VIKEN

DETECTION

formerly HEURESIS

Pb200i User Guide

January, 2020

Software V3.2 or later

For Sales & Service Contact

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Before operating the Pb200i, be sure to read this entire User's Guide.

We strongly recommend that you store this User's Guide with the instrument in its carrying case.

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Pb200i Features

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Figure 3

Battery door opening

CE mark

Battery wedge
Caution: removing the Battery wedge may cause the battery pack not to fit correctly.

Mini USB port

Battery door

Figure 4

Rechargeable NiMH (Nickel-Metal Hydride) or disposable Lithium 6 x AA cell battery holder

Charging the Batteries

The Pb200i requires 6 AA batteries. Only use rechargeable Nickel-Metal Hydride cells or disposable Lithium Ion cells (*we recommend Energizer Ultimate Lithium*).

Caution: Do not use alkaline batteries, as they will not provide the proper power for the system.

1. Identify the positive and negative ends of the batteries and insert them into the smart charger. Once the batteries are inserted correctly the LCD will turn on as indicated by the black bars in the charge indicator.
2. The batteries are fully charged when you see 4 solid bars on the LCD display and the lights are no longer blinking. Fully charging the batteries typically takes 5-6 hours. Caution: be sure that all six batteries are fully charged. If one or more AA batteries are not fully charged, it will shorten the useful life of the battery pack.
3. Caution: We recommend using the “Refresh” button on the battery charger at least once every two to three months. The refresh process typically takes 12 hours. There are four green refresh buttons, one per each bank of four batteries.
4. Once the batteries are fully charged they are ready for use in the Pb200i. We recommend leaving the charger plugged in, and the batteries inserted in the charger so that maximum charge is available for use of the Pb200i. Do not leave batteries in the charger while charger is unplugged, as they will discharge at an accelerated rate; rather, insert the batteries in the battery holders for transport or storage.

Caution : Do not mix different manufacturer’s batteries in the Pb200i battery holder. This may cause a reduction in your battery life.

Figure 5

Installing the Batteries

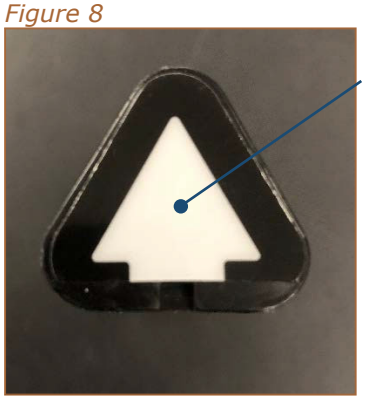
Insert the battery pack with the negative terminal facing the spring, two AA batteries per side, so that all six chambers of the battery holder are filled (Figures 6 and 7). Double check that the batteries make complete contact with each other and the springs; adjust as necessary.

Follow this link to watch a video tutorial on the batteries.

Figure 6

Figure 7

Figure 8



Bottom: this end must be visible when battery pack is inserted into your Pb200i.

Remove the battery door on the bottom of the Pb200i. Slide the battery wedge to the side. Insert the battery holder with the arrow facing the front of the instrument (Fig. 9). Apply slight upward force to seat the battery holder properly; when fully inserted the battery pack should sit firmly against the battery ledge (Fig. 10). Secure the battery holder in place with the battery wedge. Replace the battery door (Fig. 11). The latching mechanism will click when the battery pack is seated properly.

Caution: Inserting the battery holder with the incorrect orientation will not damage the Pb200i, but the instrument will not turn on.

Caution: Use care when removing the battery wedge. If broken, your Pb200i will need to be returned for non-warranty repair.

Figure 9

Figure 10

Figure 11

Powering On and Initializing the Pb Application Software

1. To power on the instrument, press and hold the Power ON/OFF Button until the instrument turns on.
2. Once the Pb200i has completed its boot-up sequence, the LED will turn green and the home screen will display an Android application showing the “Pb” icon (Fig. 12).

Caution: The instrument will go to “sleep” after 10 minutes of inactivity. Press any button to reactivate the instrument.

To access the application:

a. Touch the “Pb” icon on the home screen (Fig. 12).

b. On the next screen, enter the password assigned to you by your Compliance or Safety Officer. Touch “Login” under the “Password” text to activate the keyboard (Fig. 13).

c. Review the Warning Screen and confirm that you understand that the instrument produces ionizing radiation when the safety shutter is open and the warning lights are on (Fig. 14). If you are not familiar with the radiation safety, please press “I Do Not Understand” and read the Radiation Safety section in this User Guide before you return to this screen. If and when you do understand that the instrument produces ionizing radiation when the safety shutter is open and the warning lights are on, please select the words “I understand” to proceed to the next screen.

Caution: If you do not fully understand the warnings on the Warning Screen, please press the Back button. Do not proceed before you reread the Radiation Safety section in this User Guide (see page 56).

d. On the next screen Select “Test” (Fig. 15).

Figure 12

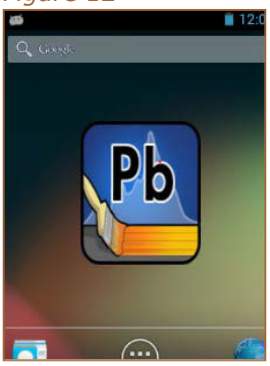


Figure 13

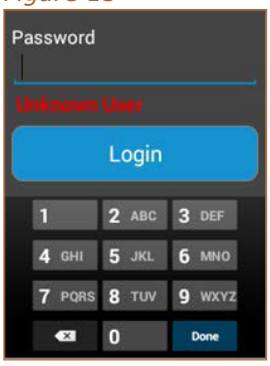


Figure 14

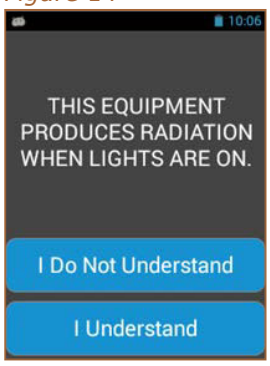
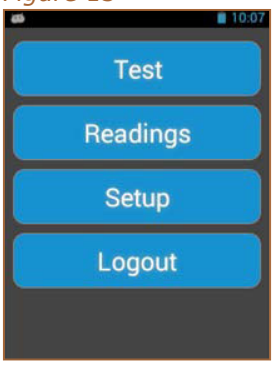


Figure 15



Taking a Measurement

The Pb application is designed to open and close the safety shutter of the instrument exposing the sample in front of the Pb200i measurement window to x-rays and gamma-rays produced by the sealed radioisotope source in the instrument. The safety shutter can only be opened by pulling the trigger of the instrument while the proximity button at the top of the snout of the Pb200i is fully depressed against a surface.

1. To depress the proximity button, place the front of the instrument's snout flat against the sample surface. The "Power indicator LED/Proximity button indicator" will turn green when the proximity button is properly depressed (Fig. 16).
2. Pull the trigger.

Caution: the proximity button must be depressed before pulling the trigger.

When the Pb application is running on the Pb200i and the trigger is pulled with the proximity button depressed, the shutter will open. The LEDs on the left and right side of the instrument will turn on and emit red light. The red lights indicate that the shutter is open. If any of the conditions above are not met during the measurement process, the shutter will close immediately and the red LEDs will shut off. Once the shutter is open, it will remain open for a maximum of 5 minutes.

Figure 16

The "Power indicator LED/Proximity button indicator" will turn green when the proximity button is properly depressed.

Testing the Accuracy of the Pb200i

The Pb200i should be tested for Quality Control (QC) before each inspection, every 4 hours, and when the inspection is complete.

1. Start by placing the wooden reference block (Fig. 17) on top of the Pb200i case. Hold the device with the proximity button against the wooden reference block, with the snout of the instrument centered on the paint film nearest 1.0 mg/cm2. When the LED turns green (Fig. 18), squeeze and hold the trigger, keeping the device's snout in firm contact with the block while continuing to hold the trigger (Fig. 19). The reading will automatically terminate (Fig. 20) when the device has determined whether the sample is classified as Positive (when Pb≥1.0 mg/cm2), or Negative (when Pb<1.0 mg/cm2).
2. Compare the result to the value on the reference block and make a note of the reading.
3. Complete the test 3 times, then average the readings. The average (rounded to 1 decimal place) of the three readings must fall between 0.8 and 1.2 mg/cm2 (inclusive) for the Pb200i to pass its QC check in accordance with the Performance Characteristic Sheet (PCS).

Figure 17

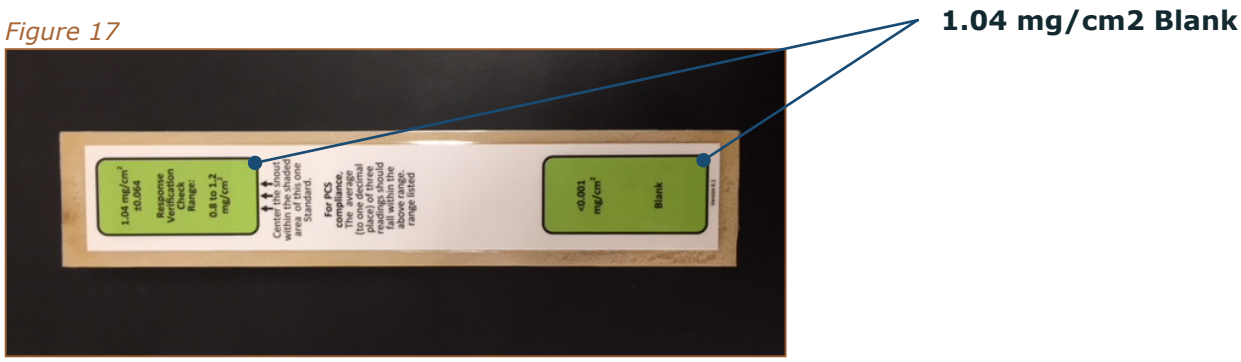


Figure 18

Figure 19

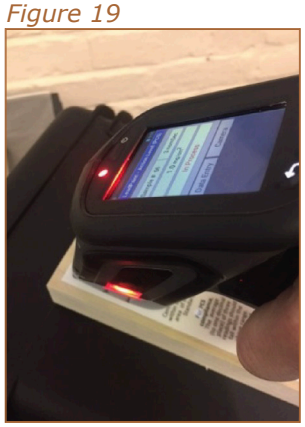
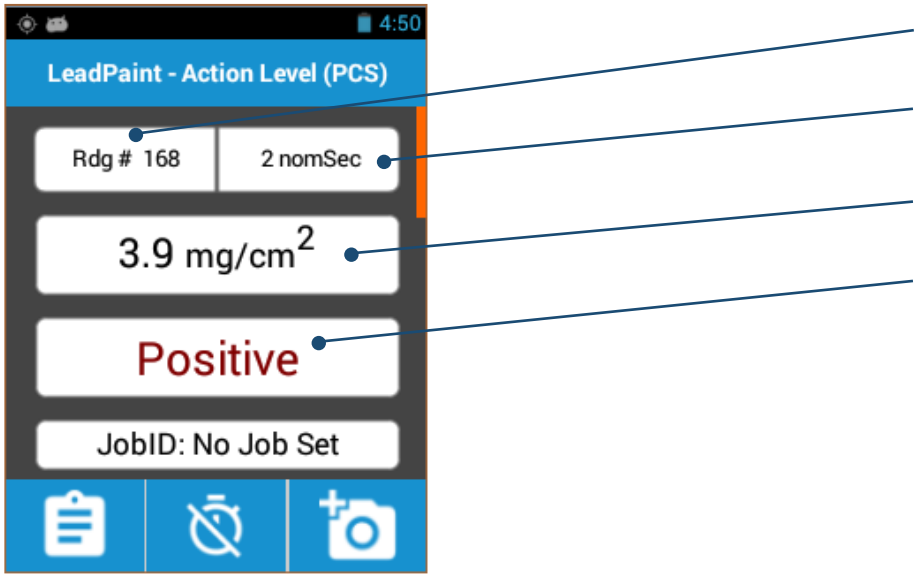


Figure 20

Performing an Inspection with the Pb200i

Pressing the trigger initiates the measurement. As the reading is taken, you will see the results on the screen change to reflect the measurement data (Figures 21 and 22).

Figure 21



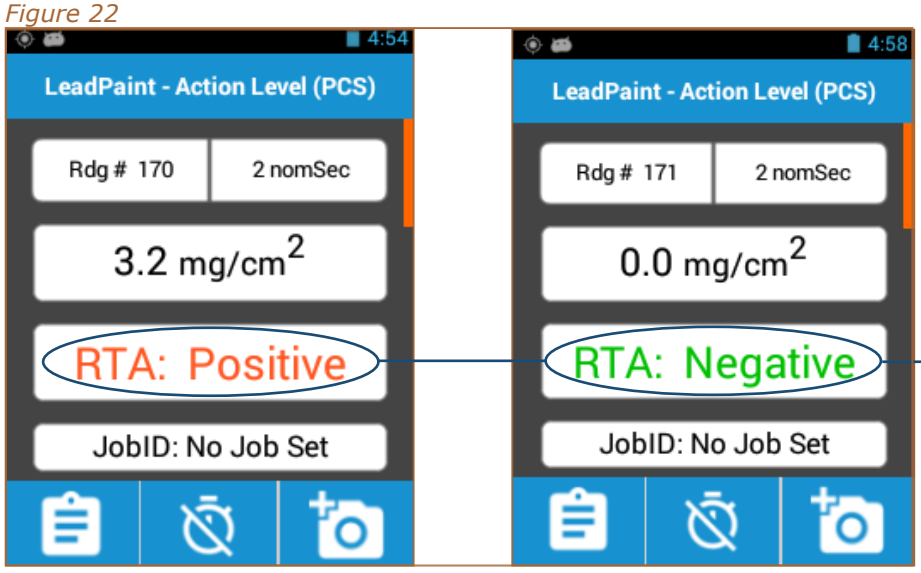
Reading/ sample number

Measurement reading time in nominal seconds

Result

Action Level indicates "Positive" or "Negative" result. "NULL" indicates the reading was terminated before a determination could be made.

Figure 22



If your instrument is equipped with the internal read through adapter (iRTA), it will display either RTA: Positive or RTA: Negative.

Once the reading is recorded, scrolling from the bottom up will allow the user to view the GPS coordinates (Fig. 23) and spectrum of the reading taken (Fig. 24).

