

# PosiTector<sup>®</sup> *SPG*

## *Surface Profile Gage*

Full Guide v. 1.1



**DeFelsko<sup>®</sup>**

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# Introduction


The **PosiTector Surface Profile Gage (SPG)** is a hand-held electronic Gage that measures the peak-to-valley height of the surface profile of abrasive blast cleaned surfaces. It consists of a body (Standard or Advanced) and probe.

## PosiTector SPG Kit Contents

- PosiTector body (*Standard or Advanced*)
- PosiTector probe (SPG)
- Glass zero plate and metal shim
- Protective rubber holster with belt clip
- Protective cap for probe
- Protective lens shield
- Wrist strap
- 3 AAA alkaline batteries
- Quick Guide instruction booklet
- Nylon carrying case with shoulder strap
- USB Cable
- Certificate of Calibration traceable to NIST
- PosiSoft.net account
- Two (2) year warranty on Body and Probe

## Quick Start

The **PosiTector SPG** powers-up when the center navigation button is pressed. To preserve battery life, it powers-down after approximately 5 minutes of no activity. All settings are retained.

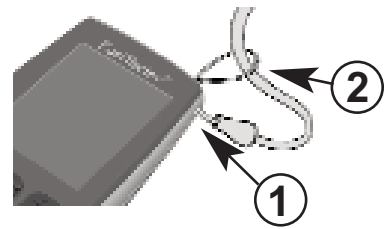
1. Remove the protective plastic cap from probe.
2. Power-up Gage by pressing the center navigation  button.
3. Place the glass zero plate onto a stable, flat surface. Take several measurements. If the average of several readings is greater than  $\pm 5 \mu\text{m}$  (0.2 mil), **Zero** the Gage (see pg. 8).
4. Place the probe FLAT on the surface to be measured such that the tip of the probe reaches into the bottom of a profile valley. HOLD STEADY. The Gage will BEEP twice and display the measurement.
5. Lift the probe from the surface between measurements.

## Protective Cap

**PosiTector SPG** models are shipped with a protective plastic cap over the probe. Remove this cap prior to use. Replace it when the Gage is not in use to protect the probe.

## Wrist Strap

We recommend attaching and wearing the supplied wrist strap.



## Plastic Lens Shield

The LCD is covered with a thin plastic film for protection against fingerprints and other marks during shipment. This film, while usually removed before using the Gage, can be left in place to protect against paint overspray or debris. Replacements can be purchased.

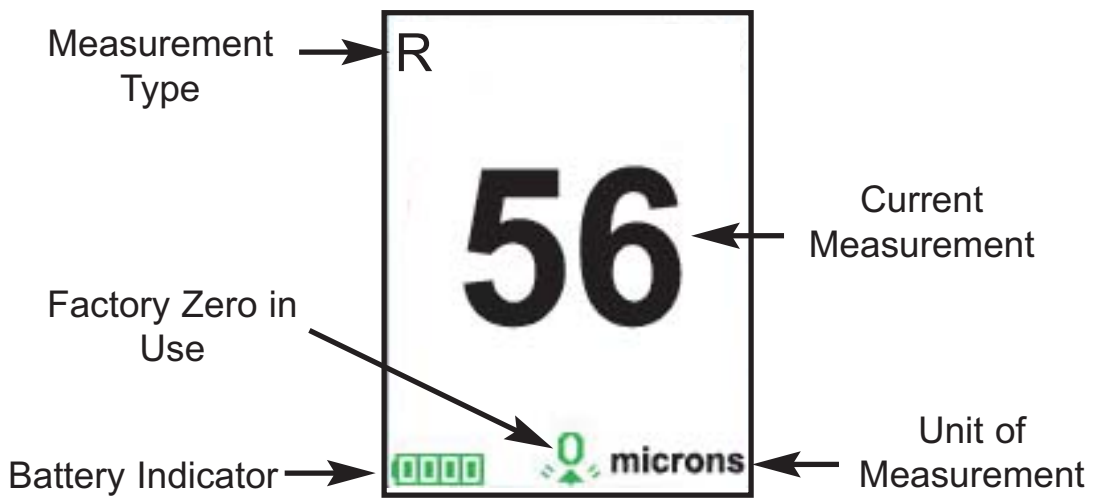
## Certification

All probes include a Certificate of Calibration. For organizations with re-certification requirements, instruments may be returned at regular intervals for calibration. DeFelsko recommends that customers establish calibration intervals based upon their own experience and work environment. Based on our product knowledge, data and customer feedback, a one year calibration interval from either the date of calibration, date of purchase, or date of receipt is a typical starting point. Written calibration procedures are available from DeFelsko Corporation at no charge.

## PosiTector Body



## Typical Screen



# Probes

To disconnect a probe from a body, power-down the Gage and slide the plastic probe connector horizontally (in the direction of the arrow) away from the body. Reverse these steps to attach a new probe.



When powered-up, the **PosiTector** automatically determines which probe is attached and does a self-check.

The supplied probe tip has a 60° angle to comply with most test standards including ASTM D 4417 B. An optional 30° angle tip with replacement tool is available for special applications or to comply with Australian Standard AS 3894.5.

A replacement tool is included with the purchase of either the 60° or 30° angle tips. Insert the two legs of the replacement tool into the probe tip and turn counter clockwise to remove the tip. Insert the new tip and tighten clockwise. Do not over tighten. Since the factory zero setting may not always be precise after a probe tip exchange, the gage should be checked on the included glass plate and zeroed if necessary.

Additionally, the **PosiTector** accepts a number of probe types including magnetic, eddy current and ultrasonic coating thickness, surface profile, environmental and ultrasonic wall thickness probes. Perform the latest software **Updates** (pg. 27) to ensure probe compatibility with your Gage. For the latest information on probe interchangeability see [www.defelsko.com/probes](http://www.defelsko.com/probes)



*PosiTector bodies accept all 6000, 200, DPM, UTG, SPG and RTR probes*


## Why is Measurement Important?

Steel is often abrasive blast cleaned or otherwise roughened prior to painting. The peak-to-valley height of the resultant surface profile is an important factor in the performance of applied protective coatings.

Low profile may reduce coating bond strength (adhesion). Too high and the peaks may receive insufficient coverage and possibly rust prematurely. The costly application of more coating may be required if the profile is too high.

For these reasons, surface profile should be measured prior to coating application to ensure that it meets contract specifications.

