuracy:** ± 0.1 mS/cm

Temperature Range: -22°F to 140°F (-30°C to 60°C), **Resolution:** 0.2°F (0.1°C), **Accuracy:** ± 1.8 °F (1°C)

IR Temperature Range: 32°F to 140°F (0°C to 60°C), **Resolution:** 0.2°F (0.1°C), **Accuracy:** ± 0.2 °F (0.1°C)



TDR250 - Measures VWC

The TDR250 offers the same technology with 20% less investment. The height of the meter cannot be adjusted with this model and it does not have Bluetooth and GPS integration.

View real time data on the backlit display as measurements are taken. The internal data logger records approximately 124,000 measurements. The device features a USB port to download the data.

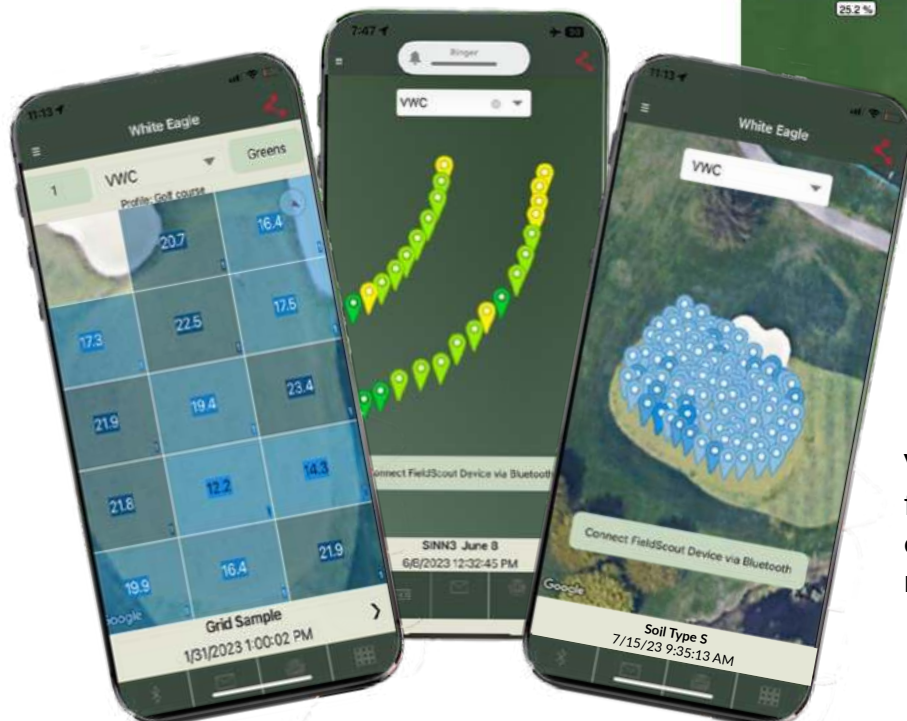
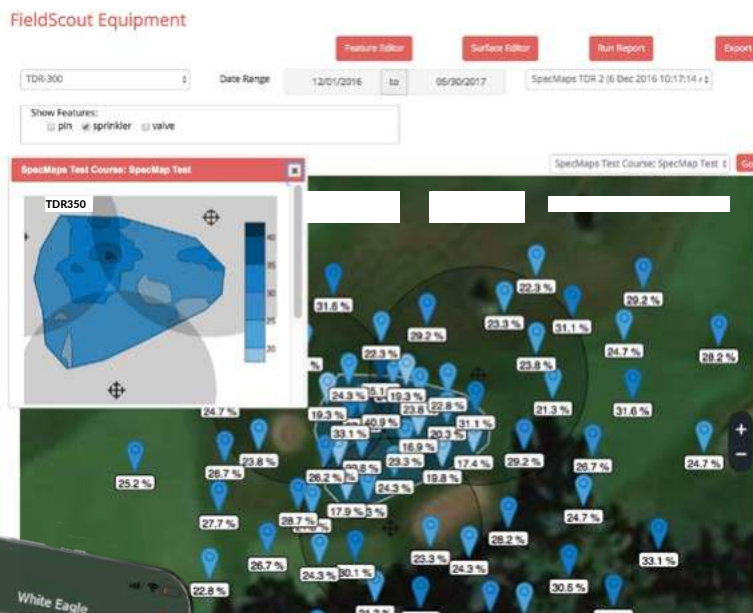
VWC Range: 0% to Saturation, **Resolution:** 0.1%, **Accuracy:** $\pm 3\%$ VWC



FieldScout TDR Soil Moisture Meter Product Options

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View data on the SpecConnect web portal. See soil moisture readings at different points to know what areas require more irrigation. Manipulate the data with a variety of reporting options.



View data in the FieldScout App. Choose from Grid Mode or Freeform depending on what you are measuring and what method would be most beneficial to you.

Item #	Item Description
6435	TDR350 Soil Moisture Meter With Carrying Case <i>Rods required but sold separately</i>
6250	TDR250 Soil Moisture Meter <i>Rods required but sold separately, carrying case sold separately</i>
6445	TDR150 Soil Moisture Meter With Carrying Case <i>Rods required but sold separately</i>
6430CASE	Carrying Case <i>Fits TDR250 and TDR350 Meters</i>
6428FS4	Two 1.5" (3.8cm) Rods
6429FS4	Two 3" (7.6cm) Rods
6431FS4	Two 4.8" (12cm) Rods
6432FS4	Two 8" (20cm) Rods
6430PH	Pilot Hole Maker for TDR Meters <i>Includes (2) 3" (7.6cm) Rods</i>
6435SP	Rod Spacer
6435TS	Infrared Temperature Sensor for TDR350
6445TS	Infrared Temperature Sensor for TDR150

WATERSCOUT SENSORS

Our two WaterScout soil moisture sensors are perfect options when you want data points at multiple soil depths to better determine irrigation needs.

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WaterScout
Soil Moisture
Sensors

SM100 Soil Moisture Sensor

- Measures Volumetric Water Content (VWC%) of soil
- Capacitance type sensor that responds immediately to changes in soil moisture content
- Use in mineral soils or soil-less media
- Take spot measurements or install permanently



SMEC300 Soil Moisture Sensor

- Measures Volumetric Water Content (VWC%), Electrical Conductivity (EC) and Temperature of soil
- Capacitance type sensor that responds immediately to changes in soil moisture content
- WaterScout Calibration Device (Item #6470CAL3V) required unless using the Soil Sensor Reader (Item #6466) to view the data



HOW DO I VIEW THE DATA?

Sensors can be read with the FieldScout Soil Sensor Reader or in the WatchDog App when connected to a WatchDog 3000, 2000 or 1000 Series Station or a WatchDog Sensor Pup.



Item #	Item Description
6460	WaterScout SM100 Sensor with 6' (1.8m) Cable
6460-20	WaterScout SM100 Sensor with 20' (6m) Cable
6470-6	WaterScout SMEC300 Sensor with 6' (1.8m) Cable
6470-20	WaterScout SMEC300 Sensor with 20' (6m) Cable
6470CAL3V	WaterScout Calibration Device
2251	Conductivity Standard, 1.41mS/cm, 250mL
6466	FieldScout Soil Sensor Reader

Product Specifications		
	WaterScout SM100	WaterScout SMEC300
Accuracy	3% VWC @ EC <8mS/cm	VWC: 3%, EC: ±2% Temperature: ±1°F (0.6°C)
Range	0% VWC to Saturation	VWC: 3%, EC: ±2% Temperature: ±1°F (0.6°C)
Temperature	NA	33°F to 175°F (0.5°C to 80°C)
Resolution	0.1% VWC	VWC: 0.1%, EC: 0.01mS/cm Temperature: ±1°F (0.6°C)
Power Requirements	3V to 5V @ 6mA to 10mA	3V @ 6mA to 10mA
Output	Analog Voltage 0.5V to 1.5V for a 3V Excitation <i>(ratiometric for other excitation voltages)</i>	Analog Voltage Time Division Multiplexed
Sensing Area	2.4" x 0.8" (2.4cm x 2cm)	2.25" x 0.75" (5.7cm x 2cm)

WATERMARK SOIL MOISTURE SENSOR

An economical way to measure soil moisture tension

- Compatible with WatchDog Weather Stations and the FieldScout Soil Sensor Reader
- Reads moisture tension from 0 (saturated) to 200 (dry) centibars

Item #6450



Item #	Item Description
6450	Watermark Soil Moisture Sensor with 5' (1.5m) pigtail cable (not compatible with WatchDog Station)
6450FSADPT	Watermark Adapter for Soil Sensor Reader
6450WD	Watermark Sensor for WatchDog Station & Pups with 11' (3.3m) cable
6450WD20	Watermark Sensor for WatchDog Stations & Pups with 25' (7.6m) cable
6450AH	Watermark Adapter for WatchDog Stations & Pups

IRROMETER TENSIO METERS

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

- "SR" Models (Items #6419 through 6423) are for general use with field or tree crops
- Low Tension (LT) models are for coarse soils or soil-less media
- Portable models for specialized applications
- Pressure gauge has a quarter inch pipe thread



Item #6420

Item #	Item Description
6419	Tensiometer SR Model 6" (15cm) Depth
6420	Tensiometer SR Model 12" (30cm) Depth
6421	Tensiometer SR Model 18" (45cm) Depth
6422	Tensiometer SR Model 24" (60cm) Depth
6423	Tensiometer SR Model 36" (90cm) Depth
6425	Tensiometer Service Kit (REQUIRED)
9917	Tensiometer SR Model Tip Replacement

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

Item #	Item Description
6400	Soil Moisture Tester 9" (22cm)
6405	Soil Moisture Tester 24" (60cm)



Item #6400

WHAT IS AN IRRIGATION STATION?

