Spectrum° Technologies, Inc. "To Measure Is To Know"







AGRONOMIC SMART SOLUTIONS

2022 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.

Mike Thurm



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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



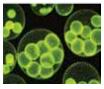
WEATHER Temperature, Light, Wind, Rain, Relative Humidity and Leaf Wetness Monitoring



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 NO₃⁻, 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.

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*Award Winning Innovation

CE



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.



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.

3240ME 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



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.

3220ME 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.

3210ME 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	•	•	•	v	-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 + Wireless Network



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

In-Field Applications



3210 Temp/RH Station Pup + Soil Moisture/EC/ Temperature Sensor + Soil Moisture Sensor

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.



3250 ET Station Pup

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



3220 Rain Station Pup + Leaf Wetness Sensor

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.



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

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



Plant Growth Pup Station

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

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



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.



HOW MANY?

DO YOU HAVE OBSTACLES, LIKE

BUILDINGS, HIGH/

LOW SPOTS THAT

MIGHT INHIBIT

TRANSMISSION?

TREES OR

ARE YOU CONNECTING TO OTHER WEATHER STATIONS?

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	<u>868Mhz</u>	
3900	3930	WatchDog Sensor Pup

3000 Series Pup Stations

322000 3220E0 watchDog wireless Rain Station Pup	900Mhz 3250DU 3240DU	868Mhz 3250EU 3240EU	WatchDog Wireless ET Station Pup WatchDog Wireless Weather Station Pup
3210DU 3210EU WatchDog Wireless Temp/RH Station Pu	3220DU 3210DU	3220EU 3210EU	WatchDog Wireless Rain Station Pup 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)

<u>900Mhz</u>	<u>868Mhz</u>	
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.



WHAT ARE YOU MEASURING?

WHAT INFLUENCES YOUR CROP MOST?

WHAT ELSE DO YOU WANT TO KNOW?

3613ARS Temperature/RH Sensor with Aspirated Radiation Shield **3613THS** Temperature/RH Sensor with Passive Radiation Shield Digital Rain Collector with Bird Guard (Sensor Pup Only) 3665RD Digital Anemometer (Sensor Pup Only) 3305ADD 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 External (Soil) Temperature Sensor with 6 ft (1.8 m) Cable 3667 3666 **Leaf Wetness Sensor** 36701 **LightScout Silicon Pyranometer** 36681 **LightScout Quantum Light Sensor**

Optional Accessories

3999 Solar Power Package for Pups & Retrievers

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



Sensor Options





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

STEP 4

CHOOSE
ADDITIONAL
ACCESSORIES

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







WI-FI OR CELLULAR?



3928M DataScout cellular Modem mounted with a WatchDog Retriever



- 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 For Real-Time Data



Use this powerful tool as a central point for viewing and evaluating realtime 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

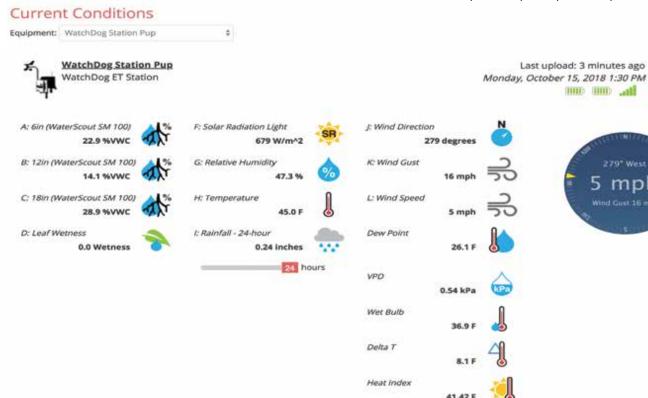
- Daily/Hourly
- Multi Station/Sensor
- **Equipment Inventory & Activity**
- Rainfall and Soil Moisture (product specific)
- And More!