## How to Measure

1. Remove the protective rubber cap from probe.
2. Power-up Gage by pressing the center navigation  button.
3. Place the probe FLAT on the surface and press down.
4. Lift the probe when you hear a double BEEP.
6. When completely finished, return the Gage to the protective pouch. There is no need to disconnect the probe from the **PosiTector** during storage.



# Calibration & Verification of Accuracy

## Calibration

Instrument calibration is typically done by the manufacturer or qualified lab. All probes include a Certificate of Calibration showing traceability to a national standard. For organizations with re-certification requirements, the **PosiTector SPG** may be returned at regular intervals for calibration.

DeFelsko recommends that our customers establish Gage calibration intervals based upon their own experience and work environment. Based on our product knowledge, data and customer feedback, a one year calibration interval from either the date of calibration, date of purchase, or date of receipt is a typical starting point.

Written Calibration Procedures are available online at no charge.

## Verification of Accuracy

Instrument accuracy is verified using the included metal shim and glass zero plate.

Place the plate onto a stable, flat surface. Take several measurements. If the average is greater than  $\pm 5 \mu\text{m}$  (0.2 mil), **Zero** the Gage (pg. 8).

Next, place the metal shim over the glass plate and measure ensuring the probe needle touches the glass plate in the area between the shim's "legs". The average of several measurements should be within the combined tolerances of both the shim and the gage ( $\pm 10\%$ ). For example, measuring a  $75 \mu\text{m}$  (3 mil) shim should result in values between  $67.5 \mu\text{m}$  (2.7 mils) and  $82.5 \mu\text{m}$  (3.3 mils). If not, see **Returning for Service** (pg. 31).

To guard against measuring with an improperly adjusted Gage, verify the Gage at the beginning and the end of each work shift. During the work shift, if the Gage is dropped or suspected of giving erroneous readings, its accuracy should be re-verified.

In the event of physical damage, wear, high usage, or after an established calibration interval, the gage should be returned to the manufacturer for repair or calibration.

# Menu Operation

Instrument functions are menu controlled. To access the Menu, power-up the Gage, then press the center navigation button.

Below is a sample menu for a **PosiTector SPG** Advanced Model:

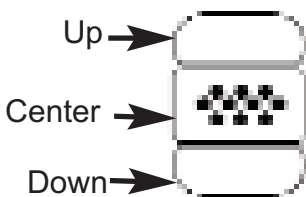
Memory
Statistics
Zero
Setup
<b>Connect</b>
Help
Power Off
Exit

Some buttons have a tick box to their right to indicate current status. An empty box indicates that feature is not active.

Sync Now	<input type="checkbox"/>
USB Drive	<input type="checkbox"/>
Auto SYNC	<input checked="" type="checkbox"/>
Bluetooth	
WiFi	
<b>Updates</b>	
Exit	

Current selection is displayed with darkened background

## Navigation Button



To navigate, use the **Up** and **Down** buttons to scroll and  to **SELECT**.

Select **Exit** to exit from any menu.

**NOTE:** The center  button is purposely recessed to help eliminate unintentional powering-up of the gage.

# Zero Menu

The **PosiTector SPG** has only one adjustment point at zero. The zero point can be set using one of two methods. Both methods are found under the Zero menu option.



## Glass Plate Zero

Setting the Gage to zero on the glass plate is the preferred zero adjustment method:

1. Select  from the menu.
2. Press the (+) button to select the number of readings to be used to obtain an average, typically 3.
3. Repeatedly measure the glass plate. After the last measurement the gage will calculate a Zero which represents the average of all the Zero readings taken.

## Factory Zero

If a glass plate or suitable smooth, hard surface is not available, the factory zero setting can be restored:

1. Select  from the menu.
2. Press the down button to select "**Reset**" and press the center navigation button . The factory calibration icon  will appear on the LCD.

**NOTE:** -The factory zero setting is restored during a RESET (below)

-The factory zero setting may not always be precise, particularly after a probe tip exchange. For best accuracy, the gage should be zeroed on the included glass plate.

# Setup Menu

## Reset

**Reset** (soft reset) restores factory settings and returns the Gage to a known condition. The following occurs:



- All batches, stored measurements, images, and batch names are erased.
- The zero adjustment is returned to the factory setting. Since this may not always be a precise zero, the gage should be checked on the glass plate (pg. 8)
- Menu settings are returned to the following:

**Memory** = OFF

**Hi Lo Alarm** = OFF

**Statistics Mode** = OFF

**Bluetooth** = OFF

Perform a more thorough **Hard Reset** by powering down the Gage, waiting several seconds, then simultaneously holding both the center  and **(+)** buttons until the **Reset** symbol  appears. This returns the Gage to a known, “out-of-the-box” condition. It performs the same function as a menu **Reset** with addition of:

- Bluetooth Pairing info is cleared.
- Menu settings are returned to the following:

**Units** = microns

**Language** = English

**Flip Display** = Normal

**Battery Type** = Alkaline

**Auto Sync** = OFF

**Backlight** = Normal

**White on Black** = OFF

**Bluetooth Streaming** = OFF

**USB Drive** = ON

**NOTES:** - Date, Time and WiFi are not affected by either **Reset**.

## Gage Info

Displays the model number & serial number, probe type & serial number, *PosiSoft.net* registration key, the amount of remaining memory for storage of readings, date and time, and software packages.

For security purposes, the registration key is required to add the Gage to your free *PosiSoft.net* account.

## Flip Display

This option causes the display to rotate 180°. Ideal for right-side-up viewing when the sensors are pointed away from the user.

## White on Black (Advanced models only)

Inverts the LCD display to white on a black background to provide better readability in some surroundings.

## Backlight (Advanced models only)

Selects display brightness (Sun, Normal or Night). All settings will dim slightly after a period of no activity to conserve battery life. Press the **Down** button to brighten the display.

## Set Clock

All batches are *date*-stamped when created, and all readings are *time*-stamped (24 hour format) when stored into memory. It is therefore important to keep both the date and time current using this menu option. Use the **Up** and **Down** buttons to scroll, and the **(-)** and **(+)** buttons to adjust a value. The Gage's data and time can also be viewed in **Gage Info** (pg. 9).

## Battery Type

Selects the type of batteries used in the Gage from a choice of "Alkaline", "Lithium" or "NiMH" (Nickel-metal hydride rechargeable). If NiMH is selected, the Gage will trickle charge the batteries while connected via USB to a PC or optional AC charger. The battery state indicator icon is calibrated for the selected battery type. No damage will occur if the wrong battery type is selected.

