TURF
SMART SOLUTIONS

SpecConnect Cloud Technology and Mobile Apps

WatchDog® Weather Stations

Current Conditions
3600 Spectrum Technologies

WatchDog Wireless Station
WD Wireless Weather Station,
LTE-M
50450001
Data Time: 3/16/2023 8:20 AM

A1: Rainfall – 24-hour
0.41 inches

B1: Temperature
72.4 F

B2: Relative Humidity
61.3 %

C1: Wind Direction
2 degrees (N)

C2: Wind Gust
16 mph

C3: Wind Speed
8 mph

Absolute Humidity
4.3 g/m³

Dew Point
29.5 F

LightScout® PAR/DLI Meters

FieldScout® Portable Soil Moisture Meters

2023-2024
PRODUCT CATALOG

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

Celebrating
35 YEARS!
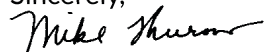
Spectrum Technologies, Inc.

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 environmental monitoring, nutrient management, soil moisture measurement, irrigation scheduling and pest management.

Our products will positively impact the way you grow your turf; 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

Mike Thurow
CEO & Founder
Spectrum Technologies, Inc.

Distributor:

CENTAUR
ASIA PACIFIC

Hong Kong | Singapore | Malaysia | Australia
Email: info@centaur-asiapacific.com
Website: www.centaur-asiapacific.com

COMPANY OVERVIEW

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

We develop soil, water and nutrient measurement devices. Turf managers receive site-specific data throughout the season to better manage high disease and insect pressure areas. Spectrum's advanced measurement technology, combined with soil and water test results, helps turf managers fine-tune agronomic programs.

INDUSTRY FUTURE

With golfers and athletes demanding higher quality playing surfaces, budgets decreasing, and regulations increasing, the need for measurement and monitoring technology will grow.

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, Soil EC and Water Quality Meters

NUTRIENT MANAGEMENT
pH, EC, Na^+, K^+, NO_3, Ca^{2+} and NDVI Meters

TABLE OF CONTENTS

*Award Winning Innovations

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

NEW

NEW OPTIONS FOR YOUR WIRELESS WEATHER STATION!

For years, our integrated WatchDog Wireless Weather Stations have provided the ability to measure essential data needed to make informed decisions regarding irrigation, frost, insect and disease control and nutrient management.

HOW DO I KNOW WHICH MODEL FITS MY NEEDS?

First, decide what measurements are important to you, then choose the model most closely tailored to your needs. Finally, purchase any additional sensors to collect all the information you need. To help guide your decision, see the chart below to clarify what each model offers.

More data provides better decision making and better return on your investment. Respond quickly and reduce damage with frost/temperature alerts direct to your phone when you add the frost alert package in SpecConnect. Use real-time data to respond to changing weather conditions and make timely, smart decisions.

Use our free WatchDog Mobile app to get your new weather station up and running quickly. Alternatively, configure your station from your PC using SpecConnect.

Cellular or wifi subscriptions allow data from your weather station to be sent to the SpecConnect cloud. Use your PC or the free WatchDog Mobile app to view current conditions on your phone. 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. Use our custom reports feature to gather the data that is meaningful to you.

PRODUCT COMPARISON

	3250 ET Weather Station	3240 Weather Station	3220 Rain Station	Range	Accuracy
Air Temperature	Included	Included	Included	-40°F to 257°F (-40°C to 125°C)	± 0.54°F (-40°F to 194°F)
Relative Humidity	Included	Included	Included	0 to 100%	± 2% @ 77°F (25°C)
Rainfall	Included	Included	Included	0.01" (0.254mm) resolution	± 2% at <2" (5cm)/hour
Wind Speed	Included	Included	Optional	0, 1 to 200mph (0, 1 to 322km/h)	± 2mph (± 3km/h) ± 5%
Wind Direction	Included	Included	Optional	1°-359°, 1° increments	±3°
Light Sensor	Solar Radiation Included	Optional (external port)	Optional (external port)	0 to 1500W/m^2 (0 to 3000µMol/m^{2}s)	±5%
Available External Sensor Ports	1	2	2		

YOUR TURF. YOUR DATA. BETTER DECISIONS

3250 Wireless ET Weather Station

Determine how much water your turf needs. Use real-time evapotranspiration (ET) data to effectively irrigate for optimum quality.

OUR MOST POPULAR MODEL!

INCLUDED MEASUREMENTS: *Wind Speed/Direction, Temperature, Relative Humidity, Rainfall, Solar Radiation*

3250MU WatchDog Wireless ET Station LTE-M Modem - US/Canada/Mexico
3250ME WatchDog Wireless ET Station LTE-M Modem - **GLOBAL** *(Outside US/Canada/Mexico)*
3250C4 WatchDog Wireless ET Station LTE CAT-4 (4G) Modem - US/Canada/Mexico
3250CA WatchDog Wireless ET Station LTE CAT-4 (4G) Modem - APAC
3250CE WatchDog Wireless ET Station LTE CAT-4 (4G) Modem - Europe
3250CG WatchDog Wireless ET Station LTE CAT-4 (4G) Modem - Latin America

3240 Wireless Weather Station

Monitor weather conditions for more effective decisions.

