Spectrum® Technologies, Inc.

"To Measure Is To Know"

Proudly Celebrating

33

Years of Service

AGRONOMIC
SMART SOLUTIONS

2021 PRODUCT CATALOG

Spectrum® Technologies, Inc.

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

We proudly work alongside researchers, growers, golf course superintendents, and industry suppliers to provide a broad line of innovative devices and software for better crop environmental monitoring, nutrient management, soil moisture measurement, irrigation scheduling, and pest management.

Our products will positively impact the way you grow your crops; therefore, we stand behind every product with our 100% Satisfaction Guarantee. Our friendly and knowledgeable product support team is available to answer any questions you may have, whether you are a new customer or have worked with us for years.

Thank you for your support and commitment to innovation. We look forward to partnering with you to help you continue to grow.

Sincerely,

Mike Thurow
CEO & Founder
Spectrum Technologies, Inc.

CONTACT US

Online	www.specmeters.com
E-mail	info@specmeters.com
Phone	1 (800) 248-8873 (Toll Free U.S. & Canada)
	1 (815) 436-4440
Fax	1 (815) 436-4460

3600 Thayer Court
Aurora, IL 60504 USA

COMPANY OVERVIEW

Spectrum Technologies, Inc. manufactures affordable, leading-edge measurement information technology for agricultural, horticultural, environmental, and turf markets worldwide.

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

INDUSTRY FUTURE

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

PRODUCTS

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

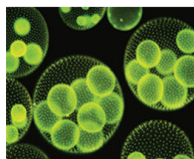### INTEGRATED PEST MANAGEMENT (IPM) TOOLS
Insect and Disease Models, IPM Scopes

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

NUTRIENT MANAGEMENT
NO_3^-, K^+, Ca^{++}, Chlorophyll, pH, EC and NDVI Meters

Award Winning Innovations

Since 1987, Spectrum Technologies has received 25 AE50 Awards from the American Society of Agricultural and Biological Engineers, which demonstrates our deep commitment to innovation and quality. Look for our award-winning products throughout our catalog.

Visit our website for a complete list of awards.

TABLE OF CONTENTS

*Award Winning Innovation

INTRODUCING THE NEW
3000 SERIES WIRELESS WEATHER STATIONS

Your Crops. Your Data. Better Decision$.

The award-winning third generation of WatchDog Weather Stations offers integrated cellular modems that send essential crop data to the SpecConnect cloud. Use your PC or WatchDog Mobile app (free) to view current conditions on your smartphone. Station set-up is easy, and configuration is simple with the WatchDog app.

With the SpecConnect cloud, you can easily view reports for degree-days, chill hours, disease and insect pressure, monthly weather reports, soil moisture trends, and more. Frost/temp alerts are sent to your smartphone so you can respond quickly and reduce crop damage.

Now, you will have the real-time data you need to respond to changing weather conditions and make timely, smart decisions. To measure is to know.

SpecConnect Cloud*

3250 Wireless ET Weather Station

Monitor evapotranspiration (ET) data to know how much water your crops are using.

Measure wind speed/direction, temperature, relative humidity, rainfall, solar radiation, plus one available sensor port.

3250MU	**WatchDog 3250 Wireless ET Station LTE-M Modem**
3250WF	**WatchDog 3250 Wireless ET Station Wi-Fi Modem**
3250HU	**WatchDog 3250 Wireless ET Station 3G/HSPA+ Modem**

NEW

*3000 Series Weather Stations require a SpecConnect Pro subscription

3240 Wireless Weather Station

Monitor weather conditions for more profitable crop and field activities.

Measure wind speed/direction, temperature, relative humidity, rainfall, plus two available sensor ports.

3240MU   **WatchDog 3240 Wireless Weather Station LTE-M Modem**

3240WF   **WatchDog 3240 Wireless Weather Station Wi-Fi Modem**

3240HU   **WatchDog 3240 Wireless Weather Station 3G/HSPA+ Modem**

3220 Wireless Rain Station

Monitor rainfall data 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.

Measure temperature, relative humidity, rainfall, plus two available sensor ports.

3220MU   **WatchDog 3220 Wireless Rain Station LTE-M Modem**

3220WF   **WatchDog 3220 Wireless Rain Station Wi-Fi Modem**

3220HU   **WatchDog 3220 Wireless Rain Station 3G/HSPA+ Modem**

3210 Wireless Temp/RH Station

Prevent frost damage with temperature alerts sent directly to your smartphone. Monitor site-specific conditions for insect pressure.

Measure temperature, relative humidity, plus two available sensor ports.

3210MU   **WatchDog 3210 Wireless Temp/RH Station LTE-M Modem**

3210WF   **WatchDog 3210 Wireless Temp/RH Station Wi-Fi Modem**

3210HU   **WatchDog 3210 Wireless Temp/RH Station 3G/HSPA+ Modem**

	3210 Temp/RH Station	3220 Rain Station	3240 Weather Station	3250 ET Weather Station	Range	Accuracy
Air Temperature	✔	✔	✔	✔	-40° to 257°F (-40° to 125°C)	±0.54°F (-40° to 194°F)
Relative Humidity	✔	✔	✔	✔	0 to 100%	±2% @ 77°F (25°C)
Rainfall	Optional	✔	✔	✔	0.01" (0.254mm) resolution	±2% at <2" (5 cm)/hr
Wind Speed	Optional	✘	✔	✔	0, 1 to 200 mph (0, 1 to 322 km/h)	±2 mph (±3 km/h), ±5%
Wind Direction	Optional	✘	✔	✔	1-359°, 1° increments	±3°
Solar Radiation	Opt. (ext. port)	Opt. (ext. port)	Opt. (ext. port)	✔	0 to 1500 W/m^2	±5%
Available External Sensor Ports	2	2	2	1		

Retriever & Pups

Our Retriever & Pups+ Network sends real time data to your laptop, tablet or smartphone - anywhere you can access the internet. Trust the data and eliminate the guesswork! Each Retriever can support up to 12 Pups. Each Pup can support four different sensors and you can receive customized threshold alerts. Our sensors measure everything from soil moisture to light, wind, rain, humidity and more.

Expand your network by adding weather stations to bring data from every corner of your property directly to you.

NEW 3000 Series Pup Stations

The 3000 Series Wireless Stations are available with wireless mesh radios to fully participate in Retriever and Pup networks. Setup is easy due to the modular design that includes the integral solar panel and rechargeable battery for reliable power. Customize your stations with additional sensors that meet your needs - see examples on the facing page.

See page 5 for sensor specifications and available ports for each model.

3250DU	WatchDog Wireless ET Station Pup, 900Mhz
3250EU	WatchDog Wireless ET Station Pup, 868Mhz
3240DU	WatchDog Wireless Weather Station Pup, 900Mhz
3240EU	WatchDog Wireless Weather Station Pup, 868Mhz
3220DU	WatchDog Wireless Rain Station Pup, 900Mhz
3220EU	WatchDog Wireless Rain Station Pup, 868Mhz
3210DU	WatchDog Wireless Temp/RH Station Pup, 900Mhz
3210EU	WatchDog Wireless Temp/RH Station Pup, 868Mhz
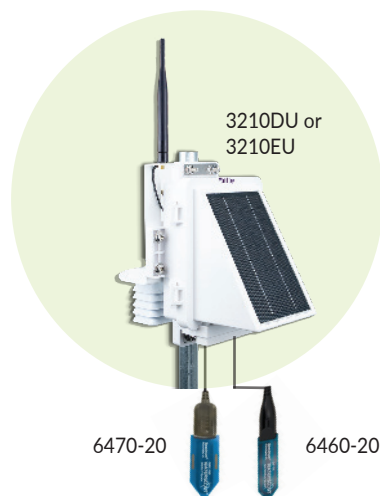
3210 Temp/RH Station Pup + Soil Moisture/EC/Temperature Sensor + Soil Moisture Sensor

3210DU or 3210EU

Easily 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.

6470-20   6460-20

3250 ET Station Pup

3250DU or 3250EU

Monitor evapotranspiration (ET) to effectively manage irrigation with respect to soil moisture loss.

3220 Rain Station Pup + Leaf Wetness Sensor

3220DU or 3220EU

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 pressures.

3666
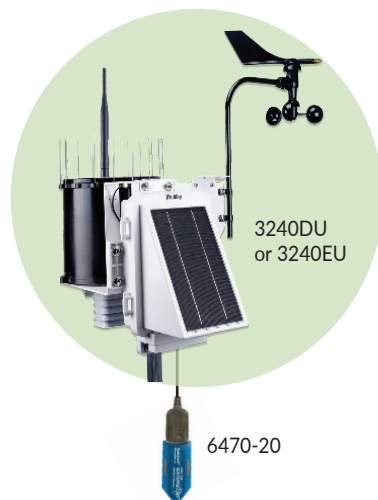
3240 Weather Station Pup + Soil Moisture/EC/Temperature Sensor

3240DU or 3240EU

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

6470-20

Plant Growth Pup Station

3900PG or 3930PG

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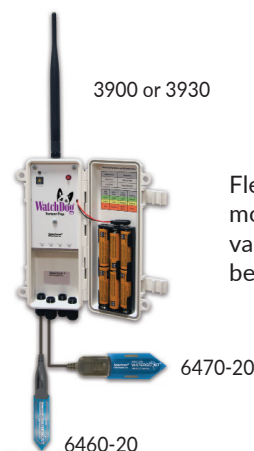
Irrigation Pup Station

3900 or 3930

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

6470-20

6460-20

Pups

SET UP A NETWORK

Multiple Pups with a variety of sensors to choose from for unlimited measurement options within a single network. Set up in **5 easy steps.**

WatchDog Sensor Pup

• Connect up to 4 external sensor inputs per Pup
• Transmits data to Retriever (directly or via other Pups)
• Includes 6 lithium AA batteries (solar-power option below)
• Single button operation: check battery status, signal strength, and join sensor network
• Tri-colored LEDs indicate battery level, signal strength, and data communication status

900Mhz	**868Mhz**	
3900	**3930**	WatchDog Sensor Pup

3000 Series Pup Stations

900Mhz	**868Mhz**	
3250DU	**3250EU**	WatchDog Wireless ET Station Pup
3240DU	**3240EU**	WatchDog Wireless Weather Station Pup
3220DU	**3220EU**	WatchDog Wireless Rain Station Pup
3210DU	**3210EU**	WatchDog Wireless Temp/RH Station Pup

WatchDog Repeater Pup

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

900Mhz	**868Mhz**	
3902	**3932**	WatchDog Repeater Pup

Additional Pup Information

• Communication range of 2,500 ft (about 1/2 mile), line-of-sight installation between devices
• Pups act as repeaters to get data to the Retriever

Most Popular Sensors

Choose sensors for what you will measure. Choose up to 4 per Sensor Pup, and up to 2 for 3000 Series Pup Stations.

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

Optional Accessories

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

STEP 1
CHOOSE YOUR PUPS

HOW MANY?

ARE YOU CONNECTING TO OTHER WEATHER STATIONS?

DO YOU HAVE OBSTACLES, LIKE TREES OR BUILDINGS, HIGH/LOW SPOTS THAT MIGHT INHIBIT TRANSMISSION?

STEP 2
CHOOSE YOUR SENSORS

WHAT ARE YOU MEASURING?

WHAT INFLUENCES YOUR CROP MOST?

WHAT ELSE DO YOU WANT TO KNOW?

100% Customizable

WatchDog

CO2 Sensor

Anemometer

Pressure Transducer

Irrigation On/Off Sensor

LightScout UV / Solar Radiation / PAR Light Sensors

Rain Collector

Barometric Pressure Sensor

LightScout Quantum Sensor Bars

External (Soil) Temperature Sensor

WaterScout SM 100 Soil Moisture Sensor

WaterScout SMEC 300 Soil Moisture, EC, and Temperature Sensor

Temperature (Micro) Sensor

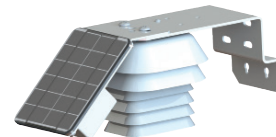Watermark Soil Moisture Sensor

Leaf Wetness Sensor

Digital Temperature / Humidity Sensor with Aspirated Radiation Shield

Digital Temperature / Humidity Sensor with Passive Radiation Shield

Retriever
GATHER THE DATA

WatchDog Retriever

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

3910	**WatchDog Retriever, 900 Mhz**
3912	**WatchDog Retriever, 868 Mhz**

Optional Accessories

3999	**Solar Power Package** Includes 5W solar panel and 6V 4.5Ah rechargeable battery
3396TPS	**Tripod Mount with Stakes**
3925	**Antenna Extension Cable - 10 ft (3 m)** Includes Mounting Bracket and Hardware
3388USB	**Replacement/additional USB Flash Drive**
3927C75	**PC Direct Connection Cable - 75 ft** **Connect your Retriever directly to your PC. Includes power and data cables, AC/DC power adapter, and DC plug adapter** Has 9-pin serial connection on PC end, may require USB adapter (Item 366IU9)
3926	**AC/DC Power Adapter**

TRIPOD?
BATTERY POWERED?
SOLAR POWER
PACKAGE?
FLASH DRIVE?
CABLE?
ADAPTER?