**NOTE:** DeFelsko recommends the use of *eneloop* (NiMH) rechargeable batteries.

## Units

Converts the display from inch to metric or vice versa. Stored measurements in memory are not converted.

**NOTE:** Switching units will turn off Statistics, HiLo Alarm, and closes Memory.

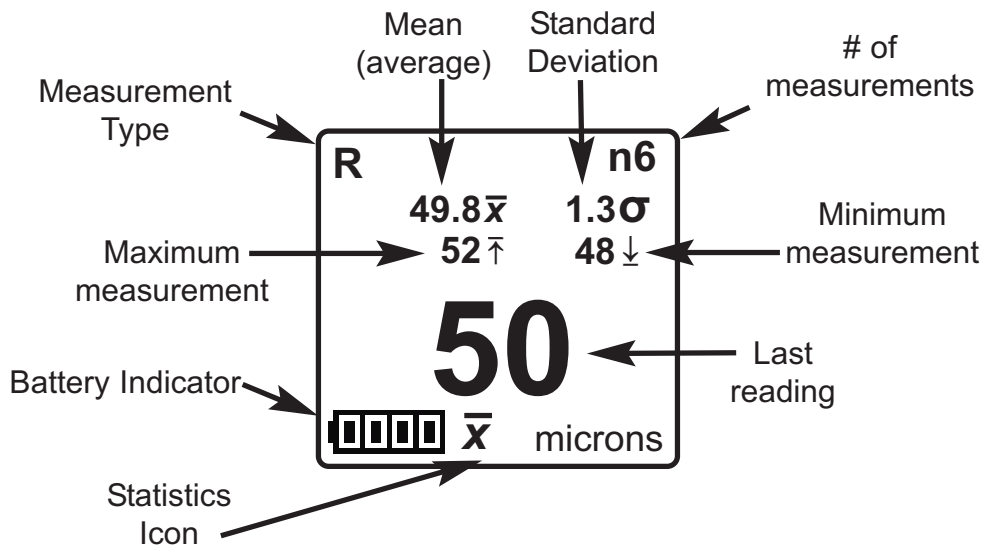
## Language

Converts displayed and printed words to the selected language.

## Statistics Menu

### Statistics

When selected, a  $\bar{x}$  icon and statistical summary will appear on the display.



Remove the last measurement by pressing the (-) button. Press (+) to clear statistics.

### HiLo Alarm

Allows the Gage to visibly and audibly alert the user when measurements exceed user-specified limits.

When **HiLo Alarm** is selected, the current **Lo** setting is displayed. Adjust down (-) or up (+). Alternatively, measure a coating with a thickness close to the required value and make final adjustments with the buttons. Select **NEXT** to accept this value. The current **Hi** setting is now displayed. Follow the same procedure to adjust the **Hi** setting.

The **HL** icon will appear on the display.

Measurements will be compared to your defined **HiLo** limits. The Gage beeps if results are within those limits. A single low tone will sound if the reading is below the **Lo** limit, and a high tone if it is above the **Hi** limit. Press (+) to clear **HiLo** readings.

### Clear

Clears all on-screen **Statistics** and **HiLo** tabulations.

# Memory Management

The **PosiTector SPG** has internal memory storage for recording measurement data. Stored measurements can be reviewed on-screen or accessed via computers, tablets and smart phones. Measurements are date and time-stamped.

Button functions with **Memory ON**:



**Standard models** store up to 250 readings in one batch.


The **Memory** Menu includes the following options...

On: turns memory on and begins recording

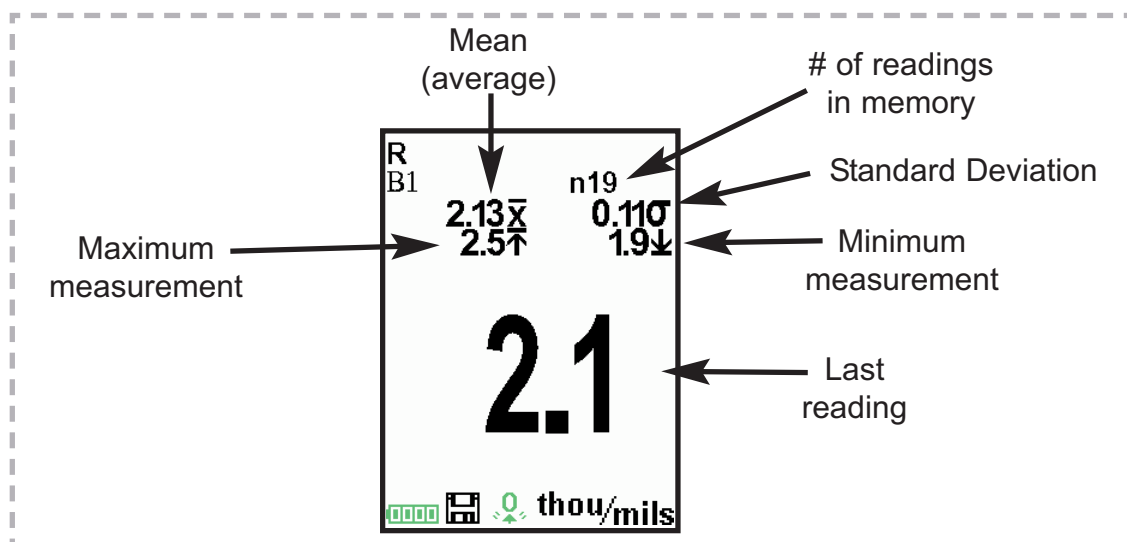
Off: stops recording (stored readings remain in memory)

Clear: removes all readings from memory

View: lists group statistics and all stored readings on the display.


It will begin by showing statistics based on all readings in memory. Use the **Up** and **Down** buttons to scroll through all readings. Press  to exit.

Standard Model display with **Memory ON** shows measurement statistics:



**Advanced models** store 100,000 readings in up to 1,000 batches. The **Memory** Menu includes the following options...

### New Batch

Closes any currently opened batch and creates a new batch name using the lowest available number. For example, if only **Batch 1** and **Batch 3** exist, then **Batch 2** would be created and made the current batch. The  icon appears and basic statistics are displayed. Each measurement will be displayed and stored into this new batch. On screen statistics are immediately updated with each measurement. New batches are date stamped when they are created. Each reading is also data/time stamped.