Figure 23

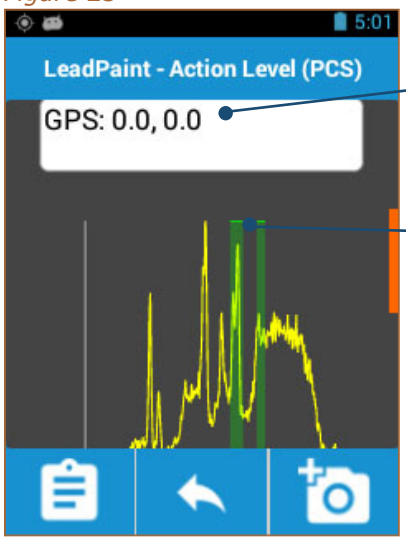
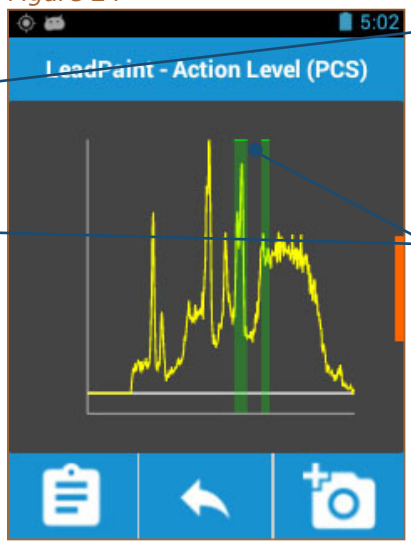


Figure 24



GPS Coordinates
(shown as 0.0, 0.0 as the Pb200i was not connected to satellites during the reading)

Green vertical bars indicate lead Kα and Kβ peaks

Scroll bar

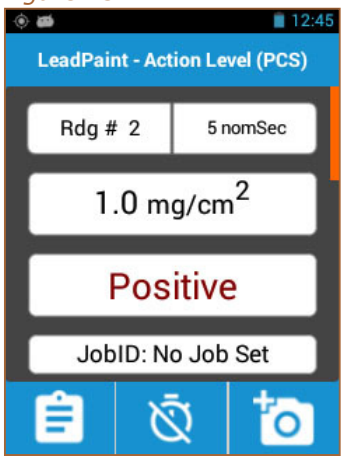
Once the measurement is determined to be Positive or Negative, the shutter will close, the warning LEDs will turn off and the result will be displayed and saved.

Typical measurement times in Action Level (PCS) Mode take 1 to 3 nominal seconds; the closer the measured value is to the action level, the longer the testing time will be. The maximum measurement time in Action Level mode is five nominal seconds without iRTA and ten nominal seconds with iRTA. The results shown in the examples in Figure 25, 26, and 27 are based on an action level of 1.0 mg/cm2.

Caution: The Action Level can be changed on the Pb200i by a user with administrative rights, but the Pb200i's Performance Characteristic Sheet (PCS) only pertains to lead inspections with an Action Level of 1.0 mg/cm2.

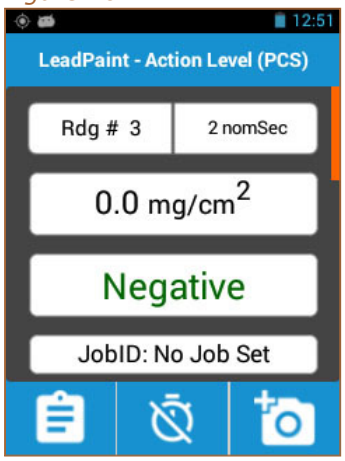
[This is true for all XRF lead paint analyzers with a PCS.]

Figure 25



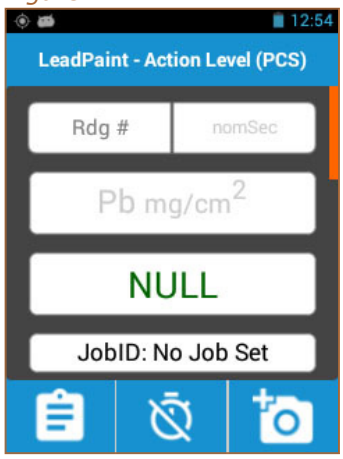
"Positive" – lead present. Result at or above the selected Action Level.

Figure 26



"Negative" – lead below selected Action Level.

Figure 27



"Null" – Reading was terminated before the instrument had made a Positive or Negative determination. NULL readings are not valid.

Using the Internal Read Through Adapter (IRTA)

For instruments equipped with the optional internal read through adapter (iRTA), this next section will guide you on it's proper use. Instruments equipped with an internal read through adapter will have a front sticker as shown in Fig. 28, and a black snout; instruments without the iRTA will have a silver snout (Fig. 1).

Caution: The magnet on the stylus should always be sitting on the top of either circle in the "on" or "off" position to ensure that the iRTA is fully engaged or disengaged.

Figure 28

The iRTA has "on" and "off" positions that are set by using a magnetic stylus to slide it between positions as seen in Fig. 29 and 30. In Fig. 29, the empty circle on the sticker denotes the "off" position. Fig. 30, the filled circle with the letters "RT" denotes the "on" position.

Figure 29

Figure 30

Take a measurement in Action Level mode with the IRTA in the "off" (disengaged) position as seen in Fig. 29. If there is lead in the sample which concentration falls within +/- 20% of the action level, the unit will take a 5 second measurement. (Fig. 31) If the reading is outside of +/- 20% of the action level, the Pb200i will complete the measurement in 1-2 seconds.

Take a measurement in test mode with the IRTA in the "on" position as seen in Fig. 30. If there is surface lead in the sample within +/- 20% of the action level, the unit will take a 10 second measurement. You will see an indicator on the display that the iRTA is present (engaged) as shown in Fig. 32. If the reading is outside of +/- 20% of the action level, the Pb200i will complete the measurement in 1-2 seconds.

Figure 31

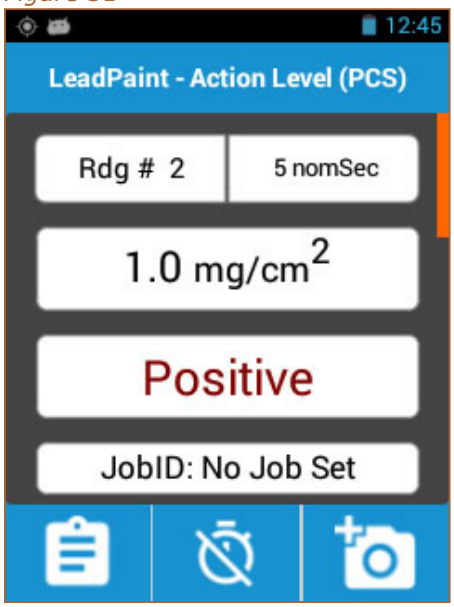
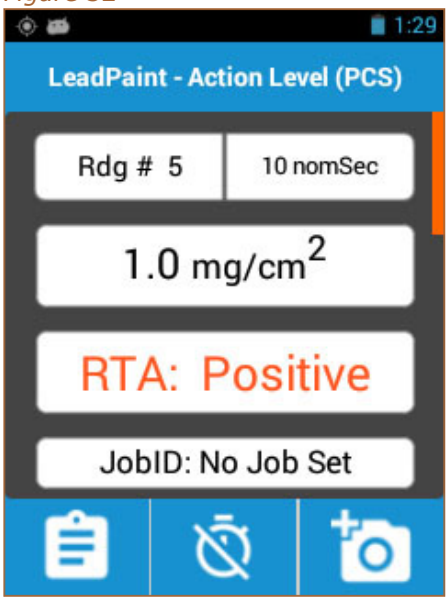


Figure 32



Enable Momentary Touch

To enable Momentary Touch: Press Setup on the opening screen, then Test Screen Display

Figure 33

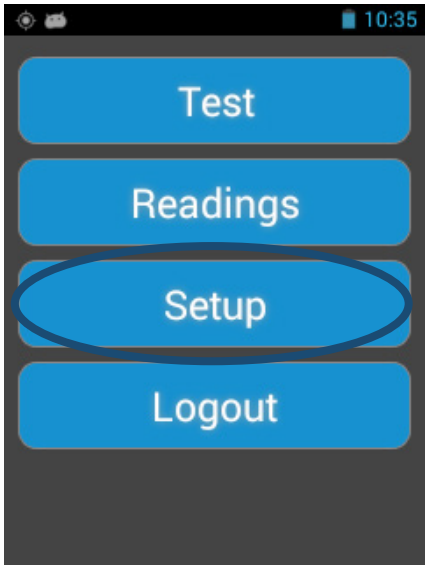
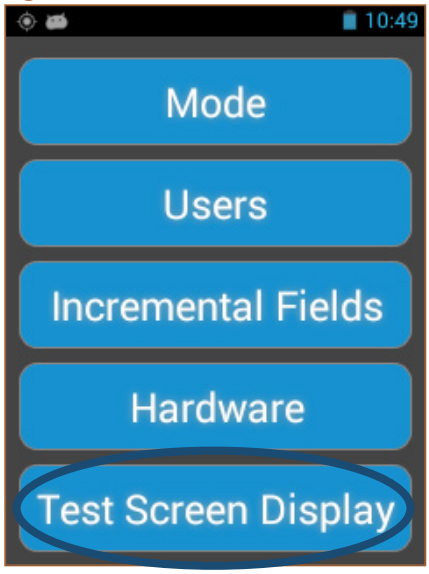
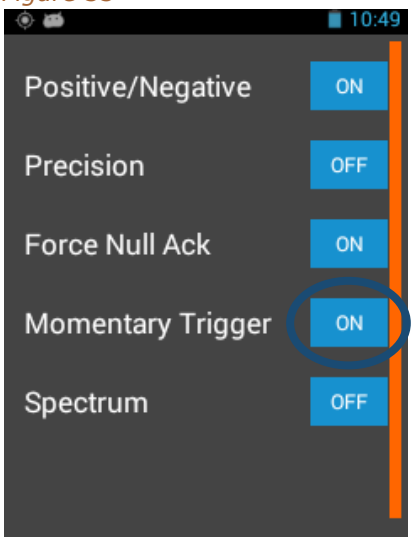


Figure 34



On the following screen turn Momentary Trigger to ON

Figure 35



When complete, exit out by pressing the back button.

Data Entry Fields

HUD Chapter 7, Section IV. B. 3 requires that lead inspectors document their XRF reading locations, including room (or room equivalent), side, and building components; additional requirements of Chapter 7 call for the recording of substrates, calibration check readings, and other details associated with the inspection. Clients may ask for additional details, such as color, paint condition and cause (if the paint is deteriorated), or other parameters.

The Data Entry function on the Pb200i is a powerful recording tool designed to help the inspector expedite the documentation process, such that the inspector can become more efficient recording the details required for their inspection work.

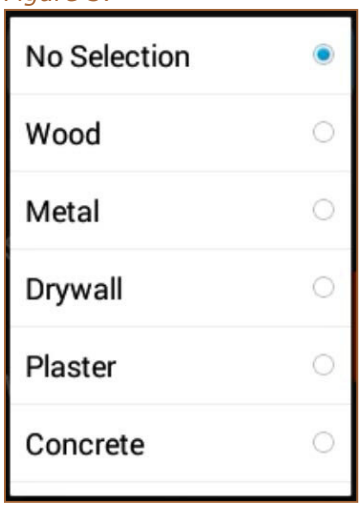
Data fields can be classified in one of three ways:

1. **Alphanumeric**: The inspector can enter inspection details using a virtual “qwerty” keyboard, as shown in Fig. 36.

Figure 36

2. **Standard Picklist**: The inspector choses an entry from a single list of choices, as shown in Fig. 37.

Figure 37



3. **SmartField™**: A set of contingent data fields, where selection of a primary field returns a different set of results for a secondary field (Fig. 38 and 39).

Figure 38

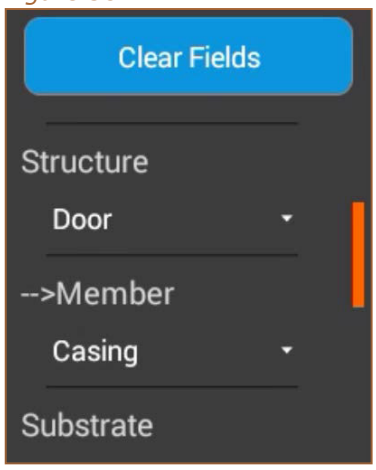
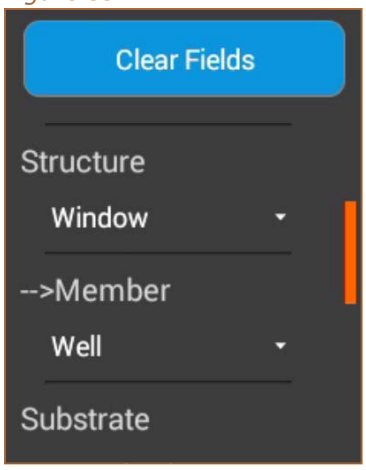


Figure 39



Your Pb200i is equipped with a default set of data entry fields.

The data entry fields are completely customizable for the Pb200i. Please see the HDMS User Guide, software version 3.2 or later for additional details.

To use data entry, select Test (Fig. 40), then tap the clipboard icon (Fig. 41). Fig. 42 shows an alphanumeric data entry field, and a SmartField.

Figure 40

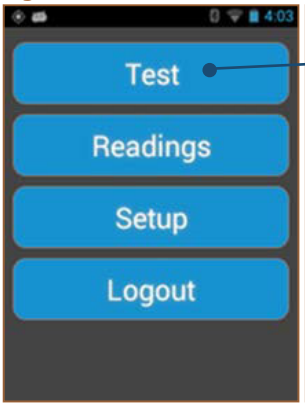


Figure 41

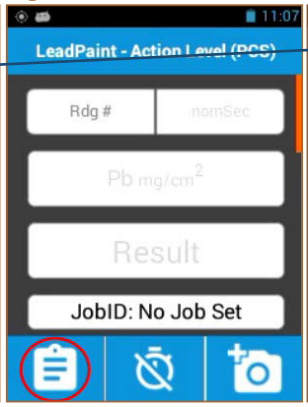
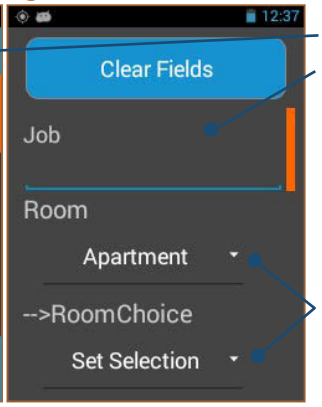


Figure 42



Test selection

Alphanumeric field

SmartFields™

Once you have selected/entered the appropriate data entry fields for your next measurement, you may initiate the reading from the data entry screen; there is no need to return to the test screen (Fig. 38) before proceeding.

Creating a Job and Performing a Calibration Check

Using Job Numbers is an effective way for inspectors to segregate their different lead inspections, helping them to generate reports in less time, with less effort than previously possible with a handheld XRF analyzer.

Begin by selecting the New Job icon (Fig. 43). Accept the date/time-based entry which automatically populates in the Job Number field, or enter your own Job Number or inspection address, and select Start (Fig. 44). Select "Yes" to have your Pb200i prompt you through the calibration check readings (Fig. 45).

Caution: Make sure that the Action Level is set to 1.0 mg/cm2 before beginning the calibration check readings.

