


PosiTector[®] 200

Ultrasonic Coating Thickness Gage



 On-Gage Help Reference

Ayuda en el Medidor | On-Gerät-Hilfe | Aide sur l'instrumentation



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The Measure of Quality

Introduction

This Reference is a compilation of the On-Gage Help that is available on your PosiTector gage. To view these help items on the gage, enter the gage menu and touch the  icon or press the  button with the desired menu item selected.

For an overview of the use and operation of your instrument, refer to its included Instruction Manual or download a digital PDF at www.defelsko.com/manuals.

Update your gage to ensure your PosiTector includes these latest help references. Instructions are available at www.defelsko.com/updates.

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Memory

The PosiTector 200 Advanced 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. Store up to 250,000 readings in up to 1,000 batches.

The memory icon appears and basic statistics are displayed when the Gage is set to store measurement data.

NOTE:

Remove the last reading by pressing (-).

Open

Select a previously created batch or sub-batch to open and make it the active batch. If it contains measurements, on-screen statistics will immediately reflect values calculated from this batch. The calibration setting (i.e. Cal 1) associated with this batch is also opened.

View

Use the Up or Down buttons to scroll through information, statistical summary, and a list of each reading in the currently opened batch. Press the center navigation button to exit.

Display

Choose between display options in the upper portion of the screen while taking measurements.

Shortcut:

Press the Up button to scroll through the display options.

NOTE:

The Display option appears only if a batch is currently open.

Annotate

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

Either the touch screen or navigation buttons can be used to enter annotations.

Annotations can be synchronized with PosiSoft.net and the PosiTector App. They are included in PosiSoft USB Drive reports.

Print

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

NOTE:

To cancel printing, simultaneously press and hold the (-) and (+) buttons.

New Batch

Closes any currently opened batch and creates a new batch name using the lowest available number. For example, if only B1 and B3 exist, then B2 would be created and made the current batch. Each measurement will be displayed and stored into this new batch.

On screen statistics are immediately updated with each measurement. New batches are date and time stamped when they are created.

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

NOTE:

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

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.

Batch Summary

Displays a summary of all stored batches with the Batch Name, Probe Type and Number of Readings listed for each batch.

Calibration Settings

Calibration, Verification and Adjustment

Three steps ensure best accuracy:

1. Calibration: typically performed by the manufacturer. All probes include a Certificate of Calibration.
2. Verification of Accuracy: typically performed by the user on known reference standards such as the included plastic shims, test block or optional coating thickness standards.
3. Adjustment - to a known thickness, if necessary.

Calibration is the controlled and documented process of measuring traceable calibration standards and verifying that the results are within the stated accuracy of the Gage. Calibrations are typically performed by the Gage manufacturer or by a certified calibration laboratory in a controlled environment using a documented process.

Verification is an accuracy check performed by the user using known reference standards. A successful verification requires the Gage to read within the combined accuracy of the Gage and the reference standards.

Adjustment, or Calibration Adjustment is the act of aligning the Gage's thickness readings to match that of a known reference sample in order to improve accuracy of a gage on a specific coating.

NOTE:

The PosiTector 200 measures most polymer coatings accurately out-of-box with no adjustment required.

Zero

The probe must be periodically zeroed to compensate for both temperature and probe wear effects. Before using, allow the probe to reach ambient temperature. Wipe the probe clean of couplant.

If measurements will be made in extreme hot or cold temperatures, it is recommended to Zero the probe in the working environment. If measurements will be made on rough substrates, it is recommended to periodically Zero the probe to compensate for wear.

Cal Reset

Restores the gage back to factory calibration and range settings. The factory calibration icon will appear on the display.

Cal Lock

When enabled, the Cal Lock icon appears and the current calibration is locked to prevent further user Thickness adjustments.

Polyurea

(PosiTector 200 D probes only)

When enabled (default), the Gage loads a pre-programmed calibration adjustment optimized for measurement of polyurea coatings. Polyurea will appear on the upper right corner of the display.

NOTE:

Measuring range in Polyurea mode: 50 - 5000 um (2 - 200 mils)

Set Range

The measurement range of each probe can be changed depending on the specific application or the expected thickness range of the coating system.

For most applications, the default range values do not need to be adjusted. But some conditions, like surface roughness, may cause the Gage to display very low or non-repeatable readings. In this case, the low range may be increased to cause the Gage to only display readings above the Lo value set by the user.

To adjust Set Range values:

1. Select Lo or Hi.
2. Use the (-) (+) buttons to decrease/increase the displayed value.

IMPORTANT:

The PosiTector 200 will ignore any readings outside the selected range. If the coating thickness is outside this range, incorrect or dashed readings may occur.