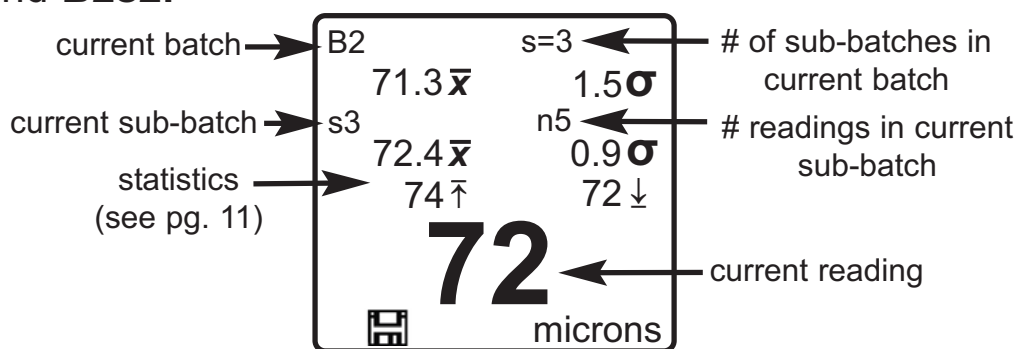
**Shortcut:** When a batch is open, press (+) to create a new batch.

### New Sub-Batch *(appears only if a batch is currently open)*

Creates a new sub-batch within the currently opened batch.

**Shortcut:** When a sub-batch is open, create a new sub-batch by pressing (+).

In the following example, **B2s2** is a sub-batch of **Batch 2**. Sub-batching allows the user to group related batches so that statistics can be accumulated for them. **Batch 2** contains the statistics for **B2s1** and **B2s2**.



### SmartBatch

The **PosiTector SPG** measures the depth of a single valley in relation to the height of the surrounding peaks using a pointed, cone-shaped probe.

A single depth measurement generally does not adequately characterize the surface profile of an abrasive blast cleaned surface. Repeated gage readings often differ due to surface irregularities even at points close together.




Therefore most organizations and contract specifications require multiple measurements be taken and analyzed to produce a final result that better characterizes the surface.

The Smart Batch menu option sets-up the **PosiTector SPG** to comply with the statistical approaches defined in various standards and test methods published by organizations such as ASTM, SSPC, ISO, IMO, US Navy, SANS and AS.

For instructions on how to use the Smart Batch™ feature, see [www.defelsko.com/smartbatch](http://www.defelsko.com/smartbatch)

### **Open**

Selects a previously created batch or sub-batch name to open and make current. If it contains measurements, on-screen statistics will immediately reflect values calculated from this batch. The calibration setting (i.e. Cal 2) associated with this batch is also opened.

**NOTE:** A solid triangle ► is displayed to the right of the batch name when sub-batches are present. Press  to view sub-batches. This also applies to the *Delete*, *View* and *Print* options.


### **Close**

Stops the recording process, closes the current batch, and removes batch information from the display.

### **Delete**

Removes a batch or sub-batch completely from memory. The name is deleted and all measurements are erased. Sub-batches can be deleted individually. To delete all related sub-batches, simply delete the top-level batch.

### **View**

Scroll using the **Up** or **Down** buttons through information, statistical summary, and a list of each reading in the currently opened batch. Press  to exit.

## Annotate

(Advanced models only)

Create meaningful batch names and enter notes directly on the Gage using a familiar onscreen *QWERTY* keyboard.

Use the Gages navigation and (-)(+) buttons to enter annotations.

Annotations can be synchronized with PosiSoft.net and are included in all PosiSoft reports (see **Accessing Stored Measurement Data**, pg. 18).



**NOTE:** Annotations can also be created using PosiSoft.net (pg. 19) or PosiSoft Mobile (pg. 20).

## Print

Sends a statistical summary and individual measurements to the optional Bluetooth wireless printer.

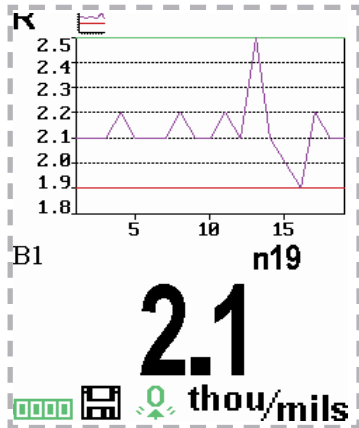
**NOTE:** To cancel printing, press and hold the (-) and (+) buttons simultaneously

## Display

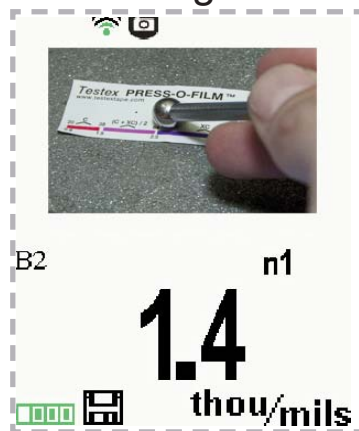
(appears only if a batch is currently open)

The following user selectable display options are available:

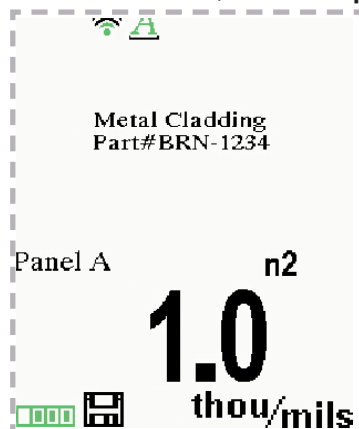
 **Chart:** A real-time chart of batch or sub-batch readings  
**x-y Chart**



**Image:** Batch image



**Notes:** Instructions, descriptions or notes (see Annotate, pg.15)



**None:** Default screen shows statistics

**Shortcut:** When a batch is open, press **Up** to scroll through the above display options.

**NOTE:** PosiSoft.net (pg. 19) and PosiSoft Mobile (pg. 20) are used to insert an **Image** and **Notes** into a batch.

**NOTES:** Remove the last reading from the current open batch by pressing (-).

Calibration adjustments cannot be made if any measurements were taken with that Cal setting and stored into a batch.

Each batch can contain a maximum of 10,000 readings.

**Summaries**

(Advanced models only)

Displays a summary of all stored batches including the name, probe type, number of readings and type.