SpecWare Software

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

3654P9	**Spec 9 Pro Software**

WatchDog

STEP 5

CHOOSE YOUR
MODEM
TO SEND DATA
ONLINE

WI-FI OR CELLULAR?

3928M DataScout cellular Modem
mounted with a WatchDog
Retriever

DATASCOUT Modems

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

Compatibility Requirements

- WatchDog Retriever - Item 3910 (with non-rechargable batteries) DataScout Modem and the Retriever can share the power from the solar power package.
- 2000 Series Full Weather Stations - - Station must be running firmware version 7.6 or above
- WatchDog 2000 Series Mini Stations - Station must be running firmware version 4.1 or above
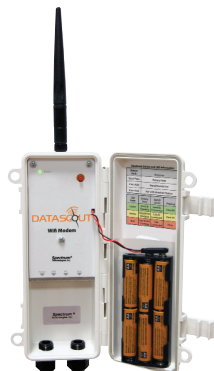
3928M DataScout
Cellular Modem

Cellular Modems

3928M   LTE CAT-M Modem

3924M   GSM 3G HSPA+ Modem

3999   Solar Power Package

Includes 5W solar panel and 6V 4.5Ah rechargeable battery

3926 AC/DC Power Adapter

Wi-Fi Modems

3920 Wi-Fi Modem - AC/DC Powered

Includes 3926 AC/DC Power Cord

3920S WiFi Modem - Solar Powered

Includes solar panel and rechargeable battery pack

SpecConnect
Manage your site data whenever, wherever.

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

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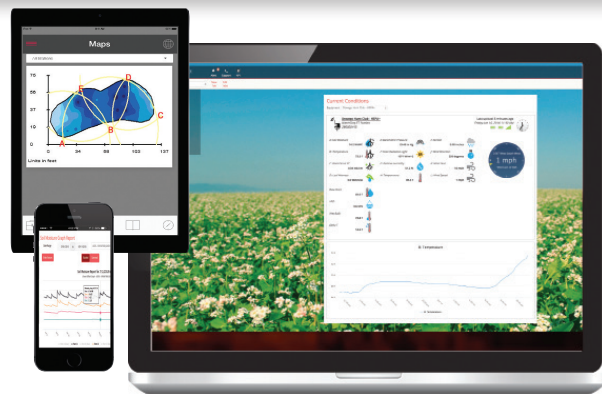
SpecConnect Reporting Features

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

SpecConnect Compatible Items

- WatchDog® Retriever & Pups
- WatchDog® 3000 Series Weather Stations
- WatchDog® 2000 Series Weather Stations
- WatchDog® 2000 Series Mini Stations
- FieldScout® TDR 350/150
- FieldScout® TruFirm® Turf Firmness Meter
- Data file uploads supported for:
  SC900, TDR300, SPAD, CM1000, TCM500

Current Conditions At Your Fingertips
Example WatchDog Station Pup Dashboard

Current Conditions

Equipment: WatchDog Station Pup

WatchDog Station Pup
WatchDog ET Station

Last upload: 3 minutes ago
Monday, October 15, 2018 1:30 PM

A: 6in (WaterScout SM 100)
22.9 %VWC

B: 12in (WaterScout SM 100)
14.1 %VWC

C: 18in (WaterScout SM 100)
28.9 %VWC

D: Leaf Wetness
0.0 Wetness

F: Solar Radiation Light
679 W/m^2

G: Relative Humidity
47.3 %

H: Temperature
45.0 F

I: Rainfall - 24-hour
0.24 inches
24 hours

J: Wind Direction
279 degrees

K: Wind Gust
16 mph

L: Wind Speed
5 mph

Dew Point
26.1 F

VPD
0.54 kPa

Wet Bulb
36.9 F

Delta T
8.1 F

Heat Index
41.42 F

279° West
5 mph
Wind Gust 16 mph

- Web Portal connection requires a WatchDog Retriever & Pup network or any 3000 or 2000 Series Weather Station to collect and log data, and DataScout Modem to send data to the internet
- FieldScout subscriptions require a TDR or TruFirm Meter and the free FieldScout Mobile App

Pro WatchDog Subscriptions (includes one device)

3010US	SpecConnect Pro 1-yr Subscription - Cellular, US/Canada For WatchDog devices, includes cellular plan
3030	SpecConnect Pro 1-yr Subscription - WiFi
3000	SpecConnect Initial Set Up Fee

Additional Devices and Services

3045US	Additional WatchDog Pup Device - Cellular (1-yr) Needed per Pup or Pup Station, includes cellular plan
3046	Additional WatchDog Device - Low-Cellular (1-yr) (15-60 minute, interval mean sensor values only)
3055	Additional WatchDog Device - WiFi (1-yr) Needed per Pup or Station
3040	Additional Login (1-yr) Limit of three users per subscription
3070	Alerts Function (1-yr) Up to 4 phone numbers and emails Needed per Pup or station
3065	API Service (one-time charge)

Pro FieldScout Subscriptions (includes one device)

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

SpecConnect
WATCHDOG SUBSCRIPTION FEATURES

Customizable Dashboard	✓
Current Conditions	✓
Basic Wind Speed/Direction & Temp Gauges	✓
Advanced Wind Rose	✓
Data Storage	✓
Mapping	✓
Calibration Adjustment	✓
Disease Models Reports (additional fee)	✓
Basic Reporting	✓
Custom Reporting	✓
Evapotranspiration (ET) Reports	✓
Degree Days Reports	✓
Daily Light Integral (DLI) Reports	✓
Chill Hours/Units/Portions Reports	✓
Alerts (additional fee)	✓
API Service (one-time charge)	✓

Disease & Insect Forecast Model Packages
1-YEAR SUBSCRIPTIONS

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

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

3095APP   SpecConnect 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

3095CHP   SpecConnect Cherry Alert Package

Required Sensors: Leaf wetness and temperature
Models Included: Leaf Spot
Insect Models

3095GAP   SpecConnect Grape Alert Package

Required Sensors: Leaf wetness, relative humidity, and temperature
Models Included: Powdery Mildew (Thomas-Gubler)
Black Rot (Spotts)
Downey Mildew
Botrytis
Phomopsis Cane Leaf Spot
Insect Models

3095POP   SpecConnect Potato Alert Package

Required Sensors: Temperature, relative humidity, and rain
Models Included: Early Blight
Late Blight (BliteCast)
Insect Models

3095TOP   SpecConnect Tomato Alert Package

Required Sensors: Leaf wetness and temperature
Models Included: Tomcast
Insect Models

3095TUP   SpecConnect Turf Alert Package

Required Sensors: Air and soil temperature, relative humidity, and rain
Models Included: Brown Patch (Schumann)
Pythium (Nutter, Schein)
Dollar Spot (Hall, Mills/Rockwell)
Insect Models

3095NUP   SpecConnect Nut Alert Package

Required Sensors: Temperature, leaf wetness, relative humidity, rain
Models Included: Almond Alternaria Leaf Spot
Almond Anthracnose
Pecan Scab
Pistachio Panicle and Shoot Blight
Walnut Blight
Insect Models

Daily Report

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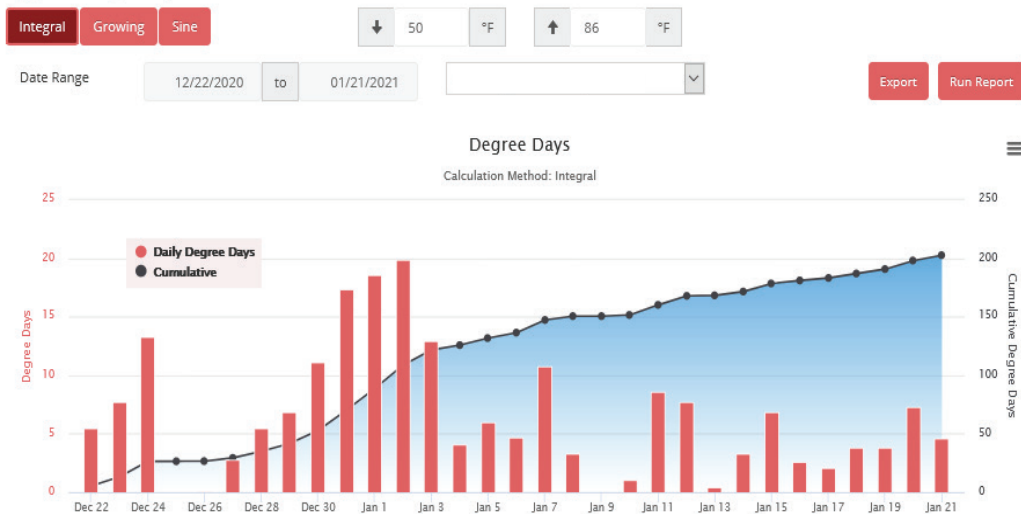- Flexible date selection for reports you need: week, month, or growing season

Daily Report

Date Range: 12/22/2020 to 01/21/2021 | Export | Run Report

Date	Temp High	Time @ Temp High	Temp Low	Time @ Temp Low	Temp Avg.	RH High	RH Low	RH Avg.	Daily Rainfall	Rainfall Cumulative
2021-01-21	78.2	2:00:00 pm	47.8	12:05:00 am	57.68	88.4	43	74.54	0	0.88
2021-01-20	74	2:50:00 pm	35.6	2:25:00 am	52.59	92.3	30.6	68.46	0	0.88
2021-01-19	65.1	1:20:00 pm	31.7	5:15:00 am	45.43	91.4	43.1	73.55	0	0.88
2021-01-18	66.3	2:35:00 pm	34	11:50:00 pm	48.2	89.8	27.7	63.49	0	0.88
2021-01-17	61.3	1:25:00 pm	29.9	6:40:00 am	44.28	91.8	39.3	70.46	0	0.88
2021-01-16	60.5	1:35:00 pm	33.1	11:55:00 pm	47.28	90.7	35.4	65.05	0.01	0.88
2021-01-15	72.5	2:30:00 pm	36.6	4:15:00 am	53.54	91.3	48.2	78.86	0.08	0.87
2021-01-14	64.8	3:20:00 pm	35.4	7:10:00 am	48.45	91.4	37	70.96	0	0.79
2021-01-13	53.9	2:10:00 pm	45.3	7:05:00 am	48.22	85.3	64.8	78.43	0	0.79
2021-01-12	62.8	10:30:00 am	49.2	11:50:00 pm	57.7	84.1	72.2	78.67	0	0.79
2021-01-11	71	1:50:00 pm	41.6	2:10:00 am	56.75	91.4	62.8	81.82	0	0.79

Degree Days Report

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

Degree Days Report

Integral | Growing | Sine   ↓ 50 °F   ↑ 86 °F

Date Range: 12/22/2020 to 01/21/2021 | Export | Run Report

Degree Days

Calculation Method: Integral

Disease Models

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

Disease Model Instance: Apple Scab

Export

Model: Apple Scab | Equipment: Watchdog 2700 | Dates: 7/8/2020 to 11/30/2020

Timestamp	Spore Mature Percent	Cornell Risk	Mills Risk	Calif Risk	Degree Day Sum	Mean Wet Temperature	Low Temperature	High Temperature	Degree Days	Leaf Wetness Hours
2020-07-08	1	Infected			42	67.42	63.00	85.80	42.10	10.50
2020-07-09	2	Infected			87	67.47	65.40	87.70	44.87	6.50
2020-07-10	4	Infected			126	69.30	62.50	76.50	39.24	8.25
2020-07-11	6	None	None	None	166		59.50	79.20	40.04	0.00
2020-07-12	9	None	None	None	200	57.22	55.60	72.80	33.80	2.75
2020-07-13	12	Infected	Light	Infected	233	54.23	51.30	76.00	32.59	10.00
2020-07-14	18	Infected	Medium	Infected	268	52.95	50.60	78.70	35.26	7.00
2020-07-15	24	Infected	Heavy	Infected	306	65.26	64.00	75.90	38.22	5.75
2020-07-16	31	Infected	Heavy	Infected	343	62.25	58.00	78.50	36.49	7.00
2020-07-17	38	None	None	None	383		56.80	81.20	40.34	0.00