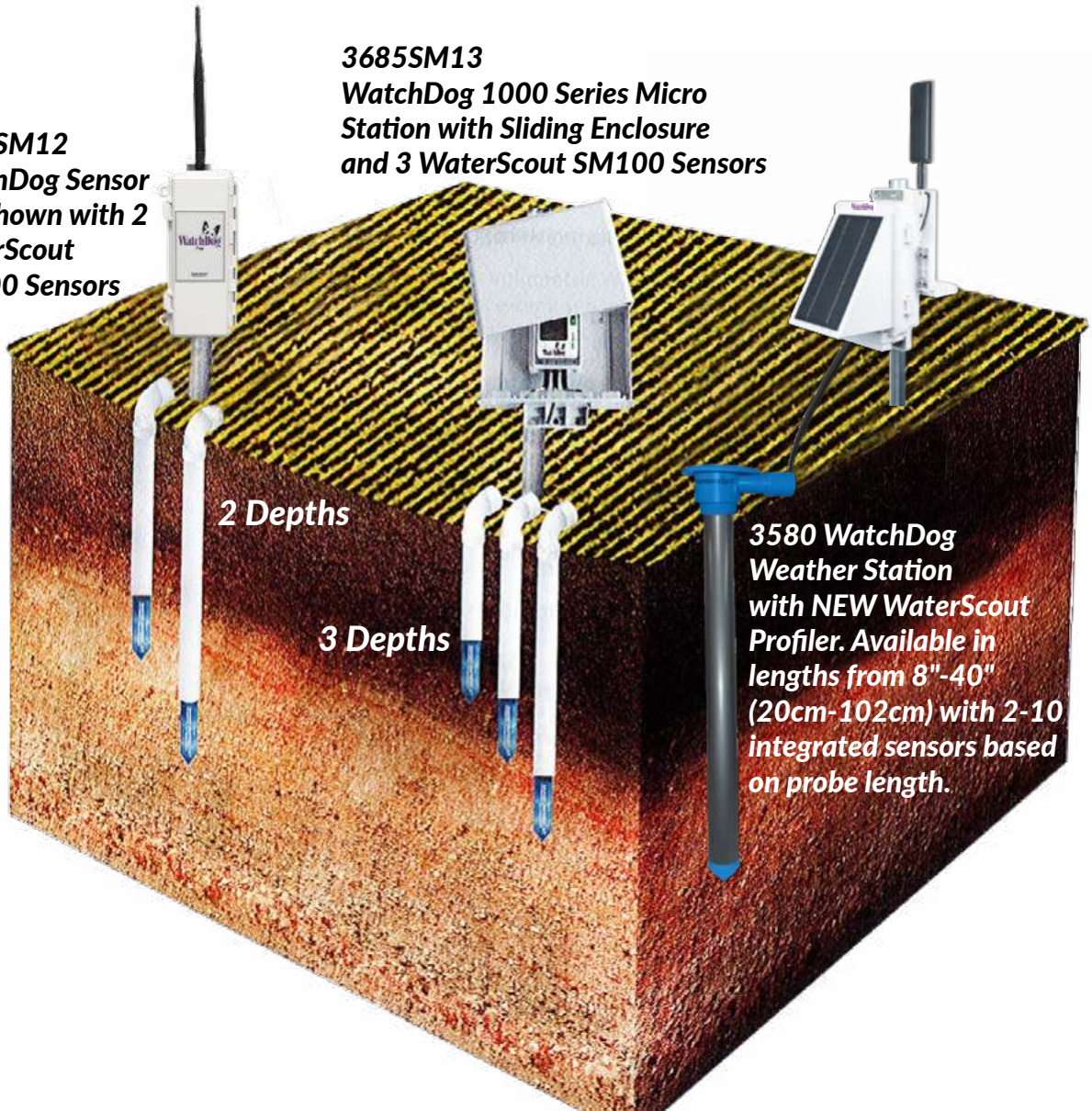
An irrigation station is a preset package with either a WatchDog Micro Station or Sensor Pup and anywhere from 2 to 4 WaterScout or Watermark Soil Moisture Sensors. Bundling these options provides an affordable way to measure multiple soil depths at once.

- WaterScout Stations include WaterScout Sensors with 20' (6m) cables
- Watermark Stations include Watermark Soil Moisture Sensors with 11' (3.3m) cables
- Micro Stations include a protective sliding enclosure
- Requires a SpecConnect subscription or SpecWare Software

Model	2 WaterScout SM100 Soil Moisture Sensors	3 WaterScout SM100 Soil Moisture Sensors	4 WaterScout SM100 Soil Moisture Sensors	3 Watermark Soil Moisture Sensors	4 Watermark Soil Moisture Sensors
Model 1200 Micro Station	3680SM12	NA	NA	NA	NA
Model 1400 Micro Station	3685SM12	3685SM13	3685SM14	3685WM13	3685WM14
Sensor Pup Irrigation Station	3900SM12	3900SM13	3900SM14	NA	NA

3680SM12
WatchDog Sensor Pup shown with 2 WaterScout SM100 Sensors

3685SM13
WatchDog 1000 Series Micro Station with Sliding Enclosure and 3 WaterScout SM100 Sensors



3580 WatchDog
Weather Station with NEW WaterScout Profiler. Available in lengths from 8"-40" (20cm-102cm) with 2-10 integrated sensors based on probe length.

WHAT IS A DIRECT SOIL EC METER?

Electrical Conductivity (EC) is affected by salts in the soil. This measurement allows you to better understand the nutritional needs of your plants. It can indicate either a surplus or deficiency so you can take proper action to maintain healthy turf/crops/plants.

- Instant and accurate EC and temperature measurements
- Professional grade meter
- No need to prepare a slurry; sample directly in ground soil, plug trays, pots, containers or solutions
- Patented soil sensor tip design provides maximum contact and higher accuracy
- Reads 0 to 19.9mS/cm (Accuracy: $\pm 1\%$, Resolution: 0.01mS/cm)
- Automatic temperature compensation, long lasting, waterproof
- Includes battery and EC calibration standard

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FieldScout
Direct Soil
EC Meter



FieldScout Direct Soil EC Meter
with 24" (60cm) T-Handle Sensor



Item #	Item Description
2266FS	FieldScout Direct Soil EC Meter with 8" Probe (Includes carrying case and 2.76 Standard)
2266PROBE	FieldScout EC 8" Replacement Probe
2266FSTP	FieldScout Direct Soil EC Meter with 24" T-Handle Probe with Replaceable Tip (Includes carrying case and 2.76 Standard)
2266FST24P	FieldScout T-Handle EC 24" T-Handle Replacement Probe with Replaceable Tip
2266	FieldScout Replaceable Tip for EC 24" T-Handle Probe
2251	Conductivity Standard, 1.41mS/cm, 250mL

Exclusive Patented Paired Sensor

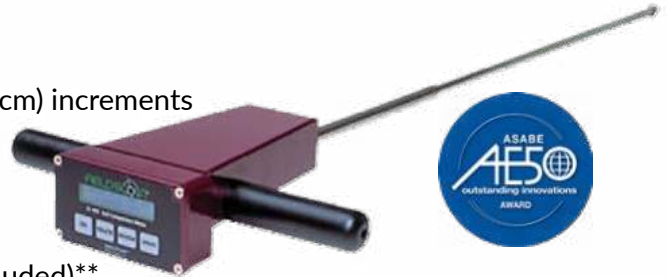


WHAT IMPACT DOES SOIL COMPACTION HAVE?

Soil compaction compresses soil particles, reducing the available air space, making the movement of water through the roots difficult. This inhibits the growth of plant roots, negatively affecting crops, plants, and turf health. Using a soil compaction meter helps guide decisions regarding areas of the field that require tillage, changes to crop rotation and planting of cover crops.

FIELDSCOUT SC900

- Includes 1/2" (1.3cm) and 3/4" (1.9cm) cone tip
- Takes compaction readings every inch from 0" to 18" (45cm)
- Exclusive ultrasonic depth sensor captures readings in 1" (2.5cm) increments
- Penetration resistance measured by internal load cell
- Compaction data is displayed in psi or kPa (1psi = 6.9kPa)
- Connects to any GPS receiver with a serial output option*
- Equipped with an 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: GPS/DGPS cable (Item #2950CV5) available from Spectrum and the PC serial interface cable supplied by the manufacturer of the GPS receiver

**PC cable connects to a computer USB port

Product Specifications	
Measurement Units	Cone Index (psi or kPa)
Resolution	1" (2.5cm), 5psi (35kPa)
Accuracy	±0.5" (1.25cm) Depth, ±15psi (103kPa) Pressure
Range	0 to 18" (0 to 45m), 0 to 1,000psi (0 to 7,000kPa)
Battery/Life	4 AAA Alkaline Batteries; Approximately 12-Month Life
Data Logger Capacity	772 Profiles without GPS, 579 Profiles with GPS



SOIL COMPACTION TESTER

- Economical way to measure soil compaction with analog readout
- Small and large tips included with convenient storage in tester housing
- 24" (60cm) 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 is liquid filled to reduce shock
- Durable molded housing with rubber grip handles
- Penetration Depth: Up to 24" (60cm) in 3" (7.6cm) increments



Item #	Item Description
FieldScout SC900 Soil Compaction Meter and Accessories	
6110FS	FieldScout SC900 Soil Compaction Meter
2950CV5	GPS/DGPS Cable
7250	GPS Unit Mounting Bracket
6106	1.5" (3.8cm) Replacement Tip (Fine Soils)
6107	3/4" (7.6cm) Replacement Tip (Coarse Soils)
Soil Compaction Tester	
6120	Soil Compaction Tester
6121	1.5" (3.8cm) Replacement Tip (Fine Soils)
6122	3/4" (7.6cm) Replacement Tip (Coarse Soils)

FIRM GREENS MEAN HAPPY GOLFERS!

