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

# TruFirm® Turf Firmness Meter Product Manual

Item #6490S

## GENERAL OVERVIEW

Thank you for purchasing a FieldScout® TruFirm Turf Firmness Meter. The FieldScout TruFirm Turf Firmness Meter is a technologically advanced solution that provides superintendents the ability to measure the firmness of sports playing surfaces, especially golf greens, fairways and bunkers.

The FieldScout TrueFirm Turf Firmness Meter consists of an impact plunger and a rotary position sensor. Once motion of the plunger is detected the electronics will collect and process the signal then send a measurement to an LCD display. The measurement will also transmit to a mobile device via Bluetooth.

Superintendents can monitor their surfaces on their smartphone and make real-time decisions that improve quality and performance, conserve resources, and increase profits.

**TABLE OF CONTENTS**



This manual will familiarize you with the features and operation of your new FieldScout TruFirm Turf Firmness Meter. Please read this manual thoroughly before launching the unit.

For customer support or to place an order, call Spectrum Technologies, Inc. at 800-248-8873 or 815-436-4440, FAX at 815-436-4460, or e-mail at info@specmeters.com.

www.specmeters.com
Spectrum Technologies, Inc.
3600 Thayer Court
Aurora, IL 60504

**Components**
The FieldScout TruFirm Turf Firmness Meter is made up of a Collar (A), Actuator Arm (B), Plunger Shaft (C), Button (D), Base (E) and Foot Support (F) - see below.

## GETTING STARTED

Get your meter running in the following steps. Find a tutorial video online at www.specmeters.com/videos.

### QUICK OVERVIEW

1. Install 2 AA Batteries (included)
2. Download FieldScout Mobile App
3. Connect SpecConnect Account
4. Connect FieldScout Device via Bluetooth

## SETUP

**Installing the Batteries**

The TruFirm meter requires 2 AA Batteries (included). They are installed inside the plastic housing. Remove the four screws holding the lid in place to access the battery holder.

Note: If the TruFirm will not be used for an extended period of time (over one month), it is recommended that you remove the batteries from the meter.

**FieldScout Mobile App**

This app can be used to view measurement results diretly on your mobile device and send data directly to the SpecConnect web interface.

1. Search for and download the FieldScout mobile app from the app store on your mobile device
2. Open the FieldScout mobile app
3. Enter the SpecConnect username and password to send measurements to the cloud account or tap Use FieldScout Basic to start grid mode
4. Upon first use, tap the Golf or Agriculture icon
5. Select an existing Course/Farm or create a new one
6. Tap the “Start a New Session” button. Alternatively, you can select an existing session. In this case, skip to step 9.
7. Select TruFirm as the Meter Type and name the session
8. Select the newly created session
9. Select whether the data will be collected in Grid or Freeform mode
10. In Basic mode, the Grid screen appears. Tap on a grid cell where measurements will be added. The app will display the Take Readings screen (Figure 1a). In Freeform mode, the app will transition to the session screen (Figure 1b).
11. Tap the Connect FieldScout Device via Bluetooth button. If Bluetooth is not enabled on the mobile device, a prompt will appear to enable it.
12. Select the meter from the device list (Figure 2).
13. For Grid mode, confirm that the meter type you are using appears at the top of the screen (Figure 3a)
14. Tap a zone to bring up the Take Reading screen (Fig. 3b). Freeform readings will appear as pushpins on the map (Figure 4)
15. Lift and drop the plunger to take a reading. The measurement data will appear on the mobile device

Note: Although the device appears in the app, it may not appear on the phone’s list of Bluetooth devices.

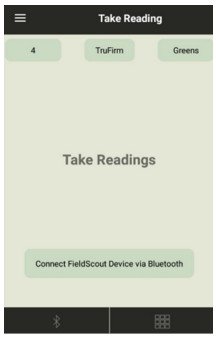


Figure 1a - Bluetooth Connect Button (Grid)


Figure 1b - Bluetooth Connect Button (Freeform)

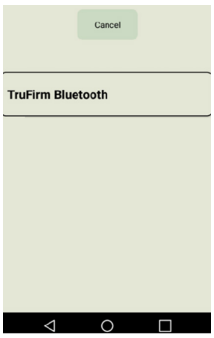


Figure 2 - Scanned Device List

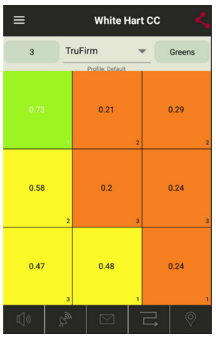


Figure 3a - Grid Mode

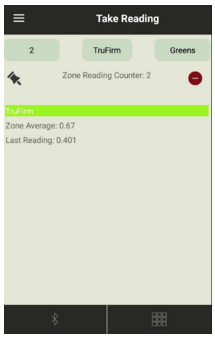


Figure 3b - Grid Mode Readings Screen


Figure 4 - Freeform Mode

## TRUFIRM OPERATION

The TruFirm meter measures the depth the plunger depresses a surface when it is released from a set height. The value of this depth is displayed on an LCD readout. The unit will also display the average of a series of measurements and the number of measurements included in the average on the LCD.