INCLUDED MEASUREMENTS: *Wind Speed/Direction, Temperature, Relative Humidity, Rainfall*

3240MU WatchDog Wireless Station LTE-M Modem - US/Canada/Mexico
3240ME WatchDog Wireless Station LTE-M Modem - **GLOBAL** *(Outside US/Canada/Mexico)*
3240C4 WatchDog Wireless Station LTE CAT-4 (4G) Modem - US/Canada/Mexico
3240CA WatchDog Wireless Station LTE CAT-4 (4G) Modem - APAC
3240CE WatchDog Wireless Station LTE CAT-4 (4G) Modem - Europe
3240CG WatchDog Wireless Station LTE CAT-4 (4G) Modem - Latin America
3240WF WatchDog Wireless Station Wi-Fi Modem

3220 Wireless Rain Station

Monitor rainfall for more effective irrigation scheduling. Monitor and note site-specific conditions for disease and insect pressure.

INCLUDED MEASUREMENTS: *Temperature, Relative Humidity, Rainfall*

3220MU WatchDog Wireless Station LTE-M Modem - US/Canada/Mexico
3220ME WatchDog Wireless Station LTE-M Modem - **GLOBAL** *(Outside US/Canada/Mexico)*
3220C4 WatchDog Wireless Station LTE CAT-4 (4G) Modem - US/Canada/Mexico
3220CA WatchDog Wireless Station LTE CAT-4 (4G) Modem - APAC
3220CE WatchDog Wireless Station LTE CAT-4 (4G) Modem - Europe
3220CG WatchDog Wireless Station LTE CAT-4 (4G) Modem - Latin America
3220WF WatchDog Wireless Station Wi-Fi Modem

GET YOUR COURSE READY FOR PLAY!

FIELDSCOUT

WatchDog

PRODUCTS TO TRACK THE MEASURMENTS YOU NEED!

FieldScout TDR Soil Moisture Meters and WatchDog Weather Stations will give you the data points you need to to make smart irrigation decisions!

PLAN YOUR DAY, SAVE TIME AND KEEP YOUR COURSE IN TOP PLAYING CONDITION!

Start with FieldScout TDR Soil Moisture Meters to quickly and accurately measure soil moisture (VWC%)

The TDR350 has an ergonomic design for quick, accurate spot measurements wherever you want to check volumetric water content (VWC) on your course. Measure VWC, salts (EC) and surface temperature.

The backlit display is easy to read on early mornings or bright, sunny days. The device is Bluetooth and GPS integrated, sending data to the FieldScout app instantaneously and allows for course mapping as desired.

Track and trend data from day to day, month to month and season to season to optimize turf health and conditioning.

SAVE TIME AND PLAN YOUR DAY!

Through the WatchDog® app on our smartphones, we have information at our fingertips that has been a great help in our scheduling. We know what our conditions are and what to expect each day. Before leaving for the club each morning, I check the weather through the app. The app gives me information like rainfall, temperature and wind speed and lets us know what the day will bring. This information, along with a reasonably accurate weather forecast, arms us with the knowledge of how the day will shape up before it even begins.

Bill Schmit, Superintendent, Sawgrass Country Club, Sawgrass, FL
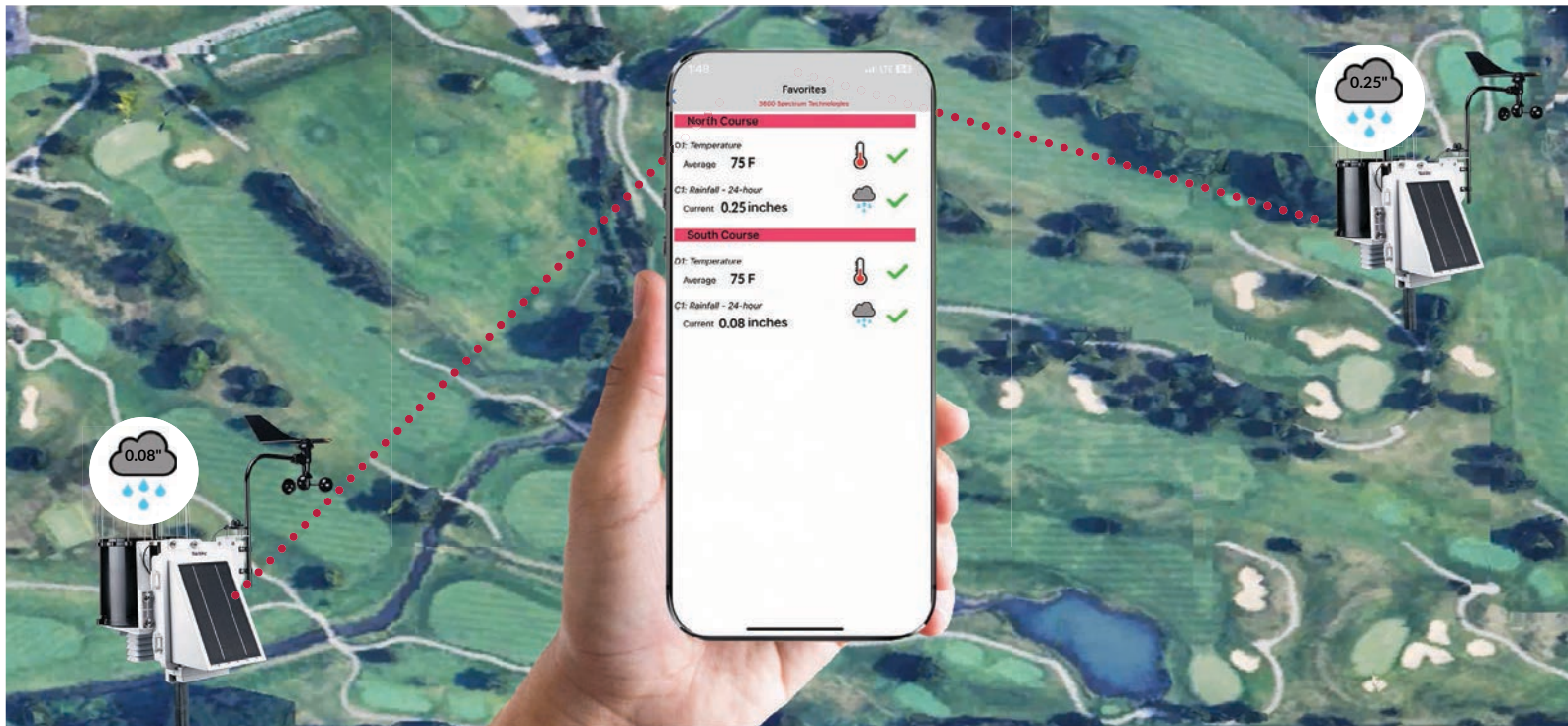
Add WatchDog Weather Stations strategically through your course to bring multiple data points directly to you.