Avoid soggy greens that prevent the ball from bouncing toward the putting green and make chip shots more difficult. Measure turf firmness and understand irrigation needs to firm up turf to ensure happy golfers will rave about your course!



The relationship between the compaction of the soil and the moisture level to quantify safety and performance of playing conditions. The TruFirm measures 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
- Perfect for golf course greens, approaches, bunker sands and fairway landing areas for achievement of optimal surface performance and consistency
- Useful on natural and artificial turf playing surfaces, infield dirt, turf and clay tennis courts, cricket pitches, bowling greens and racing tracks
- Track and trend data over time to better understand effects of turf inputs and optimize conditioning, playability and safety

FEATURES & BENEFITS

- Easy to Use - Simply raise and drop the hammer in one motion on the surface you are measuring and get immediate digital results on the device screen
- Mobile App - Compatible with the FieldScout app using bluetooth connection; add satellite mapping with automatic upload to the SpecConnect cloud with purchase of a SpecConnect FieldScout Pro license
- Objective Values - analyze and compare the impact of environmental and maintenance inputs on play
- Self Contained - all in one unit, easy to carry
- Affordable - add TruFirm to your toolbox with confidence

HOW DO I VIEW THE DATA?

Hands Free: View data instantly as you take readings on the FieldScout App

SpecConnect: Add a SpecConnect FieldScout Pro subscription and all of your data is automatically sent to the cloud where you can view it in your personal web portal and take advantage of enhanced mapping and reporting features.

Item #	Item Description
6490S	FieldScout TruFirm Turf Firmness Meter
Product Specifications	
Diameter of Hammer	1.68" (4.45cm)
Measurement Units	Depth of Travel (inches)
Resolution	0.01" @ 1" to 1.5" (0.3mm @ 25.3mm to 38.1mm)
Range	0.1" to 1.5" (2.5mm to 38.1mm)
Battery	2AA Batteries (included)
Height	27" (69cm)
Weight	4.3lb (1.95kg)

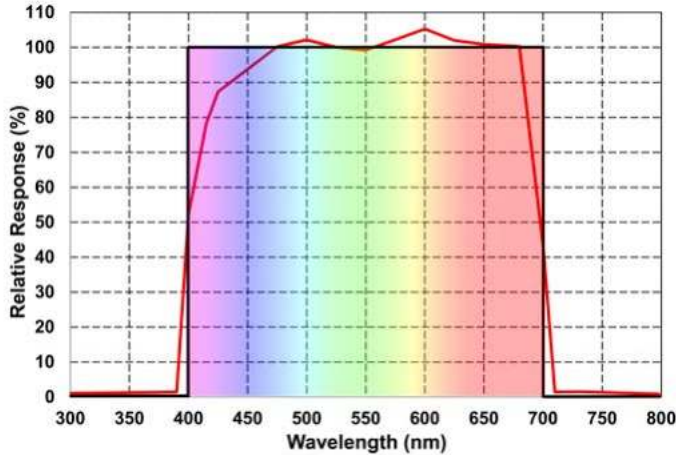
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FieldScout TruFirm
Turf Firmness
Meter



WHY MEASURE LIGHT?

While water is of key importance to the health and heartiness of plants, it is easy to overlook the impact of light. The amount of light a plant receives can vary significantly based on time of day, location and when/if a shade cloth or white wash is being utilized.



FULL SPECTRUM QUANTUM PAR LIGHT SENSORS/METERS

These sensors accurately measure light intensity across the full PAR (Photosynthetic Active Radiation) spectrum, including LED lights

- Integrates multiple optical detector elements to accurately measure light across the entire PAR spectrum from all light sources, including narrowband LED
- Perfect for all artificial light installations as well as locations supplementing natural light with LED's

Light transmission loss can be 40%-70% from outside to inside a greenhouse. Add in the timing of pulling shade cloth and the loss can be even greater. If you don't measure how much light your plants are receiving, they will not achieve their quality and profit potential!

<p>LightScout Full Spectrum Quantum PAR Light Sensor</p> <p><i>Plug sensor into any compatible WatchDog 3000 or 2000 Station/Pup</i></p> <p><i>Use with the LightScout External Light Sensor Meter (Item #3415FX)</i></p>		<p>Item #3668A</p>
<p>LightScout Full Spectrum Quantum PAR Light Meter with Internal Sensor</p> <p><i>Measure PAR light outside, inside, or at the bench</i></p>		<p>Item #3415Z</p> <p><i>(Includes soft sided carrying case and 2 AAA batteries)</i></p>
<p>LightScout Full Spectrum Quantum PAR Light Meter with External Sensor</p> <p><i>Ideal for measuring PAR light in vertical farms or hanging baskets.</i></p> <p><i>Includes 4.9' (1.5m) coiled cable for handheld measurements as well as a selfie stick with a 12' (3.7m) straight cable to extend your measuring reach</i></p>		<p>Item #3415ZX</p> <p><i>(Includes hard shelled plastic case and AAA batteries)</i></p>

DLI LIGHT METERS

The daily light integral (DLI) measures the total amount of PAR within a 24-hour period. Grow healthier, greener plants by measuring their precise light intake.

QUANTUM PAR/DLI LIGHT METER

- Provides accurate PAR light reading from ANY light source
 - Full sun to full shade, indoors or outdoors
 - Artificial light sources (LED, High Pressure Sodium, Metal Halide, Fluorescent, Halogen, etc)
- Three modes of operation
 - Instant spot measurement mode for PAR light readings
 - Scan mode for quickly averaging PAR over an area
 - DLI mode shows Daily Light Integral on the LCD display (*no computer needed*)



Item #3415A

- Integral mounting plate for stand, stake, lanyard hanger hold and magnet mounts
- 1/4" - 20" (0.64cm to 50.8cm) threaded hole for mounting on camera tripod/stand
- Includes sensor cover and soft-sided case

Generalized Plant Responses to Different Light Levels

Relative Light Level	DLI* Daily Light Integral	Light Intensity** at Noon	Generalized Plant Growth Response
Very Low	2 to 5	100 to 200	Poor Quality
Low	5 to 10	200 to 400	Minimum Acceptable
Medium	10 to 20	400 to 800	Good Quality
High	20 to 30	800 to 1,200	Excellent Quality
Very High	33 to 60	1,200 to 2,000	Excellent Quality

*Moles/Day

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

NOTE: It is not possible to make a direct conversion between an instantaneous light measurement and the Daily Light Integral. Temperature is a key factor in plant quality and growth.

SOURCE: Hamrick, Debbie, ed. Ball Red Book - Batavia, IL: Ball Publishing, 2003





Item #3405

DLI100 LIGHT METER

- Affordable and simple, one button operation
- Meter runs for 24 hours to calculate DLI
- Real-time intensity levels are shown in $\mu\text{mol}/\text{m}^2 \cdot \text{s}^{-1}$ every 4 seconds daily
- Battery included
- Greenhouse or Turf models available

Item #	Item Description
3415A	LightScout Quantum PAR/DLI Light Meter
3405G3	LightScout DLI100 Light Meter (Greenhouse, Set of 3)
3405G	LightScout DLI100 Light Meter (Greenhouse, 1 Unit)
3405T3	LightScout DLI100 Light Meter (Turf, Set of 3)
3405T	LightScout DLI100 Light Meter (Turf, 1 Unit)

	<p>EXTERNAL LIGHT SENSOR READER</p> <ul style="list-style-type: none"> • Plug in a sensor, choose it on the LCD screen and measure UV, Quantum Light or Solar Radiation • Reads any of Spectrum's external light sensors <i>(see page 19 for light sensor options)</i> 	<p>Item #3415FX</p>
	<p>RED/FAR-RED METER</p> <p>Red/Far-Red light ratio helps plants determine proximity to each other, affecting how tall or full they grow</p> <ul style="list-style-type: none"> • Cost effective • Displays the Red/Far-Red ratio on the LCD screen • Press a button to display 660nm and 730nm readings • Includes soft-sided case 	<p>Item #3412</p>
	<p>UV METER</p> <p>Monitors critical UV radiation (250nm-400nm)</p> <ul style="list-style-type: none"> • Determine UV filtering capacity of greenhouse shades and glass barriers • Range is 0 to 200$\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$ 	<p>Item #3414F</p> <p>Item #7500 Soft-Sided Carrying Case</p>
	<p>FOOT-CANDLE METER</p> <ul style="list-style-type: none"> • Displays immediate light level in units of foot-candles • Affordable light measurement solution with precision photodiode 	<p>Item #3413F</p> <p>Item #7500 Soft-Sided Carrying Case</p>

WHAT IS A SPAD METER?

A SPAD meter is a compact measurement tool used to determine the amount of chlorophyll in plant leaves without damaging them. Knowing a plant's chlorophyll content can help determine when fertilizer is needed. Understanding nutrient levels makes growing consistent, healthy plants easier so you can increase both yield and quality.

