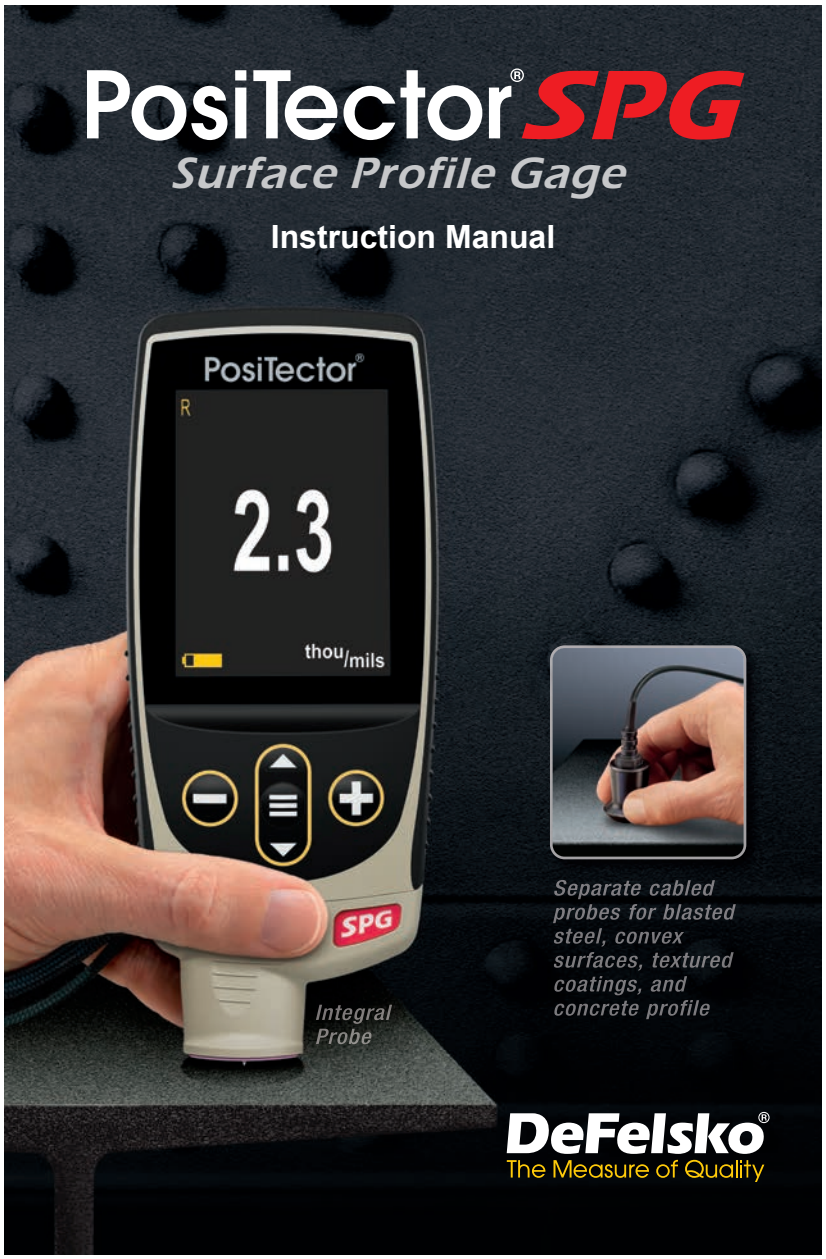
PosiTector® SPG

Surface Profile Gage

Instruction Manual



Introduction

The **PosiTector *Surface Profile Gage* (SPG)** is a hand-held electronic instrument that measures the surface profile (peak-to-valley height) of blasted steel, textured coatings and concrete profile. It consists of a PosiTector body (Standard or Advanced) and probe.

Quick Start

Press the ☰ button to power up the Gage. To conserve battery life, the gage will automatically go to sleep after 5 minutes of inactivity. While in **Sleep Mode**, the gage powers up significantly faster— convenient when moving between parts or locations. The gage will completely power off after 4 hours of inactivity. Alternatively, select **Power Off** from the main menu. All settings are retained.

1. Remove the protective rubber cap from probe.

2. Power-up Gage by pressing the center navigation ☰ button.

3. Verify Gage accuracy (pg. 3).

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.

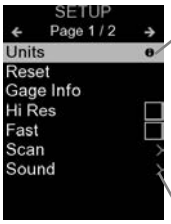
Menu Operation

To access the Menu, power-up the gage, then press the center navigation button ☰. Either the keypad or touch screen can be used to navigate the menu. If desired, touch screen functionality can be disabled within the Setup menu (See **Touch**, pg. 5).

Select a menu option by touching it, or use the ▲ and ▼ buttons to highlight the desired option and press ☰ to select it.

On menus longer than one page, the current page number is displayed below the menu name. Navigate between pages using ▲ when the first menu item is selected, or ▼ when the last menu item is selected. If using touch, navigate between pages by touching ← or →, or by swiping up or down.