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









- 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

3065

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

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-vr) 8 or more devices

API Service (one-time charge)

SpecConnect WATCHDOG SUBSCRIPTION FEATURES

Customizable Dashboard	1
Current Conditions	1
Basic Wind Speed/Direction	1
& Temp Gauges	
Advanced Wind Rose	1
Data Storage	1
Mapping	1
Calibration Adjustment	1
Disease Models Reports (additional fee)	1
Basic Reporting	1
Custom Reporting	✓
Evapotranspiration (ET) Reports	✓
Degree Days Reports	✓
Daily Light Integral (DLI) Reports	1
Chill Hours/Units/Portions Reports	✓
Alerts (additional fee)	1
API Service (one-time charge)	1

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

Leaf wetness and temperature Required Sensors:

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

Almond Alternaria Leaf Spot Models Included:

Almond Anthracnose

Pecan Scab

Pistachio Panicle and Shoot Blight

Walnut Blight Insect Models

SpecConnect Report Options

Daily Report

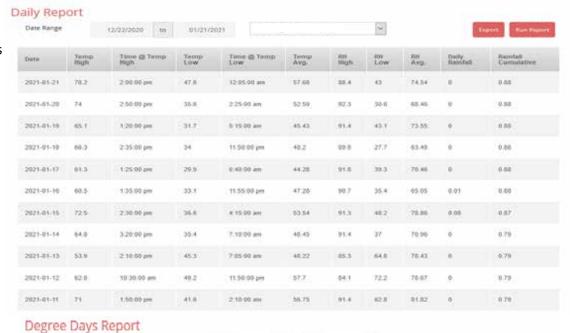
- Track the key growing factors of temperature, humidity, and rainfall
- Generate formal reports for permanent records
- Flexible date selection for reports you need: week, month, or growing season

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





Moder, Apple :	Scats			quipment: Wate	naog 2700		Dates: 3	7/8/2020 to 11/3	0/2020	
Timestamp	Spore Mature Percent	Cornell Blak	Mile ilek	Calif Risk	Degree Day Sum	Mean Wet Temperature	Lmw Temperature	High Temperature	Degree Days	Lest Wetness Hoors
2020-07-08	4	Infected			42	67-42	N3.00	AS 30	42.10	10.50
2020-07-09	2	Infected			87	67.47	65.40	87.70	44.67	6.50
2820-87-19	4	Infected			126	89.30	62.50	76.50	39.24	8.25
2920-07-11	6	None	None	None	166		59.50	79.20	40:04	0.00
2020-07-12	0	None	None	None	200	\$7.22	55.60	72.00	31.00	2.75
2020-07-13	12	Infected	Light	infected	233	54.23	51.30	76.00	32.59	10.00
2020-07-14	18	Indected	Medium .	Infected	260	52.86	50.60	78.70	35.28	7.00
2020-07-15	24	Infected	Heavy	Infected	306	65.26	64.00	75.90	30.22	5.75
2020-07-18	31	Infected	Heavy	Infected	343	62.25	58 00	78.50	36.49	7.00
2020-07-17	30	None	None	None	363		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



wsw

WatchDog® 3000 Series Data Loggers



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.



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

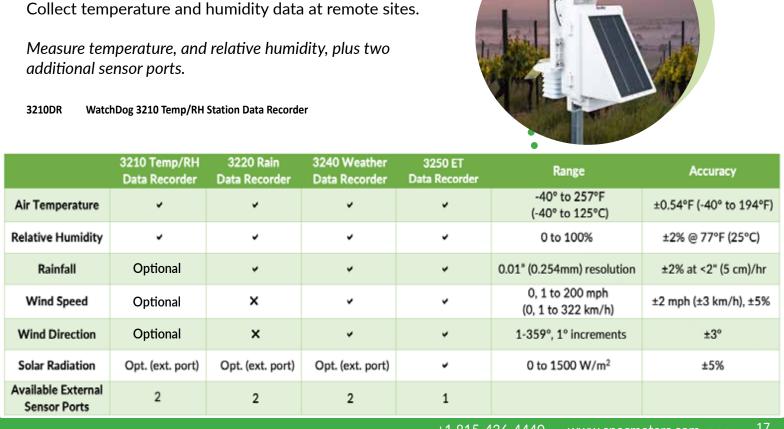
3220 Rain Station Data Recorder

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







WatchDog® 2000 Series Mini Weather Stations





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





Model 2475 Plant Growth Station

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

3686WD Model 2475 WatchDog® Weather Station

Model 2450 Temperature/RH Station

- Measures air temperature, relative humidity, dew point, with 2 available external sensor ports
- Computes and displays dew point

3684WD Model 2450 WatchDog® Weather Station



Model 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 SERIE	S MINI WE	ATHER ST	ATION FE	ΔTI IRFS
WAICHDOO	ZUUU JLINIL	O IVIII VI VVL			TIONES

Concoro	2475	2450	2425	2400	2800	Specifications	Acquirect
Sensors	24/5	2450	2425	2400	2000	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	t) 🗸	OPT	OPT	OPT	OPT	0 to 2500 μmol·m ⁻² ·s ⁻¹	±5%
External Sensor Ports	1	2	3	4	8		
Available ports for SMEC 300 Sensors	1	2	3	4	2		
Operating temperatu	ure range	e: -22 to 130	o°F (-30 to !	55°C)			