The SPAD meter is traditionally used by researchers and growers as a quick method for taking measurements. It can be used on a wide variety of plants and crops. Simply insert the leaf into the measurement head to take an instant reading that displays on the LED screen.



SPAD 502 PLUS CHLOROPHYLL METER

- Instantly measures chlorophyll content or "greenness" of your plants on a scale of -9.9 to 199
- Non-invasive, non-destructive measurement (leaf remains intact and can be remeasured throughout the growing process)
- 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

ALL THE FEATURES OF THE SPAD 502 PLUS METER AND

- Connect to any GPS receiver that has a serial output option*
- Equipped with an internal data logger and RS-232 port
- Records 4,096 measurements (1,488 with added GPS/DGPS option)
- Download FieldScout software from our website

Product Specifications

Optical Density Difference at Two Wavelengths	650nm and 940nm
Measurement Area	3/32" x 1/8" (2mm x 3mm)
Light Source	2 LED's
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

*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. Geo-referenced data can be uploaded to SpecConnect for mapping.

Item #	Item Description
2900P	Minolta SPAD 502 Plus Chlorophyll Meter (basic version, no data logger)
2900PDL	Minolta SPAD 502DL Plus Chlorophyll Meter with RS-232 data port and built in data logger (includes software and USB PC cable)
2950CV5	GPS/DGPS Cable

WHY MEASURE CHLOROPHYLL & NDVI?

A greener appearance ensures the plant or turf is receiving the right amount of light and is healthy and fruitful. Measure these values to understand plant health and make any maintenance changes.

CM1000 CHLOROPHYLL METER

- "Point-and-shoot" technology to instantly measure red (700nm) and near infrared (840m)



- 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
- Internal data logger/RS-232 port (requires software) records 3,250 measurements (1,350 with GPS/DGPS)
- Configure and download meter with FieldScout software

CM1000 NDVI METER

- "Point-and-shoot" technology to instantly measure red (660nm) and near infrared (840nm) spectral bands
- Detects stress earlier than visual monitoring



Lens View

TCM500 NDVI TURF COLOR METER

- Measures reflected light from approximately a 3" (7.6cm) diameter section of turf grass
- Uses an internal light source to negate the effect of sunny vs. cloudy conditions
- Measures reflectance in the red (660nm) and near infrared (850nm) spectral bands
- Displays results 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
- Internal data logger/RS-232 port (requires software) records 3,250 measurements (1,350 with added GPS/DGPS)
- Configure and download meter with FieldScout software
- Includes hard carrying case, batteries and TCM500 T-Handle (Item #2975H)



Turf Color Index:

Grass Index=7.20
N=10 Avg=7.44

NDVI:

NDVI = .784
N=10 Avg = .780

Product Specifications - TCM500

Measurement System	Reflectance of Red (660nm) and NIR (850nm) light
Measurement Area	Approximately 3" (7.6cm)
Measurement Units	% Reflectance (0-99.9%) of red and NIR NDVI (0-1.000); Grass Index (1.00-9.00)
Power Source	1.9V alkaline battery (included) Approximately 3,000 measurements
Repeatability	±5% of measurement

Item #	Item Description
2950	FieldScout CM1000 Chlorophyll Meter
2953	FieldScout CM1000 NDVI Meter
2975NDVI	FieldScout TCM500 NDVI Turf Color Meter
2950CV5	GPS/DGPS Cable

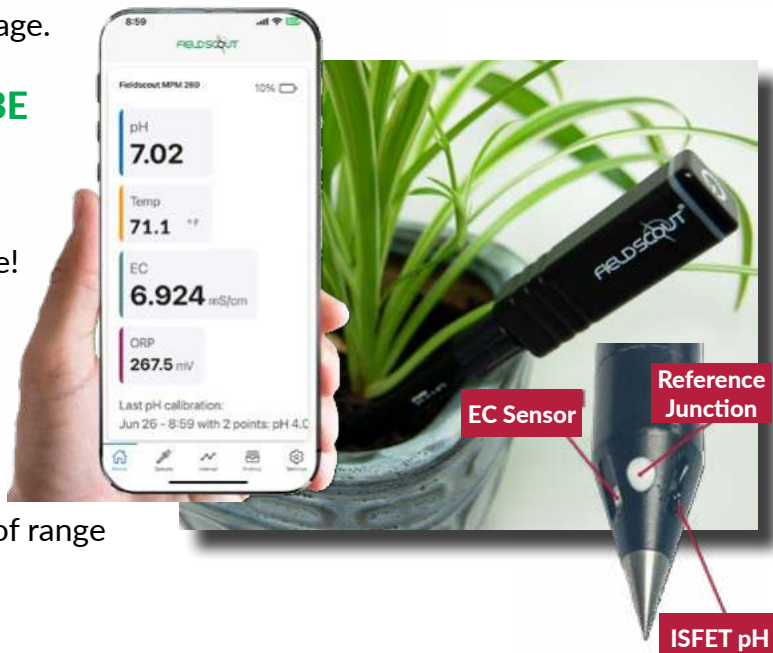
MEASURE pH AND EC WITH ONE PROBE FOR CONSISTENT PLANT QUALITY

Soil pH/EC levels can vary in plants but tracking their levels to ensure they are in optimal range and are receiving the appropriate nutrients will give you better looking plants and help reduce shrinkage.

FIELDSCOUT WIRELESS ISFET pH/EC PROBE

Our NEW Wireless pH/EC Probe is available with a blunt or pinpoint tip probe. With wireless bluetooth connection and step by step instructions in the FieldScout pH/EC app, taking measurements is simple!

- Sample directly in plug trays, pots, containers, solutions and soil-less media
- ISFET non-glass electrode is stored dry
- Probes are interchangeable and replaceable
- Connect to mobile device via Bluetooth
- Receive notifications when pH or EC value is out of range



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FieldScout
Wireless ISFET
pH/EC Probes

Item #	Item Description
2127WE	FieldScout Wireless Blunt ISFET pH/EC Probe <i>(includes hard case, transmitter, blunt tip probe, pre-drill stick, wireless charging station, pH 4, pH 7 and conductivity buffer solutions)</i>
2128WE	FieldScout Wireless Pinpoint ISFET pH/EC Probe <i>(includes hard case, transmitter, blunt tip probe, pre-drill stick, wireless charging station, pH 4, pH 7 and conductivity buffer solutions)</i>
2127W	FieldScout Wireless Blunt ISFET pH Probe <i>(includes hard case, transmitter, blunt tip probe, pre-drill stick, wireless charging station, pH 4 and pH 7 buffer solutions)</i>
2128W	FieldScout Wireless Pinpoint ISFET pH Probe <i>(includes hard case, transmitter, blunt tip probe, pre-drill stick, wireless charging station, pH 4 and pH 7 buffer solutions)</i>
2127RE	FieldScout Wireless Blunt pH/EC Probe Replacement
2128RE	FieldScout Wireless Blunt pH/EC Probe Replacement
2127R	FieldScout Wireless Blunt pH Probe Replacement
2128R	FieldScout Wireless Pinpoint pH Probe Replacement

Product Specifications

Connection	BLE (Bluetooth Low Energy) wireless connection to mobile device
ATC (Auto Temperature Correction)	Yes
Dimensions	8.8" x 1.0" x 0.8" (224mm x 24.2mm x 20mm)
Probe Material	ABS/PEEK/Stainless Steel
Probe Length	5.0" (128mm)
Data Storage	Transmitter stores data when mobile device is disconnected
Operating/Storage Temperature	32°F to 176°F (0°C to 80°C) and 30% to 80% RH
pH Sensor: Glass Free Ion Sensitive Field Effect Transistor (ISFED) Semiconductor Range: 0.00-14.00 Accuracy: ±0.02 Resolution: 0.01 Calibration: 1-, 2-, 3-, 5- point	
EC Sensor: 4 Electrode EC Sensor Range: 50-111,800µS/cm Calibration: At Factory/1 Point Calibration Accuracy within 1%: 50-12,880µS/cm, Resolution: 0.5nS/cm Accuracy within 10%: 50-111,800µS/cm, Resolution: 50nS/cm	
TEMP Sensor: NTC Range: 32°F-176°F (0°C-80°C) Accuracy: 1% Resolution: 0.1°F (0.1°C)	

LAQUA twin



Calibration Button
On/Off Button
Test Complete Indicator
Lights up when measurement is complete

Measurement Button
Press when ready to measure
Backlit Display

Meter and Sensor
Waterproof as complete unit (IP67 rated)
Sensor is replaceable

Sensor
Sensor guard protects sensor. Integrated slide cap opens for scooping water samples. Open the whole sensor guard when placing water or samples directly onto the sensor

Flat Sensor
Contains the measuring electrode and temperature sensor. It is the heart of the LAQUA Twin meter family. Enables 6 different methods

PUT THE POWER OF A LABORATORY IN YOUR HANDS

- Professional grade meters
- Measure samples in nutrient solutions, water, soils and tissue sap
- 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 0.3mL
- Automatic temperature compensation, waterproof, auto power-off
- Includes two CR2032 batteries, case and calibration standards

DON'T WAIT, GET IMMEDIATE RESULTS TO MAKE CHANGES TO IMPROVE PLANT GROWTH!