**Activating/Deactivating the Display**
The unit is activated by briefly pressing the Button. The LCD will display the percent battery life for 5 seconds and then show zeros when it is ready to take a measurement. The TruFirm will power off after 5 minutes of inactivity.

Taking a Reading

1. Place the unit on the surface being measured. If the surface is sloped, orient the Base so that it is pointing downhill
2. Step lightly on the Foot Support. This will ensure the unity does not tip over after the reading is taken
3. If the Display is blank, press the Button briefly and wait for the unit to turn on
4. Lift up the Plunger all the way. The display will now show the number of measurements that have been included in the average (or zero for the first reading)
5. Release the Plunger so that it drops smoothly
6. On the first measurement, the value of the current measurement is displayed. For subsequent measurements, the LCD will display the current reading for 2 seconds and the average after 2 seconds. To reset the average, press the Button briefly while the average value is being displayed. If the average is not reset, the next reading will be included in the average as well. The average will also be reset if the meter is powered off (manually or due to 5 minutes of inactivity).

## SPECIFICATIONS

| Characteristic | Description |
|---|---|
| Power | 2 AA Batteries (included) |
| Weight | 4.3 lb. (1.95 kg) |
| Height | 27 in (69 cm) |
| Height (with Plunger Extended) | 46 in (117 cm) |
| Diameter of Plunger | 1.68 in (4.27 cm) |
| Measurement Units | Depth of Travel (inches) |
| Range | 0.1 in - 1.5 in |
| Resolution | 0.01 in at 1.00 - 1.50 in, 0.003 in at 0.100 in - 0.999 in |
| Display | LCD |

## DATA LOGGING & STORAGE

The data collected by the TruFirm Meter can be viewed on a Smartphone in two formats:

1. **Basic Grid Mode** - Available with or without a SpecConnect subscription. The site is divided into a customizable 2-dimensional grid of 3 to 5 rows and 3 to 5 columns. Measurements are taken in each grid cell. Grid cells are color coded to show the firmness average (Figure 5).
2. **Freeform Mode** - Available with a SpecConnect subscription. Color coded location icons are placed at every measurement point using the coordinates from the internal location of the app's mobile device (Figure 6).

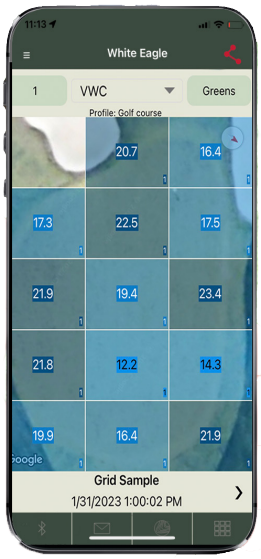


Figure 5 - Grid Mode


Figure 6 - Freeform Mode

The data from the Pro version of the app is sent instantaneously to SpecConnect. Data can be viewed in map form (Figure 7), exported to a spreadsheet, or viewed as a Trend Report (Figure 8). More details are available in the user's guide for the app.