Rainfall Report

- Monitor rainfall throughout the growing season
- See the monthly rainfalls superimposed on the cumulative total in one place
- Click on Monthly bars to see daily rain events
- Then click on Daily bars to see more detail
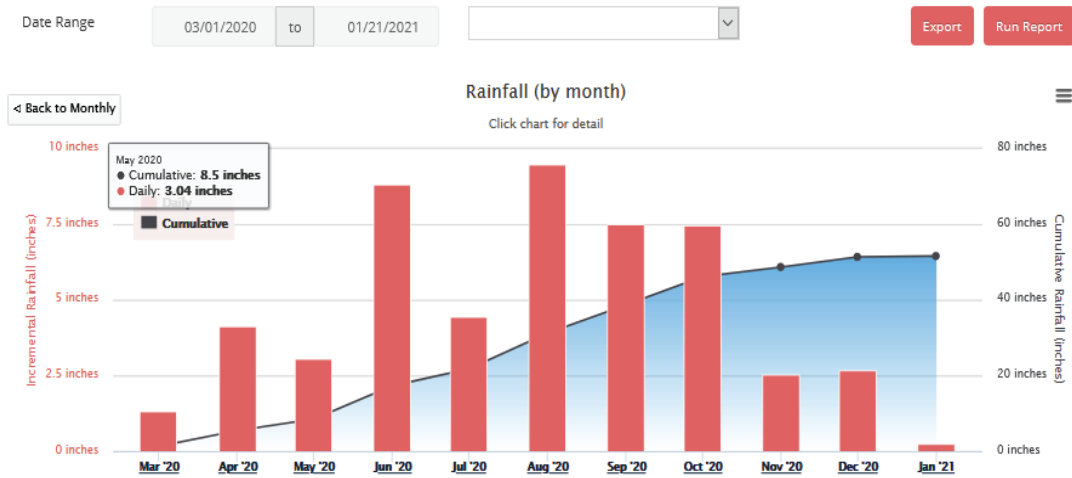
Soil Moisture Graph Report

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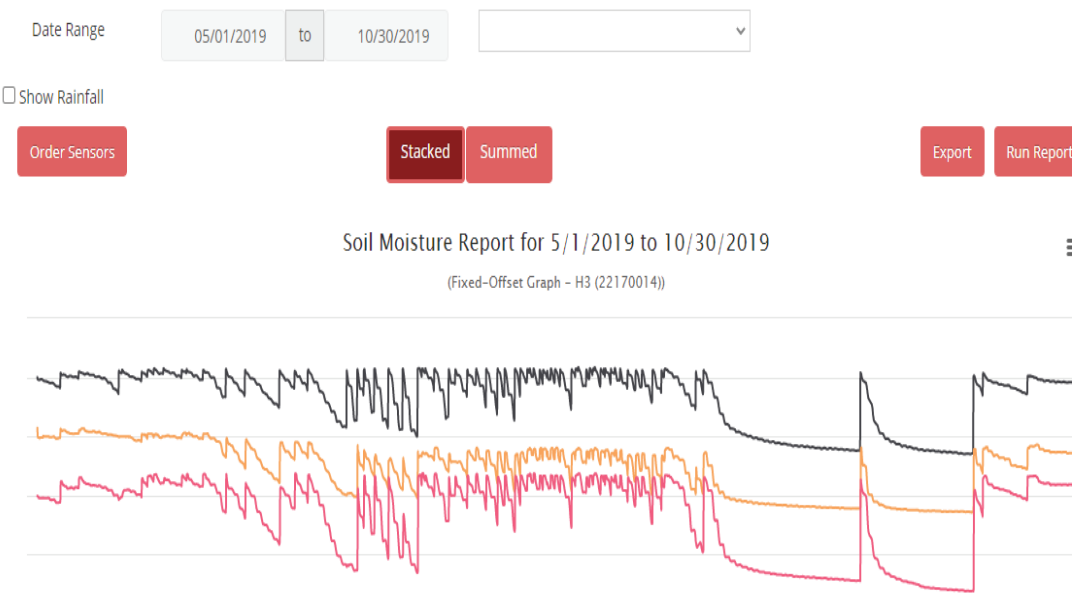
Wind Rose Report

- Analyze and display distributions of wind speeds and directions at your locations
- Protect your plants from wind damage
- Anticipate soil erosion or deposition caused by intense and heavy wind
- Manage pesticide drift risk

INTRODUCING THE NEW
3000 SERIES DATA LOGGERS

Collect the measurements that matter to you!

The NEW WatchDog® Data Loggers are ideal for those who do not need to send data to the Internet. Data can still be transferred from the internal logger to a USB flash drive and processed with SpecWare*.

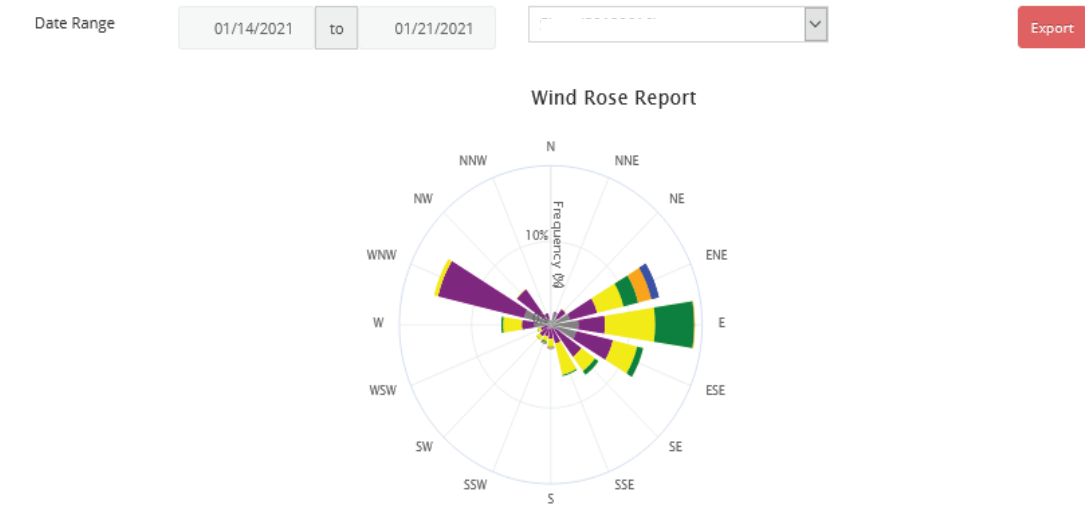The 3000 Series Data Loggers offer all-in-one simple setup. With Bluetooth connectivity and the free WatchDog mobile app, receive weather notifications direct to your smartphone. Perfect for fields, orchards, vineyards, and golf courses.

SpecWare Pro
Software*

3250 ET Station
Data Recorder

Collect evapotranspiration (ET) data to know how much water your crops are using.

Measure wind speed/direction, temperature, relative humidity, rainfall, and solar radiation, plus one additional sensor port.

3250DR   WatchDog 3250 ET Station Data Recorder

NEW

*Requires SpecWare Pro software version 9.70 or later to process 3000 Series data.

3240 Weather Station Data Recorder

Monitor weather conditions for more profitable crop decisions.

Measure wind speed/direction, temperature, relative humidity, and rainfall, plus two additional sensor ports.

3240DR   WatchDog 3240 Weather Station Data Recorder

3220 Rain Station Data Recorder

Collect rainfall data for more effective irrigation scheduling. Collect site-specific weather conditions at research plots.

Measure temperature, relative humidity, and rainfall, plus two additional sensor ports.

3220DR   WatchDog 3220 Rain Station Data Recorder

3210 Temp/RH Station Data Recorder

Collect temperature and humidity data at remote sites.

Measure temperature, and relative humidity, plus two additional sensor ports.

3210DR   WatchDog 3210 Temp/RH Station Data Recorder

	3210 Temp/RH Data Recorder	3220 Rain Data Recorder	3240 Weather Data Recorder	3250 ET Data Recorder	Range	Accuracy
Air Temperature	✔	✔	✔	✔	-40° to 257°F (-40° to 125°C)	±0.54°F (-40° to 194°F)
Relative Humidity	✔	✔	✔	✔	0 to 100%	±2% @ 77°F (25°C)
Rainfall	Optional	✔	✔	✔	0.01" (0.254mm) resolution	±2% at <2" (5 cm)/hr
Wind Speed	Optional	✘	✔	✔	0, 1 to 200 mph (0, 1 to 322 km/h)	±2 mph (±3 km/h), ±5%
Wind Direction	Optional	✘	✔	✔	1-359°, 1° increments	±3°
Solar Radiation	Opt. (ext. port)	Opt. (ext. port)	Opt. (ext. port)	✔	0 to 1500 W/m^2	±5%
Available External Sensor Ports	2	2	2	1		

Monitor, record and analyze over a dozen environmental parameters directly from your field, orchard, vineyard or golf course.

2000 Series Mini Stations

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

- Measure temperature, humidity, quantum light, and more (varies by model)
- Customize with 1-4 plug-in sensors
- Custom measurement intervals
- Reliable NEMA-4 type IP 66 enclosure and weatherproof connectors
- 12-month battery power (4 AA batteries included)

How do you access the data?

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

SpecConnect Compatible

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

**3686WD Model 2475
WatchDog® Weather Station**

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

**3684WD Model 2450
WatchDog® Weather Station**

2400

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

**3685WD Model 2400
WatchDog® Weather Station**

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

**3683WD Model 2425
WatchDog® Weather Station**

2800

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

**3345WD2 WatchDog® 2800
Weather Station**

WATCHDOG® 2000 SERIES MINI WEATHER STATION FEATURES

Sensors	2475	2450	2425	2400	2800	Specifications	Accuracy
Air Temperature	✔	✔	✔	OPT	OPT	-40° to 257°F (-40° to 125°C)	±0.54°F at -40° to 185°F(±0.3°C at -40° to 85°C)
Relative Humidity	✔	✔				0% to 100%	±2% at 32° to 176°F(0° to 80°C)
Dew Point	✔	✔				-99° to 140°F (-73° to 60°C)	±4°F (±2°C)
Quantum Light (PAR)	✔	OPT	OPT	OPT	OPT	0 to 2500 $\mu mol \cdot m^{-2} \cdot s^{-1}$	±5%
External Sensor Ports	1	2	3	4	8		
Available ports for SMEC 300 Sensors	1	2	3	4	2		
Operating temperature range: -22 to 130°F (-30 to 55°C)							

1000 Series Micro Stations

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

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

How do you access the data?

1. **Direct Connect:** Download from the station to your PC. Requires SpecWare Basic or Pro
2. **Data Shuttle:** Transport data from your station to your PC. Requires SpecWare Basic or Pro

With Rainfall Bird Guard

Soil Moisture/EC/ Temperature

Leaf Wetness

Air, Soil, Water Temperature

DESCRIPTION	INTERNAL SENSOR	EXTERNAL PORTS	MAX. NUMBER OF SMEC 300 SENSORS
MODEL 1650 Item 3688WD1	TEMPERATURE RELATIVE HUMIDITY	4	2
MODEL 1525 Item 3687WD1	TEMPERATURE	4	2
MODEL 1450 Item 3684WD1	TEMPERATURE RELATIVE HUMIDITY	2	1
MODEL 1425 Item 3683WD1	TEMPERATURE	3	1
MODEL 1400 Item 3685WD1	NONE (EXTERNAL ONLY)	4	2
MODEL 1250 Item 3682WD1	TEMPERATURE RELATIVE HUMIDITY	NONE	0
MODEL 1225 Item 3681WD1	TEMPERATURE	1	0
MODEL 1200 Item 3680WD1	NONE (EXTERNAL ONLY)	2	1
MODEL 1120 Item 3554WD1	RAINFALL (SEE BELOW FOR DETAILS)	NONE	0
MODEL 1115 Item 3635WD1	REQUIRES EXTERNAL RAINFALL (SEE WEBSITE FOR DETAILS)	1	0

1120 Data-Logging Rain Gauge

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

3554WD1   Data-Logging Rain Gauge

WatchDog® Sensors & Cables

Soil Sensors

6470-6

6460

6450WD

3667

3669

6451

Light Sensors

3668I / 3676I

3668I6

WaterScout® SMEC 300 Soil Moisture/EC/Temperature Sensor

Measures soil moisture (Volumetric Water Content), EC, and temperature. Range: VWC: 0 to saturation (typically 50%), Accuracy: ±3%; EC: 0 to 10 mS/cm, Accuracy: ±2%. Requires WaterScout Calibration Device. Compatible with WatchDog 3000, 2000, and 1000 Series Stations and Pups.