**Batch Summaries**  
Page 1/1

Batch Name	Probe Type	#	Type
B4	SPG	20	
B3	F	6	PA2
B2	F	10	
B1	UTG-C	5	

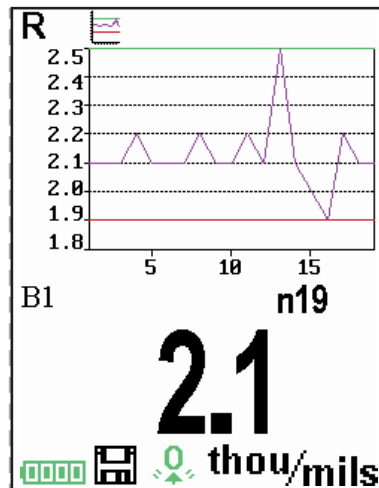
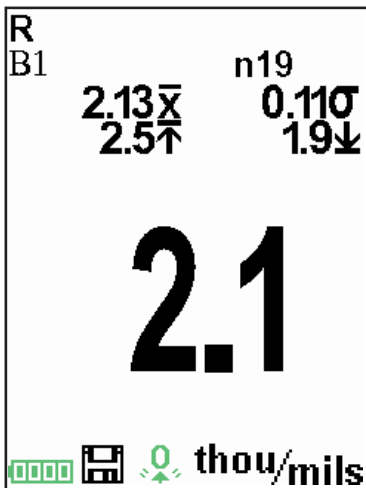
In the following example, Batch 3 (B3) indicates an "F" 6000 coating thickness probe was used to record a total of "6" readings in "PA2" mode.

**OK**

**Screen Capture**

Press both (-)(+) buttons at any time to capture and save an image copy of the current display. The last 10 screen captures are stored in memory and can be accessed when connected to a computer (see *PosiSoft USB Drive* pg. 21).

**Sample Screen Captures**



## Accessing Stored Measurement Data

PosiSoft solutions for viewing, analyzing and reporting data:

**PosiSoft USB Drive** - connect the **PosiTector** to a PC/Mac using the supplied USB cable to access and print stored readings, graphs, photos, notes and screen captures. No software or internet connection required. **USB Drive** must be selected (see pg. 21).



**PosiSoft.net** - a free web-based application offering secure centralized storage of **PosiTector** readings. Access your data from any web connected device. Go to: [www.PosiSoft.net](http://www.PosiSoft.net)

**PosiSoft 3.0** - Desktop Software for downloading, viewing and printing your measurement data.

**PosiSoft Mobile** (*Advanced models only*) - access readings, graphs, capture photos and update annotations through WiFi enabled devices, such as tablets, smart phones and computers.

### **PosiSoft Desktop Manager (PDM):**

A small Windows based application which allows automatic two-way communication (synchronization) between the Gage and *PosiSoft.net* (internet connection required). When installed, PDM runs as a start-up application and resides in the Windows notification area (system tray) of a PC. PDM is available as a free download within your PosiSoft.net account or at [www.defelsko.com/downloads](http://www.defelsko.com/downloads)

Register your Gage on PosiSoft.net to take full advantage of your Gage's capabilities. See [www.PosiSoft.net](http://www.PosiSoft.net)

**NOTE:** PDM is not required for **WiFi** enabled gages (pg. 24).

## PosiSoft.net:

To enhance the operation of your Gage, all **PosiTector** users have access to the features provided by *PosiSoft.net*. It is a web-based application offering secure centralized management of readings.

After (1) a user account has been created, (2) a Gage has been registered, and (3) the *PosiSoft Desktop Manager* is downloaded and installed onto a Windows PC (not required for WiFi connected gages), synchronization of measurement data can be performed either manually or automatically whenever the **PosiTector** is connected to a web enabled PC (USB cable or Bluetooth wireless technology) or WiFi network (Advanced gages only). Gage measurements stored in memory are uploaded; images and batch notes are synchronized.

Uploaded data can be manipulated using a standard internet web browser from any location in the world - job site or head office. Reports and graphs with annotations and corporate logo can be generated. Data can be exported to XML or CSV (comma delimited) text files.

Measurement data can be shared with authorized users via a secure login from any computer and most web enabled devices including smart phones.

**NOTE:** A *PosiSoft.net* account is not required to **Update** (pg. 27) your **PosiTector**. Simply download and install *PosiSoft Desktop Manager* at [www.defelsko.com/downloads](http://www.defelsko.com/downloads)

## PosiSoft 3.0:

Desktop Software that can be installed onto your Windows PC and allows the user to download, view, print and analyze their measurement data.

Reports and graphs with annotations and corporate logo can be generated. Data can be exported to XML or CSV (comma delimited) text files.

**NOTE:** *PosiSoft Software* is available for use with DeFelsko's complete line of electronic instruments and is available for download at [www.defelsko.com/posisoft](http://www.defelsko.com/posisoft)

## PosiSoft Mobile:

Is a Gage-based software application featured in all **PosiTector** Advanced instruments (serial numbers 730,000+).

PosiSoft Mobile allows users to:



- browse stored measurement data including notes, images, statistics and charts
- update batch names/notes using your mobile device's keyboard
- insert images directly into Gage batches using your mobile device's camera or image library
- remotely view the live display of a working **PosiTector** & more

PosiSoft Mobile can be accessed from any WiFi enabled device using a standard web browser.

Ideal for use with devices such as Windows Phone/Mobile, Blackberry (RIM), Android, Apple iOS and more.

In addition to browser based access, PosiSoft Mobile Managers are available for Apple iOS and Android users.

See [www.defelsko.com/wifi/wifi\\_mobile](http://www.defelsko.com/wifi/wifi_mobile)



## Connect Menu

**Synchronizing** (Sync) is the process whereby **PosiTector** stored measurement data uploads to *PosiSoft.net* (from both Standard and Advanced models) while images and batch notes are downloaded to the Gage (*Advanced model only*). This transfer occurs when the Gage is connected via USB, Bluetooth or directly through your WiFi router/hotspot via WiFi. It can be triggered either manually (USB, Bluetooth or WiFi) or automatically (USB only).

### **Sync Now**

When selected, the Gage immediately synchronizes stored measurement data via USB, Bluetooth or WiFi to *PosiSoft.net* (*PosiSoft Desktop Manager* (pg. 18) and an internet connection are required when using USB or Bluetooth.)

Multiple gages can be synchronized simultaneously when connected using multiple connections (for example two gages connected via USB and one gage connected via WiFi or Bluetooth).

### **Auto SYNC**



Allows the Gage to automatically synchronize stored measurements with *PosiSoft.net* when initially connected to the internet via a PC running *PosiSoft Desktop Manager* (pg. 18) or a local WiFi network.

Additional measurements added to memory while connected are synchronized only when the USB cable is disconnected, then reconnected or when the **Sync Now** option is selected.