Figure 43

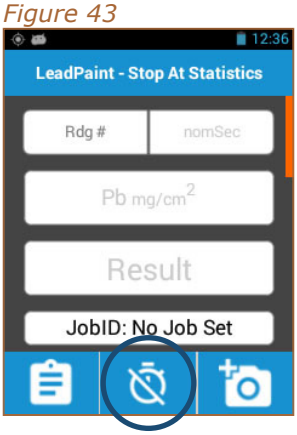


Figure 44

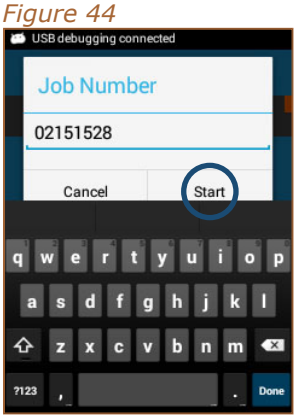
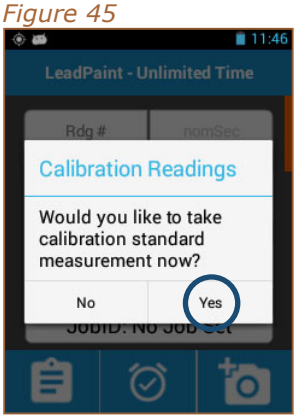


Figure 45



Place the calibration test block on top of the black "Pelican" XRF case as shown in Fig. 17 for all calibration check readings. Make sure the RTA is OFF (disengaged) for all calibration check readings.

Perform three measurements on the reference sample closest to the 1.0 mg/cm2 action level; if the average of these three readings (rounded to one decimal place) falls between 0.8 and 1.2 mg/cm2, your Pb200i is considered "in control". Note that the JobID increments to track the number of readings in the job, as shown in Fig. 46-48. Repeat the process on the blank reference sample.

Caution: Failure to properly position the Pb200i on it's supplied calibration test block, and or failure to place the test block on the black Pelican carrying case may cause the instrument to fail the calibration check.

Note: While measurements on the blank standard are not required for compliance with the PCS, they are necessary for work flow associated with the JobID functionality.

Figure 46

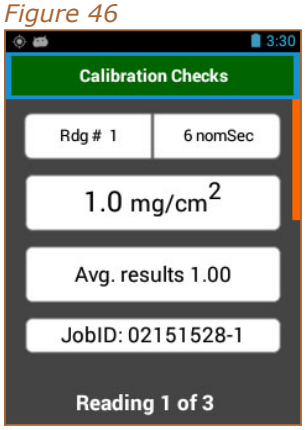


Figure 47

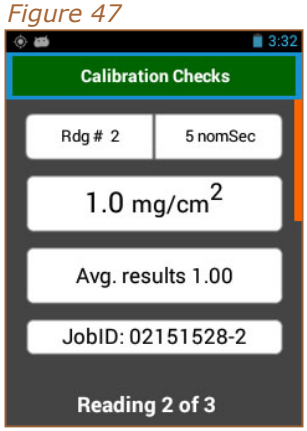
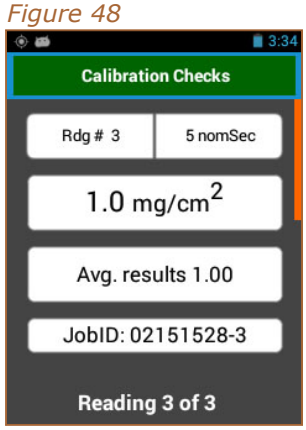


Figure 48

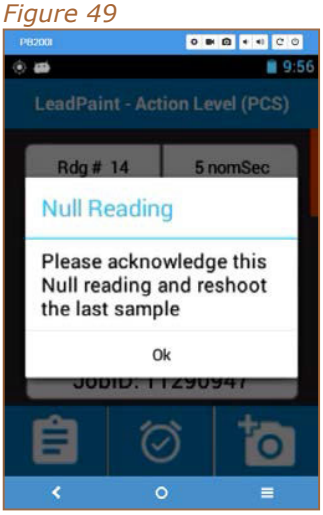


Null Readings

Null readings, where the Pb200i did not complete it's Positive/ Negative determination must be acknowledged on the display (Fig. 49).

To disable this functionality, please see the section on Test

Figure 49



Deleting Last Reading

To delete the last reading, select the Menu button (Fig. 50) and "Delete Last" (Fig 51).

Figure 50

Select the Menu Button

Figure 51

Select "Delete Last"

Stopping a Job

Select the “Job” icon to stop the current job (Fig. 52). Follow the Calibration Check prompts on the display after stopping the job (Fig. 53).

Figure 52

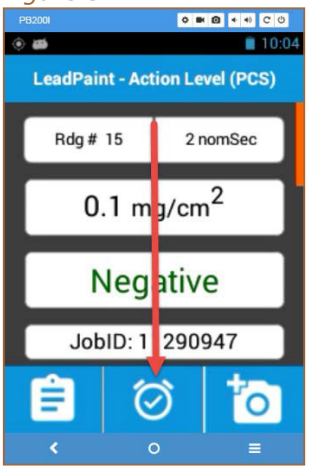
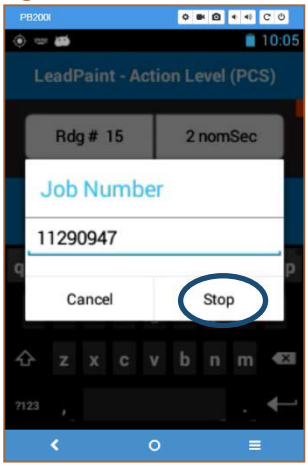


Figure 53



Retrieving Data

Your Pb200i is capable of providing you with your inspection data in two formats: a .CSV file, which may be opened in Microsoft Excel® or other spreadsheet programs; and HDMS (Viken Detection Data Management Software), which stores the data in a tamper-proof file format. To learn more about using HDMS, please see the HDMS User Guide.

To retrieve data, begin at the “Main Screen” (Fig. 15). You may access the main screen from any other screen on your Pb200i by pressing the Back (Return) button until you get to the Main Screen.

On the main menu, select “Readings” (Fig. 54, on following page) then “Export Readings (Fig. 55). Select the range of readings you wish to include in the export (Fig. 56), and whether or not you wish to be able to graph the x-ray spectrum from this range of readings. Select Export. To learn more about graphing the x-ray spectrum for a reading, or range of readings, please view the help menu for your spreadsheet software.

Caution: Always export data before connecting the Pb200i to your PC. If you connect your PC prior to exporting readings, you may not retrieve the entire data set.

Figure 54

Figure 55

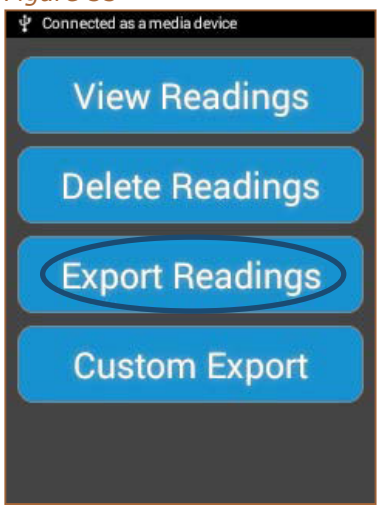


Figure 56

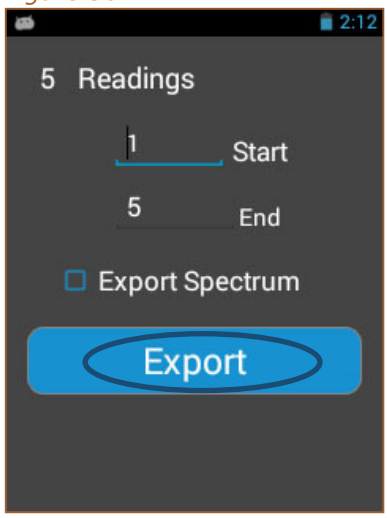
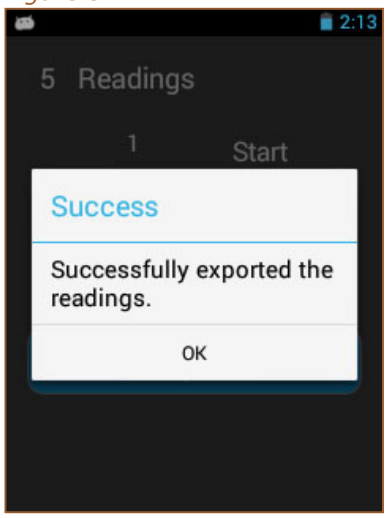


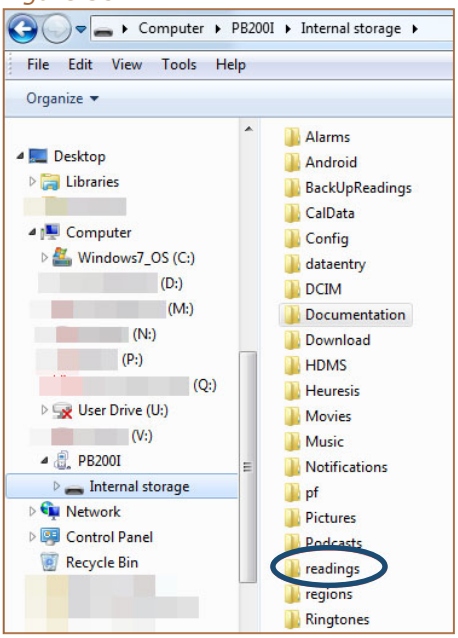
Figure 57



Caution: Checking the Export Spectrum box will include two additional lines of data associated with each reading. The Export Spectrum feature is turned off by default.

The data is “exported” to a “Readings” directory folder (Fig. 58).

Figure 58



Transferring Data

You can transfer data to your PC via the supplied mini USB cable.

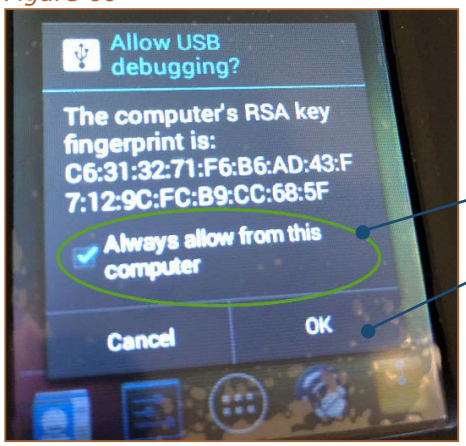
Using the USB Cable

To use the mini USB cable, start by removing the battery door. Insert the USB cable, making sure the battery wedge remains in place (Fig. 59). Be sure to use the cable supplied with your Pb200i.

Figure 59

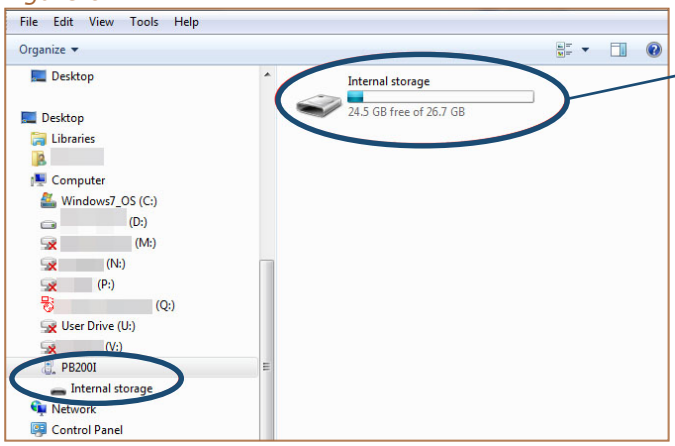
Connect the USB cable to the PC. The driver will install automatically. You may also get a message on your Pb200i that reads “Allow USB debugging?” the first time you connect to your PC (Fig. 60). Select “Always allow from this computer” and then select “OK.” When connecting the Pb200i to a PC, it will appear as though you’ve plugged in an external drive (Fig. 61). Select internal storage, then select the “Readings” folder (Fig. 58).

Figure 60



Check the “Always allow from this computer” option, and then Click “OK”

Figure 61

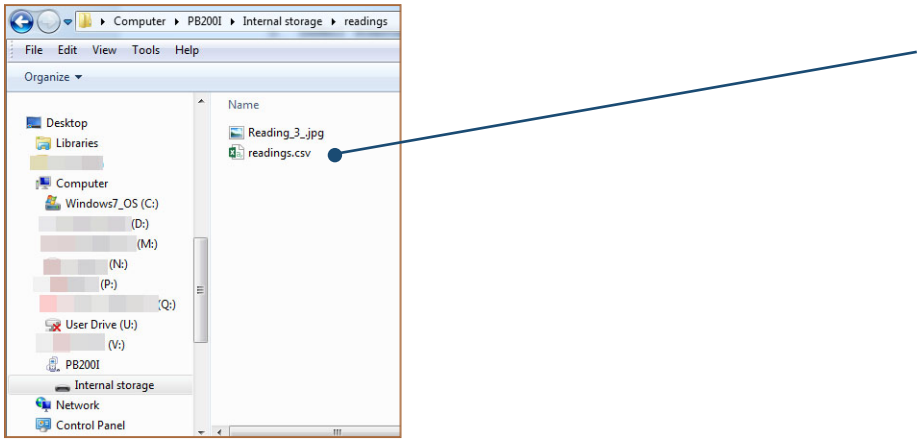


Select Internal Storage

Once you select the readings file you will see a readings.csv file (Fig. 62), as well as image files for any photos taken with your Pb200i that were associated with readings. The readings.csv file contains your readings, while the image files are named to associate them with individual readings. The example shown in Fig. 62 has a photo associated with reading 3. Copy the file(s) to your desktop (or other location on your PC), and select the file(s) to open. Fig. 63 shows a .csv file that has been opened in Microsoft Excel®.

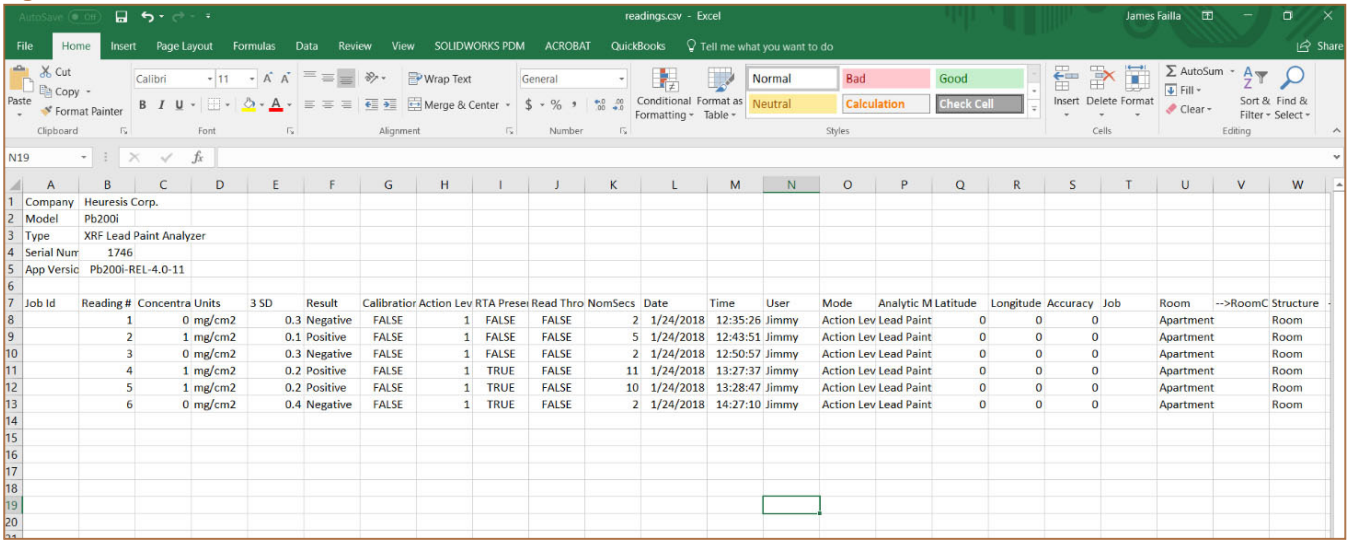
Caution: Do not attempt to open the .csv or .jpg files on your Pb200i; copy them to your PC before attempting to open these files.