6470-6	WaterScout SMEC 300 Sensor with 6 ft (1.8 m) Cable
6470-20	WaterScout SMEC 300 Sensor with 20 ft (6.1 m) Cable
6470CAL3V	WaterScout Calibration Device
2251	Conductivity Standard, 1.41 mS/cm, 250 mL

WaterScout® SM 100 Soil Moisture Sensor

Measures soil moisture (Volumetric Water Content) with little or no disturbance to the root zone. Range: 0 to saturation (typically 50%), Accuracy: ±3%. Compatible with WatchDog 3000, 2000, and 1000 Series Stations and Pups.

6460	WaterScout SM 100 Sensor with 6 ft (1.8 m) Cable
6460-20	WaterScout SM 100 Sensor with 20 ft (6.1 m) Cable

Watermark Soil Moisture Sensor

Measures soil moisture tension from 0 to 200 centibars. Compatible with WatchDog 3000, 2000, and 1000 Series Stations and Pups.

6450WD	Watermark Sensor with 11 ft (3.3 m) Cable
6450WD20	Watermark Sensor with 25 ft (7.6 m) Cable

External (Soil) Temperature Sensor

Measure soil, air, or water temperature with a resistance-based sensor. Range: -25 to 212°F (-32 to 100°C). Accuracy: ± 1°F (±0.5°C). Compatible with WatchDog 3000, 2000, and 1000 Series Stations and Pups.

3667	External (Soil) Temperature Sensor with 6 ft (1.8 m) Cable
3667-20	External (Soil) Temperature Sensor with 20 ft (6.1 m) Cable

Pressure Transducer

Connects to Irrometer tensiometers and utilizes the dial gauge for measurements. Accuracy: ±2%. Compatible with WatchDog 3000, 2000, and 1000 Series Stations and Pups.

3669	Pressure Transducer

Irrigation On/Off Sensor

Record and analyze relationships between irrigation periods and soil moisture. Does not control irrigation system, but monitors on/off periods. Range: On at 5psi. Compatible with WatchDog 3000, 2000, and 1000 Series Stations and Pups.

6451	Irrigation On/Off Sensor

LightScout® Silicon Pyranometer

Measure solar radiation between 300 and 1100 nanometers. 1000 Series Micro Stations Range: 0 to 1250 W/m^2, Accuracy: ±5%. All other Series & Pups Range: 0 to 1500 W/m^2, Accuracy: ±5%. Compatible with WatchDog 3000, 2000, and 1000 Series Stations and Pups.

3670I	LightScout Silicon Pyranometer

LightScout® UV Light Sensor

Measure UV radiation between 250 and 400 nanometers. Range: 0 to 200 µmol m^{-2} s^{-1}, Accuracy: ±5%
Compatible with WatchDog 3000, 2000, and 1000 Series Stations and Pups.

3676I	LightScout UV Light Sensor

LightScout® Quantum Light Sensors

Measure PAR light between 400 and 700 nanometers. Sensor bars average PAR light readings to minimize the effects of small shadows. Sensor bars are 19 in (48 cm) long and include mounting brackets. 1000 Series Micro Stations Range: 0 to 2500 umol m^{-2} s^{-1}, Accuracy: ±5%. All other Series & Pups Range: 0 to 3000 umol m^{-2} s^{-1}, Accuracy: ±5%. Compatible with WatchDog 3000, 2000, and 1000 Series Stations and Pups.

3668I	LightScout Quantum Light Sensor
3668I3	LightScout Quantum Light 3 Sensor Bar
3668I6	LightScout Quantum Light 6 Sensor Bar

Environmental Sensors

3667S

3665R
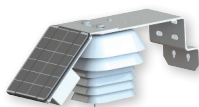
3666

3671

2655

Miscellaneous Cables

3664

3673

Digital Sensors (for Pups only)

3613ARS

3613THS

3665RD

3305ADD

Temperature (Micro) Sensor

Measure surface temperature of leaves, buds, and other tiny mediums.
Range: -25 to 212°F (-32 to 100°C). Accuracy: ± 1°F (±0.5 °C). Compatible with WatchDog 3000, 2000, and 1000 Series Stations and Pups.

3667S   **Temperature (Micro) Sensor**

Tipping Bucket Rain Collector

Measure rainfall in 1/100 inch increments. Self-emptying and freeze resistant. Range: 0.01", 0.25 mm, Accuracy: ±2% at < 2 in (5 cm) per hour. Compatible with WatchDog 3210, 2800, 2400 Series, and 1000 Series Micro Stations.

3665R   **Tipping Bucket Rain Collector**

Leaf Wetness Sensor

Measure leaf wetness with a resistance-based sensor designed to replicate a leaf. Range: 0 (dry) to 15 (wet). Compatible with WatchDog 3000, 2000, and 1000 Series Stations and Pups.

3666   **Leaf Wetness Sensor**

Barometric Pressure Sensor

Measure atmospheric pressure. Standard Sensor: Range: 26 to 32 inHg, 880-1080 hPa, Accuracy: ±0.05 inHg, ±1.7 hPa; High Altitude Sensor: 18.75 to 33.1 inHg, 635-1121 hPa, Accuracy: ±0.057 inHg, ±1.9 hPa
Compatible with WatchDog 3000, 2000, and 1000 Series Stations and Pups.

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

CO_2 Sensor

Measure CO_2 levels in ppm using NDIR technology. Requires AC power. Not waterproof. Range: 0 to 4000 ppm, Accuracy: ±5% or 50 ppm. Compatible with WatchDog 3000, 2000, and 1000 Series Stations and Pups.

2655   **CO2 Sensor**

Sensor Extension Cable

20 ft (6 m) extension for all sensors (except digital sensors), connect up to 3 cables per sensor.

3664   **Sensor Extension Cable**

General Input Cables

Connect non-WatchDog sensors to your WatchDog Station. (Item 3673) Range: 0 to 3v, Accuracy: ±0.005V. (Item 3674) Range: 0 to 20.1 mA, Accuracy: ±1%. Compatible with WatchDog 3000, 2000, and 1000 Series Stations and Pups.

3673   **0-3V Input Cable**
3674   **4-20mA Input Cable**

Digital Temperature/RH Sensor with Aspirated Radiation Shield

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

3613ARS   **Temperature/RH Sensor with Aspirated Radiation Shield**

Digital Temperature/RH Sensor with Passive Radiation Shield

Digital temperature and RH sensor with 6 ft (2 m) cable. Range: -40 to 212°F (-40 to 100°C), 0 to 100% RH, Accuracy: ±0.54°F from 50 to 131°F (0.3°C from 10 to 55°C) , ±2.5% RH Compatible with WatchDog Pups only.
3613THS   **Temperature/RH Sensor with Passive Radiation Shield**

Digital Rain Collector

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

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

Digital Anemometer

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

3305ADD   **Digital Anemometer**

Accessories

3665BG

3396TPS

3658A

3663A

3672

3659WD1

Tripod Mount

Rugged galvanized steel folding tripod and 3 ft (1 m) pole

3396TPS	**Tripod Mount with Ground Stakes**
3396TP	**Tripod Mount without Ground Stakes**

Bird Guard

Reduce debris and maintenance. Improve accuracy. Adjustable to fit 8" diameter rain collectors

3665BG	**Bird Guard**

Radiation Shield

Protect your Micro Station or logger from rain and measurement-distorting solar radiation. Compatible with 1000 Series Micro Stations and A-Series Data Loggers

3663A	**Radiation Shield**

Sliding Enclosure

Water resistant - mounts to pole or post. Compatible with 1000 Series Micro Stations

3658A	**Sliding Enclosure**

Waterproof Enclosure

Clamshell enclosure. Compatible with 1000 Series Micro Stations (Models 1400 or 1200, plus soil sensors)

3659WD1	**Waterproof Enclosure**

Alarm Output Module

Triggers an external device based on a sensor reading. Compatible with WatchDog 2000 Series Stations (Full and Mini)

3672	**Alarm Output Module**

Communication Options

3679WD1

Mid Range Wireless Communications - up to 2 mi (3 km)

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

3393B	**Mid Range Wireless Base Station**
3393W	**Mid Range Wireless for Remote Station**

Optional Yagi antennas increase line of sight range to 7 mi (11 km); see website for details

WatchDog® 1000/2000 Series Data Shuttle

Transport weather data from your 2000 Series Stations or 1000 Series Micro Stations to your host PC. Holds data for multiple stations (up to 5 Full, 10 Mini, or 12 Micro Stations). Includes soft-sided case (also available separately as Item 7500). Requires SpecWare 9 Basic or Pro.
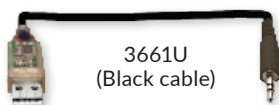
3679WD1	**WatchDog 1000/2000 Data Shuttle**

Cables & Adapters

3660-75SP

3661U
(Black cable)

3661U9
(White cable)

Short Range Modem Pair

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

3365WD2	**Short Range Modem Pair**

Direct Connect Cables for Weather Stations

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

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

USB-to-3.5mm-Stereo-Plug Adapter

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

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

USB-to-9-Pin-Serial Adapter

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

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

A-Series Data Loggers

The most affordable way to track environmental conditions for analysis.

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

How do you access the data?

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

Operating temperature range: -22 to 140°F (-30 to 60°C); A160: 32 to 122°F (0 to 50°C)
Temperature range: -40 to 185°F (-40 to 85°C); A160: 14 to 140°F (-10 to 60°C)
Accuracy: ±1.1°F (±0.6°C) at -4 to 122°F (-20 to 50°C), else ±2.2°F (±1.2°C); A160: ±1.0°F (±0.6°C)
RH range: 0 to 100%, Accuracy: ±3% from 10-90% at 77°F (25°C), else ±5%
CO_2 range: 0 to 9999 ppm, Accuracy: ±50 ppm ±5% of reading (0 to 2000 ppm), else unspecified

3611A

3612A

3617A

DESCRIPTION	INTERNAL SENSOR	INTERVALS	RADIATION SHIELD
MODEL A160 3611A	AIR TEMPERATURE RH, CO_2	5,333	INDOOR USE ONLY (NO SHIELD AVAILABLE)
MODEL A150 3612A	AIR TEMPERATURE RELATIVE HUMIDITY	5,333	OPTIONAL
MODEL A130 3610A	AIR TEMPERATURE EXTERNAL LEAF WETNESS	4,000	INCLUDED
MODEL A125 3617A	AIR TEMPERATURE EXTERNAL TEMPERATURE	4,000	RECOMMENDED
MODEL A110 3618A	AIR TEMPERATURE	8,000	OPTIONAL

3661A	**WatchDog® A-Series PC Connection Cable - USB Port** (required to download data)	
3663A	**Radiation Shield** (needed for outdoor use)	

B-Series Data Loggers

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

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

DESCRIPTION	INTERNAL SENSOR	INTERVALS	LCD DISPLAY
MODEL B102 T/RH 3621WD Temp Range: -4 to 185°F (-20 to 85°C) Temp Accuracy: ±1.1°F from 5 to 149°F (±0.6°C from -15 to 65°C) Humidity: 0 to 100%, ±5%	TEMPERATURE RELATIVE HUMIDITY	4000	NO
MODEL B101 8K 3620WD Range: -40 to 185°F (-40 to 85°C) Accuracy: ±1.1°F from 5 to 149°F (±0.6°C from -15 to 65°C)	TEMPERATURE	8000	NO
MODEL B100 2K 3619WD Range: -40 to 185°F (-40 to 85°C) Accuracy: ±1.8°F from -22 to 158°F (±1.0°C from -30 to 70°C) Use included plastic bag when measuring soil temperature.	TEMPERATURE	2000	NO

Docking Station

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

SpecWare 9 Basic

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

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

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

* Does not include USB cable

SpecWare 9 Pro

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

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

* Does not include USB adapter cable

Disease & Insect Forecast Model Packages

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

For more information, please visit our website.