Press the ⊖ button or swipe right to return to a previous screen. Select **Exit** to close the Menu.



When a Menu option is highlighted, the ⓘ icon indicates on-gage help is available. Press ⊕ or touch the ⓘ icon to display the help.

Update your gage to ensure that you have the latest on-gage help information.

[redacted] indicates that a sub-menu exists for the Menu option. Select the option to display its sub menu.

Probes

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

To disconnect a probe from a body, slide the plastic probe connector horizontally (in the direction of the arrow) away from the body. Reverse these steps to attach a different probe. It is not necessary to power-down the Gage when switching probes.

PosiTector *SPG* and ***SPG S*** probes include a 60˚ (ASTM D 4417 B) or 30˚ (Australian Standard AS 3894.5) angle tip (50 µm/2 mil radius) with a measurement range of 0 to 500 µm (20 mils).

PosiTector *SPG OS* probes have the same specifications as the **PosiTector *SPG*** probes above but feature a V-groove sleeve ideal for measuring flat or convex surfaces such as tanks and pipes.

PosiTector *SPG CS* probes measure the profile of textured coatings up to 1500 µm (60 mils) with a 500 µm (20 mil) radius 60˚ angle tip.

PosiTector *SPG TS* probes measure concrete surface profile up to 6 mm (250 mils) with a 500 µm (20 mil) radius 60˚ angle tip.

Additionally, the **PosiTector** body accepts a wide variety of probe types including magnetic, eddy current, and ultrasonic coating thickness, surface profile, hardness, salt contamination, and ultrasonic wall thickness probes.

Calibration & Verification of Accuracy

Calibration

Instrument calibration is typically performed by the manufacturer. All probes include a Certificate of Calibration.

Verification of Accuracy

Instrument accuracy is verified using the included metal shim and glass zero plate. Ensure that the glass plate and shim are clean and dirt free before use.

Place the plate onto a stable, flat surface. Take several measurements. If the average is greater than ±5 µm (0.2 mil), **Zero** (pg. 4) the Gage.

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 Gage and the shim.

If not, see **Returning for Service** (pg. 11).

Zero Menu

Zero

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

Zeroing on the included glass plate is the preferred method for best accuracy:

1. Select **Zero** 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 **Zero** from the menu.
2. Press the ▼ button to select **Reset** (below) and press the ☰ button. The factory calibration icon will appear on the display.

NOTE: The factory zero setting may not always be accurate, particularly after a probe tip exchange. For best accuracy, the Gage should be zeroed on the included glass plate.

Setup Menu

Units

Converts the display from mils to microns and vice versa.

Reset

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

- All batches, stored measurements, batch names and screen captures are erased.

- The Zero adjustment is returned to the factory setting.
- Menu settings are returned to the following:

Memory = OFF	**Bluetooth & Stream** = OFF
Statistics = OFF	**WiFi & Access Point** = OFF
Hi Lo Alarm = OFF	**USB Keyboard & Stream** = OFF
Auto Dim = ON	**BLE Keyboard** = OFF
Display = None	

Perform a more thorough **Hard Reset** as follows:

1. Power down the Gage and wait 5 seconds.

2. Simultaneously press and hold the ⊕ 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 the addition of:

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

Units = Microns	**Language** = English
Touch = ON	**Backlight** = Normal
Flip Lock = OFF	**Battery Type** = Alkaline
Auto Sync .net = ON	**Bluetooth Smart** = OFF
Sound = Medium	**USB Drive** = ON

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

Sound

Adjusts the volume of built-in speaker (Off, Low, Medium, High).

Flip Lock ☑

Disables the **Auto Rotate** feature by locking the display in its current orientation.

Touch ☑

Allows the touch screen functionality to be disabled. All gage functions can also be controlled using the navigation buttons.

Set Clock

All measurements are date and time stamped (24-hour format) when stored into memory. It is therefore important to set the correct date and time. Use the ▲ and ▼ buttons to select a value, and the ⊖ and ⊕ buttons to adjust it. The current date and time setting can also be viewed at the top of the main menu.

Battery Type

Selects the type of batteries used in the Gage from a choice of "Alkaline", "Lithium" or "NiMH" (nickel-metal hydride rechargeable). The battery state indicator symbol is calibrated for the selected battery type. No damage will occur if the battery type used in the Gage does not match the selected battery type.

Statistics Mode

Statistics ☑ $\overline{X}$

A statistical summary will appear on the display. Remove the last reading by pressing the ⊖ button. Press ⊕ to clear statistics.

$\overline{X}$ – Average
$\overline{\uparrow}$ – Maximum Value
σ – Standard Deviation
↓ – Minimum Value

HiLo Alarm ☑

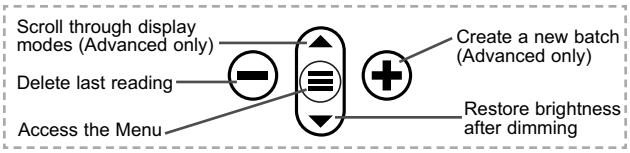
Allows Gage to visibly and audibly alert the user when readings exceed user-specified limits.