Thickness

The PosiTector 200 measures most polymer coatings accurately out-of-box with no adjustment required.

To determine if an adjustment is necessary, select a coating sample of known thickness as close as possible in composition to the intended application. For best results, the thickness of the sample should be equal to or slightly greater than the maximum expected thickness of the coating to be measured.

Measure the coated sample. If the average of a series of measurements on the sample is not close to the known thickness:

1. Use (-) or (+) to decrease/increase the displayed measurement thickness value to match the known thickness of the sample.
2. For Advanced models with multiple layers selected, use the Down button to select the next layer and adjust as necessary.
3. To save adjustments, use the Down button to highlight OK and press the center navigation button.

Setup

Set configuration options for the Gage.

Set Clock

All measurements are date and 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 value. The Gage's date and time can also be viewed in Gage Info and on top of the main menu.

NTP

Enables automatic time synchronization with a remote server over WiFi using the NTP (Network Time Protocol).

Enter a NTP Server address and TZ (Time Zone) details. The PosiTector uses POSIX format to set the time zone.

Eastern Time in the USA is input as the following:

EST5EDT4,M3.2.0,M11.1.0

From left to right:

- EST5 is the time zone name and offset from UTC
- EDT4 is the daylight savings time zone name and offset from UTC
- M3.2.0 is the start of EDT. 'M' specifies that the date will follow a 'Month.Week.Day' format. 3.2.0 is the third month, second week, first day (Sunday)
- M11.1.0 is the end of EDT. 'M' specifies that the date will follow a 'Month.Week.Day' format. 11.1.0 is the eleventh month, first week, first day (Sunday)

Detailed NTP instructions available at: www.defelsko.com/NTP

Reset

Restores factory settings and returns the Gage to a known condition. The following occurs:

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

Calibration and range adjustments are cleared and returned to the Gage's factory settings. The factory calibration icon will appear on the display.

Menu settings are returned to the following:

Memory = OFF
Graphics = OFF
Cal Lock = ON
Auto Dim = ON
Bluetooth & Stream = OFF
Bluetooth BLE Keyboard = OFF
Display = None
WiFi & Access Point = OFF
Layers = 1
Layer Name = Layer 1
Layer Color = Blue
Max Thick Mode = OFF

Perform a more thorough Hard Reset by powering down the Gage, waiting several seconds, then simultaneously holding both the center navigation and (+) buttons until the Reset symbol appears. This returns the instrument 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 status:

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

NOTE:

Date, Time and WiFi are not affected by either Reset.

Layers

The PosiTector 200 Advanced is capable of numerically displaying up to three individual layer thicknesses in a multi-layer system. Select this option to edit the number of layers (default = 1 layer), their names and chart colors.

NOTES:

Before setting up the Gage for multi-layer measurement, it is recommended that you first take measurements in single layer mode and interpret the results using the Graphics option.

When a batch is open, press the Up button to view the Chart.

Select Layers

Select the number of layers to display.

NOTE:

Before setting up the Gage for multi-layer measurement, it is recommended that you first take measurements in single layer mode and interpret the results using the Graphics option.

Edit Layers

Edit each Layer Name (up to 7 characters) and chart Color (blue, green or red).

Units

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

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.

Sound

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

Touch

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

Backlight

Selects display brightness (Sun, Normal or Night). If Auto Dim is enabled (default), the display dim slightly after a period of no activity to conserve battery life. Press the Down button to brighten the display.

Flip Lock

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

Graphics

When selected, the Gage displays a graphical representation of the ultrasonic pulse as it travels through the coating system.

As the probe is depressed and the ultrasonic pulse travels through the coating system, the pulse encounters changes in density at the interfaces between coating layers and between the coating and the substrate.

These interfaces are depicted by a peak. The greater the change in density, the higher the peak. The more gradual the change in density, the greater the width of the peak.

For example, two coating layers made of essentially the same material and blended would result in a low, wide peak. Two materials of very different density and a well-defined interface would result in a high, narrow peak.

The PosiTector 200 has the ability to measure the thickness associated with either the highest peak(s) or the deepest peak(s), depending on whether Max Thick Mode is enabled. The reported peaks will be indicated with small red triangles on the graph.

Use the Up (move left) and Down (move right) buttons to highlight icons on the graphic display.