BASIC VS. PRO

COMPARING SPEC 9 BASIC TO SPEC 9 PRO

	Basic	Pro
View Data		
On-demand graphing	✔	✔
Manage Data		
Calibration adjustment	✔	✔
Automatic data append	✔	✔
Single file per logger	✔	✔
International data format	✔	✔
Reports		
Standard reports	✔	✔
Custom reports		✔
Disease & Insect models		OPT
"Pest Alert" report models		OPT
Communications		
Direct connect or modem	✔	✔
Wireless capability		✔
Cellular or wi-fi modem		✔
Auto download		✔
Supported Products		
3000 Series Stations		✔
2000 Series Full Stations		✔
2000 Series Mini Stations		✔
Retriever & Pups		✔
1000 Series Micro Stations	✔	✔
A-Series & B-Series	✔	✔

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

Visit **specmeters.com/ updates** to ensure your software version is compatible with our newest WatchDog models.

Daily Report

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

Degree Days Report

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

Disease Models

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

WatchDog®

Columns grouped under **STANDARD FEATURES** (SpecConnect Compatible · LCD Display · Wireless · Evapotranspiration · Alarm Output-Ready [3672] · Air Temperature Sensor · Relative Humidity Sensor · Dew Point · Wind Speed & Direction · Tipping Bucket Rain Collector · Solar Radiation Sensor [3670I] · Available Sensor Ports) and **OPTIONAL SENSORS & ACCESSORIES** (Quantum Light Sensor [3668I] · Ext. (Soil) Temperature Sensor [3667] · Leaf Wetness Sensor [3666] · WaterScout Soil Moisture Sensor [6460] · WaterScout Soil Moisture/EC/Temperature Sensor [6470-6] · Digital Sensor Compatible · Radiation Shield [P=Passive or A=Aspirated]).

Item #	Model	SpecConnect Compatible	LCD Display	Wireless	Evapotranspiration	Alarm Output-Ready (3672)	Air Temp Sensor	Relative Humidity Sensor	Dew Point	Wind Speed & Direction	Tipping Bucket Rain Collector	Solar Radiation Sensor (3670I)	Available Sensor Ports	Quantum Light Sensor (3668I)	Ext. (Soil) Temp Sensor (3667)	Leaf Wetness Sensor (3666)	WaterScout Soil Moisture (6460)	WaterScout Soil Moisture/EC/Temp (6470-6)	Digital Sensor Compatible	Radiation Shield (P/A)
3000 Series Stations																				
3250xx	3250 ET Station	✔		✔	✔		✔	✔	✔	✔	✔	✔	1	Opt	Opt	Opt	Opt	Opt		P
3240xx	3240 Weather Station	✔		✔			✔	✔	✔	✔	✔	Opt	2	Opt	Opt	Opt	Opt	Opt		
3220xx	3220 Rain Station	✔		✔			✔	✔	✔		✔	Opt	2	Opt	Opt	Opt	Opt	Opt		P
3210xx	3210 Temp/RH Station	✔		✔			✔	✔	✔	Opt	Opt	Opt	2	Opt	Opt	Opt	Opt	Opt		P
2000 Series Mini Stations																				
3684WDPD	Plant Disease Station	✔	✔	Opt		✔	✔	✔	✔		✔		0			✔				P
3686WD	2475 TEMP/RH/PAR + 1 PORT	✔	✔	Opt		✔	✔	✔	✔		Opt	Opt	1	✔	Opt	Opt	Opt	Opt		P
3684WD	2450 TEMP/RH + 3 PORTS	✔	✔	Opt		✔	✔	✔	✔		Opt	Opt	2	Opt	Opt	Opt	Opt	Opt		P
3683WD	2425 TEMP +3 PORTS	✔	✔	Opt		✔	✔				Opt	Opt	3	Opt	Opt	Opt	Opt	Opt		P
3685WD	2400 4 PORTS	✔	✔	Opt		✔					Opt	Opt	4	Opt	Opt	Opt	Opt	Opt		
3345WD2	2800 8 PORTS+OPT RAIN	✔	✔	Opt		✔					Opt	Opt	9	Opt	Opt	Opt	Opt			
Retriever & Pups Wireless Sensor Network																				
3250DU	3250 ET Station Pup	✔		✔	✔		✔	✔	✔	✔	✔	✔	1						✔	P
3240DU	3240 Weather Station Pup	✔		✔			✔	✔	✔	✔	✔	Opt	2	Opt	Opt	Opt	Opt	Opt	✔	P
3220DU	3220 Rain Station Pup	✔		✔			✔	✔	✔		✔	Opt	2	Opt	Opt	✔	Opt	Opt	✔	P
3900PG	Plant Growth Pup Station	✔		✔			✔	✔		Opt	Opt	Opt	2	✔	Opt	Opt	Opt	Opt	✔	A
3900	Sensor Pup	✔		✔	Opt	Opt					Opt	Opt	4	Opt	Opt	Opt	Opt	Opt	✔	P
3901	Station Pup	✔		✔									0							
3902	Repeater Pup	✔		✔									0							
1000 Series Micro Stations																				
3685SM14	Irrigation Station		✔										0					✔ (4)		
3685SM13	Irrigation Station		✔								Opt	Opt	1	Opt	Opt	Opt	✔ (3)	Opt		
3684PD1	Plant Disease Station		✔				✔	✔			✔		0			✔				P
3684PAR1	Plant Growth Station		✔				✔	✔					1	✔	Opt	Opt	Opt	Opt		P
3688WD1	1650 TEMP/RH+ 4 PORTS		✔				✔	✔			Opt	Opt	4	Opt	Opt	Opt	Opt	Opt		
3687WD1	1525 TEMP+ 4 PORTS		✔				✔				Opt	Opt	4	Opt	Opt	Opt	Opt	Opt		
3684WD1	1450 TEMP/RH+ 2 PORTS		✔				✔	✔			Opt	Opt	2	Opt	Opt	Opt	Opt	Opt		
3683WD1	1425 TEMP+ 3 PORTS		✔				✔				Opt	Opt	3	Opt	Opt	Opt	Opt	Opt		
3685WD1	1400 4 PORTS		✔								Opt	Opt	4	Opt	Opt	Opt	Opt	Opt		
3682WD1	1250 TEMP/RH		✔				✔	✔					0							
3681WD1	1225 TEMP+ 1 PORT		✔				✔				Opt	Opt	1	Opt	Opt	Opt	Opt			
3680WD1	1200 2 PORTS		✔								Opt	Opt	2	Opt	Opt	Opt	Opt	Opt		
A-Series Loggers																				
3611A	A160 Temp/RH/CO$_2$		✔				✔	✔					0					+CO$_2$		
3612A	A150 Temp/RH		✔				✔	✔					0							
3610A	A130 Leaf Wetness/Temp		✔				✔						0			✔				
3617ARS	A125 Soil/Air Temp Station		✔				✔						0		✔					P
3617A	A125 Soil/Air Temp		✔				✔						0		✔					
3618A	A110 Temperature		✔				✔						0							
Sprayer Station																				
3349SSCH	Sprayer Station with Console		✔				✔	✔	✔	✔			0							

REFERENCE:

✔	STANDARD	**Opt** OPTIONAL	**BLANK** NOT AVAILABLE

1000 Series Micro & 2000 Series Weather Station Recertification Program

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

Diagnostic Check-Up

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

One-Year Warranty & Turnaround Time

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

Pricing

3300C	Weather Station Recertification 2000 Series
3600C	Weather Station Recertification 2000 Series Mini
3680C	Weather Station Recertification 1000 Series

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

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.
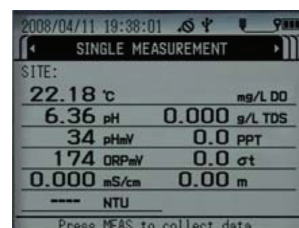
Control Unit Features:

- 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 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-53	U-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			✔		✔
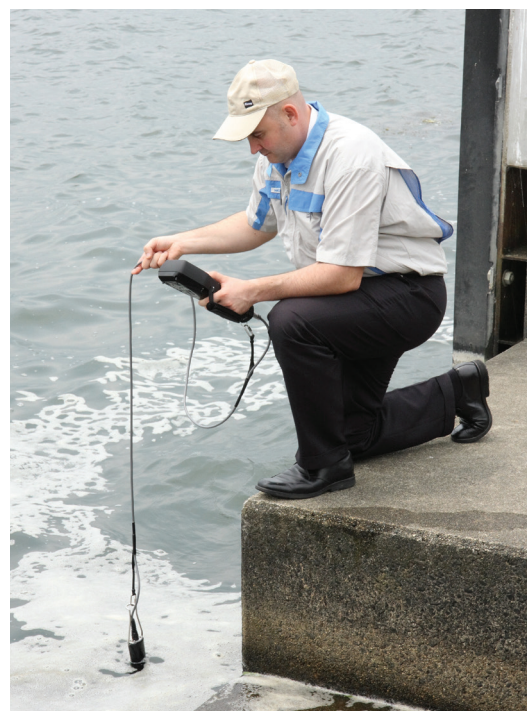
Avoid Drift Complaints

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

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

All-in-One Weather Station Measures:

- Wind Speed/Direction & Chill
- Air Temperature
- Barometric Pressure
- Humidity
- Dew Point
- Computes True Wind Speed

Additional Information

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

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 in (7 cm)

12.75 in (33 cm)

WatchDog® Sprayer Station

SPECIFICATIONS FOR SPRAYER STATION

Wind Resolution - Speed: 0.1 mph (0.2 km/h); Direction 1°

Wind Speed Range: 0 to 90 mph (0 to 145 km/h)

Wind Speed Accuracy: <12 mph (19 km/h): ±1.1 mph (1.7 km/h) ±10%;
   >12 mph (19 km/h): ±2.3 mph (3.7 km/h) or ±5%

Wind Direction Accuracy: 4 to 11 mph (6 to 18 km/h): ±5°; >12 mph (19 km/h): ±2°

Wind Accuracy Temperature Range: 32° to 131°F (0° to 55°C)

Operating Temperature: -13° to 131°F (-25° to 55°C)

Temperature Accuracy: ±2°F (±1.1°C) with wind above 4.6 mph (7.4 km/h)

Relative Humidity Range: 10 to 95%

Relative Humidity Accuracy: ±5% with wind above 4.6 mph (7.4 km/h)

Barometric Pressure Range: 24 to 33 in-Hg (800 to 1100 hPa)

Barometric Pressure Accuracy: ±0.029 in-Hg (±1 hPa)

Power Supply Voltage: 9 to 40 VDC; Current: <90 mA@12VDC

Sprayer Station

3349SSCH   **WatchDog® Sprayer Station with Console**
Buy as a Package & Save! See data on the display and/or download directly from console (requires SpecWare Mobile for WatchDog® Sprayer Station)

3349SSH   **WatchDog® Sprayer Station**
Includes sensor unit with magnetic base, 21 ft (7 m) cable with vehicle power and 9-pin serial connectors, and display/logging program for Windows Mobile PDA or Windows Laptop
Integrates Raven & AGCO

3349CN   **WatchDog® Sprayer Station Console**
Includes console with built-in data logger, USB-to-3.5mm stereo cable, and software CD

3349H   **Replacement Humidity Sensor**
3661U9   **USB-to-9-Pin-Serial Adapter**

Sunlight   Consistent plant quality starts with light.

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

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

LIGHTSCOUT®
Quantum PAR/DLI Light Meter

Grow healthier, greener plants by measuring their precise light intake.

- Provides accurate PAR light readings 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 (no computer needed)
- Integral mounting plate for: stand, stake, lanyard & hanger hole, and magnet mounts
- ¼-20 threaded hole for mounting on camera tripods & stands
- Includes sensor cover & soft carrying case

3415A   LightScout® Quantum PAR/DLI Light Meter

NEW

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	30 to 60	1,200 to 2,000	Excellent quality

*   Moles
** Micromoles (μmol/m^2·s)

Note: It is not possible to make a direct conversion between an instantaneous light measurement and the Daily Light Integral. Also, temperature is a key factor in plant quality and growth. Source: Hamrick, Debbie, ed. <u>Ball Red Book</u>. Batavia, IL: Ball Publishing, 2003.