The 3000 Series Wireless Weather Station Models are designed to give you the measurements you need to help make planning your irrigation activities for the day even easier. Check your course conditions before your feet hit the floor and know what the day will bring!

Our SpecConnect Cloud Service allows you to view all the data from your weather station, review preset reports and manipulate the data into customized reports that you create.

Our Turf Alert package sends texts to notify you of any rain events that may affect the course in real time based on the parameters you create within the alert.

RETRIEVER & PUPS

Our Retriever & Pups Solution 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.

ADD YOUR RETRIEVER

Receives all data from Pup network, each Retriever supports up to 12 Pups

3250DU WatchDog Wireless ET Weather Pup Station, 900Mhz
Monitor Evapotranspiration (ET) data to know how much water your turf is using
Included Measurements: Wind Speed/Direction, Temperature, Relative Humidity, Rainfall, Solar Radiation

3240DU WatchDog Wireless Weather Pup Station, 900Mhz
Monitor weather conditions to help determine field activities
Included Measurements: Wind Speed/Direction, Temperature, Relative Humidity, Rainfall

3220DU WatchDog Wireless Rain Pup Station, 900Mhz
Monitor rainfall and temperature/humidity to effectively manage irrigation scheduling
Included Measurements: Temperature, Relative Humidity, Rainfall

3910 WatchDog Retriever
- 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 (see Optional Accessories)
- Single button operation: switch modes, download data, upload configuration, and check battery status
- Tri-colored LEDs indicate mode, battery level, data communication status, and configuration status
- Non-volatile memory preserves your logged data, even when the batteries are removed
- 900 MHz radios *(868 MHz also available for International use - contact for details)*

ADD REPEATER PUPS

3902 WatchDog Repeater Pup
- Communication range of 2,500 feet (about 1/2 mile), line-of-sight installation between devices
- Serves as "signal booster" to provide a path for signal transmission around obstacles or to extend range and transfer data to the Retriever
- No sensor inputs of its own
- Includes 6 lithium AA batteries (solar-power option below)
- 900 MHz radios (*868 MHz also available for International use - contact for details*)

ADD OPTIONAL ACCESSORIES
- **3999 Solar Power Package for Pups and Retrievers**
  Includes 5W solar panel and 6V 4.5Ah rechargeable battery
- **3396TPS Tripod Mount with Stakes**
- **3925 Antenna Extension Cable - 10' (3m)**
  Includes mounting bracket and hardware for use with Retrievers & Pups
- **3927C75 PC Direct Connection Cable - 75' (23m)**
  Connect your Retriever directly to your PC. Includes power and data cables, AC/DC power adapter, and DC plug adapter. Has 9-pin serial connection on PC end, may require USB adapter (Item 366IU9)
- **3926 AC/DC Power Adapter**

View LIVE current conditions and reports on the WatchDog App

Add SpecConnect Cloud Service to the Lynx System

Info is sent from the WatchDog Weather Station to the WatchDog Retriever

CONTACT YOUR LOCAL TORO DISTRIBUTOR FOR PRICING AND ADDITIONAL INFORMATION

WHAT INFORMATION CAN I SEE WITH SPECCONNECT?

CURRENT CONDITIONS
- 24 hour graph for any selected sensor
- Rolling 24 hour ET calculation
- Wind gust and speed included

REPORTS
- Customizable to show multiple stations/sensors, DLI, ET, hourly, daily, degree days and soil moisture
- Includes disease and insect models
- Includes weather underground and API functionality
- Single station export allows viewing of all available data history

MOBILE APP
- Includes on-site weather station data, current conditions and reports of the last 24 hours from any sensor selected
- Alert function notifies you and two others of an event by call, text or email

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The Spectrum Technologies weather station with additional station pups in the field makes monitoring the weather data in different areas of the golf course much easier. There are currently 4 pups in the field, spread out on different areas of the property. Understanding the different microclimates on the property and using the data from the different pups helps us better understand what the needs of the turf are on different sections of the golf course. We might water more on prairie holes and less on holes in the trees where ET is lower and water loss from wind is less.

-Mark Beitel, Superintendent, Flying Horse North Golf Club, Colorado Springs, CO

COLLECT MEASUREMENTS THAT MATTER TO YOU!