	pH	EC	Sodium	Potassium	Nitrate	Calcium
Measurement Principle	Glass Electrode Method	2 AC Bipolar	Ion Electrode Method	Ion Electrode Method	Ion Electrode Method	Ion Electrode Method
Sample Volume Required	0.1mL - 2.0mL	0.12mL - 2.0mL	0.3mL - 2.0mL	0.3mL - 2.0mL	0.3mL - 2.0mL	0.3mL - 2.0mL
Measurement Range	0 - 14pH	0 - 199.9mS/cm	2 - 9900ppm	4 - 9900ppm	6 - 9900ppm	4 - 9900ppm
Calibration	pH4 & pH7	1.41mS/cm	150ppm & 2000ppm*	150ppm & 2000ppm*	34ppm & 450ppm*	150ppm & 2000ppm*
Reproducibility	±0.1pH	±2%	±10% or ±10ppm	±10% or ±10ppm	±10% or ±10ppm	±20% or ±20ppm
Display	4 Digit Digital Backlit LCD Display					
Power	CR2032 Coin Batteries (x2)					
Battery Life	400 Hours Continuous Operation with Backlit Display Off (New)					
Operating Range	40°F (5°C) to 105°F (40°C), 85% Relative Humidity					
Dimensions	164mm x 29mm x 20mm					

LAQUA Twin pH Meter	
2103ALP	LAQUA Twin pH Meter <i>(Includes Case, Batteries and pH 4 and 7 Standards)</i>
2143L	LAQUA Twin pH Replacement Sensor
2110	Refill Solutions pH 4 and 7, 60mL each
2135L	Sampling Sheets, 100 Pieces
LAQUA Twin EC Meter	
2205LP	LAQUA Twin EC Meter <i>(Includes Case, Batteries and pH 4 and 7 Standards)</i>
2242L	LAQUA Twin EC Replacement Sensor
2210L	Conductivity Standard, 1.41mS/cm, (6) 14mL Bottles
LAQUA Twin Sodium (Na ⁺) Meter	
2500GL	LAQUA Twin Sodium (Na ⁺) Meter <i>(Includes Case, Batteries and Calibration Standards)</i>
2540L	LAQUA Twin Sodium (Na ⁺) Replacement Sensor
2514L	150ppm Na ⁺ Standard, (6) 14mL Bottles
2518L	2,000ppm Na ⁺ Standard, (6) 14mL Bottles
2535	Na ⁺ Soil Test Kit, 30 Samples <i>(Includes Solutions, Filter Paper, Cups and Soil Scoop)</i>
2135L	Sampling Sheets, 100 Pieces
LAQUA Twin Potassium (K ⁺) Meter	
2400GL	LAQUA Twin Potassium (K ⁺) Meter <i>(Includes Case, Batteries and Calibration Standards)</i>
2440L	LAQUA Twin Potassium (K ⁺) Replacement Sensor
2414L	150ppm K ⁺ DI Standard, (6) 14mL Bottles
2418L	2,000ppm K ⁺ DI Standard, (6) 14mL Bottles
2434	K ⁺ Soil Test Kit, 30 Samples <i>(Includes Solutions, Filter Paper, Cups and Soil Scoop)</i>
2135L	Sampling Sheets, 100 Pieces
LAQUA Twin Nitrate (NO ₃ ⁻) Meter	
2305GL	LAQUA Twin Nitrate (NO ₃ ⁻) Meter <i>(Includes Case, Batteries and Calibration Standards)</i>
2345L	LAQUA Twin Nitrate (NO ₃ ⁻) Replacement Sensor
2311	450ppm NO ₃ ⁻ -N Standard, (6) 14mL Bottles
2312	34ppm NO ₃ ⁻ -N Standard, (6) 14mL Bottles
2330	NO ₃ ⁻ Soil Test Kit, 30 Samples <i>(Includes Solutions, Filter Paper, Cups and Soil Scoop)</i>
2135L	Sampling Sheets, 100 Pieces
LAQUA Twin Calcium (CA ²⁺) Meter	
2450L	LAQUA Twin Calcium (CA ²⁺) Meter <i>(Includes Case, Batteries and Calibration Standards)</i>
2455L	LAQUA Twin Calcium (CA ²⁺) Replacement Sensor
2460L	150ppm CA ²⁺ DI Standard, (6) 14mL Bottles
2461L	2,000ppm CA ²⁺ DI Standard, (6) 14mL Bottles
2135L	Sampling Sheets, 100 Pieces



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



Water quality monitor displays 11 parameters simultaneously

Item #	Item Description
Item 2195-2	U51-2 Meter with 2m Cable
Item 2195-10	U51-10 Meter with 10m Cable
Item 2196-2	U52-2 Meter with 2m Cable
Item 2196-10	U52-10 Meter with 10m Cable
Item 2196-30	U52-30 Meter with 30m Cable
Item 2197-2	U52G-2 Meter with 2m Cable
Item 2197-10	U52G-10 Meter with 10m Cable
Item 2197-30	U52G-30 Meter with 30m Cable
Item 2198-2	U53-2 Meter with 2m Cable
Item 2198-10	U53-10 Meter with 10m Cable
Item 2198-30	U53-30 Meter with 30m Cable
Item 2199-2	U53G-2 Meter with 2m Cable
Item 2199-10	U53G-10 Meter with 10m Cable
Item 2199-30	U53G-30 Meter with 30m Cable

U-50 SERIES COMPARISON	U-51	U-52	U52G	U-53U	53G
pH	✓	✓	✓	✓	✓
ORP (Oxidation Reduction Potential)	✓	✓	✓	✓	✓
Dissolved Oxygen	✓	✓	✓	✓	✓
Conductivity	✓	✓	✓	✓	✓
Salinity	✓	✓	✓	✓	✓
TDS (Total Dissolved Solids)	✓	✓	✓	✓	✓
Seawater Specific Gravity	✓	✓	✓	✓	✓
Temperature	✓	✓	✓	✓	✓
Turbidity (LED)	✓	✓			
Turbidity (Tungsten lamp)				✓	✓
Water Depth			✓	✓	✓
GPS			✓		✓



See the latest and greatest in technology!

Learn what trade shows we will be attending!

Search our video library to gain more product knowledge!

Find out more about our office staff!

Be the first to know about upcoming promotions!

Share your success stories with us!



Our WatchDog Weather Stations can be configured in the WatchDog Mobile App!

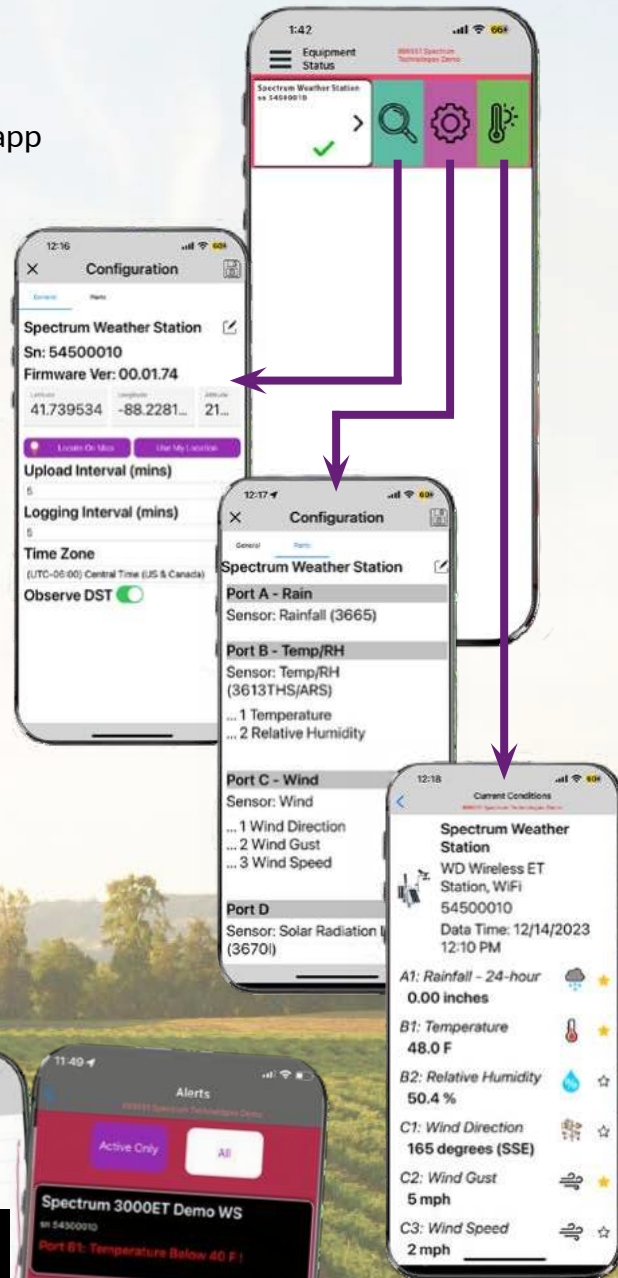
Download the FREE app when you receive your weather station and start recording measurements immediately!

WatchDog Mobile Features

- Connect to your weather station via Bluetooth within the app
- Configure station to log data at your chosen intervals
- View and rename included sensors
- Connect additional sensors as desired in available ports
- View Current Conditions real time from anywhere
- Graph data from each sensor to view trends
- When subscribed to the alerts function, set alerts for instant notification
- Run reports within the app
- Send data directly to SpecConnect for additional reporting capabilities



View all of your connected WatchDog Equipment



Click on a sensor icon to view a cumulative graph of that condition



Add the ALERTS function and get notifications when a specified condition goes above or below the designated threshold

Our FieldScout TDR and TruFirm meters can be used with the FieldScout Mobile App!