Max Thick Mode

By default, the PosiTector 200 reports a coating thickness result associated with the loudest ultrasonic echo (the highest peak in Graphics Mode), within the set range. This loudest echo often represents the total coating thickness above the coating-substrate interface. When multiple layers are selected, the loudest echoes are reported as individual layer thicknesses.

In some applications, surface roughness and/or coating layers with significant density differences near the surface can result in a louder ultrasonic echo than the one from the coating-substrate interface, resulting in a lower than expected reading. While the Lo

Range can be adjusted to ignore these loud, unwanted echoes, this sometimes requires that the range be adjusted too close to the expected coating thickness for reliable measurement.

When Max Thick Mode is selected, the PosiTector 200 reports the echo or peak associated with the deepest interface in the coating system, instead of the loudest. This is often more effective at reporting the total coating thickness above the substrate interface, and eliminates the need to adjust the Lo Range.

Since there will inevitably be some small echoes from within the substrate, only echoes above a pre-set loudness threshold will be reported. This threshold can be adjusted from within Graphics Mode. When multiple layers are selected, the layer thicknesses associated with the deepest ultrasonic echoes are reported.

NOTE:

Max Thick Mode is not recommended for thin metal substrates less than 2.54 mm (100 mils) thick, or substrates such as composites and fiberglass.

Language

Converts displayed and printed words to the selected language.

Gage Info

Displays the model number and serial number, probe type and 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.

Connect

Configure communication and connection options for the Gage.

Bluetooth

Allows readings to be sent to a computer, optional printer or compatible device using Bluetooth wireless technology. Pairing required.

See www.defelsko.com/bluetooth

Enabled

Allows readings to be sent to a computer, optional printer or compatible device using Bluetooth wireless technology. Pairing required.

Stream

Stream individual readings to a USB connected computer via a serial protocol. Ideal for use with serial compatible SPC data collection software.

See www.defelsko.com/update

Pairing

The instrument and receiving device must be paired before readings can be transmitted.

For pairing instructions, see www.defelsko.com/bluetooth

Info

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

USB

Connect the Gage to a PC/Mac using the supplied USB-C cable. View and print readings and graphs with universal web browsers/file explorers or using PosiSoft Desktop.

NOTE:

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

Sync.net Now

When selected, the Gage immediately synchronizes stored measurement data to PosiSoft.net (USB connection required to a computer running PosiSoft Desktop).

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.

NOTE:

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

USB Drive

When USB Drive is enabled, the PosiTector is recognized as a USB mass storage device which provides 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. Once connected, any computer can view measurements stored in memory by navigating a virtual drive labeled PosiTector using the supplied USB-C cable.

NOTE:

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

JSON Files

When enabled (default), JSON schema files will be available in PosiSoft USB drive. Files can be parsed in to databases and custom software applications.

NOTE:

Disabling this option may reduce the time required for the computer to recognize the PosiTector when first connected via USB.

HTML Report

When enabled (default), 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 web browsers or file explorers.

NOTE:

Disabling this option may reduce the time required for the computer to recognize the PosiTector when first connected via USB.

Stream

Stream individual readings to a USB connected computer via a serial protocol. Ideal for use with serial compatible SPC data collection software.

For more information on USB Keyboard and Streaming visit:
www.defelsko.com/usb/stream

Auto Sync .net

When enabled, measurements will automatically synchronize with PosiSoft.net when connected to a computer running PosiSoft Desktop. 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.

NOTE:

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

USB Keyboard

USB Keyboard mode enables PosiTector Advanced instruments to emulate a USB keyboard when connected to a computer.

USB Keyboard mode communicates with your computer by emulating keyboard keystrokes. When connected in this mode, PosiTector Advanced instruments will be recognized as a simple USB keyboard. Each reading is typed, followed by a carriage return (enter). This provides a simple way to capture readings as they are taken without any special software, drivers or complex setup.

For more information on USB Keyboard mode visit: www.defelsko.com/connect

WiFi

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.

See www.defelsko.com/wifi

Setup Options

Setup WiFi configuration options for the Gage.

AP Channel

The access point channel corresponding to a frequency range. (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.

Press the Up button to highlight the channel. Use the (-) or (+) buttons to change the channel. Press the Down button and select OK.

Gage Name

Enter a unique name for the Gage (up to 14 Characters). This helps identify the gage on your local network.

Server Enable

The gage contains a WebServer that can be accessed by network connected devices. This option enables (default) a connection between the network and the Gage. To access the gage server, browse to the gages IP Address:8080 using an internet browser.

IP Settings

Manually enter network IP information as follows...

IP Type (DHCP or Static), IP Address, Gateway, Netmask, DNS1, DNS2

See your network administrator or IT department for assistance.