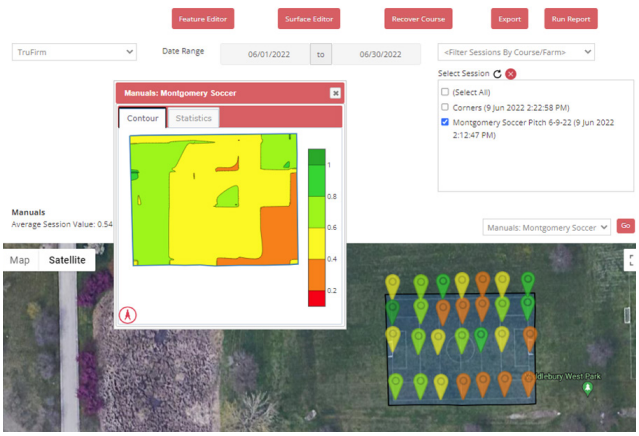


Figure 7 - Grid Mode

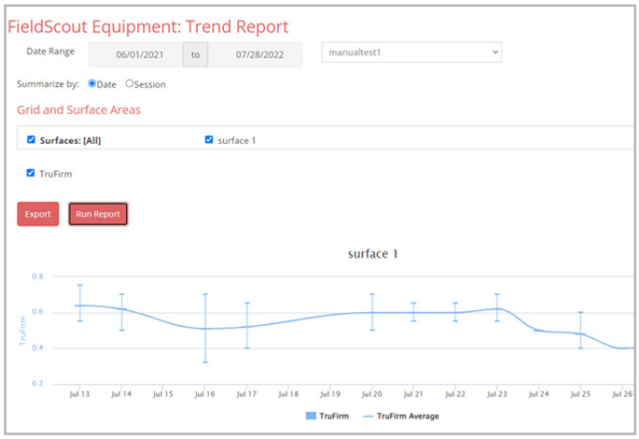


Figure 8 - Grid Mode

The larger the TruFirm value, the softer the turf. The following are general guidelines used to describe firmness measurements of the TruFirm on greens. With experience, you will see how the firmness measured by the TruFirm corresponds to ball bounce.

| TruFirm Reading (in) | Metric Equivalent (cm) | Description |
|---|---|---|
| > 0.43 | > 1.1 | Very Soft |
| 0.38 to 0.43 | 0.97 to 1.1 | Good for Normal Play |
| 0.35 to 0.38 | 0.89 to 0.97 | Firm but Playable |
| 0.30 to 0.35 | 0.76 to 0.89 | Very Firm |
| < 0.30 | < 0.76 | Extremely Firm, Rock Hard |

## WARRANTY

This product is warranted to be free from defects in material or workmanship for one year from the date of purchase. During the warranty period Spectrum will, at its option, either repair or replace products that prove to be defective. This warranty does not cover damage due to improper installation or use, lightning, negligence, accident, unauthorized modifications, or to incidental or consequential damages beyond the Spectrum product. Before returning a failed unit, you must obtain a Returned Materials Authorization (RMA) from Spectrum. Spectrum is not responsible for any package that is returned without a valid RMA number or for the loss of the package by any shipping company.

Spectrum Technologies, Inc. "To Measure Is To Know" www.specmeters.com

RE-D EU Declara on of Conformity (DoC) #20220413_1

In accordance with European Parliament and Council Decision No. 768/2008/EC Annex III
we, Spectrum Technologies, Inc., a corporation validly organized and exis ng under the laws of the United States of America, having its principal place of business at 3600 Thayer Court, Aurora IL 60504 USA
**declare under our sole responsibility that the below named**
**Product:** FieldScout TruFirm Turf Firmness Meter
**Model Name (Product Number):** TruFirm 6490S
**Object of the Declara on:**
FieldScout TruFirm Turf Firmness Meter providing a means for determining the rmness of turf used in sport playing surfaces.
Speci cati ns:
- Battery powered device (2 x AA batteries)
- Bluetooth communications
- LCD Display
- Durable powder coated aluminum frame

**to which this declaration relates, conform with the relevant requirements of the Harmonized Legislations mentioned below. Specifically, but not limited to, the following harmonized stand-ards and/or normative documents:**

**Harmoniza on Legisla on:**
2014/53/EU Radio Equipment Directi e
2011/65/EU Restric on of Hazardous Substances Direc ve

**Ar cle 3.1(a) Safety of Informa on Technology Equipment**
EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (as applied to internal Bluetooth module Silicon Labs BLE113-A-M256K)

**Ar cle 3.1(b) Electromagne c Compa bility**
EN 61000-6-1:2007 Immunity for residen al, commercial, and light-industrial environments
EN 61000-6-3:2007 /A1:2011 Emission standard for residen al, commercial, and light-industrial environments
EN 55022:2010 /AC:2011 Information echnology equipment - Radio disturbance characteris cs - Limits and methods of measurement
EN 301 489-1 V2.1.1 EMC standard for radio equipment and services; Part 1 (as applied to internal Bluetooth module Silicon Labs BLE113-A-M256K)
EN 301 489-1 V1.9.2; 2011 EMC standard for radio equipment and services; Part 1: Common technical requirements
EN 301 489-3 V1.6.1; 2013 EMC standard for radio equipment and services; Part 3: Specific condi-tions for Short-Range Devices
EN 301 489-17 v3.1.1 EMC standard for radio equipment and services; Part 17 (as applied to inter-nal Bluetooth module Silicon Labs BLE113-A-M256K)