### **USB Drive**



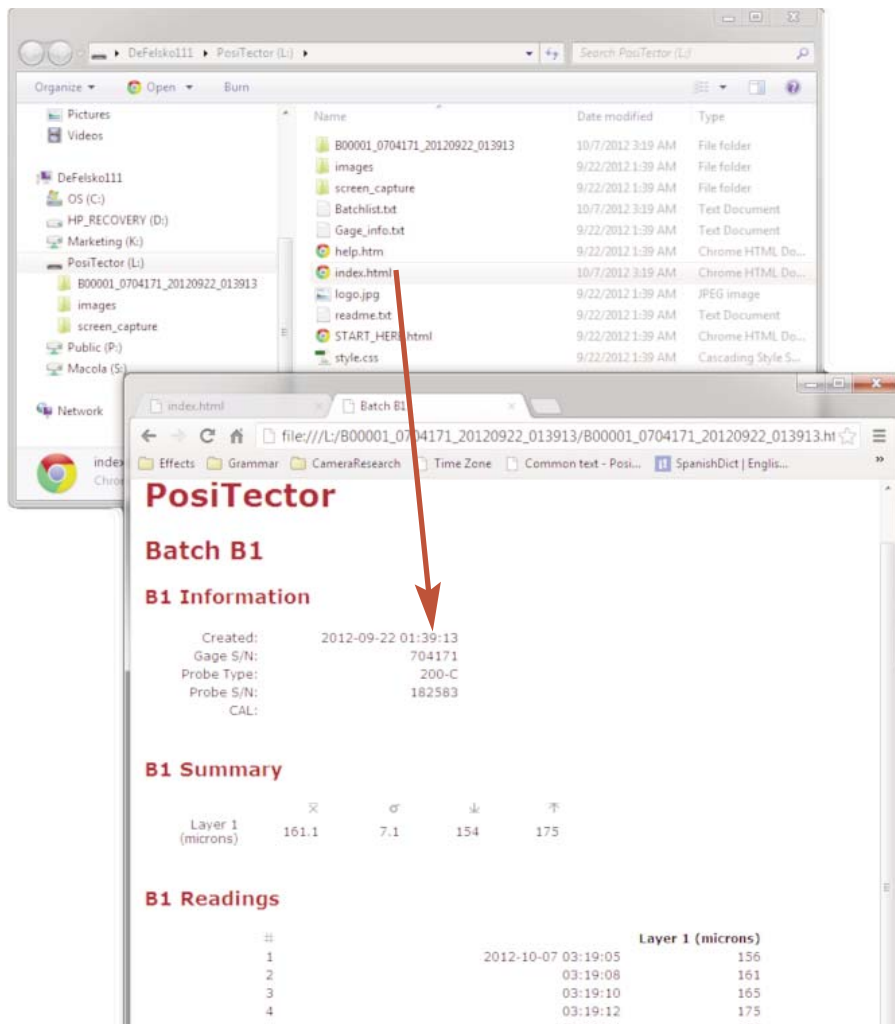
Universal Serial Bus (USB) is a specification for communication between devices and a host controller (usually a personal computer). USB has effectively replaced a variety of interfaces such as serial and parallel ports.

The **PosiTector** uses a USB mass storage device class which provides a simple interface to retrieve data in a manner similar to USB flash drives, cameras or digital audio players.



When checked, any computer can view readings stored in memory by navigating a virtual drive labeled “PosiTector” using the included USB cable.

A formatted HTML report is viewed by selecting the "index.html" or “START\_HERE.html” file found in the root directory. Optionally, text ".txt" files located in each batch folder provide access to measurement values. Stored readings and graphs can be viewed or copied using universal PC/Mac web browsers or file explorers.

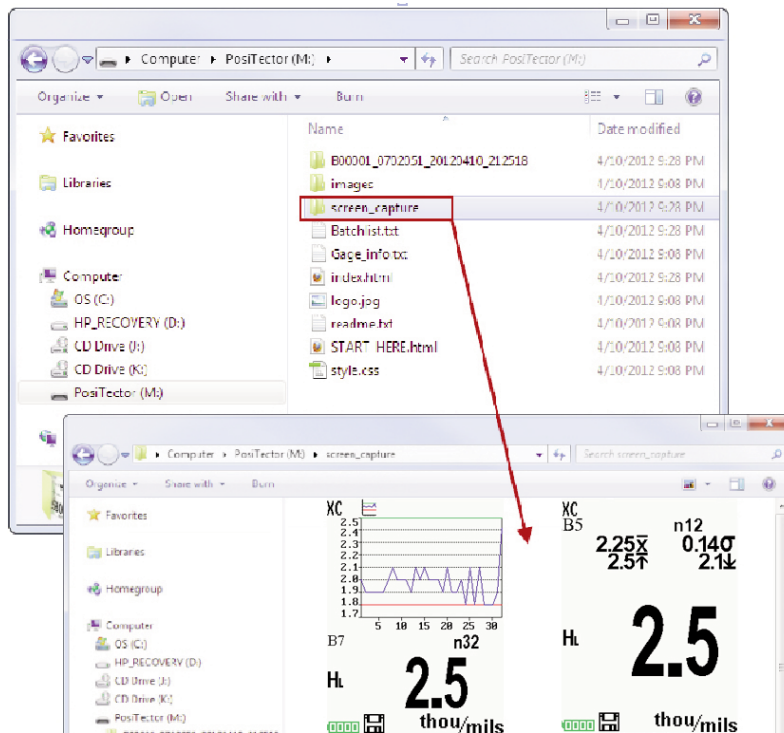


When your **PosiTector** is first connected to your Windows PC via a USB cable, an enumeration process is started that installs device drivers without re-booting your computer. You may see several pop-up windows in the taskbar at the bottom right of your screen. Wait for the entire process to be completed before proceeding.

**NOTE:** When connected, power is supplied through the USB cable. The batteries are not used and the body will not automatically power down. If rechargeable (NiMH) batteries are installed, the Gage will trickle charge the batteries.

## Retrieving stored screen captures

The last 10 screen captures (pg. 17) stored in memory can be accessed by navigating to the “screen\_capture” directory within the “PosiTector” virtual drive.



### Bluetooth

(Advanced models only)



PosiTector Advanced models have Bluetooth functionality to:

- **Communicate** with the *PosiSoft Desktop Manager (PDM)* in lieu of a USB cable.
- **Stream** individual readings to a computer or Bluetooth wireless printer as they are taken.
- **Print** to the optional battery powered Bluetooth wireless printer.