AP Passphrase

A series of characters, numbers or symbols used to log on to a WiFi network. Default Passphrase: password

Press the center navigation button to display on-screen keyboard. Enter a Passphrase for the Access Point. The Passphrase will be required for all devices connecting to the PosiTectors 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 or user selected Gage Name.

WiFi Reset

Removes all previously configured networks and restores default WiFi settings.

WiFi Stream

Wirelessly stream readings to a device or computer over WiFi.

When enabled, the gage will send a GET request to specified URL for each reading. The URL can contain tags which are replaced by the PosiTector with values corresponding to the reading. This solution turns the PosiTector gage body into an Internet of Things device and is ideal for users with an existing WiFi network and a desire to stream live readings to a central application or database.

For more information on WiFi Streaming visit: www.defelsko.com/connect

Auto Sync .net

When enabled, the Gage automatically attempts to synchronize stored measurement data with PosiSoft.net upon power-up (internet connected WiFi network required). Alternatively, select Sync .net Now to immediately synchronize stored measurement data.

Access Point

Creates a wireless network to allow your smart device or computer to connect directly to the PosiTector. Ideal when a WiFi network is not available.

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 to modify the default passphrase.

Enabled

Select to allow connection with your local WiFi network. The WiFi icon will appear on the display and the Gage will attempt to connect to any previously configured network. Connect to a new network from the Networks menu option.

Networks

Searches and displays all available WiFi networks within range. Select a network, then enter the password, if required. The WiFi icon will appear on the display.

NOTE: Some networks may not be visible and will require manual configuration using the Add Network option. See your network administrator or IT department for assistance.

WiFi Information

Displays information about the local WiFi network connection including:

SSID:

the network's name

State:

the network connection status

IP Address:

the assigned IP Address for the Gage on the network

Sync .net Now

When selected, the Gage immediately synchronizes stored measurement data to PosiSoft.net (WiFi internet connection required).

Bluetooth Smart

When Enabled, allows communication with a computer or smart device running the PosiTector App via auto-pairing Bluetooth Smart (BLE) wireless technology.

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

BLE Keyboard mode communicates wirelessly with your computer by emulating keyboard keystrokes. When connected in this mode, PosiTector Advanced instruments will be recognized as a simple BLE keyboard. Each reading is typed, followed by a carriage return (enter). This provides a simple way to capture readings as they are taken without any special software, drivers or complex setup.

For more information on BLE Keyboard mode visit: www.defelsko.com/connect

Smart Probes

Displays available PosiTector DPM-L and PosiTector CMM-IS Smart Probes within range of the PosiTector gage. Smart Probes must be powered ON to be visible.

Shortcut:

Check the Shortcut box to add the Smart Probes menu option to the gage's main menu.

Power Off Time

By default, the PosiTector Advanced powers off after 5 minutes of inactivity. This power off time interval can be adjusted when connected wirelessly via Bluetooth Smart to help maintain connectivity while measuring. The interval is user selectable in 5-minute increments up to a maximum of 60 minutes. Use the (-) and (+) buttons to adjust the interval time, then select Ok.

Enabled

When Enabled, allows communication with a computer or smart device running the PosiTector App 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, data from batches selected in the Sync Batches menu are held in a queue until communication with the PosiTector App is re-established.

Updates

Determines if a software update is available for your Gage.

To perform an update the Gage must be connected to an internet connected computer running PosiSoft Desktop, or a WiFi network.

See www.defelsko.com/update

WARNING:

The Gage will perform a Hard Reset after an update. All stored measurements will be erased from memory.

Help

When a Menu option is highlighted, the (i) icon indicates on-gage help is available. Press (+) or touch the (i) icon to display the help. Update your gage to ensure that you have the latest on-gage help information.

A formatted PDF containing all on-gage help items is available at www.defelsko.com/help.

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 > Touch menu.

Select a menu option by touching it, or use the Up and Down buttons to highlight the desired option and press the center navigation button to select it.

On menus longer than one page, the current page number is displayed below the menu name. Navigate between pages using the Up button when the first menu item is selected, or Down button when the last menu item is selected. If using touch, navigate between pages by touching the left or right arrow, or by swiping up or down.

Press the (-) button or swipe right to return to a previous screen. Select Exit to close the Menu.

A menu option with a > indicates that a sub-menu exists for the Menu option. Select the option to display its sub menu.

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 via PosiSoft USB Drive.

Power Off

To conserve battery life, the gage will automatically go to sleep after 5 minutes of inactivity and enter Sleep Mode. 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.

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