LIGHTSCOUT® DLI 100 Light Meter

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

- Affordable & simple, one button operation
- Meter runs for 24 hours to calculate DLI
- Real-time intensity levels are shown in μmol·m^{-2}·s^{-1} every 4 seconds daily
- Battery included
- Greenhouse & Turf models available

3405G3	LightScout® DLI 100 Meter - Greenhouse (set of 3)
3405G	LightScout DLI 100 Meter - Greenhouse (1 unit)
3405T3	LightScout® DLI 100 Meter - Turf (set of 3)
3405T	LightScout DLI 100 Meter - Turf (1 unit)

For the best results place one meter in the sun, one in partial shade and one in full shade.

LIGHTSCOUT® Red/Far-Red Meter

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

3412

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

3412   LightScout® Red/Far-Red Meter

LIGHTSCOUT® UV Meter

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

3414F

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

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

LIGHTSCOUT® Quantum/PAR Meters

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

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

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

3415FXSE

LIGHTSCOUT® Foot-Candle Meter

- Displays immediate light level in units of foot-candles
- An affordable light measurement solution, with precision photodiode with cosine correction

3413F   LightScout® Foot-Candle Meter
7500   Soft-Sided Carrying Case

LIGHTSCOUT® External Light Sensor Reader

- Plug in a sensor, choose it on the LCD, and measure UV, Quantum Light, or Solar Radiation
- Reads any of Spectrum's external light sensors

3415FX   LightScout® External Light Sensor Reader
Compatible light sensors sold separately:
3668I   LightScout® Quantum Light Sensor (PAR Light)
3668I3   LightScout® Quantum Light 3 Sensor Bar
3668I6   LightScout® Quantum Light 6 Sensor Bar
3670I   LightScout® Silicon Pyranometer Sensor (Solar Radiation)
3676I   LightScout® UV Sensor

3415FX

TDR 350 Soil Moisture Meter

Backed with proven time-domain measurement technology, the TDR 350 accurately measures soil moisture across a full range of soil conditions. An ergonomic design and built-in display provides quick and easy measurements for water management.

What does it measure?

Soil moisture (Volumetric Water Content %), salts (electrical conductivity) and surface temperature, plus optional Infrared Temperature sensor

Common Applications

- Reliable portable meter for instant, accurate and actionable root zone moisture and soil EC readings average of rod length
- Irrigation scheduling, syringing practices, and soil flushes
- Track and trend data from day to day, month to month and season to season to optimize turf Health and Conditioning

Features & Benefits

- Backlit Display - Easy to see on early mornings and bright sunny days
- Improved Layout & Larger Digits - Clearly view readings, settings and icons
- Integrated Bluetooth & GPS - Greater accuracy with onboard components
- Internal Data Logger - Records approximately 50,000 measurements with GPS coordinates
- Optional TDR 300 Mode

How do you access the data?

- Manual – download the data with a USB flash drive, no special software or cable required
- Hands free – instantly view data on your smartphone or tablet via FieldScout Mobile App
- Cloud – SpecConnect FieldScout Pro subscription automatically uploads data to your personal web portal to view enhanced mapping and reporting features
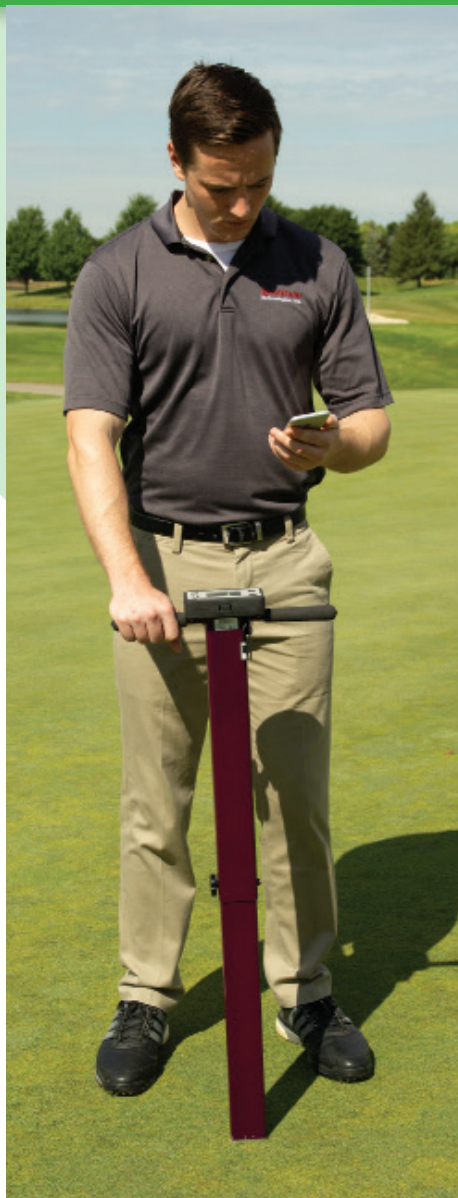
SpecConnect Web Portal
showing TDR 350 data

6435   **TDR 350 Soil Moisture Meter**
Rods required and sold separately. See page 35.
Note: Rods are required for TDRs to function
Includes carrying case.

6435TS   **Infrared Temperature Sensor for TDR 350**

INTRODUCING THE NEW FIELDSCOUT®

TDR 250 ECONOMY SOIL MOISTURE METER

IF YOU DON'T MEASURE IT, YOU CAN'T MANAGE IT EFFECTIVELY

NEW

The TDR 250 offers the same proven time-domain measurement technology as the other TDR meters, but with a 20% less investment. The TDR 250 is a simplified portable soil-moisture meter that captures measurements in the root zone.

What does it measure?
Soil moisture (Volumetric Water Content %)

Common Applications
- Reliable portable meter for instant, accurate and actionable root zone moisture readings
- Irrigation scheduling, syringing practices, and soil flushes
- Ideal for daily-fee/municipal golf courses, sports turf fields, and row crop farmers

Features
- Displays VWC% (with running average)
- Operates in TDR 300 mode or salinity-corrected (TDR 350) mode
- Soil measurements in less than a second
- Internal data logging up to 124,000 measurements
- USB port for a flash drive data download
- High-contrast display with backlight for easy viewing
- Interchangeable soil probes (varying options) - sold separately

SPECIFICATIONS FOR TDR 250 SOIL MOISTURE METER
VWC Range: 0% to saturation, Resolution: 0.1%, Accuracy: ±3.0% VWC

6250   TDR 250 Soil Moisture Meter
Rods required and sold separately. See page 35.
Note: Rods are required for TDRs to function
Carrying case sold separately.

6430CASE   TDR 250/350 Carrying Case

TDR 150 Soil Moisture Meter

An affordable alternative to the TDR 350, the TDR 150 is a compact meter that allows you to obtain readings on-the-go. Ideal for measuring containers on benches, variable rod length options provide soil moisture measurements for your ideal root depth.

What does it measure?

Soil moisture, (Volumetric Water Content %), salts (electrical conductivity) and temperature (surface thermistor)

Features & Benefits

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

How do you access the data?

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

6445   **TDR 150 Soil Moisture Meter**
Includes carrying case. Rods sold separately. See page 35.

6445TS   **Infrared Temperature Sensor-TDR 150**

SMARTIRRIGATION:
Maximize Irrigation Audits with TDR

SPECIFICATIONS FOR TDR 150/350 SOIL MOISTURE METERS

VWC Range: 0% to saturation, Resolution: 0.1%, Accuracy: ±3.0% VWC

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

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

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

TDR Rods

Multiple length options for varying root zones.

6428FS4	**Two 1.5 inch (3.8 cm) Rods**
6429FS4	**Two 3 inch (7.6 cm) Rods**
6431FS4	**Two 4.8 inch (12 cm) Rods**
6432FS4	**Two 8 inch (20 cm) Rods**
6430PH	**Pilot Hole Maker for TDR Meters**
	Includes two 3 inch (7.5 cm) rods

TDR Spacers

- For use in TDR 300 Mode
- Using 1.5" (3.9 cm) rods, easily measure 0.5" and 1" depths
- Easily attach and detach from any FieldScout TDR meters
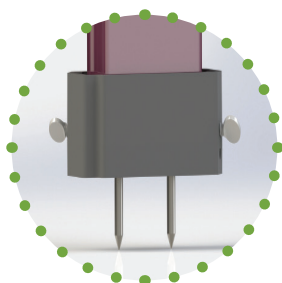
6435SP   **Rod Spacer**

Infrared Temperature Sensor

- Predict turf wilt with higher accuracy
- Easily correct a moisture deficit earlier and reduce heat stress
- Quickly and accurately measure surface temperatures
- Use IR temperature real-time - instantaneous readings
- Easy installation to our FieldScout TDR 350 and TDR 150

6435TS	**Infrared Temperature**
	Sensor for TDR 350
6445TS	**Infrared Temperature**
	Sensor for TDR 150

TDR Model Comparison

FEATURES	TDR 150	TDR 250	TDR 350
Measure Volumetric Water Content	✓	✓	✓
Displays EC + Surface Temperature	✓	N/A	✓
Interchangeable soil probes	✓	✓	✓
Backlit Display	✓	✓	✓
T-Handle	N/A	✓	Telescoping
Infrared Temperature Sensor	Optional	N/A	Optional
GPS/GNSS + Bluetooth	Optional	N/A	✓
Carrying Case	✓	Optional	✓
FieldScout Mobile/SpecConnect Capability	✓	N/A	✓

Supported with

Developed Technology
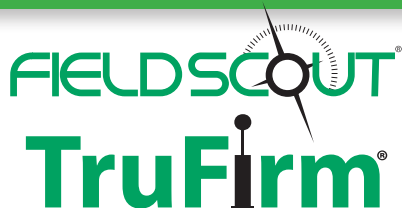
Based on USGA technology, the FieldScout® TruFirm® offers a quick, easy and affordable method to measure the firmness of turf, bunker sands and other playing surfaces. Data acquired from the device allows turf management professionals to measure the relationship between the compaction of the soil and the moisture level to quantify safety and performance of playing conditions.

What does it measure?

Surface Firmness/Hardness (depth of impact in inches)

Common Applications

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

Features & Benefits

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

How do you access the data?

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

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

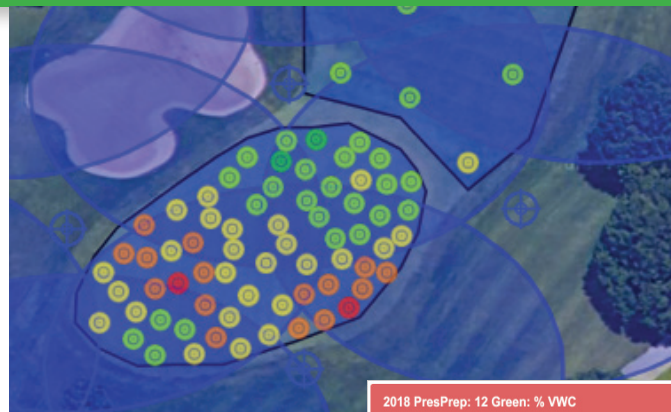## SPECIFICATIONS FOR TRUFIRM

Range: 0.1 in - 1.5 in (2.54 mm - 38.1 mm)

Resolution: 0.01 in at 1.00 in - 1.50 in (0.25 mm at 25.4 mm - 38.1 mm)
        0.003 in at 0.00 in - 0.999 in (0.076 mm at 0 mm - 25.4 mm)

Diameter of Hammer: 1.68 in (4.45 cm)

Height: 27 in (69 cm)

Weight: 4.3 lb (1.95 kg)

Measurement Units: Depth of travel (inches)

Power: 2 AA batteries (included)

SpecConnect
Compatible

FieldScout® Mobile App

Data at your fingertips! We've made it easier for you to send data from the field to your smartphone.

Basic Features

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

Basic App capabilities include:

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

Pro Features

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

FieldScout Pro Mode requires purchase of 1-year SpecConnect FieldScout subscription.