Spectrum's **WatchDog Station Data Loggers** are ideal when real time data and constant round the clock monitoring is not needed. This economical option is perfect to gather measurements and data important to you, but on your own schedule. Data can be transferred from the internal logger to a USB flash drive and processed with SpecWare Pro Software. The 3000 Series Data Loggers offer all-in-one simple setup. With Bluetooth connectivity and the free WatchDog mobile app, they are perfect for your greens.

How is Data Accessed

1. **SpecConnect: With** WiFi or Cellular Communication: Access real time data from your PC, tablet or phone. Data loggers are not wireless and require the purchase of the DataScout Modem purchase should you want to utilize SpecConnect.
2. **Direct Connect:** Download from the station to your PC. Requires SpecWare 10 Pro.
3. **USB Flash Drive:** Transport data from your station to your PC (flash drive not included). Requires SpecWare 10 Pro.

ET Station Data Recorder
Monitor Evapotranspiration (ET) data to know how much water your turf is using

INCLUDED MEASUREMENTS: *Wind Speed/Direction, Temperature, Relative Humidity, Rainfall, Solar Radiation*

3251DRTDP WatchDog ET Station Data Recorder (Toro) with 75' Cable
3251DRTSR WatchDog ET Station Data Recorder (Toro) with Short Range Modem Pair

Use with the Short-Range Modem Pair to extend the range of your WatchDog Data Recorder up to 4000' (1200m). Since the station is hardwired to your computer, it is not necessary to have a line of sight with the station.

WatchDog Weather Station ➡️ **Short Range Modem Pair** ➡️ **TORO. LYNX®**

Connect to the AUX port on Weather Station

Connect directly to PC

Add SpecConnect to Toro Lynx to view LIVE *Current Conditions* and *Reports* on your computer or through the WatchDog App

3000 SpecConnect Initial SetUp Fee
3030 SpecConnect Pro 1-Year WiFi Subscription

MANAGE YOUR SITE DATA WHEREVER, WHENEVER

SpecConnect is a Cloud Based service that allows you to access the data from your compatible WatchDog and FieldScout products on demand from your phone, PC or tablet.

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

- Configure your network from your computer, smartphone, or tablet
- Easy and simple to navigate
- 100% customizable dashboard
- Supports multiple user logins

INFORMATION AT YOUR FINGERTIPS

- Map view allows you to see all station locations and **Current Conditions**
- Run **Standard Reports** to provide you with the data you need to make informed decisions
- Choose from a variety of **Custom Report Templates**
- Create your own **Custom Template** for full data analysis that can be downloaded
- Choose optional plant disease and insect models
- Receive customized alerts via text or email with the purchase of the **Alerts Function**

- SpecConnect is compatible with:
  - WatchDog 3000 Series Weather Station
  - WatchDog Retriever & Pups

SPECCONNECT SUBSCRIPTIONS

3000 SpecConnect Initial SetUp Fee

3010xx SpecConnect Pro 1-Year Cellular Subscription
(Per Watchdog Product, xx indicates region)

3030 SpecConnect Pro 1-Year WiFi Subscription
(Per Watchdog Product)

3040 Additional Login (1 Year)

3070 Alerts Function (1 Year) up to 4 phone numbers/emails

3055 Additional WatchDog Pup Product - Wifi (1 Year)

3045US Additional WatchDog Pup ar (1 Year)

TURF ALERT PACKAGE

Keep your turf in top playing condition with a SpecConnect Alert package that will email/text based on your parameters

3095TUP SpecConnect Turf Alert Package
- Required Sensors: Air and Soil Temperature, Relative Humidity and Rain
- Model Included: Brown Patch (Schumann), Pythium (Nutter, Schein), Dollar Spot (Hall, Mills/Rockwell), Insect Models

NEW

WIND WatchDog®

AVOID DRIFT COMPLAINTS
Measure and Record
WIND _SPEED_ & _DIRECTION_
when spraying pesticides

MEASURES
Wind Speed   Wind Direction
App Displays Local Weather Readings:
Temperature   Humidity   Barometer   DeltaT

PRODUCT SPECIFICATIONS

WIND SPEED	
Range	1-25m/s (2.24mph - 56mph)
Accuracy	±0.3m/s @ 10m/s (0.67mph @ 22.40mph)
WIND DIRECTION	
Range/Accuracy	0° to 359°; ±1°
ANEMOMETER DIMENSIONS	
Diameter/Height	1.69" (43mm); 1.85" (47mm)
Weight:	2.8oz (78g)
Height with Phone Mount	5.6" (144mm)
Width with Phone Mount	3.43" to 5.28" (87mm to 134mm)
Phone Width Capacity	2.28" to 4.13" (58mm to 105mm)
Weight with Phone Mount	5.4oz (152g)
MISCELLANEOUS	
Sensors	4 Ultrasonic Transducers
Compatibility	WatchDog Wind App (Free in Google Play Store and Apple App Store)
Power	Rechargeable Battery, Qi Wireless Charger Included
Battery Run Time	150 Hours of Active Use
IP Code	IPX8

FEATURES & BENEFITS

- Ultrasonic bluetooth wind sensor
- NO moving parts
  - *Immediate and precise measurements*
  - *Portable design for spot measurements*
  - *Make better pesticide application decisions*
- Record data to create a permanent spray record
  - *Email records directly from the app*
  - *Choose a specific day or date range*
- Avoid negative impact from drift
  - *Improve pesticide coverage on targeted area*
  - *Ensure the safety of surrounding people, plants and flowers*
  - *Address legal issues with accurate, time stamped weather data*
- Demonstrate good stewardship
- Includes WatchDog Portable Wind Sensor, mounting bracket, wireless charger and wall plug

3348P - WatchDog Portable Wind Sensor

Record Log

USE THE FREE APP!