WatchDog® 1000 Series Micro Stations





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





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



36681 / 36761



366816

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 $212^{\circ}F$ (-32 to $100^{\circ}C$). Accuracy: \pm $1^{\circ}F$ (\pm 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/m², Accuracy: $\pm 5\%$. All other Series & Pups Range: 0 to 1500 W/m², Accuracy: $\pm 5\%$. 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 μ mol m⁻² s⁻¹, Accuracy: $\pm 5\%$ 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: $\pm 5\%$. All other Series & Pups Range: 0 to 3000 umol m^{-2} s⁻¹, Accuracy: $\pm 5\%$. 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



3667



3665R



3666



3671



2655

Miscellaneous Cables





3673

Digital Sensors (for Pups only)





3613THS





Temperature (Micro) Sensor

Measure surface temperature of leaves, buds, and other tiny mediums.

Range: -25 to 212°F (-32 to 100°C). Accuracy: \pm 1°F (\pm 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

CO₂ Sensor

Measure CO₂ levels in ppm using NDIR technology. Requires AC power. Not waterproof. Range: 0 to 4000 ppm, Accuracy: ±5% or 50 ppm. Compatible with WatchDog 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: $\pm 2\%$ 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: $0 - 359^{\circ}$, Accuracy: $\pm 3^{\circ}$, Range: 0 - 1 to 200 mph 0 - 1 to 322 km/h, Accuracy: ± 2 mph 0 - 1 km/h, 0 - 1 to 322 km/h, Accuracy: 0 - 1 mph 0 - 1

3305ADD Digital Anemometer

WatchDog® Accessories & Communication Options

Accessories

3665BG





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)

659WD1 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

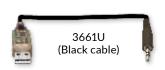
Transport weather data from your 2000 Series Stations or 1000 Series Micro Stations to your host PC. Holds data for multiple stations (up to 5 Full, 10 Mini, or 12 Micro Stations). Includes soft-sided case (also available separately as Item 7500). Requires SpecWare 9 Basic or Pro.

3679WD1 WatchDog 1000/2000 Data Shuttle

Cables & Adapters



3660-75SP





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

WatchDog® A-Series & B-Series Data Loggers



The most affordable way to track environmental conditions for analysis.

- Log 4,000 to 8,000 intervals in failsafe 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: $\pm 3\%$ from 10-90% at 77°F (25°C), else $\pm 5\%$ CO $_2$ range: 0 to 9999 pm, Accuracy: ± 50 ppm $\pm 5\%$ of reading (0 to 2000 ppm), else unspecified







3612A

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 18 Temp Accuracy: ±1.1° Humidity: 0 to 100%,	F from 5 to 149°F (±0.6°C fr	4000 om -15 to 65°C)	NO
MODEL B101 8K 3620WD Range: -40 to 185°F (Accuracy: ±1.1°F from	TEMPERATURE -40 to 85°C) 15 to 149°F (±0.6°C from -1!	8000 5 to 65°C)	NO
	TEMPERATURE -40 to 85°C) n -22 to 158°F (±1.0°C from ag when measuring soil tem)		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

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

www.specmeters.com

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	✓	~

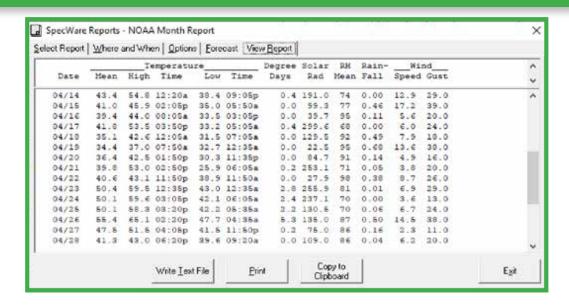
SpecWare™ 9 software is compatible with Windows XP and later.