Pro Mobile App capabilities include:

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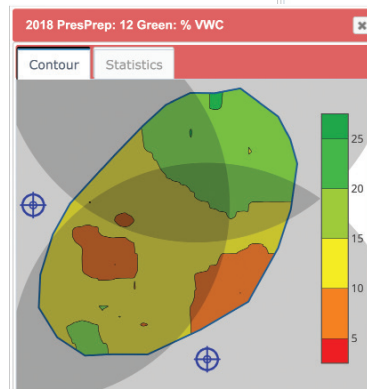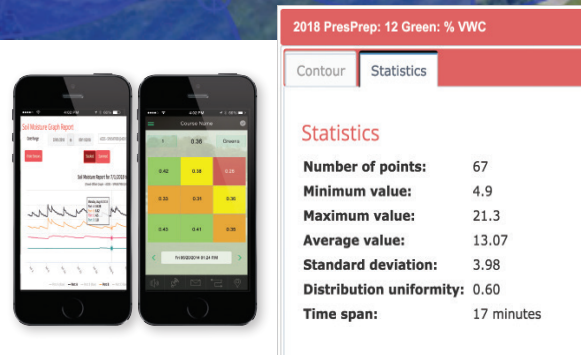- Map locations of sprinkler heads, pin locations and more

FieldScout® Mobile Compatible Items

- TDR 350 Soil Moisture Meter
- TruFirm Turf Firmness Meter
- TDR 150 Soil Moisture Meter (with optional GPS/Bluetooth upgrade)
- TDR 300 Soil Moisture Meter (with optional Bluetooth device)

FieldScout Mobile App   FREE

3035A	SpecConnect FieldScout Pro Subscription (1-yr) 1-3 Devices
3035B	SpecConnect FieldScout Pro Subscription (1-yr) 4-7 Devices
3035C	SpecConnect FieldScout Pro Subscription (1-yr) 8+ Devices
6453BT	FieldScout Bluetooth Device for TDR 300

Statistics

Number of points:	67
Minimum value:	4.9
Maximum value:	21.3
Average value:	13.07
Standard deviation:	3.98
Distribution uniformity:	0.60
Time span:	17 minutes

FIELDSCOUT MOBILE APP BASIC vs. PRO

	Basic	Pro
Basic Grid Map	✔	✔
Change Number of Grid Zones	✔	✔
Customizable Google Map Image		✔
Saves the Average Measurement by Zone	✔	✔
Email the Map/Results View	✔	✔
Freeform Notes		✔
Freeform Mode		✔
Guided Mode (Auto-Advancing through Zones)		✔
SpecConnect Data Sharing		✔
Auto-Upload to SpecConnect		✔
Add User Note or Comment to Individual Reading or Zone		✔
Irrigation/Soil Moisture Audit		✔

WATERSCOUT® SM 100 Soil Moisture Sensor

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

- Measures Volumetric Water Content (VWC%) of soil
- Capacitance-type sensor responds immediately to changes in soil moisture content for better irrigation decisions
- Calibrated for mineral soils or soilless media
- Install permanently or use to take spot measurements
- Can be read with the FieldScout® Soil Sensor Reader, WatchDog® 3000, 2000, 1000 Series Stations, and Pups

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

SPECIFICATIONS FOR WATERSCOUT SM 100

Accuracy: 3% VWC @ EC < 8 mS/cm; Range: 0% VWC to saturation

Power Requirements: 3 to 5V @ 6 to 10 mA

Output: Analog voltage 0.5 - 1.5V for a 3V excitation (ratiometric for other excitation voltages)

Resolution: 0.1% VWC

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

Sensing Area: 2.4 in (6 cm) x 0.8 in (2 cm)

WATERSCOUT® SMEC 300 Soil Moisture/EC/Temperature Sensor

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

- Capacitance-type soil moisture sensor
- Carbon ink electrodes provide large measuring surface for electrical conductivity (EC)
- Can be read with the FieldScout® Soil Sensor Reader, WatchDog® 3000, 2000, 1000 Series Stations, and Pups
- Recommended placement of sensors is 10 feet separation to prevent EC interference when in the same medium
- WaterScout® Calibration Device required unless using Soil Sensor Reader

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

SPECIFICATIONS FOR WATERSCOUT SMEC 300

Accuracy: VWC: 3%, EC: ±2%, Temp: ±1°F (0.6°C); Range: VWC: 0% VWC to saturation, EC: 0 to 10 mS/cm, Temp: 33 - 175°F (0.5 - 80°C)

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

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

Power Requirements: 3V @ 6 to 10 mA

Output: Analog voltage, time division multiplexed

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

FIELDSCOUT® Soil Sensor Reader

Shown measuring in soilless media mode to gather immediate data.

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

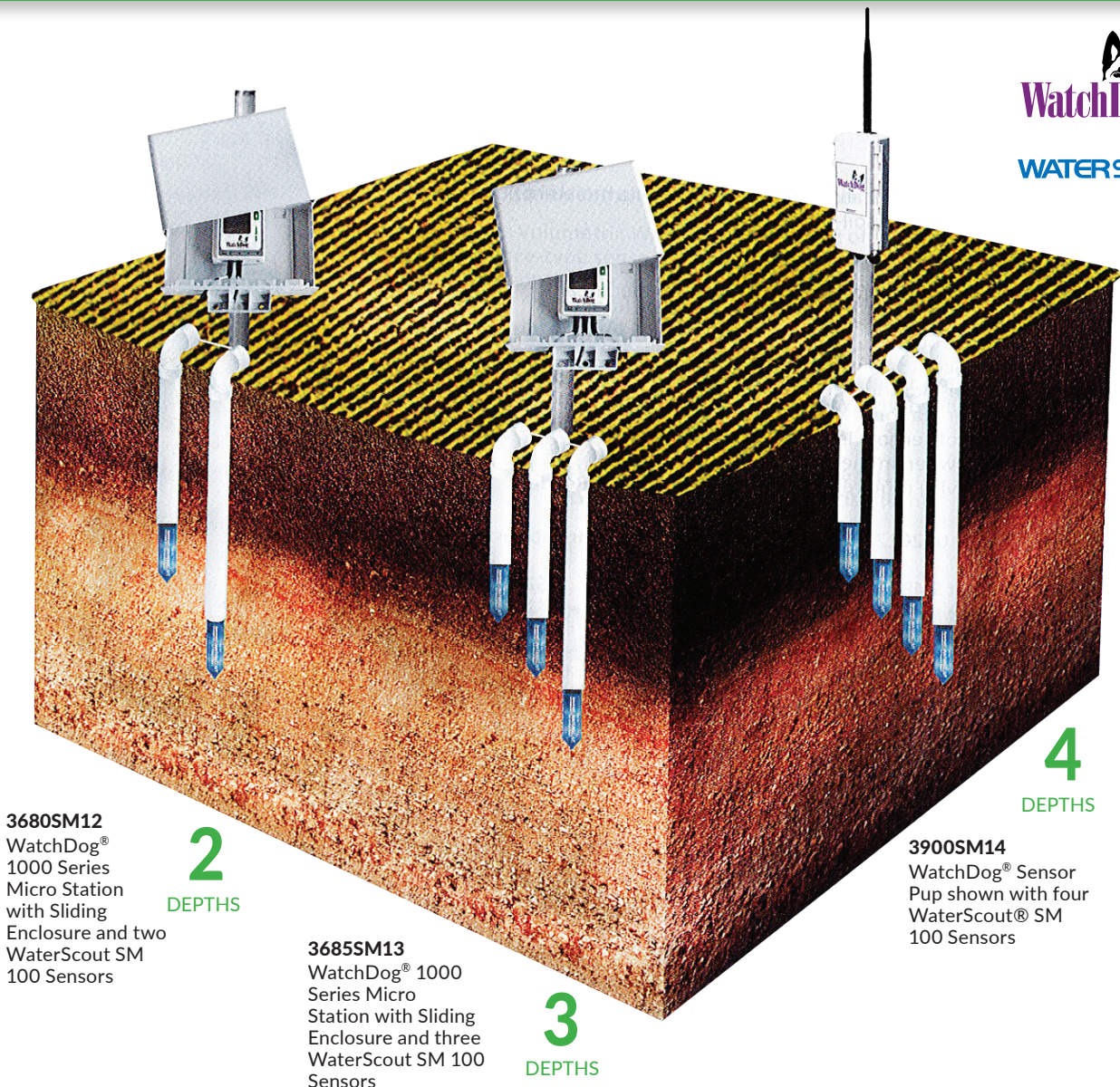|	
6466	FieldScout® Soil Sensor Reader
6450FSADPT	Watermark Adapter for Soil Sensor Reader
7500	Soft-Sided Carrying Case*

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

3680SM12
WatchDog® 1000 Series Micro Station with Sliding Enclosure and two WaterScout SM 100 Sensors

2 DEPTHS

3685SM13
WatchDog® 1000 Series Micro Station with Sliding Enclosure and three WaterScout SM 100 Sensors

3 DEPTHS

3900SM14
WatchDog® Sensor Pup shown with four WaterScout® SM 100 Sensors

4 DEPTHS

WatchDog® Irrigation Stations with WaterScout® Sensors and Watermark Sensors

- Affordably monitor, compare and evaluate soil moisture levels from two, three, or four user-defined soil depths.
- Includes WatchDog® Station and WaterScout Sensors with 20 ft (6 m) cables - save money when purchased as a system

- Micro Stations also include the Protective Sliding Enclosure
- Watermark Stations include Watermark Soil Moisture Sensors with 11 ft (3.3 m) cables
- Add soil moisture sensors to your WatchDog Pup network and see your data on SpecConnect.net
- Add a WaterScout® SMEC 300 Soil Moisture/EC/Temp Sensor (Item 6470-20) and monitor soil temperature and EC levels
- Requires SpecConnect, SpecWare 9 Basic or Pro software.

	MODEL 1200 MICRO STATION	MODEL 1400 MICRO STATION	SENSOR PUP IRRIGATION STATION			MODEL 1200 MICRO STATION	MODEL 1400 MICRO STATION
2 WaterScout SM 100 Soil Moisture Sensors	3680SM12	3685SM12	3900SM12		**2 Watermark Soil Moisture Sensors**	3680WM12	3685WM12
3 WaterScout SM 100 Soil Moisture Sensors		3685SM13	3900SM13		**3 Watermark Soil Moisture Sensors**		3685WM13
4 WaterScout SM 100 Soil Moisture Sensors		3685SM14	3900SM14		**4 Watermark Soil Moisture Sensors**		3685WM14

6450

Watermark Soil Moisture Sensor

Economical way to measure soil moisture tension.

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

6450	**Watermark Sensor with 5 ft (1.5 m) cable**
6450FSADPT	**Watermark Adapter for Soil Sensor Reader**
6450WD	**Watermark Sensor for WatchDog® Stations & Pups with 11 ft (3.3 m) cable**
6450WD20	**Watermark Sensor for WatchDog® Stations & Pups with 25 ft (7.6 m) cable**
6450AH	**Watermark Adapter for WatchDog® Stations & Pups**

6421

Irrometer Tensiometers

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

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

6425	**Service Kit - Required**
6419	**SR Model 6 in (15 cm) Depth**
6420	**SR Model 12 in (30 cm) Depth**
6421	**SR Model 18 in (45 cm) Depth**
6422	**SR Model 24 in (60 cm) Depth**
6423	**SR Model 36 in (90 cm) Depth**
9917	**Replacement tip for SR models**

- Connect your "SR" model (Items 6419 thru 6423) tensiometer to your weather station. The Pressure Transducer adapts to Irrometer tensiometers and allows use of the dial gauge for in-field measurements

3669	**Pressure Transducer**

6400

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

6400	**9 in (22 cm) Soil Moisture Tester**
6405	**24 in (60 cm) Soil Moisture Tester**

FIELDSCOUT® SC 900 Soil Compaction Meter

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

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

* GPS interface requires two cables. The GPS/DGPS cable (item 2950CV5) is available from Spectrum. A PC serial interface cable supplied by the manufacturer of the GPS receiver is also required.