**On:** Turns Bluetooth functionality **On**. When selected, the  icon will appear on the display. To deactivate Bluetooth, select **Off**.

**Pairing:** The Gage and receiving device must be paired before stored or streamed readings can be transmitted. For pairing instructions, see [www.defelsko.com/bluetooth](http://www.defelsko.com/bluetooth)

**Info:** Lists information about your current Bluetooth connection, including the currently paired device and MAC address.

**Stream:** When checked, the Gage will stream readings to the paired Bluetooth Device as they are taken. Readings can be streamed as they are taken to the optional Bluetooth wireless printer (pg. 24) or third-party computer software.

## Bluetooth Wireless Printer

**PosiTector** Advanced models can output to the optional battery powered Bluetooth wireless printer one of two ways:



- Stream individual readings as they are taken.
- Print stored batch readings and summaries.

Begin by entering the **Connect > Bluetooth** menu. Turn Bluetooth **On** and “Pair” the **PosiTector** to the printer. See: [www.defelsko.com/bluetooth](http://www.defelsko.com/bluetooth)


**Streaming:** In the **Connect > Bluetooth** menu, select the **Stream** tick box. All readings will now be simultaneously displayed on the LCD and sent to the printer.

**Printing:** In the **Memory** menu, select **Print**.


**WiFi** *(Advanced models only)*



Allows wireless communication with devices such as tablets, smart phones and computers connected to your local wireless network or portable mobile hot spot. See [www.defelsko.com/WiFi](http://www.defelsko.com/WiFi)


**On/Off** : Turns WiFi functionality **On**. When selected, the  icon will appear on the display. To deactivate WiFi, select **Off**.

**Access Point** : Connect your smart device/computer to a PosiTector Advanced body wirelessly without the need for a separate network. Wirelessly import readings into PosiSoft 3.0 Desktop Software or access PosiSoft Mobile in the field or whenever a WiFi network is not available or out-of-range.

To enable, select **Access Point** from the **Connect > WiFi** menu. The Access Point icon  will display in the upper left of the PosiTector display.

## Securing your Access Point

To ensure the PosiTector is only accessible to authorized devices, it is important that you enter a passphrase (password) for the Access Point. The default Passphrase is **password**.


In the **Connect > WiFi > Setup** menu, select **AP Passphrase**. Press  button to display on-screen keyboard. Enter a Passphrase for the Access Point. The Passphrase will be required for all devices connecting to the PosiTector's Access Point.

The PosiTector is now visible to all WiFi enabled devices. Simply connect your devices WiFi to the new PosiTector Access point. All PosiTectors are uniquely identified by their respective gage body serial numbers.

## AP Channel

Default Channel: 6

For most users the default channel will not have to be altered. If you are experiencing poor connection or are unable to connect, try another channel.

In the **Connect > WiFi > Setup** menu, select **AP Channel**. Press the **UP** center navigation button to highlight the channel. Use the (-) or (+) buttons to change the channel. Press the **DOWN** navigation button and select **OK**. Press the  button.

## Import readings into PosiSoft 3.0 Desktop Software

From the PosiSoft 3.0 menu, select **Import > From Gage**. All connected gages will display their unique serial number. Measurement data will be displayed upon completion of the import.

The time it takes for import will depend on the number of Batches and measurements present within the gage. Imports generally take no longer than a few seconds.

Batches are not erased from the gages memory during import. They remain on the gage until they have been deleted by the user. For more information regarding PosiSoft 3.0:

[http://www.defelsko.com/posisoft/posisoft\\_software.htm](http://www.defelsko.com/posisoft/posisoft_software.htm)

## **Accessing your PosiTector PosiSoft Mobile**

### ***For use on Apple iOS and Android devices:***

PosiSoft Mobile Manager apps exist for Apple iOS and Android users. Simply download the App from the Apple App Store or Google Play.

Once your smart device/computer has been connected to the PosiTector Access Point, open the *PosiSoft Mobile Manager* app. Select your PosiTector from the list to open PosiSoft Mobile.

### ***For use with all WiFi enabled devices:***

Any WiFi enable device connected to the PosiTector Access Point can view the instrument's built-in PosiSoft Mobile web interface. Using your device's web browser, enter the IP address of your PosiTector to access the features of PosiSoft Mobile.

In the **Connect > WiFi** menu, select **Information** to view the IP address associated with your PosiTector.

Enter the displayed IP address into your devices web browser exactly as it appears. Example: 192.168.0.1:8080

For more information regarding PosiSoft Mobile:

[http://www.defelsko.com/posisoft/posisoft\\_mobile.htm](http://www.defelsko.com/posisoft/posisoft_mobile.htm)

**Networks:** The Gage will allow the user to add a new network and will automatically check for available local networks. Available networks detected by the Gage are listed on the screen along with any networks that the Gage has previously been connected to that are not currently within connection range.

**Information:** Gage displays information about the local WiFi network connection including...

- SSID: the network's name
- State: displays if the Gage is connected to the network or not
- IP Address: the network's IP Address. Users can enter this number into a web-browser of any WiFi enabled device that is connected to the same network in order to view the Gage's synced batches through **PosiSoft Mobile** (See pg. 20).

**Setup:** Allows user to setup a WiFi connection

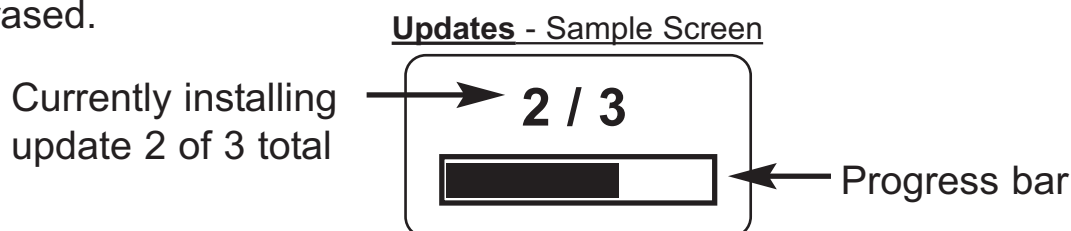
- IP Settings: enter the IP information as follows... IP Type (DHCP or Static), IP Address, Gateway, Netmask, DNS1, DNS2.
- Server Enable: enables a connection between the network and the Gage.
- Gage Name: enter a name for the Gage (up to 14 Characters).
- WiFi Reset: erases all WiFi settings.

## Updates

Determines if a software update is available for your Gage. If an update is available, a prompt will appear allowing the user to choose to perform the update at this time or not.