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

^{*} Does not include USB adapter cable

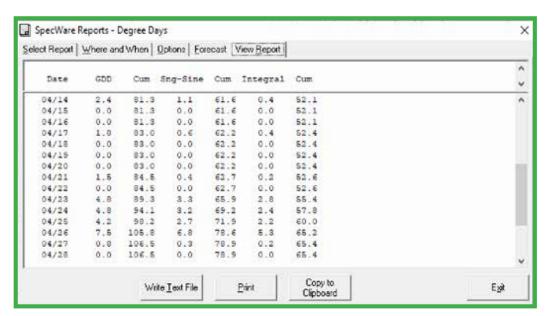
Daily Report

- 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



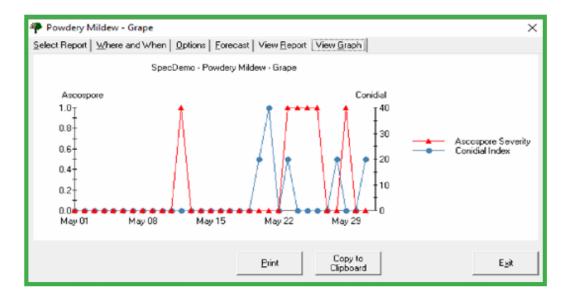
Degree Days Report

- 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® Weather Stations & Data Loggers Comparison Chart

Wa	tc	hDog	SpecConnect Compatible	LCD Display	Wireless	Evapotranspiration	25 Alarm Output-Ready	Air Temperature Sensor	Relative Humidity Sensor	Dew Point	Wind Speed & Direction	Tipping Bucket Rain Collector	Solar Radiation Sensor	Available Sensor Ports	& Quantum Light Sensor	95 Ext. (Soil) Temperature Sensor	& Leaf Wetness Sensor	WaterScout Soil Moisture Sensor	YwaterScout Soil Moisture/EC, Temperature Sensor	Digital Sensor Compatible	Radiation Shield (P=Passive or A=Aspirated)
Item #	Model					S	TAND	ARD I	FEATU	RES					OPTI	ONAL	SENS	ORS &	ACCE	SSOF	RIES
3000 Se																		,			
3250xx		Γ Station	~		~	~		~	~	~	~	~	✓	1	Opt	Opt	Opt	Opt	Opt		Р
3240xx		eather Station	~		~			~	~	~	~	~	Opt	2				Opt			_
3220xx		ain Station	✓		~			✓	~	~		V	Opt	2				Opt			Р
3210xx	3210 Te	mp/RH Station	~		~			~	~	~	Opt	Opt	Opt	2	Opt	Opt	Opt	Opt	Opt		Р
2000 Se	eries N	Ini Stations																			
		sease Station	~	~	Opt		~	~	~	~		~		0			~				Р
3686WD	2475	TEMP/RH/PAR + 1 PORT	~	v	Opt		~	~	~	~		Opt	Opt	1	~	Opt	Opt	Opt	Opt		Р
3684WD	2450	TEMP/RH + 3 PORTS	~	~	Opt		~	~	~	~			Opt	2	Opt			Opt			Р
3683WD	2425	TEMP +3 PORTS	~	~	Opt		•	~				Opt	Opt	3				Opt			Р
3685WD	2400	4 PORTS	✓	~	Opt		~					Opt	Opt	4				Opt			
3345WD2	2800	8 PORTS+OPT RAIN	~	~	Opt		~					Opt	Opt	9	Opt	Opt	Opt	Opt	Opt		
Retrieva	or & D	ups Wireless Ser	sor	Net	wor	٠L															
3250DU		Γ Station Pup	13UI 	1401	VVOI	N.		.a	.4					1							Р
3240DU		eather Station Pup	Ž		,	•		Ž	J	J	J	, v	Opt	2	Ont	Ont	Ont	Opt	Ont	J	P
3220DU		ain Station Pup	•		~			J	, , , , , , , , , , , , , , , , , , ,	Ť	Ť	v	Opt	2	•	Opt	V	Opt		J	P
3900PG		rowth Pup Station	•		•			J	J	•	Ont	Opt	Opt	2	✓			Opt		Ž	A
3900	Sensor		•		~			Opt	Opt			Opt		4				Opt		~	P
3901	Station	•	_		~				- 1				- 1	0	- 1	- 1			- 1		
3902	Repeate		~		~									0							
3685SM14	Irrigatio Irrigatio Plant Di Plant G 1650 1525 1450 1425 1400 1250 1225 1200 S Logg	Aicro Stations In Station In Station In Station In Sease Station In Station In Station ItemP/RH+ 4 PORTS ItemP+ 4 PORTS ItemP+ 4 PORTS ItemP+ 3 PORTS ItemP+ 3 PORTS ItemP+ 1 PORT		************				> > > > > > > > > > > > > > > > > > > >	> > >			Opt Opt Opt Opt Opt	Opt Opt Opt Opt Opt Opt Opt Opt	4 2 3	Opt Opt Opt Opt Opt Opt Opt	Opt Opt Opt Opt Opt Opt Opt	Opt Opt Opt Opt Opt Opt Opt Opt	✓ (4) ✓ (3) Opt Opt Opt Opt Opt Opt Opt	Opt Opt Opt Opt Opt Opt		PP
3612A	A150 Te			7				7	7					0							
3610A		eaf Wetness/Temp		,				,						0			v				
		oil/Air Temp Station		~				~						0		~					Р
3617A	A125 S	oil/Air Temp		•				~						0		~					
3618A	A110 Te	mperature		~				~						0							
Sprayer 3349SSCH		Station with Console		•				~	•	V	•			0							