Figure 62



Readings.csv file

Figure 63



You may also use Viken Detection HDMS software to retrieve the readings from your Pb200i in a tamper-proof format; retrieve your previously exported .csv file; customize the order and content of exported .csv files; and to create reports. Please see the HDMS User Guide for instructions, located on the analyzer in the “HDMS” folder.

Caution: Check to make sure that all of the data intended for export is included in the download. If it is not, unplug the analyzer from the USB cable, and repeat the steps above.

Downloading Debug Data

In certain situations you may be asked by Viken Detection Tech Support to download debug readings. This is generally used for troubleshooting purposes for the Pb200i. Select the following: Setup > Support> Debug Export. (Fig. 64 through 66).

Figure 64

Figure 65

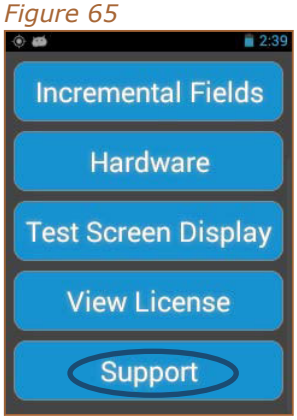


Figure 66

Leaving “Export Spectrum” checked, select “Export” (Fig. 67). Your Pb200i will tell you if it has successfully exported the readings (Fig. 68). Select OK.

Figure 67

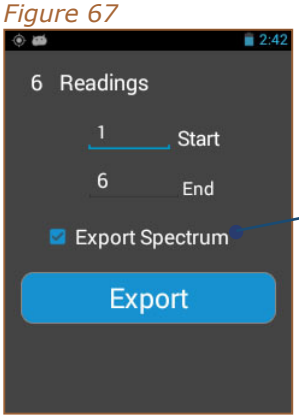
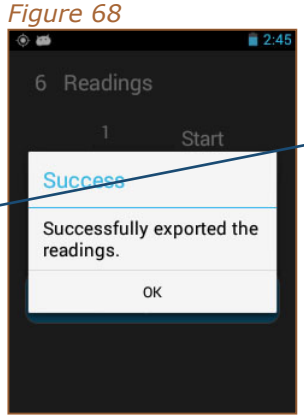


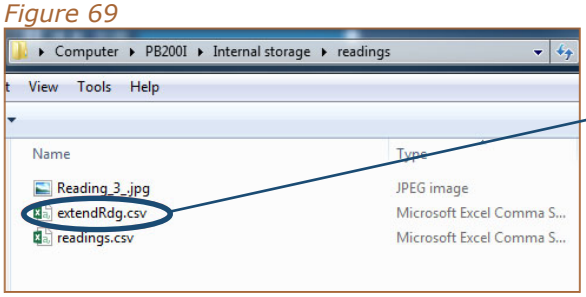
Figure 68



Caution: Ensure that the USB cable is NOT plugged in until readings have been successfully exported.

To retrieve the debug readings, repeat the process described in “Transferring the Data” to retrieve the extendRdg.csv. The readings will be in the same “Readings” file location (Fig. 69).

Figure 69



Caution: Ensure that the USB cable is NOT plugged in until readings have been successfully exported.

Using Wi-Fi Connectivity

You can also use Wi-Fi to transfer your data via an FTP client. To enable Wi-Fi usage, select the “Settings” icon (Fig. 70). Enable Wi-Fi by swiping right; the “Wi-Fi” icon will appear (Fig. 71).

Caution: Turning on Wi-Fi will decrease the battery life of the Pb200i. We recommend leaving the Wi-Fi feature off when it is not in use.

Figure 70

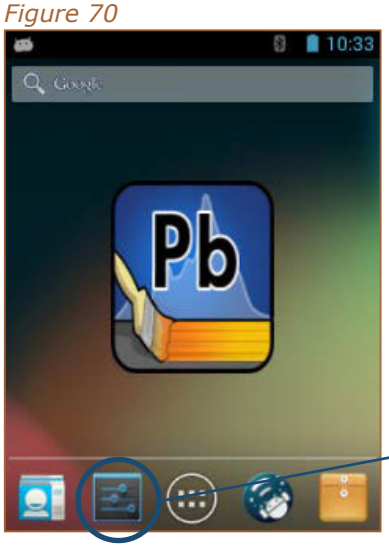


Figure 71

Enable Wi-Fi

Select the “Settings” Icon

After enabling Wi-Fi, tap on the word “Wi-Fi” as circled in Fig. 71. Find the desired network, select and connect (Fig. 72). Enter any required Wi-Fi password to proceed.

Figure 72

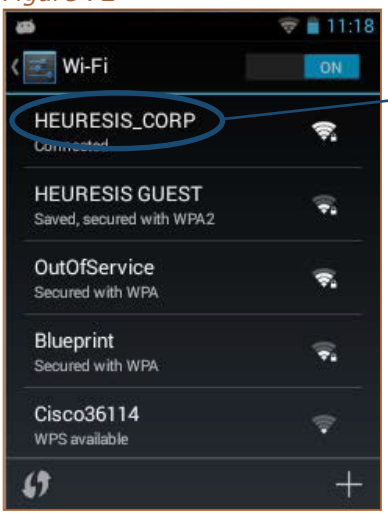


Figure 73

Find desired network

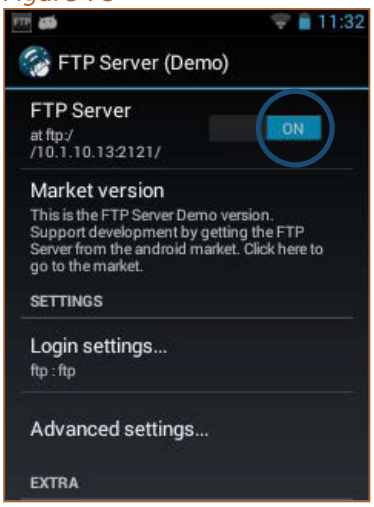
Exit from Wi-Fi using the left arrow, then close the “settings” app by holding the center “Home” button down until a list of open apps appears (Figure 73). Swipe left to close the Settings app.

Select and open the FTP Server app (Fig. 74). To enable the FTP server, select the icon and swipe from off to on (Fig. 75).

Caution: The FTP server feature will default to the "off" position for security reasons every time the instrument is turned on.

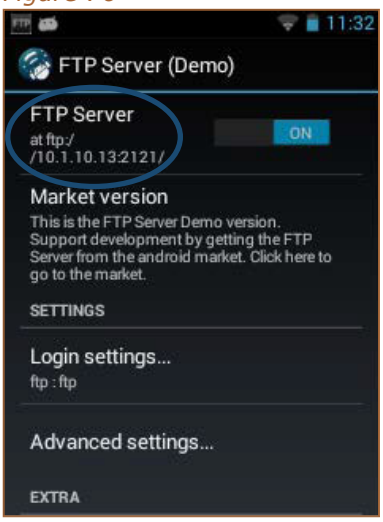
Figure 74

Figure 75



Place the number which appears in the area circled in Fig. 76 in your web browser. The example shown here is **ftp://10.1.10.13:2121/**

Figure 76



Your browser will prompt you to enter a user name and password (Fig. 77). Enter “ftp” as the User name and “ftp” as the Password. Select “Log on”.

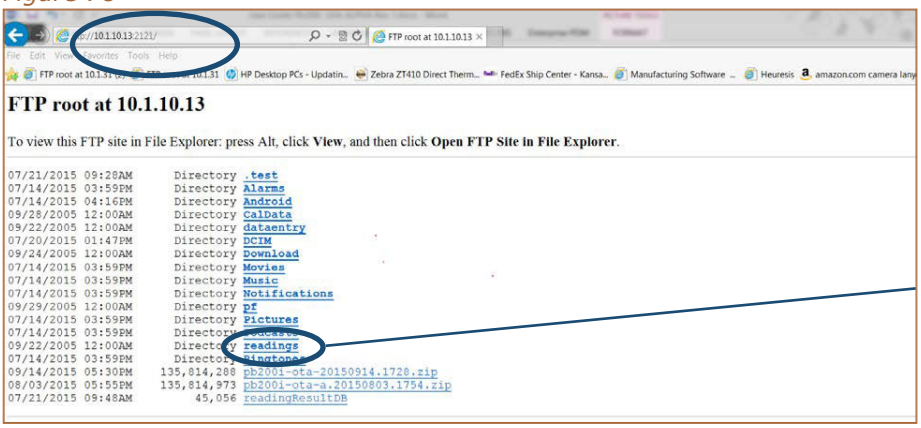
Figure 77

Type ftp for both the User Name and Password

Select “Log on”

Your screen should display the file tree located on your Pb200i as shown in Fig. 78. Be sure to bookmark this page in your browser. Select the “readings” folder.

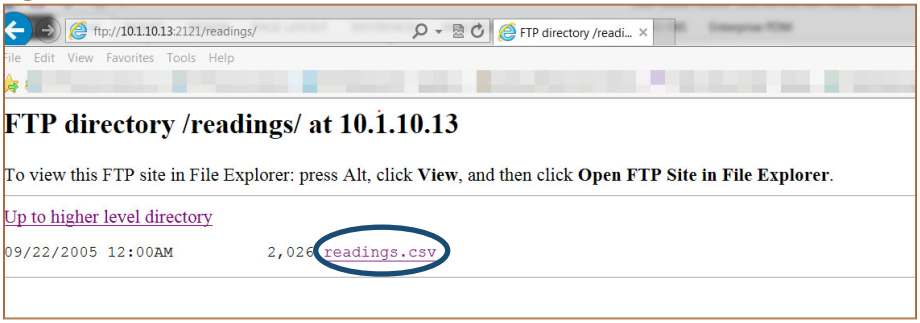
Figure 78



Select “Readings”

At this next screen (Fig. 79) select “readings.csv” You will be prompted to save the readings in a location of your choice (.csv file format). You may also retrieve any photos taken which are associated with the exported readings.

Figure 79



Enabling Bluetooth™ Connectivity

The Pb200i is equipped with a Bluetooth™ radio. You can use this feature to pair the instrument to an external keyboard or other Bluetooth™ device.

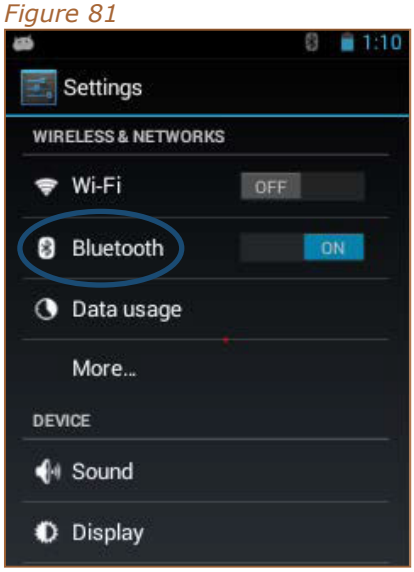
To enable Bluetooth™, select the “Settings” icon (Fig. 80).

Figure 80

Caution: There are multiple Bluetooth™-equipped devices on the market, but they are not all compatible with the Pb200i.

Enable Bluetooth by swiping right; click on “Bluetooth” (Fig. 81).

Figure 81



A list of available devices will populate on the screen; click on the Pb200i option (Fig. 82). This makes the instrument visible to other devices. Click on the desired device to pair it with your Pb200i (Fig. 83).

Figure 82

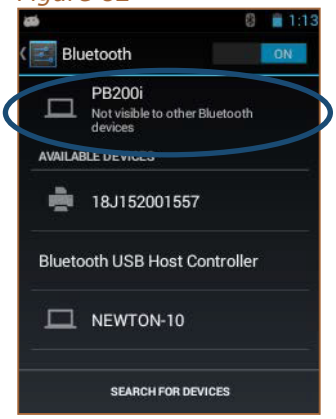
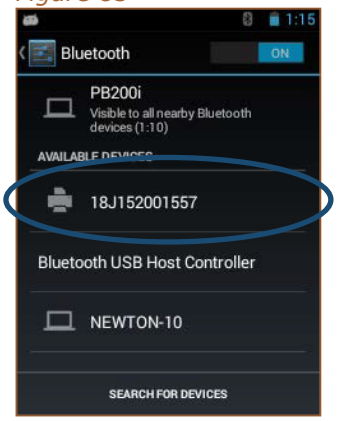


Figure 83



Turning On the GPS Receiver

The Pb200i is equipped with an onboard GPS receiver, which is set to "On" by default at the factory. Follow these steps to turn on/off the GPS receiver. Select the "Settings" icon (Fig. 84).

Figure 84

Scroll down to “Location Access” (Fig. 85) and select. Slide “Access to my location” to “ON” (Fig. 86). The icon in shown in Figure 87 will appear when GPS is enabled.

Figure 85

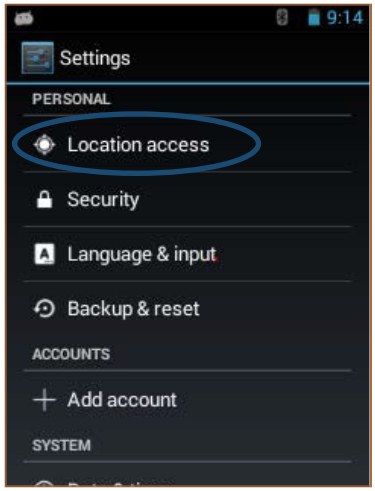


Figure 86

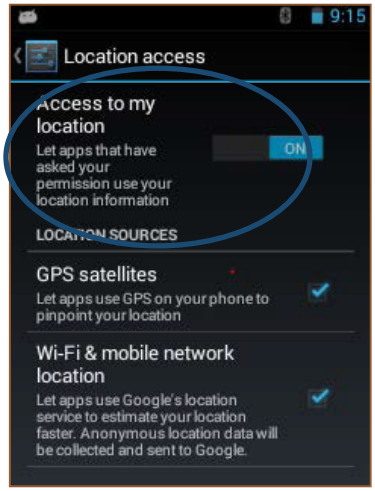
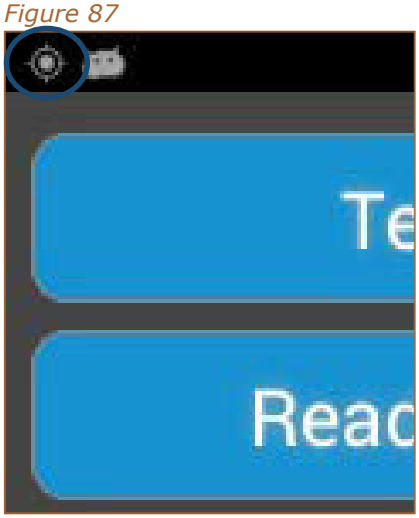


Figure 87



To check the status of your GPS, go to the following screens Setup>Hardware>GPS (Fig. 88-91).