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

Consistent Turf Starts With Light

Why Measure Light?
Improve growth and quality of your turf.

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

Quantum PAR/DLI Light Meter
Grow healthier, greener turf by measuring precise light intake

Provides accurate PAR light readings from ANY light source:
- Full sun to full shade indoors or outdoors
- Artificial light sources (LED, High Pressure Sodium, Metal Halide, Fluorescent, Halogen, etc)

Three modes of operation:
- Instant spot measurement mode for PAR light readings
- Scan mode for quickly averaging PAR over an area
- DLI mode shows Daily Light Intergral on the LCD *(no computer needed*

3415A LightScout Quantum PAR/DLI Light Meter
- *Integral mounting plate for stand, stake, lanyard hanger hole and magnet mounts*
- *1/4" - 20" threaded hole for mounting on camera tripods and stands*
- *Includes sensor cover and soft-sided case*

GENERALIZED PLANT RESPONSES TO DIFFERENT LIGHT LEVELS

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

* Moles
** Micromoles ($\mu mol/m^2 \cdot s$)

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

DLI 100 Light Meter
Light is one of the most important factors in plant and turf quality. The best way to quantify light for growing plants is to measure photosynthetically active radiation (PAR) light between 400 and 700, the range that promotes photosynthesis. The daily light integral (DLI) measures the total amount of PAR within a 24-hour period.

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

3405T3 LightScout DLI 100 Light Meter (set of 3)

3405T LightScout DLI 100 Light Meter

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

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 (free download from specmeters.com)**
- 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" (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 (free download from specmeters.com)**
- Includes hard carrying case, batteries, and TCM 500 T-Handle (Item 2975H)

* GPS interface requires two cables. The GPS/DGPS cable (Item 2950CV5) is available from Spectrum. A PC serial interface cablesupplied 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.
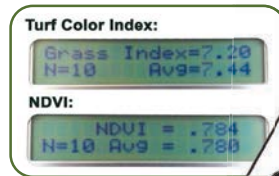
2975NDVI FieldScout TCM 500 NDVI Turf Color Meter

Turf Color Index:
Grass Index=7.20
N=10   Avg=7.44

NDVI:
NDVI = .784
N=10 Avg = .780
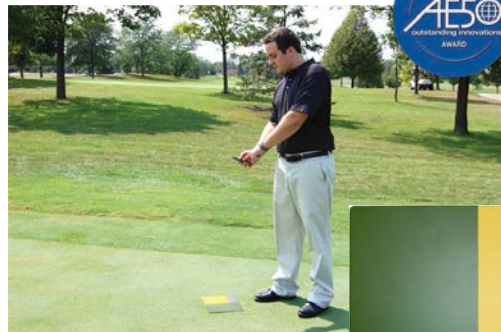
GreenIndex + Turf *(compatible with iPhones only)*

The FieldScout GreenIndex+ Turf app utilized the latest advancements in camera technology to measure plant health via the chlorophyll content (relative greenness) of turf right on your phone. The app captures turfgrass images with Apple products (iPhone/iPad), calculates the Dark Green Color Index (DGCI), and displays a visual rating. Measurements can be compared to identify variability or trends in turf health across golf course greens, fairways and research plots, providing valuable data for decisions regarding fertilization and irrigation.

2910T FieldScout GreenIndex+ Turf Board
FieldScout GreenIndex+ Turf App

FIELDSCOUT

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

SCAN TO DOWNLOAD

Basic App Capabilities:

- 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 App Capabilities:

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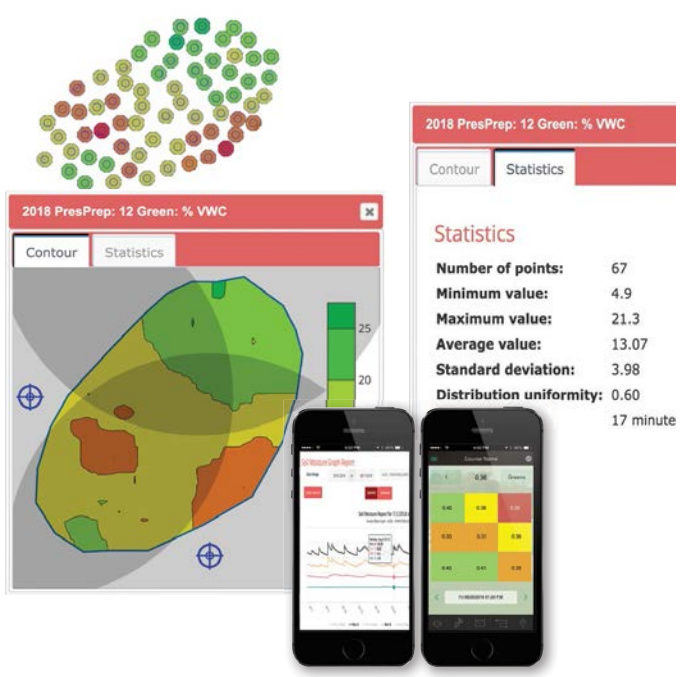
FieldScout Mobile

	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		✔

FieldScout Mobile App - FREE TO DOWNLOAD

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

* "Devices" refers to the number of FieldScout TDR or TruFirm Devices that can be connected to the app per subscription

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

TDR350

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

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
• Optional TDR 300 Mode

Common Applications

• Reliable, portable meter for instant, accurate and actionable root zone moisture and soil EC readings average of the 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