STANDARD

BLANK NOT AVAILABLE

Opt

OPTIONAL



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

Weather Station Recertification 2000 Series
 Weather Station Recertification 2000 Series Mini
 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

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 COMPA	RISON	ı				
	U-51	U-52	U52G	U-53	U-53G	
pH	~	~	~	~	~	Ī
ORP (Oxidation Reduction Potential)	✓	✓	✓	✓	✓	
Dissolved Oxygen	~	✓	~	~	~	Ī
Conductivity	✓	~	✓	✓	✓	
Salinity	✓	~	✓	~	~	
TDS (Total Dissolved Solids)	✓	~	✓	~	✓	
Seawater Specific Gravity	~	~	~	~	~	Ī
Temperature	✓	~	✓	~	~	
Turbidity (LED)	·	~	~			Ī
Turbidity (Tungsten lamp)				~	~	
Water Depth	·		~	~	~	Ī
GPS			~		~	



SINGLE ME	ASUREMENT • III
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Water quality monitor displays 11 parameters simultaneously



WatchDog® Sprayer Station

WatchDog Avoid Drift Complaints

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

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

All-in-One Weather Station Measures:

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

Additional Information

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

SPECIFICATIONS FOR SPRAYER STATION

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 $\pm 5\%$

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

Choose Your Console:



WatchDog® Sprayer Station Console

12.75 in (33 cm)



Raven Viper 4, ViperPro or Envizio Pro (not available through Spectrum)



AGCO Accu Terminal (not available through Spectrum)

2.75 in (7 cm)



WatchDog® Sprayer Station

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

Intermeter Davies 9 ACCO

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.



LIGHTSCQUT
Quantum PAR/DLI Light Meter
Grow healthier, greener plants by measuring their precise lig

ght 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 1/4-20 threaded hole for mounting on camera tripods & stands
- Includes sensor cover & soft carrying case

GENERALIZED PLANT RESPONSES TO DIFFERENT LIGHT LEVELS

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

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

3415A LightScout® Quantum PAR/DLI Light Meter



UGHTSCOUT 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

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



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.

- 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



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

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

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



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 LightScout® Dual Solar/Electric 3415FSE

Quantum Meter

3415FXSE LightScout® Dual Solar/Electric **Quantum Meter - External Sensor**

3415FQF LightScout® Quantum and Foot-Candle Meter

7500 **Soft-Sided Carrying Case**



3415FXSE

3414F

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:

LightScout® Quantum Light Sensor 36681

(PAR Light)

LightScout® Quantum Light 3 Sensor Bar 366813 366816 LightScout® Quantum Light 6 Sensor Bar 36701 LightScout® Silicon Pyranometer Sensor

(Solar Radiation)

36761 LightScout® UV Sensor



3415FX



SpecConnect Web Portal showing TDR 350 data



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

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



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 salinitycorrected (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

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)









FieldScout® TDR Accessories & Model Information

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

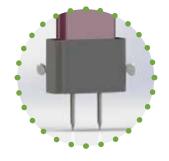
 6430PH
 Pilot Hole Maker for TDR Meters

 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	1	-	~
Displays EC + Surface Temperature	✓	N/A	~
Interchangeable soil probes	✓	~	*
Backlit Display	√	✓	~
T-Handle	N/A	1	Telescoping
Infrared Temperature Sensor	Optional	N/A	Optional
GPS/GNSS + Bluetooth	Optional	N/A	-
Carrying Case	~	Optional	✓
FieldScout Mobile/SpecConnect Capability	·	N/A	1

FieldScout® Trufirm® Turf Firmness Meter





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)



FieldScout® Mobile App





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

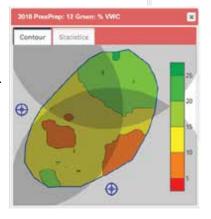
FREE

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		~

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

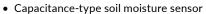
Resolution: 0.1% VWC

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)

VATER SCOUT 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.