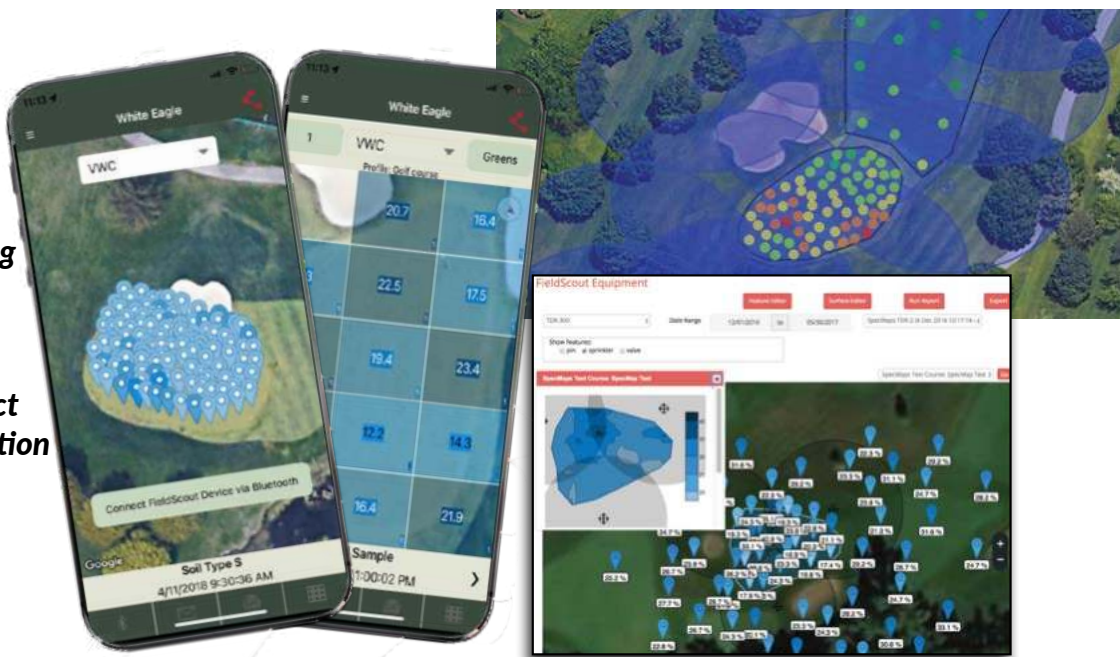
Download the FREE app!

FieldScout Mobile Features

- Handsfree data collection
- The FieldScout Basic app allows you to take measurements in grid format
- Purchase a SpecConnect Pro subscription to take freeform measurements and see geo-referenced data points overlaid on your property
- Color coded data points to represent a scale of moisture, EC, surface temperature or turf firmness
- Map sprinkler heads, holes, pin locations and more
- Automatic wireless upload to SpecConnect for further analysis from your personal web portal

TDR soil moisture data plots on a golf course using both the FREEFORM and GRID mode.

Views data in SpecConnect for more detailed information and reporting.



TDR in FREEFORM mode in a field of row crops. Pin colors can be changed to suit your preference.



TruFirm turf firmness measurements in GRID mode on a golf course.

When real time data viewing isn't necessary but data reporting is still needed, SpecWare Software is the answer!

SpecWare provides a permanent record of your data and allows you to view data from multiple WatchDog products within the system. Choose from the Basic or Pro version based on what equipment you are using and what information you need from your collected data. Gain back valuable time in your day by letting SpecWare do the data crunching!



SpecWare BASIC is the right choice if you are using a WatchDog Plant Growth Mini Station, a 1000 Series Micro Station, or any of our A or B Series Data Loggers.

If basic data is all you need to accomplish your goals with data analyzing, SpecWare Basic will meet your needs. Download the data via USB or direct connection to your PC and import into the SpecWare program. Quickly view standard reports from the data collected.

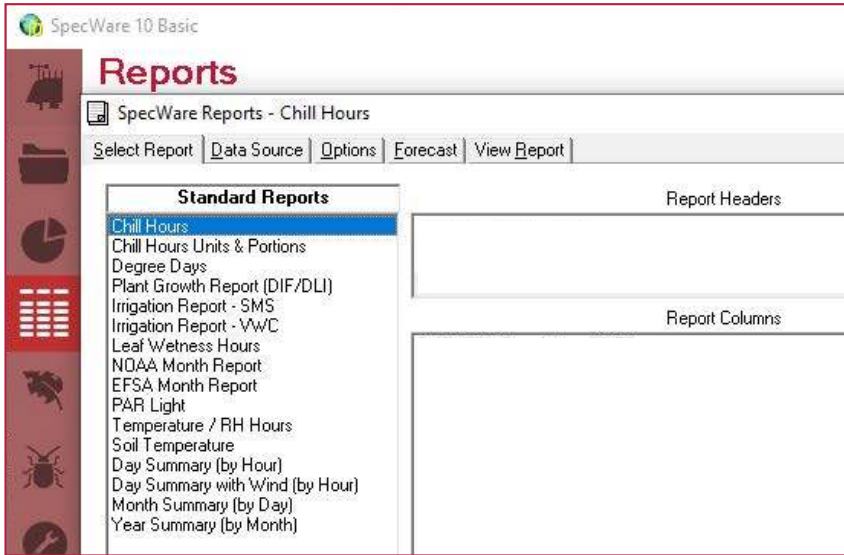
View multiple WatchDog products within the SpecWare program with one software purchase.



SpecWare PRO is the right choice if you are using a WatchDog 3000 Series Data Recorder, the WatchDog Pup/Retriever Radio System, a WatchDog Plant Growth Mini Station, a 1000 Series Micro Station, or any of our A or B Series Data Loggers.

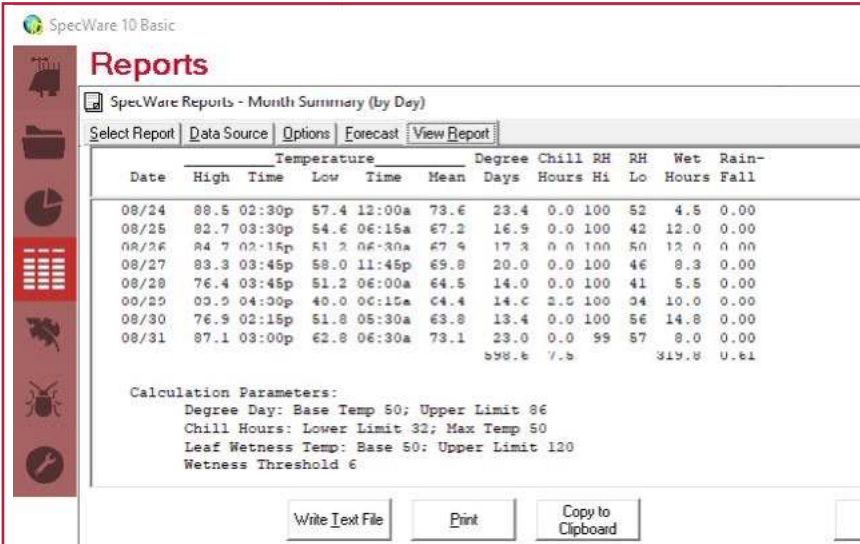
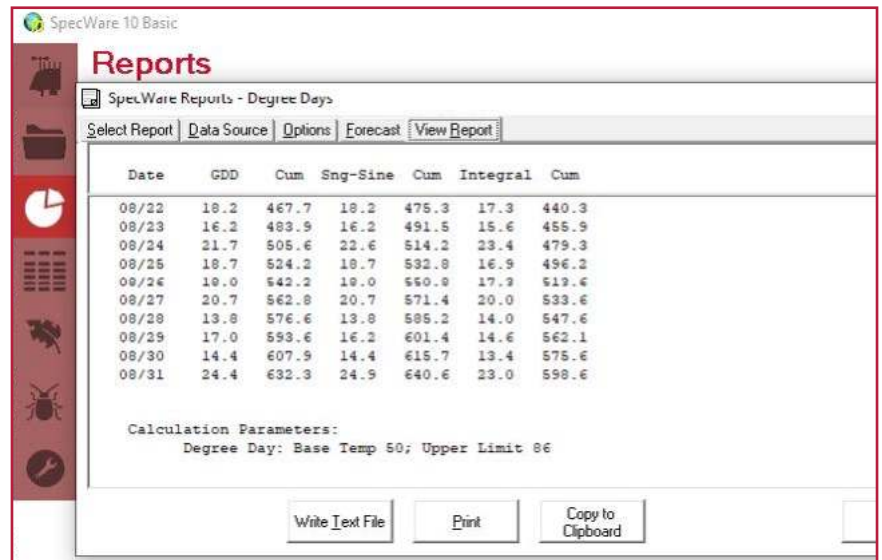
If you want to build your own custom reports to suit your needs, if you want to view Evapotranspiration (ET) or if you want to add Insect or Disease models, SpecWare Pro will provide you with the analytics needed. Download the data via USB or direct connection to your PC and import into the SpecWare program.

View multiple WatchDog products within the SpecWare program with one software purchase.