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

6435 TDR350 Soil Moisture Meter with Carrying Case *(Rods required, but sold separately)*
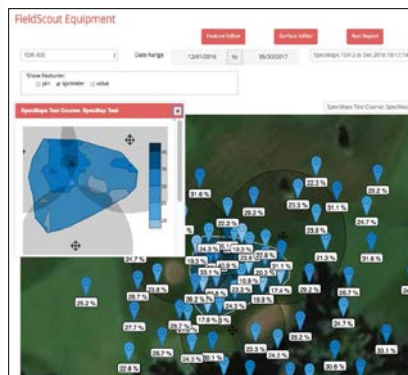
SMARTIRRIGATION:
Maximize Irrigation Audits with TDR

FIELDSCOUT®

TDR250

The TDR 250 offers the same proven time-domain measurement technology as the other TDR meters, but with 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 %)

Features & Benefits

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

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 and sports turf fields

6250 TDR250 Soil Moisture Meter with Carrying Case
(Rods required, but sold separately and Carrying Case sold separately)

6430CASE TDR250/350 Carrying Case

TDR MODEL COMPARISONS

FEATURES	TDR150	TDR250	TDR350
Measures Volumetric Water Content	✓	✓	✓
Displays EC and Surface Temperature	✓	NA	✓
Interchangeable Soil Probes	✓	✓	✓
Backlit Display	✓	✓	✓
T-Handle	NA	✓	Telescoping
Infrared Temperature Sensor	Optional	NA	Optional
GPS/GNSS + Bluetooth	Optional	NA	✓
Carrying Case	✓	Optional	✓
FieldScout Mobile/SpecConnect Capability	Optional	NA	✓

TDR150

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 taking spot measurements on your greens. 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
- Optional Bluetooth & GPS – greater accuracy with on-board 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 TDR210 Soil Moisture Meter with Carrying Case *(Rods required, but sold separately)*

6445TS Infrared Temperature Sensor - TDR150

6445GBU Bluetooth and GPS Upgrade

SMARTIRRIGATION:
Maximize Irrigation Audits with TDR

TDR Rods

Multiple length options for varying root zones

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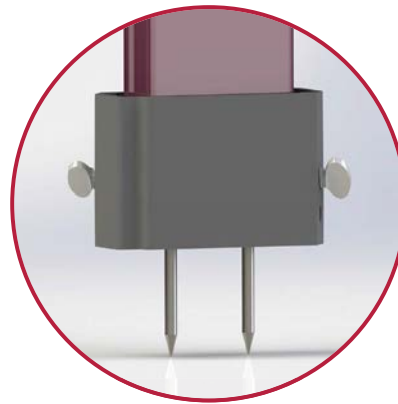**6430PH Pilot Hole Maker for TDR Meters**
(Includes two 3" (7.5cm) Rods)

TDR Spacer

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

6435SP TDR Rod Spacer

Infrared Temperature Sensor

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

6435TS Infrared Temperature Sensor (TDR350)
6445TS Infrared Temperature Sensor (TDR150)

PRODUCT SPECIFICATIONS - ALL TDR MODELS

| SPECIFICATIONS FOR TDR350/150 SOIL MOISTURE METERS |
| --- |
| VWC Range: 0% to Saturation, Resolution: 0.1%, Accuracy: ±3.0% VWC |
| EC Range: 0 to 5mS/cm, Resolution: 0.01mS/cm, Accuracy: ±0.1mS/cm |
| Temperature Range: -22°F to 140°F (-30°C to 60°C), Resolution: 0.1°, Accuracy: ±1.8°F (1°C) |
| IR Temperature Range: 32°F to 140°F (0°C to 60°C), Resolution: 0.2°F (0.1°C), Accuracy: ±0.2°F (0.1°C) |
| SPECIFICATIONS FOR TDR250 SOIL MOISTURE METER |
| VWC Range: 0% to Saturation, Resolution: 0.1%, Accuracy: ±3.0% VWC |

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 19.9mS/cm (Accuracy ±1%, resolution 0.01mS/cm)
- Automatic temperature compensation, long lasting and waterproof
- Includes battery and EC calibration standard

Exclusive Patented Paired Sensor

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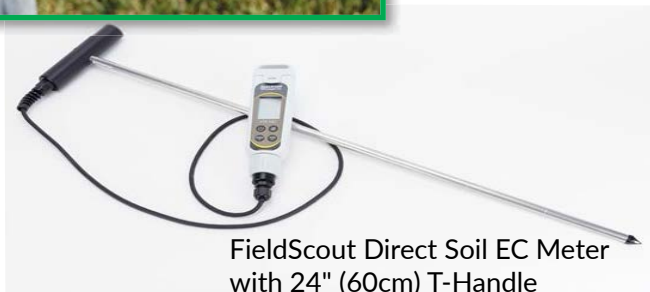
PRODUCTS

| DIRECT SOIL EC METER WITH 8" PROBE OPTION	
2266FS	FieldScout Direct Soil EC Meter with 8" Probe *(Includes carrying case and 2.76 Standard)*
2266PROBE	FieldScout EC 8" Replacement Probe
2251	Conductivity Standard, 1.41mS/cm, 250mL