Figure 88

Figure 89

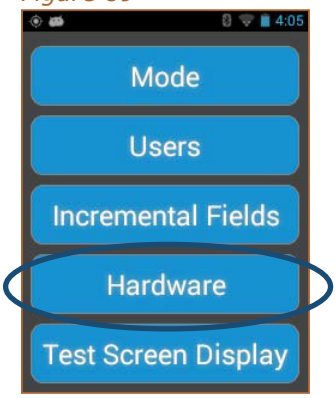
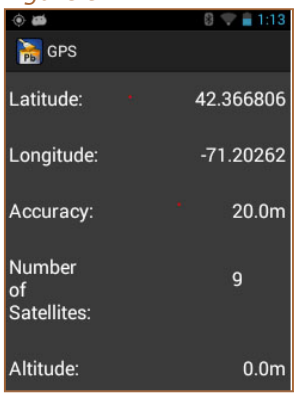


Figure 90

Figure 91



Creating an Administer

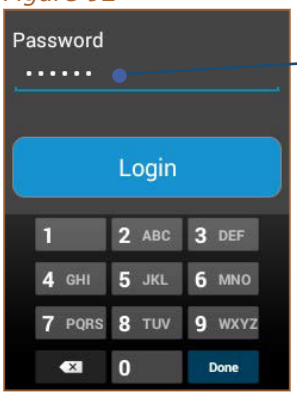
When first logging on to the Pb200i, you will need to create a username and password. Start by using the factory default password: 371945.

You will be prompted to create the first user. This person will be the device administrator, and can administer rights to other users as needed. This person should be a high-level employee, responsible for the instrument, such as the radiation safety officer (RSO).

Login using the default password. When prompted to “create user?” select yes. Enter the text for your new password. Continue by logging in using the new password. (Fig. 92-94).

Caution: User names must be a minimum of four characters. Passwords must be a minimum of six characters.

Figure 92



Default Password: 371945

Figure 93

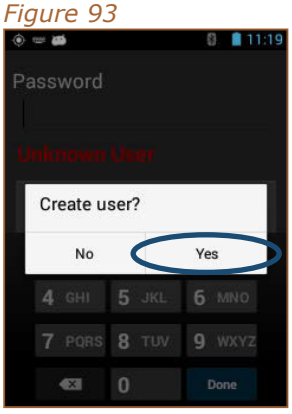
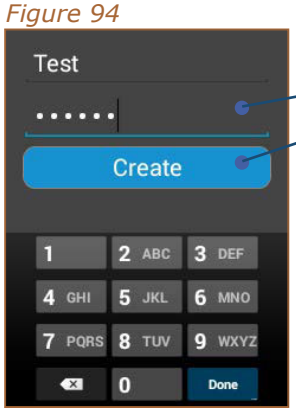


Figure 94



New name and password

To view the rights of the administrator, return to the main menu. Select setup, followed by users, then modify and finally settings. (Figures 95-98)

Figure 95

Figure 96

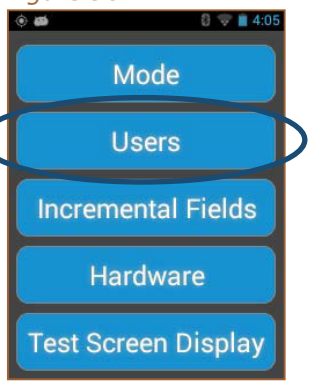


Figure 97

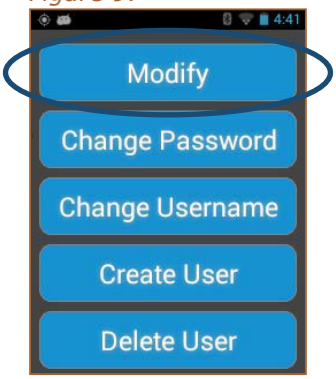
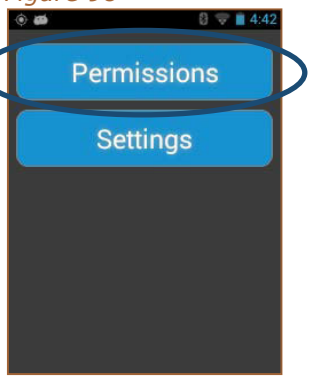


Figure 98



As an administrator or Supervisor, you can turn ON/OFF any of the available options. To save, select the back arrow on the analyzer and exit the menu (Fig. 99 and 100).

Figure 99

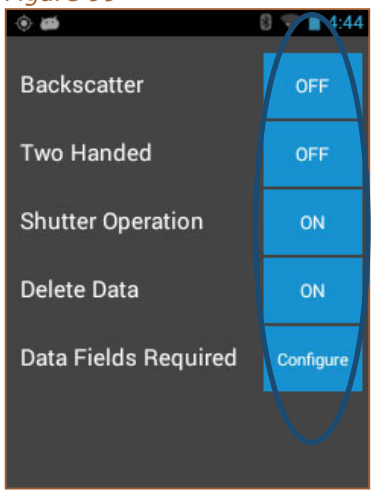
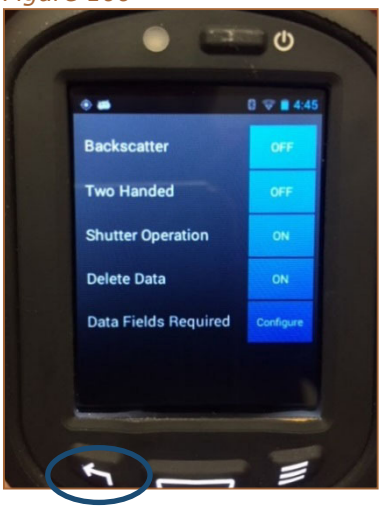


Figure 100



For more information on Permissions and Settings, please see Appendix A.

Changing Password/User name

Follow these steps to change your password or user name. From the main menu select Setup>Users>Change Password (or Change Username) (Fig. 101-103). Select “Update.”

Caution: User names must be at least four characters long, and passwords must be at least six numbers long.

Figure 101

Figure 102

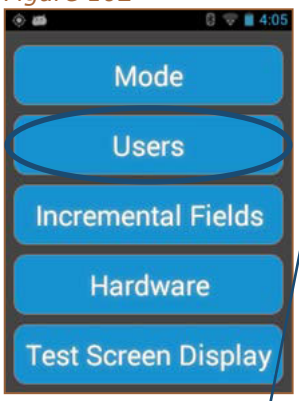


Figure 103

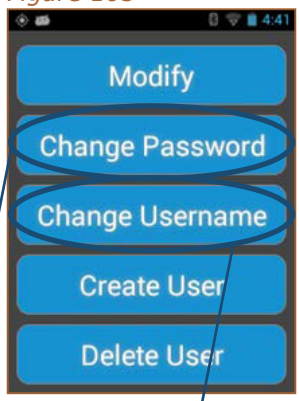


Figure 104

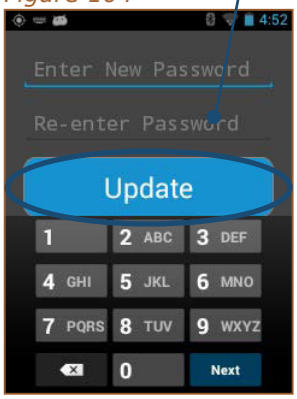
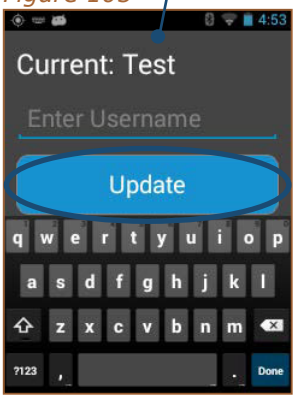


Figure 105



Creating a User/Supervisor

Creating another User or Supervisor ID on the Pb200i lets you easily identify who was using the instrument for an inspection, and/or restrict certain functions of the instrument on a user-by-user basis to reduce potential for error, such as a User accidentally deleting stored readings.

To create a Supervisor ID on the Pb200i, start at the Main Menu. Select Setup>Users>Create User. Select “Supervisor” and create a new password (Fig. 106-110).

Caution: Only an administrator can set up these rights.

Figure 106

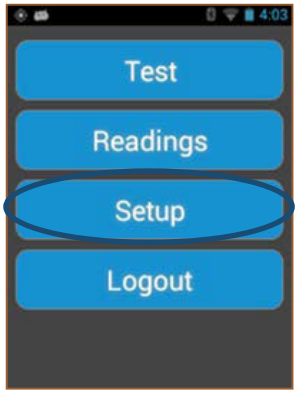


Figure 107

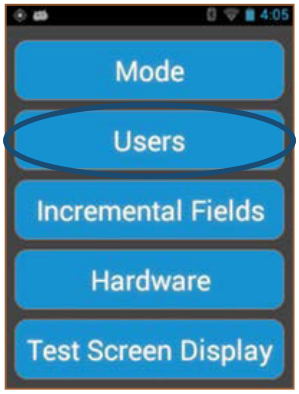


Figure 108

Figure 109

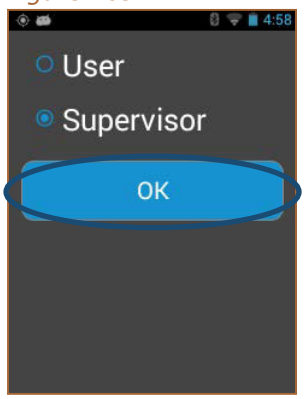
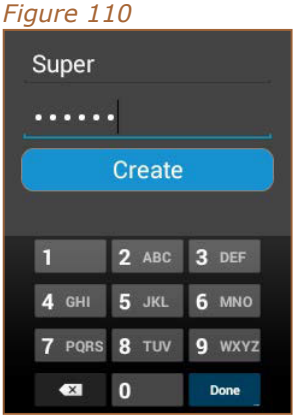


Figure 110



To create a user ID on the Pb200i, start at the main menu. Select Setup>Users>Create User. Select “User” and create a new password.

Caution: Only an administrator can set up these rights (Figures 108 to 112).

Figure 111

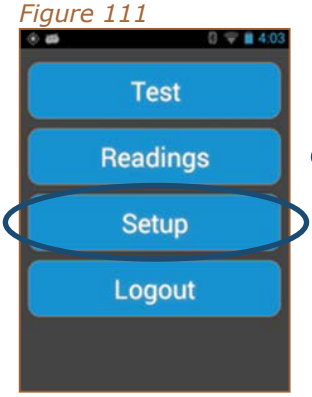


Figure 112

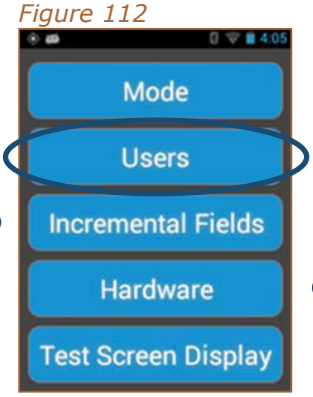


Figure 113

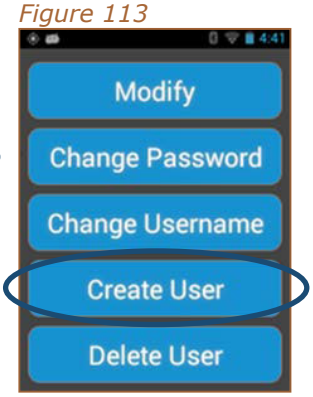


Figure 114

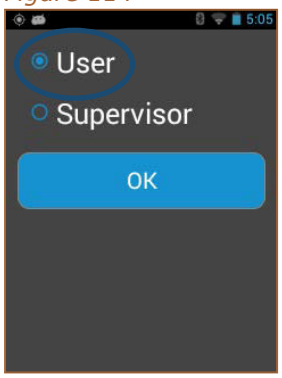
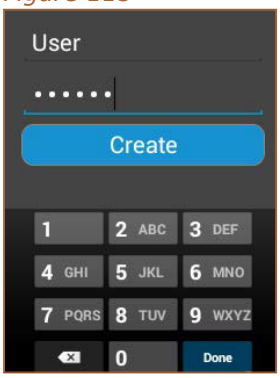


Figure 115



Modifying Permissions

An administrator can modify the permissions for themselves, a Supervisor, or a User. A Supervisor can only modify the permissions for a User.

The example shown here illustrates the administrator revoking the default permission to delete data for a user’s ID.

Start at the main menu. Select Setup>Users>Modify>Permissions. (Fig. 116 to 119) Select the user and change “Allow” to “Disallow” (Fig. 120 to 122). The factory default settings are shown in Figure 118.

Figure 116

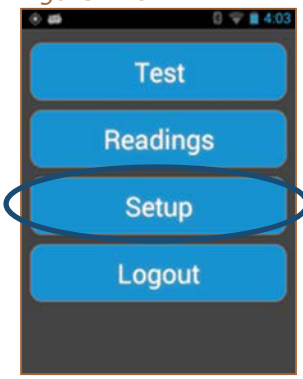


Figure 117

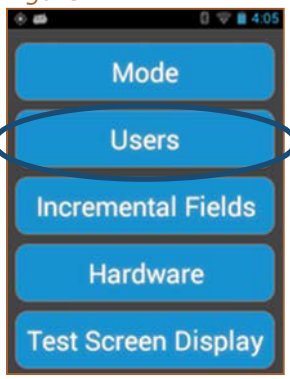


Figure 118

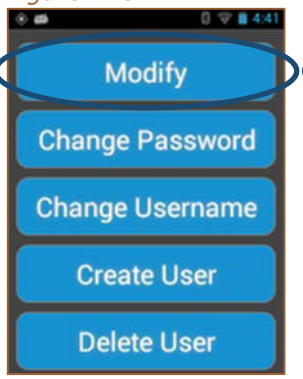


Figure 119

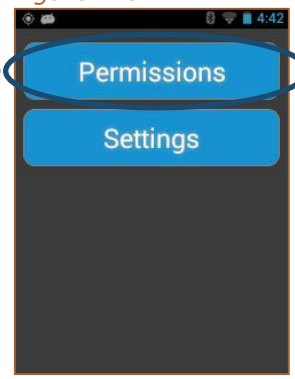


Figure 120

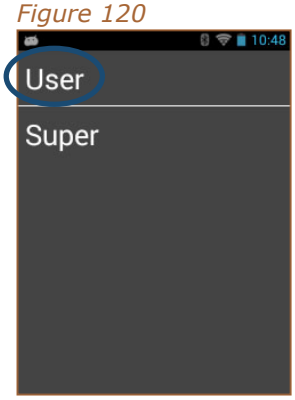


Figure 121

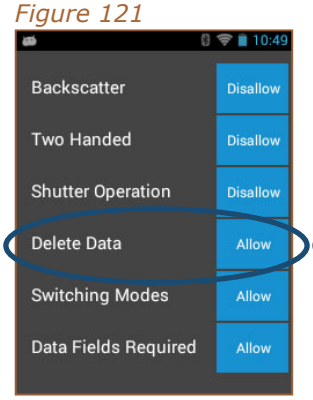
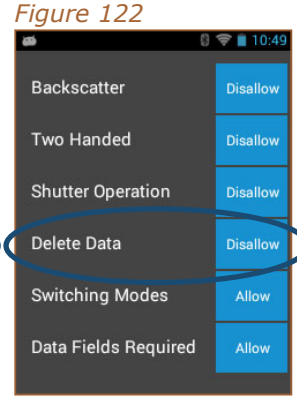


Figure 122



Back out using the Back button (Fig. 123) to save, then go to "Settings" and select "User" (Fig. 121 to 125).