**Ar cle 3.2 Spectrum E ciency**
EN 300 328 V2.1.1; 2016-11 Wideband Data Transmission Systems; 2.4 GHz Band; Emissions, EMC (as applied to internal Bluetooth module Silicon Labs BGM113-A-M256K)
EN 300 440 V1.6.1 2010-08 Short Range Devices 1-40 GHz; Emissions; EMC

**Ar cle 3.3 Other Requirements**
EN 63000:2018 Technical documenta on for the assessment of electrical and electronic products with respect to the restric on of hazardous substances

Sam Kelly
Electronics Engineer
skelly@specmeters.com

Spectrum Technologies, Inc. "To Measure Is To Know" www.specmeters.com

UK Declarati n of Conformity (DoC) #20220414_2

In accordance with BS EN ISO/IEC 17050-1:2010 we, Spectrum Technologies, Inc., a corpora on validly organized and existin under the laws of the United States of America, having its principal place of business at 3600 Thayer Court, Aurora IL 60504 USA
**declare under our sole responsibility that the below named**
**Product:** FieldScout Tru rm Turf Firmness Meter
**Model Name (Product Number):** TruFirm 6490S
**Object of the Declarati n:**
FieldScout TruFirm Turf Firmness Meter providing a means for determining the rmness of turf used in sport playing surfaces.
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**to which this declaration relates, conform with the relevant requirements of the Harmonized Legislations mentioned below. Specifically, but not limited to, the following harmonized stand-ards and/or normative documents:**

**Harmoniza on Legisla on:**
2016 No. 1091 The Electromagnetic Compatibility Regulations 2016
2012 No. 3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

**Safety of Informa on Technology Equipment**
EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (as applied to internal Bluetooth module Silicon Labs BGM113-A-M256K)

**Electromagne c Compa bility**
BS EN 61000-6-1:2007 Immunity for residen al, commercial, and light-industrial environments
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EN 301 489-1 V2.1.1 EMC standard for radio equipment and services; Part 1 (as applied to internal Bluetooth module Silicon Labs BGM113-A-M256K)
EN 301 489-1 V1.9.2; 2011 EMC standard for radio equipment and services; Part 1: Common technical requirements
EN 301 489-3 V1.6.1; 2013 EMC standard for radio equipment and services; Part 3: Specific condi-tions for Short-Range Devices
EN 301 489-17 v3.1.1 EMC standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems (as applied to internal Bluetooth module Silicon Labs BGM113-A-M256K)

**Spectrum E ciency**
EN 300 328 v2.1.1 (as applied to internal Bluetooth module Silicon Labs BGM113-A-M256K)
EN 300 440 V1.6.1 2010-08 Short Range Devices 1-40 GHz; Emissions; EMC

**Other Requirements**
BS EN 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Sam Kelly
Electronics Engineer
skelly@specmeters.com

**Supplier's Declara on of Conformity**
**47 CFR § 2.1077 Compliance Informa on**
**Unique Iden fi r:** FieldScout TruFirm Turf Firmness Meter TruFirm 6490S
**Responsible Party – U.S. Contact Informa on**
Spectrum Technologies, Inc., 3600 Thayer Ct. Aurora IL 60504
Phone: (800) 248-8873 or (815) 436-4440 Fax (815) 436-4460
E-Mail: info@specmeters.com Web: www.specmeters.com
**Direc ve/Standard:**
FCC Part 15: 2014: Emissions for Unintenti nal Radiators for USA (ANSI C63.4:2014)
ICES-003:2012: ITE Emissions for Canada (ANSI C63.4:2014)
**FCC Compliance Statement**
This device complies with part 15 of the FCC Rules. Operati n is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protec on against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an output on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced RF technician for help.

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:
(1) This device may not cause interference.
(2) This device must accept any interference, including interference that may cause undesired operati n of the device.
**This Class (B) digital apparatus complies with Canadian ICES-003.**
**Cet appareil numériqué de la classe (B) est conformé à la norme NMB-003 du Canada.**

**Proper Disposal of Waste Electrical and Electronic Equipment**
This symbol when found on the product or packaging indicates that this product shall not be treated as common waste and that an effort to recycle materials should be made or may be required. Disposal of used and depleted electrical & electronic equipment may be subject to local laws and regulations for proper collection and recycling initiatives in the local area. This is applicable to areas within the European Union and other participating countries including the USA. The recycling of materials will help to conserve natural resources and prevent negative consequences of inappropriate waste handling at the end of a product's usable life. For more information about the recycling of waste electrical and electronic equipment, please contact your local civic office, waste disposal service, or the shop where the item was purchased.

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Rev. A 07/2023