DIRECT SOIL EC METER WITH 24" PROBE OPTION	
2266FSTP	FieldScout Direct Soil EC Meter with 24" T-Handle Probe and Replaceable Tip *(Includes carrying case and 2.76 Standard)*
2266FST24P	FieldScout T-Handle EC 24" Probe with Replaceable Tip
2266	Replaceable Tip for T-Handle EC Probe
2251	Conductivity Standard, 1.41mS/cm, 250mL
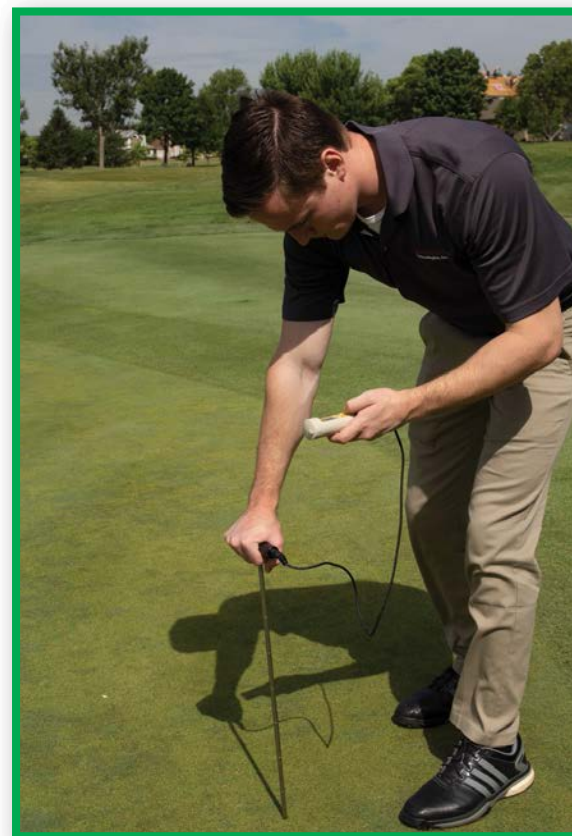
FIELDSCOUT®
TruFirm®
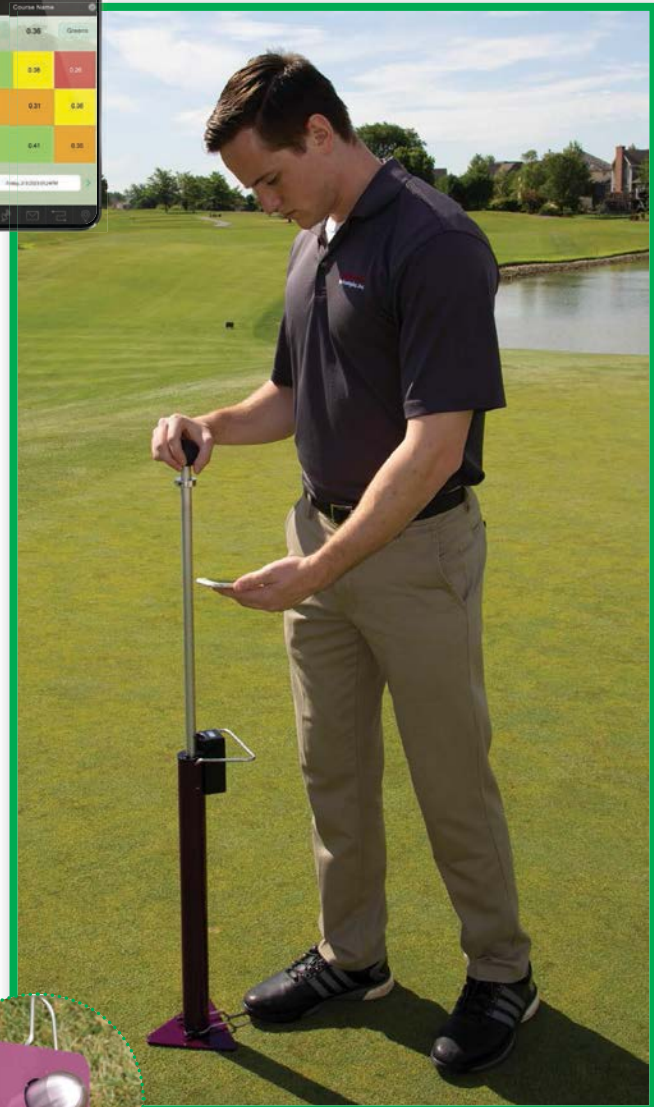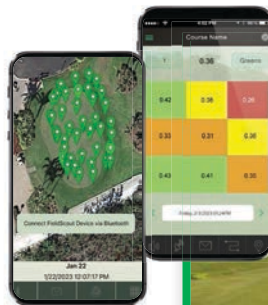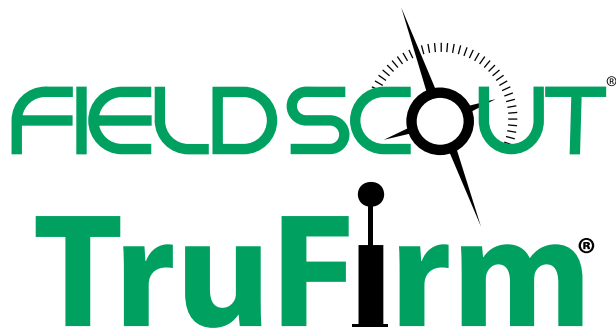
The FieldScout TruFirm offers a quick, easy and affordable method to measure the firmness of turf, bunker sands and other playing surfaces. Data acquired from the device allows turf management professionals to measure the relationship between the compaction of the soil and the moisture level to quantify 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 and 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