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. All stored measurements are date and time-stamped. The 💾 symbol appears when the Gage is set to store measurement data.

Standard models store up to 1,000 readings in one batch.

Advanced models store 250,000 readings in up to 1,000 batches. "New Batch" closes any currently opened batch and creates a new batch name using the lowest available number. New batch names are date-stamped when they are created.



Screen Capture
Press both ⊖ and ⊕ buttons simultaneously to save an image of the current display. The last 100 screen captures are stored in memory and can be accessed when connected to a computer (see **PosiSoft USB Drive** below).

SmartBatch™

Allows the **PosiTector *SPG*** to comply with various standards and test methods published by organizations including ASTM, SSPC, ISO, IMO, US Navy, SANS and AS.

Accessing Stored Measurement Data

DeFelsko offers the following free solutions for viewing, analyzing and reporting data:

PosiSoft USB Drive - Connect the Gage to a PC/Mac using the supplied USB-C cable. View and print readings and graphs using universal PC/Mac web browsers or file explorers. No software or internet connection required.

PosiSoft Desktop - Powerful desktop software (PC/Mac) for downloading, viewing, printing and storing measurement data. Includes a customizable, templated PDF Report Generator. No internet connection required.

PosiSoft.net - Web-based application offering secure, centralized storage of measurement data. Access your data from any web-connected device.

PosiTector App - (*Advanced models only)* App for compatible iOS and Android smart devices. Permits users to create, save and

share professional PDF reports. Add images and notes using the smart device's camera and keyboard.

Connect Menu

WiFi *(Advanced models only)*

Allows connection to your local wireless network or mobile hot spot. Ideal for using your network's internet connection for synchronizing stored measurements with ***PosiSoft.net***.

USB

When **USB Drive** is enabled , the PosiTector uses a USB mass storage device class which provides users with a simple interface to retrieve stored data in a manner similar to USB flash drives and digital cameras. **USB Drive** is also required to import stored measurements into **PosiSoft Desktop** software (see pg. 7).

While connected, power is supplied through the included USB-C cable. The batteries are not used and the body will not automatically power down.

Keyboard *(Advanced models only)*

When enabled and connected to a computer, the PosiTector will be recognized as a *Keyboard*. Readings are sent to the computer as they are taken, emulating keystrokes, followed by a carriage return.

Stream *(Advanced models only)*

Stream readings via USB Serial Port to SPC data collection software, drones, ROVs, PLCs, and robotic devices.

Sync .net Now

The **WiFi** and **USB** menus contain a **Sync .net Now** option. When selected, the Gage immediately synchronizes stored measurement data via its respective communication method (internet connection required).

Alternatively, select **Auto Sync .net** from within the **USB** connect menu to automatically synchronize upon connection to a PC. Additional measurements added to memory while connected are synchronized only when the USB cable is disconnected and reconnected, or when the **Sync .net Now** option is selected. **WiFi** connected gages automatically attempt synchronization upon power up.

PosiSoft Desktop is required when using USB to synchronize measurements with **PosiSoft.net**.

Bluetooth *(Advanced models only)*

Bluetooth Smart *(Advanced models only)*

Allows communication with a smart device running the **PosiTector App** (pg. 7) via auto-pairing **Bluetooth Smart** (BLE) wireless technology.

Sync Batches

Select batches to flag them for synchronization to the PosiTector App. **Sync Batches** is useful when connecting a new device to a gage with pre-existing batches, since only batches created while **Bluetooth Smart** is enabled are automatically selected.

Selected batches are synchronized when the next reading is taken in a batch flagged for synchronization, or when the **Sync Batches** option is selected at the bottom of the list of selected batches.

NOTE: If **Bluetooth Smart** is disabled or disconnected, data from batches selected in the **Sync Batches** menu are held in a queue until communication with the PosiTector App is re-established.

Send Batches

Transfers selected batches to the PosiTector App. **Send Batches** is useful when switching between devices, as only readings and batches that have yet to be synchronized with any smart device are synchronized automatically.

The **Send Batches** option is visible in the menu when the Gage is connected to a smart device running the PosiTector App.

BLE Keyboard *(Advanced models only)*

When enabled and connected to a computer, the PosiTector will be recognized as a wireless **Keyboard**. Readings are sent to the computer as they are taken, emulating keystrokes, followed by a carriage return.

WARNING: The Gage will perform a **Hard Reset** after an update (see pg. 5).

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. The probe tip should move up and down freely. The plate surrounding the probe tip should be smooth and free from burrs and foreign material.
3. Perform a **Hard Reset** (pg. 5).
4. Place the metal shim over the glass plate and attempt a measurement.
5. If issue is not resolved, **Update** (pg. 10) your **PosiTector** gage body and re-attempt measurements.