Figure 123

Figure 124

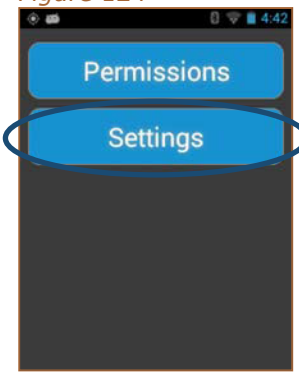
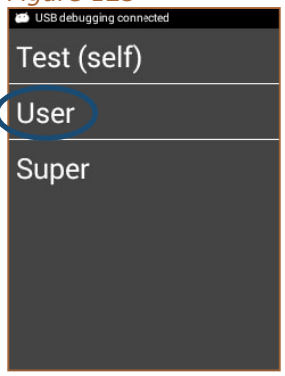


Figure 125



Turn the "Delete Data" toggle to the "OFF" position and back out with the Back button (Fig. 126 to 128).

Figure 126

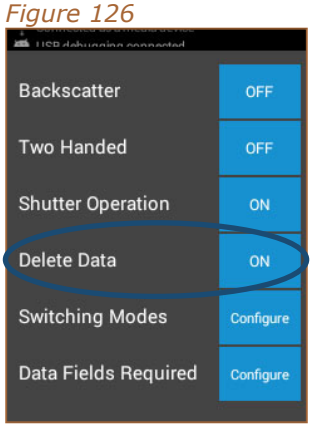


Figure 127

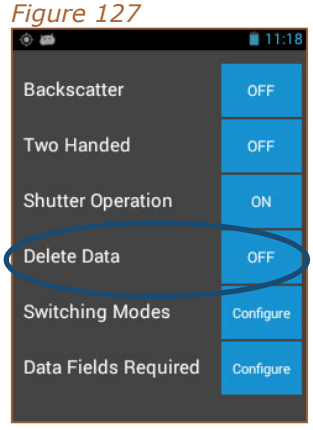
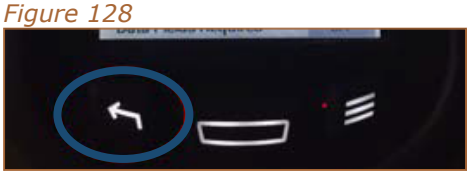


Figure 128



In the example shown here, when the user logs in, if they try to delete data, they will see the error message shown (Fig. 129). If they went to their settings, the choice to “Delete Data” is no longer available (Fig. 130).

Figure 129

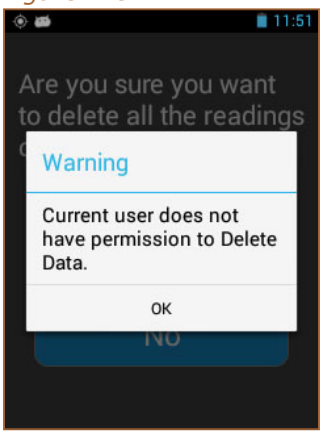
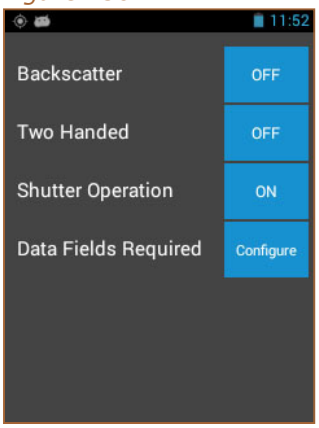


Figure 130



Changing the Action Level in Action Level Mode

In some instances, the user will want to change the action level to accommodate a Pb threshold other than the default of 1.0 mg/cm2. In order to change the action level, start at the main menu, select Setup>Mode>Action Level Mode, tap the gear icon and input the number (Fig. 131-133). Press the Back button (Fig. 137).

Figure 131

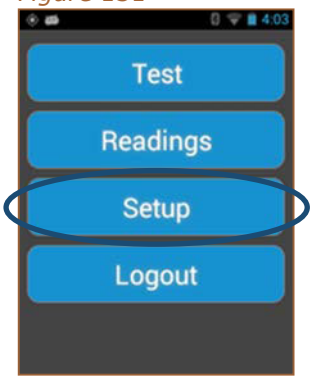


Figure 132

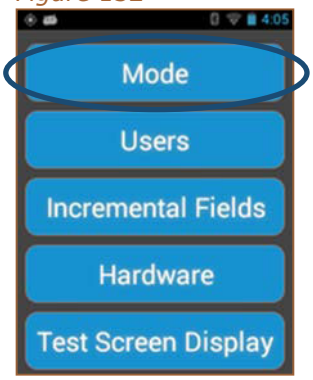


Figure 133

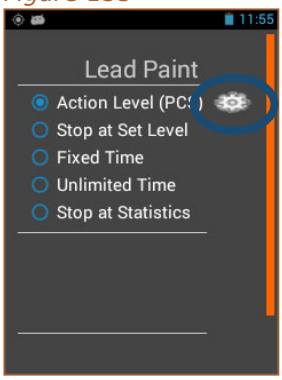
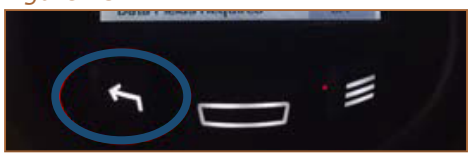


Figure 134

Figure 135

Figure 136

Figure 137



When the action level is set to 1.0 mg/cm2, the instrument will display results as shown in Fig. 138 to 140.

Figure 138

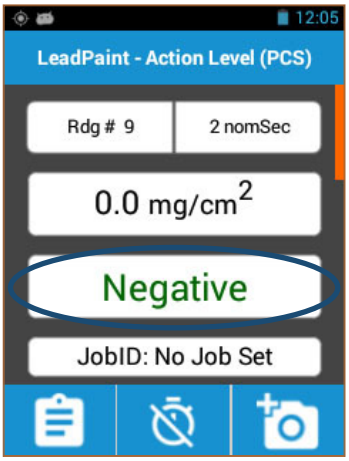


Figure 139

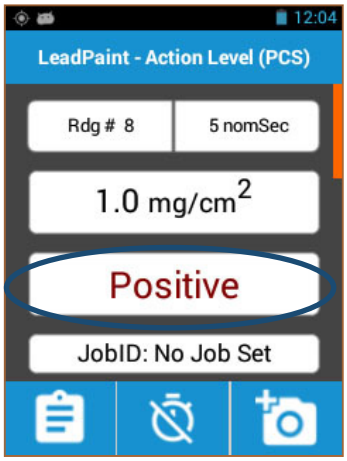
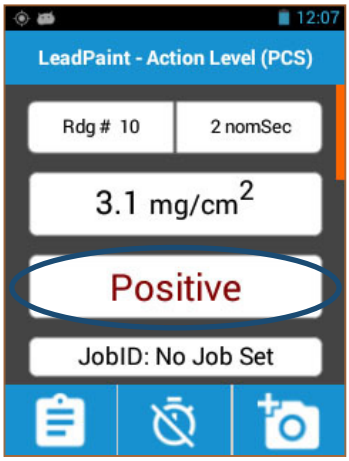


Figure 140



When the action level is set to anything other than 1.0 mg/cm2, the instrument will display “NEG” (for negative) and “POS” for positive. In this example, the action level has been set to .7 mg/cm2 (Fig. 141 to 143).

Figure 141

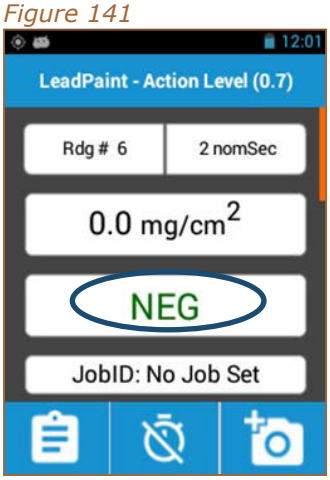


Figure 142

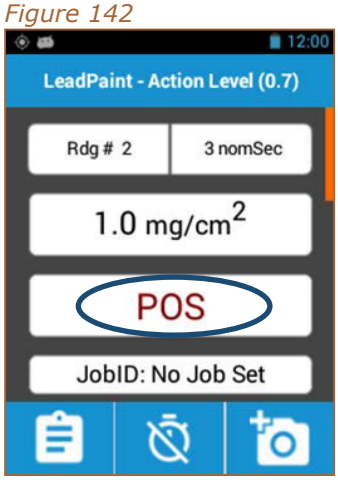
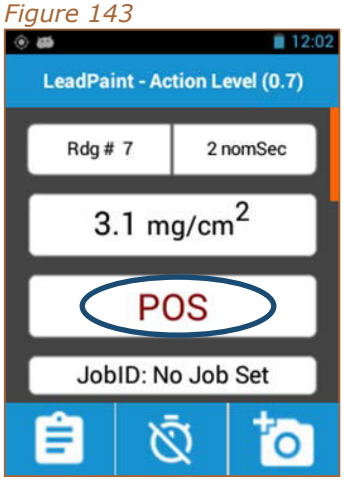


Figure 143



Extended Reading Mode

Extended reading mode is used for occupational inspection work where the quantification of lower levels of lead may be required. This usually entails longer reading times for the instrument. Extended Reading Mode is broken down into four “sub” modes for the user: Stop at Set Level, Fixed Time, Unlimited Time, and Stop at Statistics.

Stop at Set Level

Stop at Set Level mode allows the user to set up the instrument with three variables: action level, number of standard deviations above the action level, and number of standard deviations below the action level. Once these user-determined thresholds have been reached, the instrument will stop acquiring data, close the safety shutter, and display a result. This mode may be useful for customers performing commercial, industrial, and/or institutional Pb inspection work, where they are looking for the Pb200i to terminate the measurement once customer-determined statistical confidence has been achieved.

To setup this mode, start at the main menu. Select Setup>Mode>Stop at Set Level (Fig. 144), set the action level, SD’s above, and SD’s below (Fig. 145), and select the Back button (Fig. 146).

Figure 144

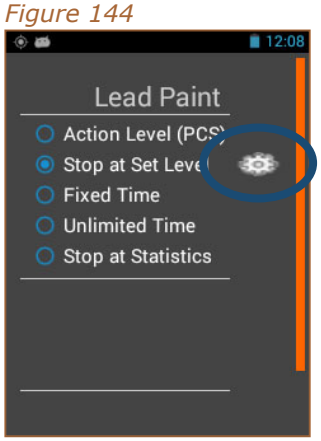


Figure 145

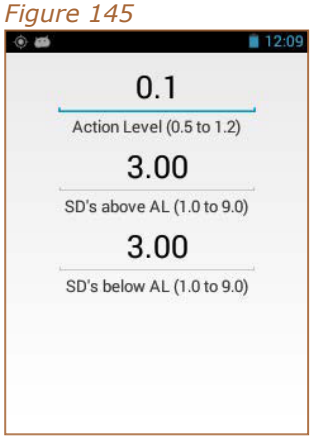


Figure 146

Fixed Time

Fixed Time mode allows the user to set a maximum time the instrument will take a reading with the trigger depressed. Once the instrument reaches this set time, it will stop acquiring data, close the safety shutter, and display a result. The value of time that can be entered is in real time seconds, up to a maximum of 300 seconds (5 minutes). This mode is often employed when users are following a strict standard operating procedure (SOP) that prescribes the length of each reading that must be taken on a given project.

To setup this mode, start at the main menu. Select Setup>Mode>Fixed Time. Enter the desired time limit in seconds (Fig. 147 to 149), then select the Back button (Fig. 150).

Figure 147

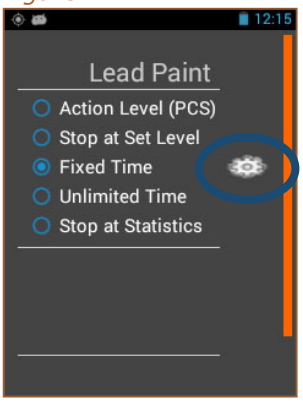


Figure 148

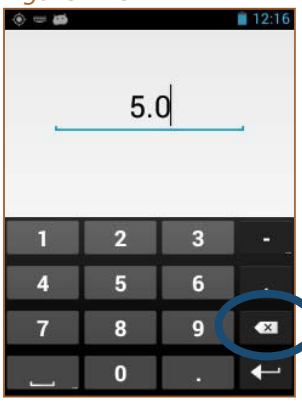


Figure 149

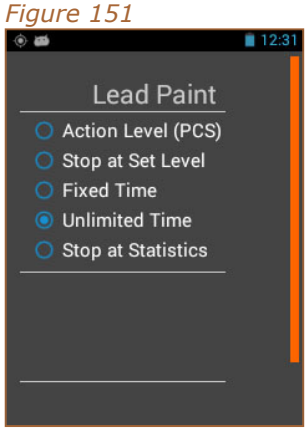
Figure 150

Unlimited Time

Unlimited Time mode allows the user to simply pull the trigger until they are satisfied with the result for a given reading up to a maximum reading time of 300 nominal (source) seconds (5 minutes). Releasing the trigger will prompt the instrument to close the safety shutter and display a result.

To setup the Unlimited Time mode, start at the main menu. Select Setup >Mode>Unlimited Time (Fig. 151). Select the Back button.

Figure 151

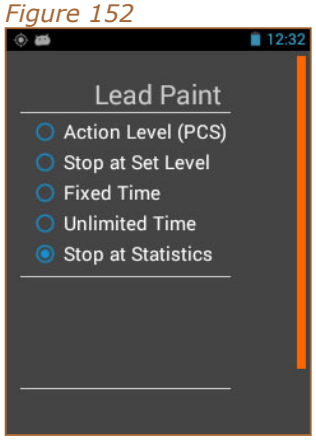


Stop at Statistics

Stop at Statistics mode automatically terminates the measurement when there is no statistical advantage to sampling for additional time. This may be beneficial to customers looking for low levels of Pb in commercial, industrial, and/or institutional inspection work.

To setup this mode, start at the Main Menu. Select Setup > Mode> Stop at Statistics (Fig. 152). Select the Back button.