PRODUCT SPECIFICATIONS

|	
Range	0.1" to 1.5" (2.54mm to 38.1mm)
Resolution	0.01" at 1" to 1.5" (0.25mm at 25.3mm to 38.1mm)
Diameter of Hammer	1.68" (4.45cm)
Height	27" (69cm)
Weight	4.3lb (1.95kg)
Measurment Units	Depth of Travel (inches)
Power	2AA Batteries (included)

FieldScout SC900

Help make decisions regarding areas of the field that require extra care

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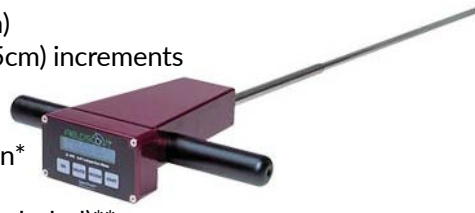
*GPS interface requires two cables: GPS/DGPS cable (item 2950CV5), available from Spectrum and the PC serial interface cable supplied by the manufacturer of the GPS receiver

**PC cable connects to a computer USB port, see our website for other cable connection options
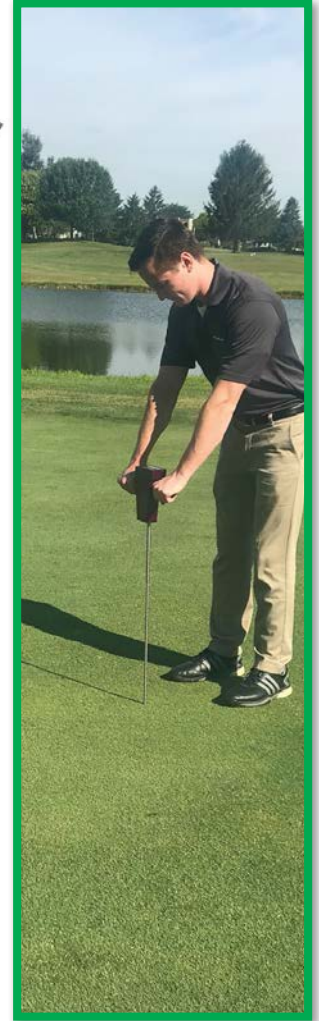
PRODUCT SPECIFICATIONS

Measurement Units	Cone Index (PSI or kPa)
Resolution	1" (2.5cm), 5PSI (35kPa)
Accuracy	±0.5" (1.25cm) Depth, ±15PSI (103kPa) Pressure
Range	0 to 18" (0 to 45 m), 0 to 1,000PSI (0 to 7,000kPa)
Battery/Life	4 AAA alkaline batteries; approximately 12-month life
Data Logger Capacity	772 profiles without GPS, 579 profiles with GPS

Soil Compaction Tester

Economical way to measure soil compaction with analog 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" (60cm) in 3" (7.6cm) increments

PRODUCTS

SC900 SOIL COMPACTION METER & ACCESSORIES

6110FS	FieldScout SC900 Soil Compaction Meter
2950CV5	GPS/DGPS Cable
7250	GPS Unit Mounting Bracket
6110FST	Replacement Depth Target
6106	1.5" (3.8cm) Replacement Tip (Fine Soils)
6107	3/4" (7.6cm) Replacement Tip (Coarse Soils)

SOIL COMPACTION TESTER

6120	Soil Compaction Tester
6121	1.5" (3.8cm) Replacement Tip (Fine Soils)
6122	3/4" (7.6cm) Replacement Tip (Coarse Soils)

FIELDSCOUT®

LAQUA TWIN METERS

![LAQUAtwin logo]

EC METER

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

Measurement Button
Press when ready to measure
Backlit Display

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

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

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

pH METER

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 0.3mL
- Automatic temperature compensation, waterproof, auto power-off
- Includes two CR2032 batteries, case and calibration standards

Take Quick, Lab Accurate Measurements On Site

pH Meter
- Pesticide Spray Water
- Soil pH
- Irrigation Water

EC Meter
- Soil EC
- Irrigation Water

PRODUCTS

LAQUA Twin pH Meter	
2103ALP	LAQUA Twin pH Meter (Includes Case, Batteries, and pH 4 and 7 Standards)
2110	Refill Solutions pH4 and 7, 60mL Each
2143L	LAQUA Twin pH Replacement Sensor
2135L	Sampling Sheets, 100 Pieces

LAQUA Twin EC Meter	
2205LP	LAQUA Twin EC Meter (Includes Case, Batteries, and pH 4 and 7 Standards)
2210L	Conductivity Standard, 1.41mS/cm, (6) 14mL Bottles
2242L	Replacement Sensor

PRODUCT SPECIFICATIONS

	pH	Conductivity (EC)
Measurement Principle	Glass Electrode Method	2AC Bipolar
Sample Volume Required	0.1mL to 2.0 mL	0.12 mL to 2.0 mL
Measurement Range	0 to 14 pH	0 to 199mS/cm
Calibration	pH 4 and pH 7	1.41 mS/cm
Reproducibility	± 0.1pH	± 2%
Display	4-Digit Digital LCD Display with Backlight (New)	
Power	CR2032 Coin Batteries (x2)	
Battery Life	400 Hours Continuous Operation with Backlight Off (New)	
Operating Range	40°F to 105°F (5°C to 40°C), 85% Relative Humidity	
Dimensions	164mm x 29mm x 20mm	

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

Spectrum®
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"To Measure Is To Know"

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More Info
Page 12

WIND WatchDog®

AVOID DRIFT COMPLAINTS!

MEASURE AND RECORD
WIND SPEED AND DIRECTION
when spraying pesticides

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