To perform an update the Gage must be connected to an internet connected PC with *PosiSoft Desktop Manager* (pg. 18), or **WiFi** network (pg. 24).



**NOTE:** Ensure that stored measurements are backed up to a PC or *PosiSoft.net*. The Gage may perform a **Hard Reset** (pg. 9) after completion of the update and ALL readings in memory would be erased.




 **DO NOT** unplug the Gage during the update operation.

## Power Supply / Battery Indicator

**Power Source:** 3 AAA alkaline, Lithium or optional Nickel-metal hydride (NiMH) rechargeable batteries. For best battery indicator results, ensure the appropriate **Battery Type** is selected in the **Setup > Battery Type** menu (pg. 10).

The battery indicator  displays a full bar with fresh alkaline or fully charged batteries installed. As the batteries weaken, the bar will be reduced. When the battery symbol is low  the Gage can still be used, but the batteries should be changed or recharged at the earliest opportunity. The Gage will turn off automatically when batteries are very low, preceded by a Low Battery Warning on the display.

 To retain all user settings and stored memory readings, only replace the batteries after the Gage has powered-down.

Battery performance decreases at low temperatures.

## **Additional Accessories**

### **Rechargeable Battery Pack - 4 AAA eneloop batteries**

The **PosiTector** can operate on rechargeable batteries and DeFelsko recommends the use of *eneloop* (NiMH) rechargeables. *eneloop* batteries combine the advantages of regular rechargeable batteries and disposable (Alkaline) batteries. They discharge very slowly and can be stored for long periods without having self discharge concerns. Eneloop batteries come pre-charged and ready to use immediately. See: [www.eneloop.info](http://www.eneloop.info)

### **AC Power Cable Kit**

An optional AC Power Cable Kit is available for continuous operation or battery charging through the **PosiTector's** built-in USB port (as shown on page 18). This kit supplies several alternate power solutions for your battery-operated **PosiTector**. They allow the gage to operate continuously without the need for batteries.

Use the USB cable alone to connect a **PosiTector** to your PC's built-in USB port that acts as a continuous power source.

Or connect the cable to the included power adaptor which plugs into any AC wall electrical outlet, 110 or 220V.

A selection of electrical plugs is included which are capable of dealing with most country's outlets. The USB cable provided can also be used for **Accessing Stored Measurement Data** (See pg. 18).

### **USB Cable**

A USB Cable is provided with every **PosiTector**.

### **Bluetooth Printer**

This lightweight wireless printer receives data from all **PosiTector** gages via Bluetooth wireless technology. It is battery-operated and prints readings and statistical summaries.

## **Nylon Case**

Convenient soft shell nylon case for carrying a **PosiTector**. Case has compartments for Certificates of Calibration, instruction manuals and other accessories.

## **Protective Lens Shield**

One lens shield is included with every **PosiTector** instrument. Additional package of five (5) thin plastic lens shields are available and ideal for protecting the **PosiTector** display from paint and overspray.

## **Replacement Probe Tips**

Two replacement probe tips are available. The first replaces the supplied 60° angle tip that complies with most test standards including ASTM D 4417 B. The second is a 30° angle tip for special applications or to comply with Australian Standard AS 3894.5. A replacement tool is included with both.

## **PosiTector Probes**

PosiTector **6000** - Magentic & Eddy Current Coating Thickness probes

- measure coatings on ferrous and non-ferrous metal substrates.

PosiTector **200** - Ultrasonic Coating Thickness probes

- measure coatings on wood, concrete, plastics and more

PosiTector **SPG** - Surface Profile probes

- measure and records peak to valley surface profile height

PosiTector **RTR** - Replica Tape Reader probes

- measure and records peak to valley surface profile height using replica tape (Testex™ Press-O-Film™ Replica Tape™)

PosiTector **DPM** - Dew Point Meter probes

- measure and records climatic conditions

PosiTector **UTG** - Ultrasonic Wall Thickness probes

- measures wall thickness of steel, plastic and more



## Technical Data

<b>Range:</b>	0 – 500 $\mu\text{m}$ (0 – 20 mils)
<b>Accuracy:</b>	$\pm$ (5 $\mu\text{m}$ + 5%) of reading $\pm$ (0.2 mils + 5%) of reading
<b>Resolution:</b>	1 $\mu\text{m}$ (0.1 mils)
<b>Probe tip:</b>	60° angle with a 50 $\mu\text{m}$ radius tip
<b>Measurement speed:</b>	>40 readings per minute
<b>Weight:</b>	140 g (4.9 oz.) without batteries
<b>Dimensions:</b>	137x61x28 mm (5.4" x 2.4" x 1.1")

This device complies with part 15 of the FCC Rules. Operation 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.

## Temperature

Operating range: +32° to +120°F (0 to +50°C)

The **PosiTector SPG** compensates automatically for temperature. Allow a few minutes for the probe to reach ambient temperature before measuring.

Discard the first measurement taken in a notably different temperature condition. When measuring surfaces much hotter or colder than ambient, lift the probe at least 6 inches (15cm) and allow 1 second off the surface between measurements.

## Troubleshooting

Most conditions can be cleared with a **Hard Reset** (see pg. 9). If not, visit our Service & Support page for information on sending your Gage to us for a no charge evaluation.

See: <http://www.defelsko.com/service>

### **Thickness readings are inconsistent:**

- Probe tip may be damaged, scratched or worn

### **Gage will not print to the Bluetooth wireless printer:**

- Ensure the gage has been paired for use with the printer and the Gage menu option **Connect > Bluetooth > Stream** box is ticked.

- Check printer batteries. Switch it off and then on again.

## Returning for Service

Before returning the Gage for service...

1. Install new or newly recharged batteries in the proper alignment as shown within battery compartment.
2. Examine the probe tip for dirt or damage.
3. Perform a **Hard Reset** (pg. 9)
4. Place the metal shim over the glass plate and attempt a measurement.

### **IMPORTANT:**

If you must return the Gage for service, please fill out and include the Service Form located at [www.defelsko.com/support](http://www.defelsko.com/support) with the Gage. Be sure to also include the probe, your company name, company contact, telephone number and fax number or email address.

## Limited Warranty, Sole Remedy and Limited Liability

DeFelsko's sole warranty, remedy, and liability are the express limited warranty, remedy, and limited liability that are set forth on its website:

[www.defelsko.com/terms](http://www.defelsko.com/terms)



*The Measure of Quality*

[www.defelsko.com](http://www.defelsko.com)

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# DeFelsko®

Simple. Durable. Accurate.



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