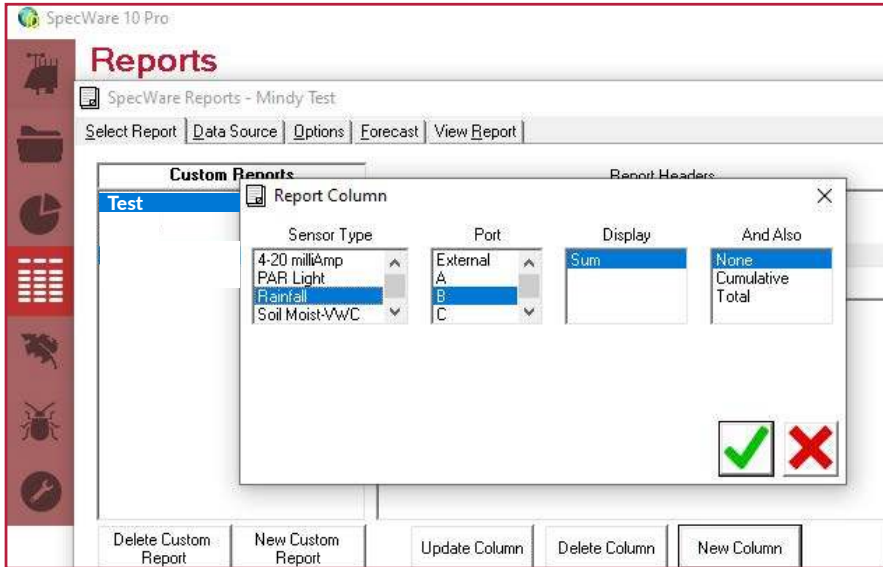


Choose from 16 available STANDARD reports when using SpecWare BASIC

Example of a Degree Days Report available as a STANDARD report using SpecWare BASIC



Example of Month Summary by Day Report available as a STANDARD report using SpecWare BASIC

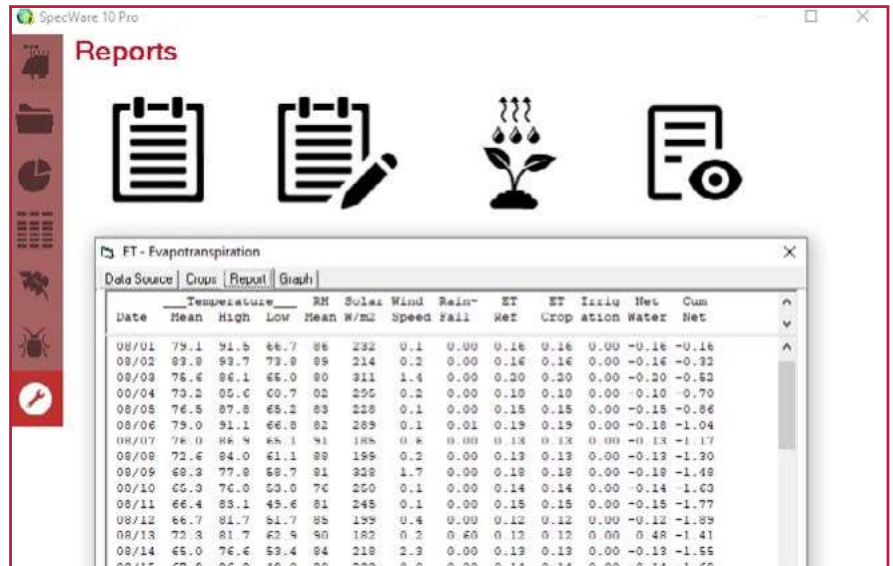


CUSTOM reports are available when using SpecWare PRO.

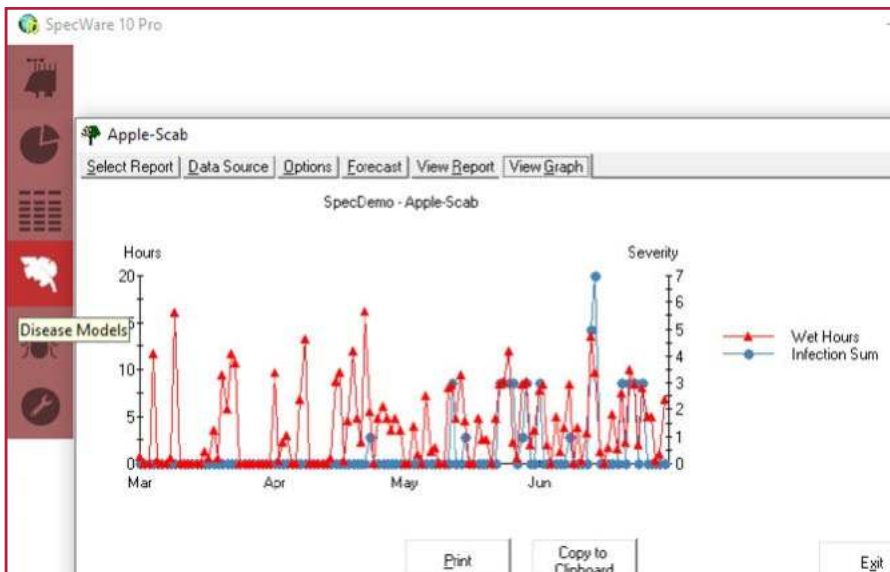
Select the sensor type to report on and choose how you want the data to display

Create additional custom reports as desired

Example of an Evapotranspiration (ET) report available using SpecWare PRO



Example of Apple Scab report available with the purchase of Disease/Insect Models and using SpecWare PRO



SpecWare Software

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SpecWare
Software



DOWNLOAD NOW!

www.specmeters.com/specware10

Activation is Required

Item #	Item Description
3654BX	SpecWare 10 Basic Software (USB cable included)
3654BXU	SpecWare 10 Basic Upgrade (USB cable not included)
3654BXX	SpecWare 10 Basic Extra User License (USB cable included)
3661U	USB to 3.5mm Stereo Plug Adapter
3654PX	SpecWare 10 Pro Software
3654PXU	SpecWare 10 Pro Upgrade
3654PXX	SpecWare 10 Pro Extra User License
3656TO	SpecWare Tomato Alert Package Required Sensors: Leaf Wetness and Temperature Models Included: Tom Cast, Insect Models
3656CH	SpecWare Cherry Alert Package Required Sensors: Leaf Wetness and Temperature Models Included: Leaf Spot, Insect Models
3656AP	SpecWare Apple/Pear Alert Package Required Sensors: Leaf Wetness and Temperature Models Included: Apple Scab (Modified Mills, Cornell, UC Davis California), Fire Blight (Maryblyt, CougarBlight), Sooty Blotch/Flyspeck, Insect Models
3656GA	SpecWare Grape Alert Package Required Sensors: Leaf Wetness, Temperature, Relative Humidity Models Included: Powdery Mildew (Thomas-Gubler), Black Rot Spots, Downey Mildew, Botrytis, Phomopsis Cane Leaf Spot, Insect Models
3656PO	SpecWare Potato Alert Package Required Sensors: Leaf Wetness and Temperature Models Included: Early Blight, Late Blight (BliteCast), Insect Models
3656TU	SpecWare Turf Alert Package Required Sensors: Air and Soil Temperature, Relative Humidity and Rain Models Included: Brown Patch (Schuman), Pythium (Nutter, Schein), Dollar Spot (Smith-Kerns, Hall, Mills/Rockwell), Insect Models

	BASIC	PRO
Viewing Data		
On Demand Graphing	✓	✓
Managing Data		
Calibration Adjustment	✓	✓
Automatic Data Append	✓	✓
Single File Per Logger	✓	✓
International Data Format	✓	✓
Reporting Data		
Standard Reports	✓	✓
Custom Reports		✓
Disease & Insect Models		Optional
Pest Alert Report Models		Optional
Communication		
USB	✓	✓
Direct Connect	✓	✓
Modem	✓	✓
Wireless Capability		✓
Cellular or WiFi Modem		✓
Auto Download		✓
Supported Products		
3000 Series Weather Stations		✓
Retriever & Pups Radio System		✓
1000 Series Micro Stations	✓	✓
A & B Series Data Loggers	✓	✓



Access data from your compatible WatchDog and FieldScout products on demand from your phone, PC or tablet using SpecConnect, our cloud-based subscription.

Save time, improve yield and quality, conserve resources, increase profits and decrease risk. View current conditions and factors in the app and then view and create reports in SpecConnect to better understand what is needed to improve your fields or turf!

SpecConnect is *required* if you are using a WatchDog 3000 Series Weather Station that uses Cellular or WiFi communication (not compatible with Data Recorders). It can also be used with the WatchDog Pup/Retriever Radio System when a DataScout modem is added.

In addition to WatchDog, SpecConnect works with both our FieldScout TDR350 and TDR150 soil moisture meters as well as the FieldScout TruFirm Turf Firmness meter.

SpecConnect supports data file uploads for the SPAD Meter, the FieldScout CM1000 Chlorophyll Meter, the FieldScout TCM500 NDVI Turf Color meter and the FieldScout SC900 Soil Compaction meter.

While data cannot be sent directly to the cloud for these products, you can still make use of all the features SpecConnect offers when you upload the data.



WHAT DOES SPECCONNECT OFFER?