** PC cable connects to a computer USB port. See our website for other cable connection options.

6110FS	**FieldScout® SC 900 Soil Compaction Meter**
2950CV5	**GPS/DGPS Cable**
7250	**GPS Unit Mounting Bracket**
6110FST	**Replacement Depth Target**
6106	**1/2 in Replacement Tip (Fine soils)**
6107	**3/4 in Replacement Tip (Coarse soils)**

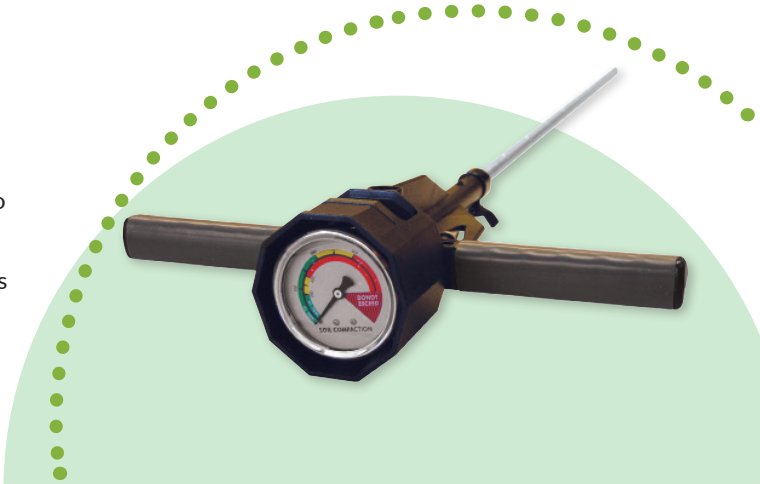FieldScout SC 900

SPECIFICATIONS FOR FIELDSCOUT SC 900

Measurement Units:	Cone Index (PSI or kPa)
Resolution:	1 in (2.5 cm), 5 PSI (35 kPa)
Accuracy:	±0.5 in (1.25 cm) Depth, ±15 PSI (103 kPa) Pressure
Range:	0 to 18 in (0 to 45 cm), 0 to 1,000 PSI (0 to 7,000 kPa)
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 read out.

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

6120	**Soil Compaction Tester**
6121	**1/2 in Replacement Tip (Fine Soils)**
6122	**3/4 in Replacement Tip (Coarse Soils)**

LAQUAtwin

pH K⁺ Ca²⁺ Na⁺ NO₃⁻ EC

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
Containing the measuring electrode and temperature sensor, the flat sensor is the heart of the LAQUA Twin meter family. Enables six different methods of sample measurement

Put the power of a laboratory right 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 0.3 ml
- Automatic temperature compensation, waterproof, auto power-off
- Includes two CR2032 batteries, case and calibration standards

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

2103ALP	**LAQUA Twin pH meter**
	Includes case, batteries, and pH 4 & 7 standards
2110	**Refill Solutions - pH 4 and 7, 60 mL ea.**
2143L	**LAQUA Twin pH Replacement Sensor**
2135L	**Sampling Sheets - 100 pieces**

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

2205LP	**LAQUA Twin EC Meter**
	Includes case, batteries, and calibration standards
2210L	**Conductivity Standard, 1.41 mS/cm**
	(6 - 14 mL bottles)
2242L	**Replacement Sensor**

	pH	Conductivity (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:	0.1 mL to 2.0 mL	0.12 mL to 2.0 mL	0.3 mL to 2.0 mL	0.3 mL to 2.0 mL	0.3 mL to 2.0 mL	0.3 mL to 2.0 mL
Measurement Range:	0 to 14 pH	0 to 199.9 mS/cm	2 to 9900 ppm	4 to 9900 ppm	6 to 9900 ppm	4 to 9900 ppm
Calibration:	pH 4 and pH 7	1.41 mS/cm	150 ppm and 2000 ppm*	150 ppm and 2000 ppm*	34 ppm and 450 ppm*	150 ppm and 2000 ppm*
Reproducibility:	± 0.1 pH	± 2%	± 10% or ± 10 ppm	± 10% or ± 10 ppm	± 10% or ± 10 ppm	± 20% or ± 20 ppm
Display:	4-digit digital LCD display with Backlight (New)					
Power:	CR2032 coin batteries (x2)					
Battery Life:	400 hours continuous operation with Backlight Off (New)					
Operating Range:	40°F (5°C) to 105°F (40°C), 85% relative humidity					
Dimensions:	164mm x 29mm x 20mm					

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

LAQUA Twin Sodium Na+

2500GL	LAQUA Twin Sodium (Na+) Meter
	Includes case, batteries, and calibration standards
2540L	Replacement Sodium Sensor
2514L	150 ppm Na+ Standard, 6 - 14 mL bottles
2518L	2000 ppm Na+ Standard, 6 - 14 mL bottles
2535	Na+ Soil Test Kit w/30 Samples
	Includes filter paper, cups, and soil scoop
2135L	Sampling Sheets - 100 pieces

LAQUA Twin Potassium K+

2400GL	LAQUA Twin Potassium (K+) Meter
	Includes case, batteries, and calibration standards
2440L	Replacement Potassium Sensor
2414L	150 ppm K+ DI Standard, 6 - 14 mL bottles
2418L	2,000 ppm K+ DI Standard, 6 - 14 mL bottles
2434	K+ Soil Test Kit w/30 Samples
	Includes solutions, filter paper, cups, and soil scoop
2135L	Sampling Sheets - 100 pieces

LAQUA Twin Nitrate NO₃⁻

2305GL	LAQUA Twin Nitrate (NO₃⁻) Meter
	Includes case, batteries, and calibration standards
2345L	Replacement Nitrate Sensor
2311	450 ppm NO₃⁻-N Standard, 6 - 14 mL bottles
2312	34 ppm NO₃⁻-N Standard, 6 - 14 mL bottles
2330	NO₃⁻ Soil Test Kit w/30 Samples
	Includes solutions, filter paper, cups, and soil scoop
2135L	Sampling Sheets - 100 pieces

LAQUA Twin Calcium Ca²⁺

2450L	LAQUA Twin Calcium (Ca²⁺) Meter
2455L	Replacement Calcium Sensor
2460L	150 ppm Ca²⁺ Standard, 6-14 mL bottles
2460L	2000 ppm Ca²⁺ Standard, 6-14 mL bottles
2135L	Sampling Sheets - 100 pieces

pH 400 and 600 Meters
Fast, easy and accurate "direct" soil pH measurement.

Modern User Interface

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

Rugged and Ergonomic Design

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

ISFET (Ion Sensitive Field Effect Transistor) Probes

Glass Free and Durable Probe - 2 Options
Unlike glass electrodes, the FieldScout 400 and 600 pH Meters feature ISFET pH electrodes that will not shatter. Neither model requires wet storage.
• Both come with a 6-month warranty
• Spectrum ISFET probes are made of high quality materials such as PEEK, ABS, and PVC
• Sample directly in plug trays, pots, containers, solutions, and soilless media

2107	FieldScout pH 400 Meter
	Meter includes case, batteries, AC adapter, brush, and pH 4 & 7 standards
	(Does not include pH Probe - order separately below)
2108	FieldScout pH 600 Meter
	Meter includes case, batteries, AC adapter, brush, and pH 4 & 7 standards
	(Does not include pH Probe - order separately below)
2127	FieldScout pH Meter Blunt Tip ISFET Probe
2128	FieldScout pH Meter Pin Point Tip ISFET Probe
2110	Refill Solutions - pH 4 and 7, 60 mL each

Robust probe design makes it easy to go from sample to sample.

pH 400

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

pH 600

Includes all features of the FieldScout pH 400 Meter, plus:
• Internal storage of measured data points, up to 65,000 measurements
• Ability to query both momentary pH value and temperature
• Supports up to 5-point calibration

Pin Point Tip ISFET Probe

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

Blunt Tip ISFET Probe

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

FIELDSCOUT®

Direct Soil EC Meter

Instant and accurate direct EC and temperature measurements.

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

NEW

8 in (20 cm) Probe Option

2266FS	**FieldScout® Direct Soil EC Meter w/ 8 in Probe**
	Includes Carrying Case and 2.76 Standard
2266PROBE	**FieldScout EC 8 in Probe (Replacement)**
2251	**Conductivity Standard, 1.41 mS/cm, 250 mL**

24 in (60 cm) Probe Option

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

See website for replacement probes for previous models 2265FS and 2265FSTP.

2266FS

2266FSTP

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

Exclusive Patented Paired Sensor

FIELDSCOUT® CM 1000 Chlorophyll Meter

- "Point-and-shoot" technology to instantly measure red (700nm) and NIR (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 (not included)**
- Includes hard carrying case and batteries

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

Technology based on an exclusive patent license from **NASA**

FIELDSCOUT® CM 1000 NDVI Meter

- "Point-and-shoot" technology to instantly measure red (660 nm) and near infrared (840 nm) spectral bands.
- Detects stress earlier than visual monitoring
- Computes Normalized Difference Vegetative Index (NDVI)
- Laser guides outline the edges of the measured sample area
- Calculates and displays a running average for multiple readings
- Connects to any GPS receiver that has a serial output option*
- Equipped with internal data logger and RS-232 port
- Records 3,250 measurements (1,350 with GPS/DGPS)
- Configure and download meter with FieldScout® software (included)**
- Includes hard carrying case and batteries

2953	FieldScout CM 1000 NDVI Meter
2950CV5	GPS/DGPS Cable

FIELDSCOUT® TCM 500 NDVI Turf Color Meter

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

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

SPECIFICATIONS FOR TCM 500

Measurement System: Reflectance of red (660 nm) and NIR (850 nm) light

Measurement Area: Approx. 3.0 in (7.6 cm)

Measurement Units: Percent reflectance (0.0 to 99.9) of Red and NIR

NDVI (0.000 to 1.000); Grass Index (1.00 to 9.00)

Power Source: 1 9 V alkaline battery (included); approx. 3,000 measurements

Repeatability: ± 5% of measurement

Turf Color Index:

Grass Index=7.20
N=10   Avg=7.44

NDVI:

NDVI = .784
N=10 Avg = .780
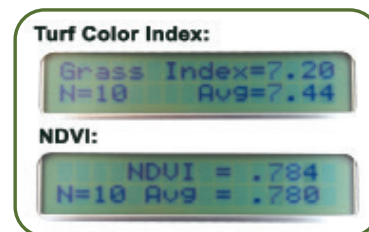
TCM 500 LCD Display

* GPS interface requires two cables. The GPS/DGPS cable (item 2950CV5) is available from Spectrum. A PC serial interface cable supplied by the manufacturer of the GPS receiver is also required.

** PC cable connects to a computer USB port. See our website for other cable connection options. Georeferenced data can be uploaded to SpecConnect for mapping.

Green = Nitrogen
Chlorophyll Meters

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

SPAD 502 Plus Chlorophyll Meter (2900P)

Quantifies the health of your crops.

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

SPECIFICATIONS FOR SPAD 502 PLUS

Optical Density Difference at two wavelengths: 650 nm and 940 nm

Measurement Area: 2 mm x 3 mm (Approximately 3/32 in x 1/8 in)

Light Source: 2 LEDs

Receptor: Silicon Photodiode

Power Source: 2 AA alkaline batteries (1.5V)

Repeatability: Within ±0.3 SPAD unit

SPAD Value: Index of relative chlorophyll content; -9.9 to 199

SPAD Data-Logging Model (2900PDL)

All the features of the 2900P, plus:
- Connects to any GPS receiver that has a serial output option*
- Equipped with internal data logger and RS-232 port
- Records 4,096 measurements (1,488 with added GPS/DGPS option)
- Configure and download meter with FieldScout® software (included)**

*   GPS interface requires two cables. The GPS/DGPS cable (item 2950CV5) is available from Spectrum. A PC serial interface cable supplied by the manufacturer of the GPS receiver is also required.

** PC cable connects to a computer USB port. See our website for other cable connection options. Georeferenced data can be uploaded to SpecConnect for mapping.

2900PDL	Minolta SPAD 502DL Plus Chlorophyll Meter with RS-232 Data Port and Built-In Data Logger (includes software and USB PC cable)
2900P	Minolta SPAD 502 Plus Chlorophyll Meter Basic version, no Data Logger
2950CV5	GPS/DGPS Cable
2900CASE	Replacement Hard Carrying Case

Non-invasive measurement with readings in less than 2 seconds

Spectrum® Technologies, Inc.

"To Measure Is To Know"

Distributed by:

3600 Thayer Court
Aurora, Illinois 60504 USA

Toll Free: 800-248-8873
Phone: 815-436-4440
Fax: 815-436-4460

info@specmeters.com
www.specmeters.com

INTRODUCING THE NEW

TDR 250 ECONOMY SOIL MOISTURE METER

SAME RENOWNED MEASUREMENT ACCURACY FOR 20% LESS

CONNECT WITH US!