Figure 152



Additional Features

Custom Exporting

The Pb200i allows you to customize the content of exported CSV files. You may select any of the options shown in Fig. 152 by following the prompts. Use of the JobID field permits you to export readings on a job-by-job basis (see Creating a Job and Performing a Calibration Check for more information on using the JobID field).

Figure 153

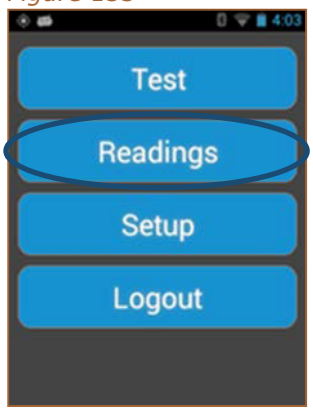


Figure 154

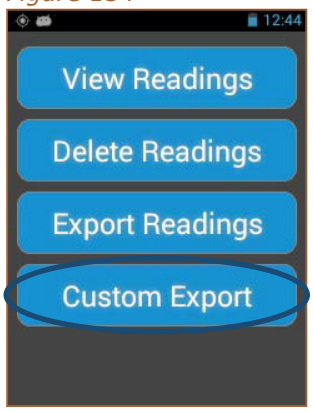


Figure 155

Figure 156

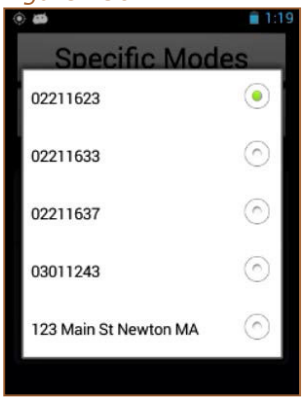
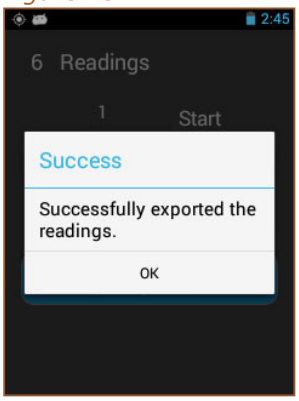


Figure 157



Camera

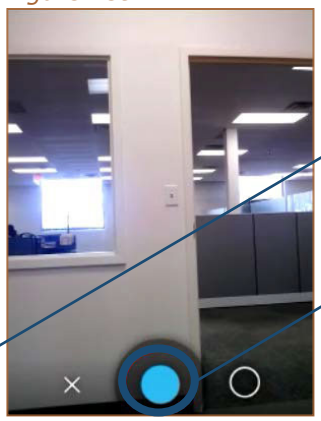
The Pb200i's built-in camera is located in the foot of the instrument (see Fig. 1). The camera is operated using the Pb200i application on the instrument.

To use the camera, select the camera icon (Fig. 158). Select the blue dot (Fig. 159) to take the picture, the "X" to exit the camera, or the white circle to adjust camera settings. Select the checkmark to store the photo (Fig. 160), the circle with arrow to retake the photo, or the "X" to exit the camera. Once you have stored the photo, select whether you want it associated with the next or the last XRF reading (Fig. 161).

Caution: Do not use the android camera application that is on the analyzer.

Figure 158

Figure 159



Camera Icon

Press blue dot to take picture

Figure 160

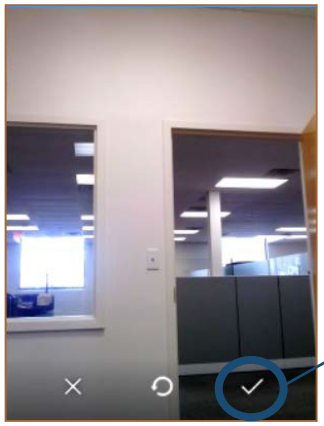
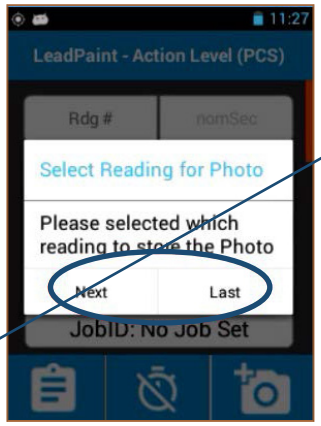


Figure 161



Press circle with arrow to retake a photo

Note: Please refer to the section on Exporting Readings and the HDMS User Guide for more information on retrieving photos captured during your inspections.

Swipe to View Readings from Test Screen

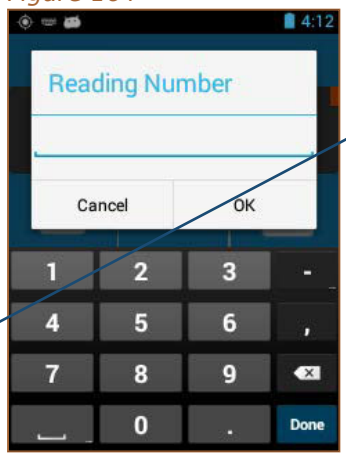
You may swipe left or right from the “Ready to Test” screen to view readings (Fig. 162). You may also use the search function to go to any desired reading (Fig. 163 and 164). Press the Back button on the analyzer to return to the “Test” screen.

Figure 162

Swipe Left or Right from Test Screen

Figure 163

Figure 164



Press the back button to return to the “Test” screen

Test Screen Display Functionality

The user may tailor the test screen with any number of combinations, selectable by on/off toggles. From the Main Menu, go to Setup>Test Screen Display (Fig. 165 to 167).

Figure 165

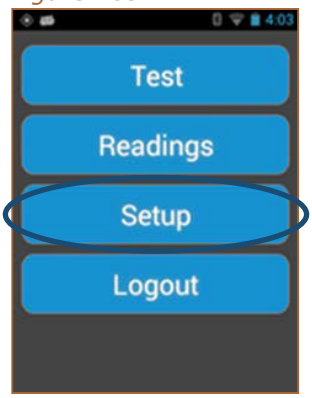


Figure 166

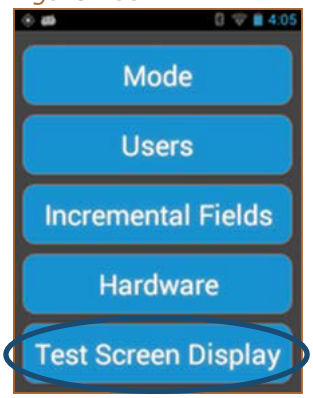


Figure 167

Individual settings are shown in Fig. 167. Positive/Negative permits you to turn off a Positive/Negative result when compared to a threshold value of lead in paint. It may be useful to you to turn off

Positive/Negative for commercial/industrial lead inspection work, where one is typically looking for accurate measurements for a lower level of lead. The factory default for this setting is “ON.”

Precision displays/hides the two-sigma (95% confidence). It is often turned “ON” in combination with Positive/Negative “OFF”. The factory default for this setting is “OFF.” We don’t recommend turning it “ON” in conjunction with Positive/Negative set to “ON” as Action Level mode already takes into account the Pb200i’s two-sigma confidence as to whether the result is positive or negative when compared to an action level of 1.0 mg/cm2.

An example of the Test Screen Display set for commercial/industrial lead inspection work, along with the associated display settings are shown in Figures 165 and 166.

Figure 168

Figure 169

Optional Soil Mode

In-Situ Soils

The Pbi200 instrument can be utilized to test for lead in soil samples by following the steps hereafter. Once the instrument has been attached to the skid and set up for In-Situ soil tests, place the skid into the soil to be tested and hold the trigger.

Attaching the Skid
Users should first attach the skid to the Pbi200. To do so, the elastic band is pulled over the handle of the Pbi200 and then the nozzle and foot stabilizer placed securely onto the front and back sections of the skid, appropriately.

Figure 170

Figure 171

Elastic band pulled tightly over the Pbi200 handle

Note: The skid is calibrated to the instrument allowing proper results, in addition, the skid keeps dirt from getting in under the proximity button and prevents future contamination (such as contaminated tests being on the snout protector).

In-Situ Soil Tests
After logging in, press the "I Understand" tab.

Figure 172

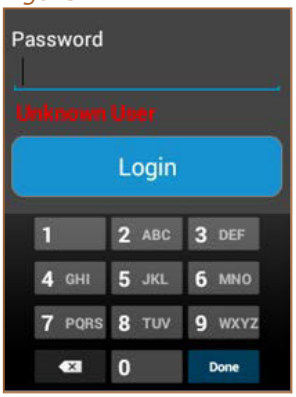


Figure 173

Before taking an In-Situ test sample, enable the Momentary Touch option. This is shown below and is discussed in the Enable Momentary Touch section of this manual. Press the Setup tab, then the Test Screen Display tab, and make sure the Momentary Trigger is set to ON. When finished, exit out by pressing Back.

Figure 174

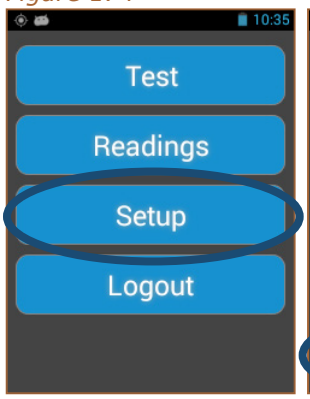


Figure 175

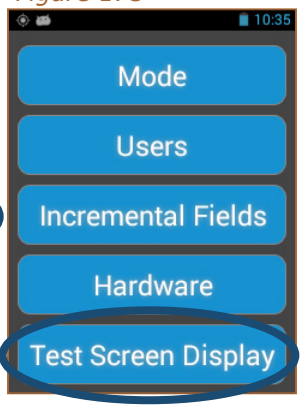
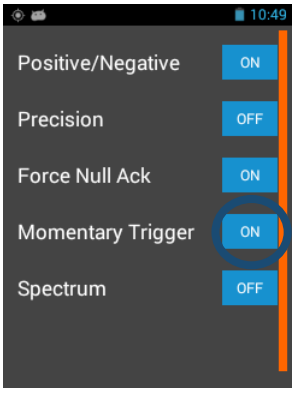


Figure 176



Click on In-Situ Soils, then press Setup, then Mode.

Figure 177

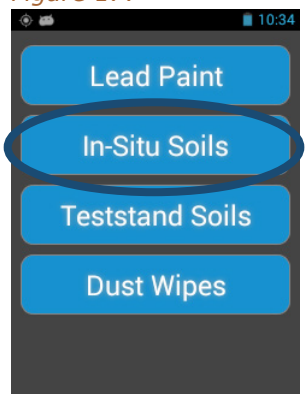


Figure 178

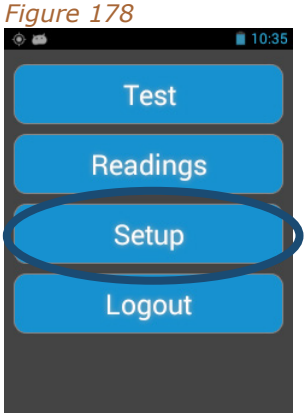
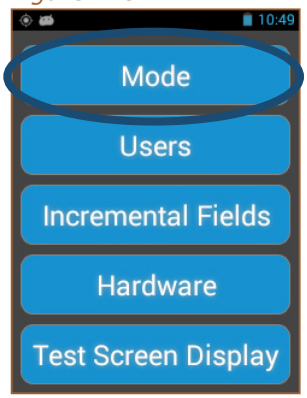


Figure 179



On the following screen, make sure that Fixed Time is clicked on, then press the gear to the right of it. When the next page comes up, change the fixed time to 60 (60 seconds), and click the back button three times. Press Test to take a reading of the soil.

Figure 180

Figure 181

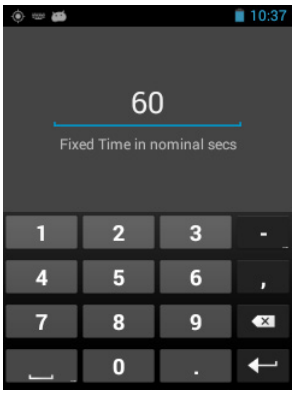
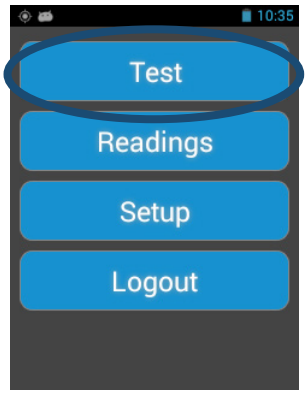


Figure 182



Teststand Soil Tests

As an option to the In-Situ Soil tests, the Pbi200 can also be enabled to perform a Teststand verification. To do so, the Pbi200 must be properly placed on the Teststand before administering a test.

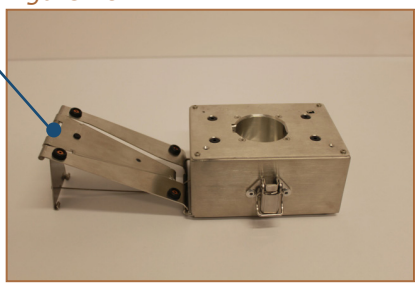
Setting up the Teststand

Before a test using the teststand can be administered, the teststand must first be properly setup, both in assembly as well as the software.

Figure 183

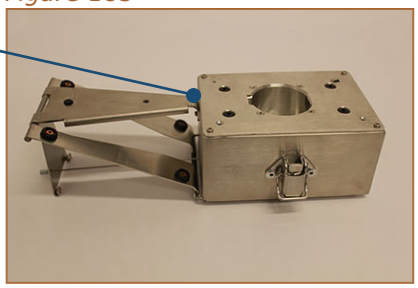
To set up the Teststand, first, pull the bottom section to a sitting position on the back side of the Teststand base.

Figure 184



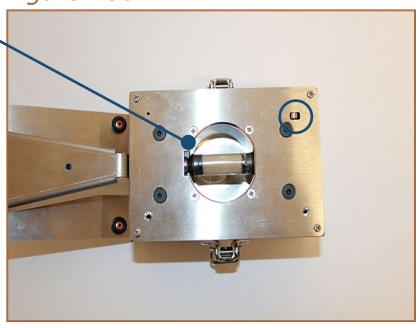
Lift the middle portion and place the point at its end into the hole in the base of the Teststand. This is magnetically fitted and will hold the point firmly.

Figure 185



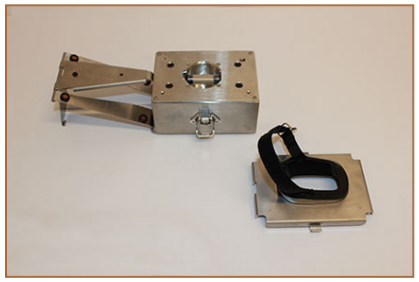
Next, place the soil sample into the center of the Teststand plate, fitting it backside first with a slight push, then inserting the front end. Again, the couplars there will hold the sample firmly, and magnetically.
There is a small pin which when pressed spins the motor, causing the sample to turn during analysis. Make sure the pin is properly aligned for results.

Figure 186



Reattach the cover to the teststand base by placing it on top and tightly locking in the clasps on both sides.

Figure 187



Then, place the Pbi200 instrument on the top of the Teststand, and

the handle onto the plate and back portion. Firmly set the velcro band around the highest part of the handle and secure it tightly so it will not move.