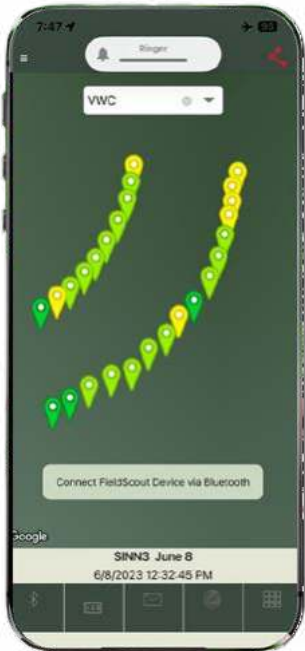
WatchDog

- View Station Locations
- View Current Conditions
- Optional Disease/Insect Models
- Optional Alerts Function

FieldScout

- Data Overlay on Satellite Map
- Map Location of Sprinkler Heads
- Pin Locations

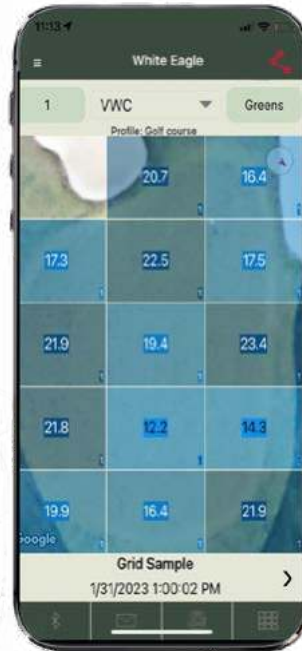
**Multiple User Logins Customizable Dashboard Easy Navigation
Standard and Custom Reports Downloadable Data**



VWC in FREEFORM on a farm field



VWC in FREEFORM on a golf course

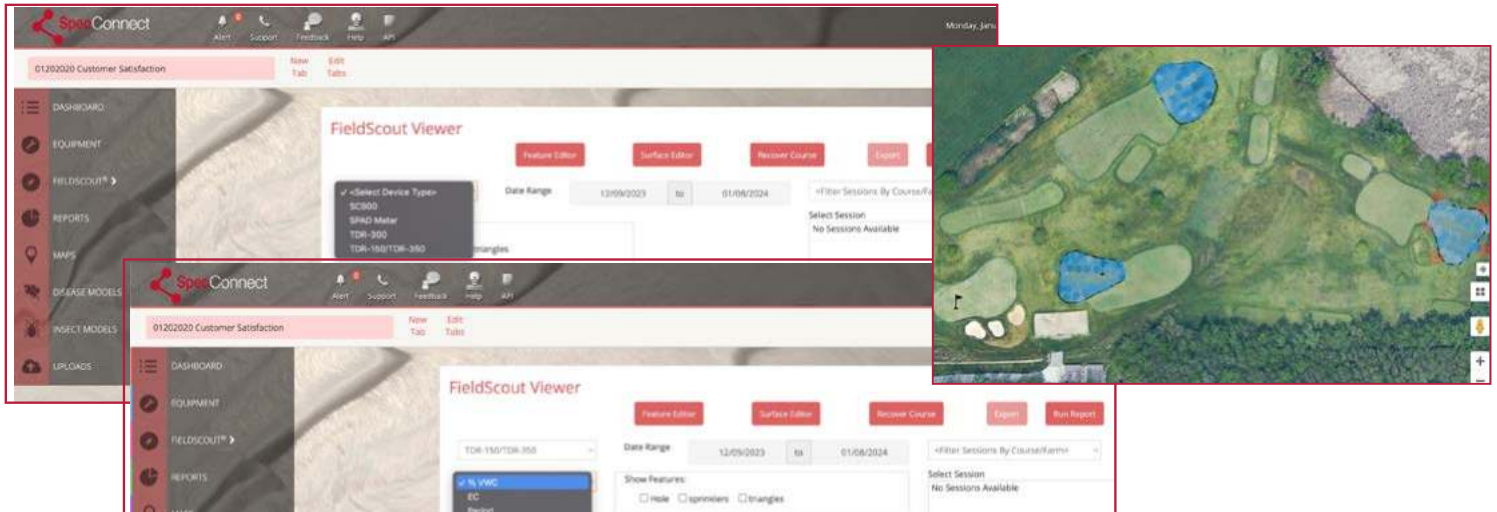


VWC in a GRID on a golf course

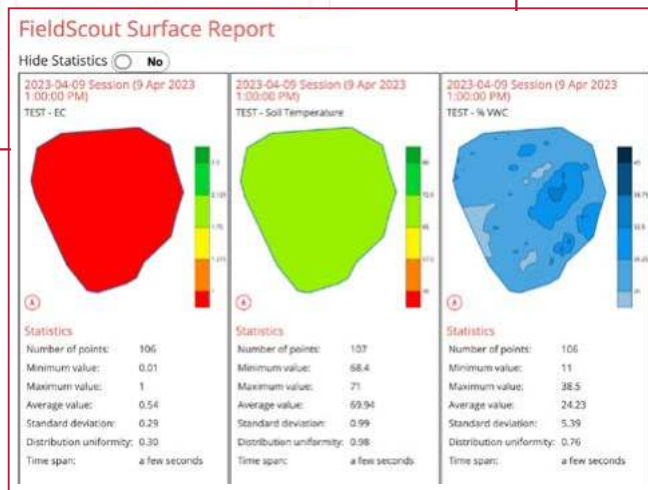
Your SpecConnect FieldScout PRO subscription allows collected data to be sent directly to the SpecConnect cloud for immediate viewing.

Through the SpecConnect portal, data can be overlaid on a satellite map, showing all data points within custom selected areas or groupings. Additionally sprinkler heads, and holes can also be visualized.

Choose the FieldScout product and data points you want to report on/display. Within the surface editor, you can create an outline of the surface area you are mapping. Once created, this area is saved so you do not have to recreate every time you take new measurements.



Once parameters are entered/collected, you can run the report. Select single or multiple sessions. This example shows the results from one session for EC, Soil Temperature and VWC%.



**DATA AT YOUR FINGERTIPS FOR
EDUCATED, QUICK DECISION MAKING!**



Item #	Item Description
WatchDog Subscriptions	
3000	SpecConnect Initial Setup Fee
3010xx*	SpecConnect Pro 1-Year Cellular Subscription (<i>per WatchDog Product</i>) xx* Specifies Region: MA (Middle East/Africa) MX (Mexico) AM (Central/South America) AP (Asia Pacific) EU (Europe)
3030	SpecConnect Pro 1-Year WiFi Subscription (<i>US/Canada, per WatchDog Product</i>)
Additional Devices/Services	
3065	API Service (<i>One time charge</i>)
3040	Additional Login (1-Year) (<i>WatchDog or FieldScout Products</i>)
3070	Alerts Function (1-Year) (<i>WatchDog or FieldScout Products - Up to 4 phone numbers/emails</i>)
3046	Additional WatchDog Product - 1-Year Low Cellular FOR NETWORKS ONLY (<i>US/Canada - 15-60 minute intervals for mean sensor values only</i>)
3055	Additional WatchDog Product - 1-Year WiFi FOR NETWORKS ONLY
FieldScout Subscriptions	
3035A	SpecConnect FieldScout Pro 1-Year Subscription (<i>1-3 FieldScout Products</i>)
3035B	SpecConnect FieldScout Pro 1-Year Subscription (<i>4-7 FieldScout Products</i>)
3035C	SpecConnect FieldScout Pro 1-Year Subscription (<i>8+ FieldScout Products</i>)
Disease & Insect Forecast Model Packages	
3095TOP	SpecConnect Tomato Alert Package <i>Required Sensors: Leaf Wetness and Temperature</i> <i>Models Included: Tom Cast, Insect Models</i>
3095CHP	SpecConnect Cherry Alert Package <i>Required Sensors: Leaf Wetness and Temperature</i> <i>Models Included: Leaf Spot, Insect Models</i>
3095APP	SpecConnect Apple/Pear Alert Package <i>Required Sensors: Leaf Wetness and Temperature</i> <i>Models Included: Apple Scab (Modified Mills, Cornell, UC Davis California), Fire Blight (Maryblyt, CougarBlight), Sooty Blotch/Flyspeck, Insect Models</i>
3095GAP	SpecConnect Grape Alert Package <i>Required Sensors: Leaf Wetness, Temperature, Relative Humidity</i> <i>Models Included: Powdery Mildew (Thomas-Gubler), Black Rot Spots, Downey Mildew, Botrytis, Phomopsis Cane Leaf Spot, Insect Models</i>
3095POP	SpecConnect Potato Alert Package <i>Required Sensors: Leaf Wetness and Temperature</i> <i>Models Included: Early Blight, Late Blight (BliteCast), Insect Models</i>
3095NUP	SpecConnect Nut Alert Package <i>Required Sensors: Leaf Wetness and Temperature</i> <i>Models Included: Almond Alternaria Leaf Spot, Almond Anthracnose, Pecan Scab, Pistachio Panicle and Shoot Blight, Walnut Blight, Insect Models</i>
3095TUP	SpecConnect Turf Alert Package <i>Required Sensors: Air and Soil Temperature, Relative Humidity and Rain</i> <i>Models Included: Brown Patch (Schumann), Pythium (Nutter, Schein), Dollar Spot (Hall, Mills/Rockwell), Insect Models</i>

Spectrum[®] Technologies, Inc.

"To Measure Is To Know"

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Fax: +1 815.436.4460

info@specmeters.com
www.specmeters.com

Form 203 (24-147)
2025 Catalog

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*Spectrum, WatchDog, FieldScout,
WaterScout and LightScout
are registered trademarks
of Spectrum Technologies, Inc.*

DISTRIBUTED BY:



NEW!!

WATERSCOUT WIRELESS PROFILER - LoRa

MULTI-SENSOR PROBE

Each probe measures temperature and soil moisture (VWC) at multiple depths.

Choose your probe length based
on your crop's root zone.