- 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)



38



Spot-check WaterScout® SM 100 and SMEC 300 sensors in the field.

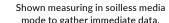
- Reads Watermark sensors (requires separate adapter)
- Includes soft-sided case (also available separately)

6466 6450FSADPT

FieldScout® Soil Sensor Reader Watermark Adapter for Soil Sensor Reader

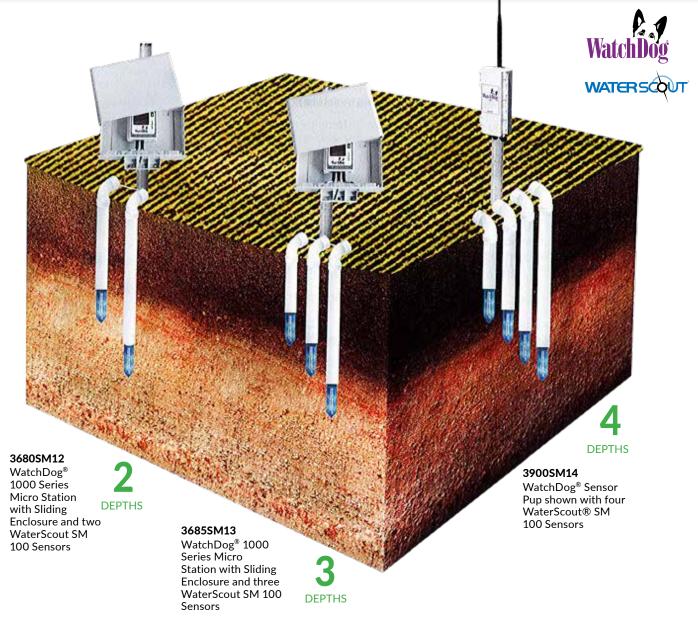
7500 Soft-Sided Carrying Case*

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





WatchDog® Irrigation Stations



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
2 WaterScout SM 100 Soil Moisture Sensors	3680SM12	3685SM12	3900SM12
3 WaterScout SM 100 Soil Moisture Sensors		3685SM13	3900SM13
4 WaterScout SM 100 Soil Moisture Sensors		3685SM14	3900SM14

	MODEL 1200 MICRO STATION	MODEL 1400 MICRO STATION
2 Watermark Soil Moisture Sensors	3680WM12	3685WM12
3 Watermark Soil Moisture Sensors		3685WM13
4 Watermark Soil Moisture Sensors		3685WM14



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

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

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 (Fine 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

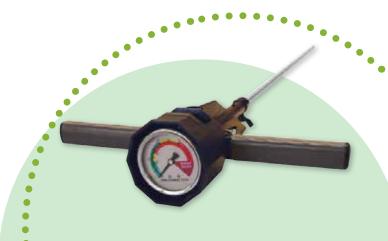
Soil Compaction Tester

Economical way to measure soil compaction with analog read out.

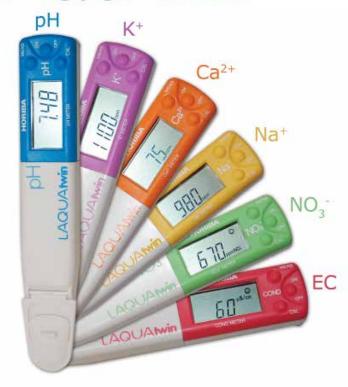
- Large and small tip included with convenient storage in tester housing
- 24 in stainless steel rod with adjustable shock collar to prevent damage to the gauge during transport or storage
- Easy to read, color-coded, stainless steel dial that is liquid filled to reduce shock
- Durable molded housing 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



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



* 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 (NO,) 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 NO, 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



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

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 FieldScout pH Meter Pin Point Tip ISFET Probe 2128 2110 Refill Solutions - pH 4 and 7, 60 mL each



pH 400

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



pH 600

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

- Internal storage of measured data points, up to 65,000 measurements
- Ability to query both momentary pH value and temperature
- Supports up to 5-point calibration

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

FELDSCOUT Direct Soil EC Meter

Instant and accurate direct EC and temperature measurements.

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

8 in (20 cm) Probe Option

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.









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



Exclusive Patented Paired Sensor



Technology based on an exclusive patent license from NASA



- "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



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



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



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



"To Measure Is To Know"

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TDR 250 ECONOMY SOIL MOISTURE METER

SAME RENOWNED MEASUREMENT ACCURACY FOR 20% LESS

See page 33!



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