Figure 188

Lastly, insert the provided USB cable into the Teststand input (noted on the image to the right), and plug the output into a computer.

Caution: Make sure you use a source that has suitable power. Most computers that have USB have enough power.

Figure 189

Setting up the Teststand Software

After logging in, press the "I Understand" tab.

Figure 190

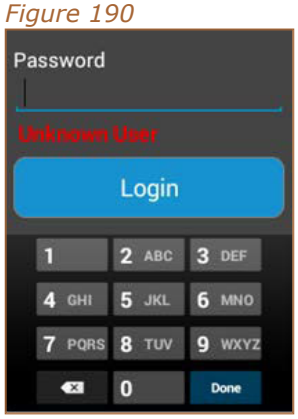
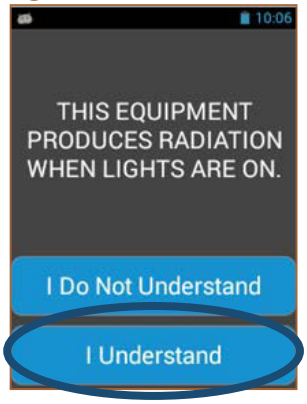


Figure 191



Before taking a Teststand sample, enable the Momentary Touch option. This process is shown below and is discussed in the Enable Momentary Touch section of this manual. Press the Setup tab, then the Test Screen Display tab, and make sure the Momentary Trigger is set to ON. When finished, exit out by pressing Back.

Figure 192

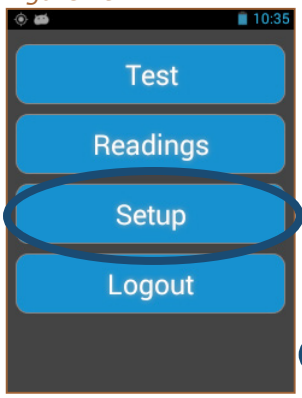


Figure 193

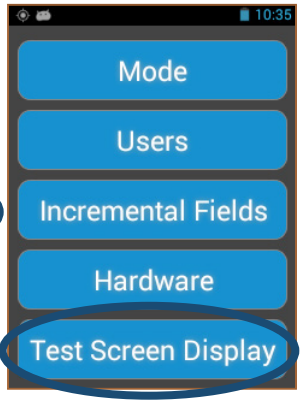
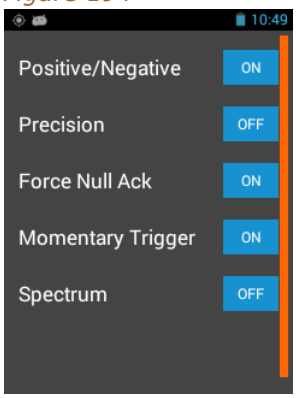


Figure 194



Taking a Test on the Teststand

To take a test using the Teststand, put the instrument into soil mode by pressing Test, then Teststand Soils. A screen will pop up and when pressing the trigger will activate a test for 60 seconds. When complete the results will be given.

Figure 195

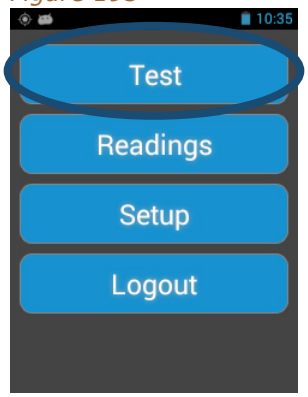


Figure 196

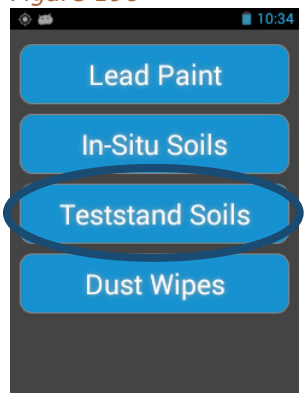


Figure 197

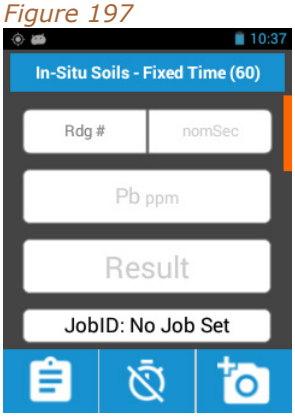
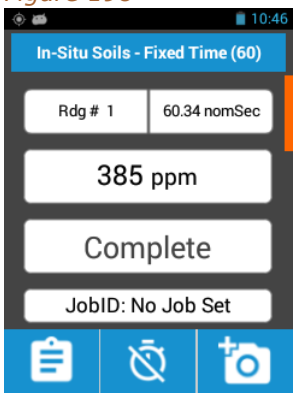


Figure 198



When complete, take the instrument off and rotate the sample. Take another 60 second sample. The 2 samples are needed if you are very close to your detection limit or decision point, but if your samples are very high a single sample will be sufficient.

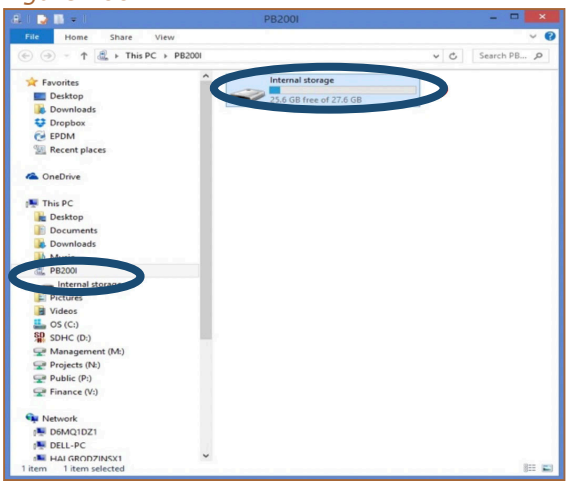
Installing Pb200i.apk Software Updates

The software on the Pb200i can be updated by following the procedure outlined below. Before beginning this process, please download the data on your system.

1. Power the system on and connect the instrument via USB cable to your PC. Double click on the Pb200i “Internal storage” when the icon appears.

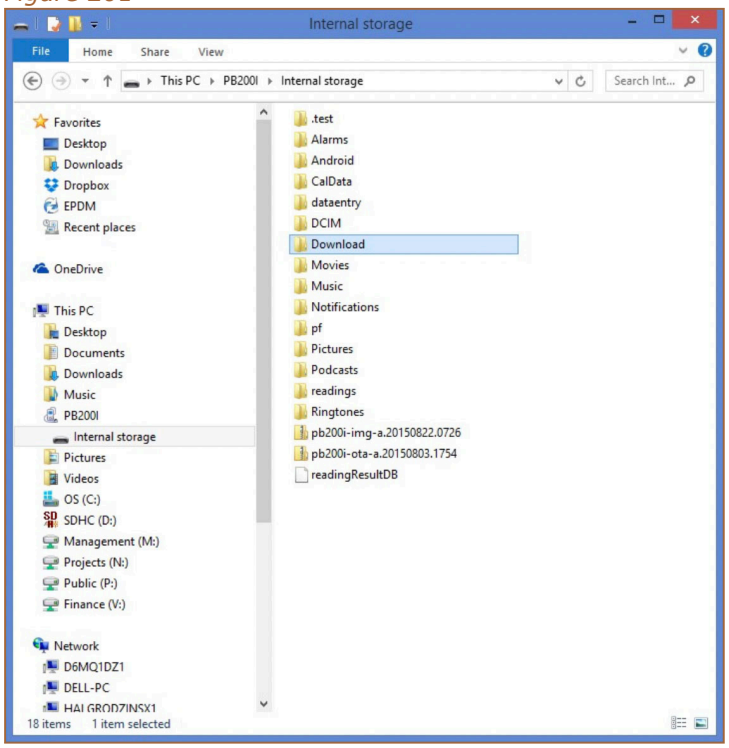
Figure 199

Figure 200



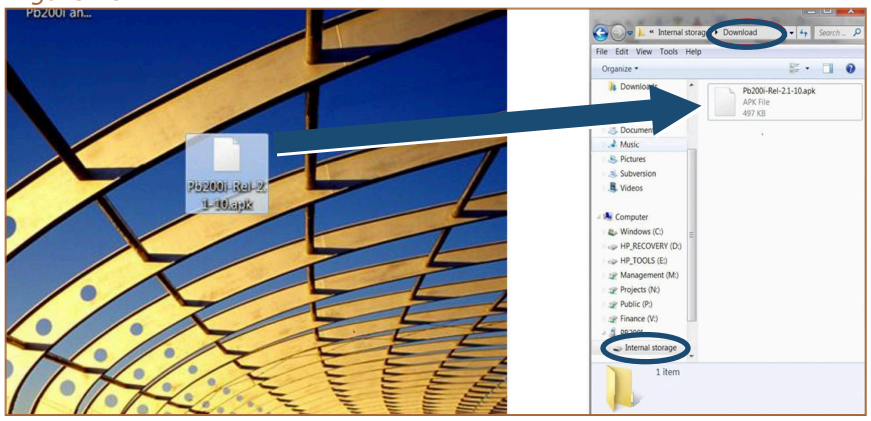
2. Double click on the “Download” folder.

Figure 201



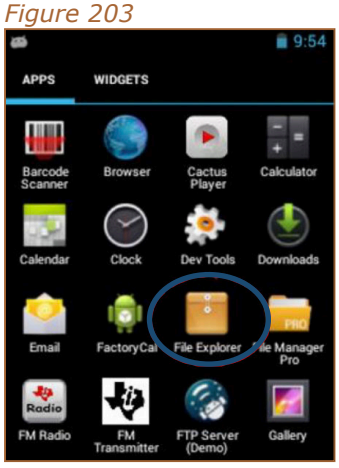
3. Drag or copy the new Pb200.apk into the folder from the location it is residing on your PC into the “Download” folder. Disconnect the USB cable.

Figure 202



4. Select the “File Explorer” app on the analyzer.

Figure 203



5. Click on the “Download” folder and click on the version of the Pb200i.apk application you wish to install.

Figure 204

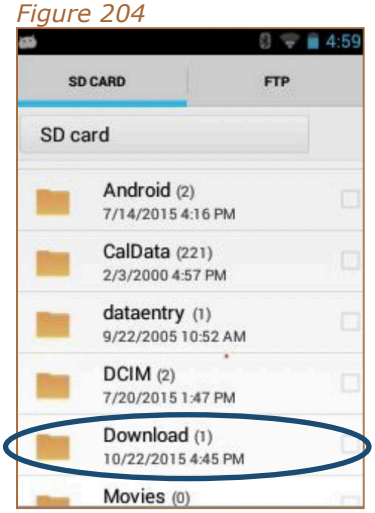


Figure 205

6. You will receive a prompt asking if you wish to update your existing application; it does not matter if you have “New” or “All” toggled, as these are view menus only (Figure 206). Select “Install” (Figure 207).

Figure 206

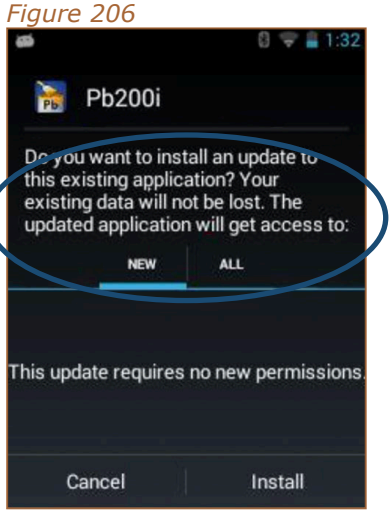
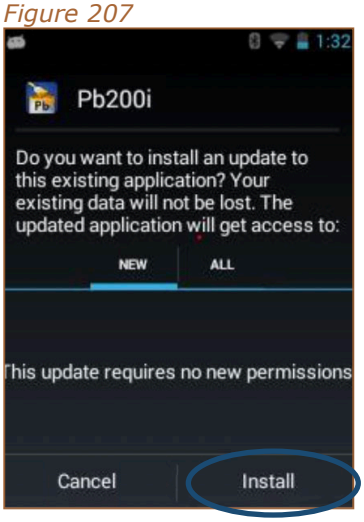
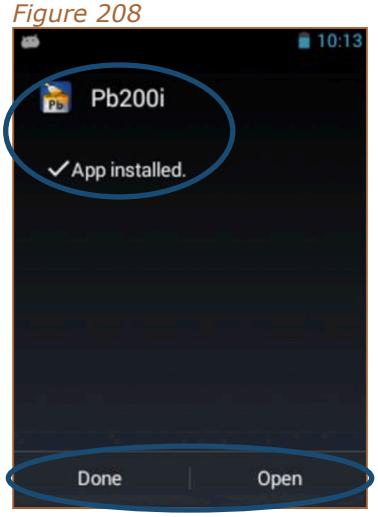


Figure 207



7. A verification will appear that the application has been successfully installed. You may select either “Done” or “Open”.

Figure 208



8. If you select “Done”: you will be taken back to the “Download” folder. You may close this folder at this time by holding down the center button; you will see the application minimized (Figure 178). Swipe to the left to close the application (Figure 179).

Figure 209

Figure 210

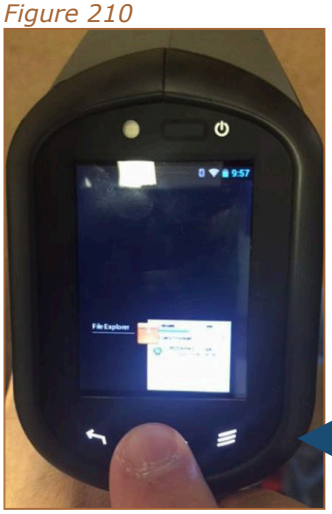
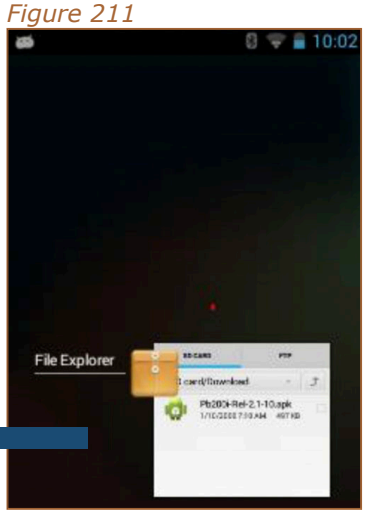


Figure 211



9. If you select “Open”: you may enter your password and log on, using the newly updated application.

Figure 212

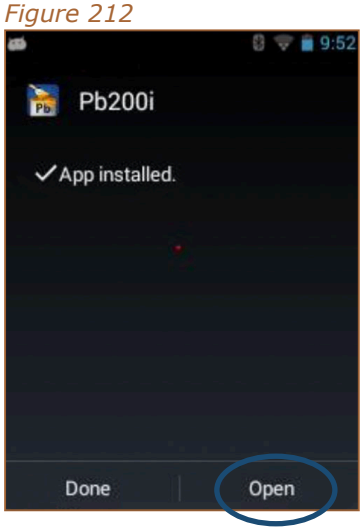
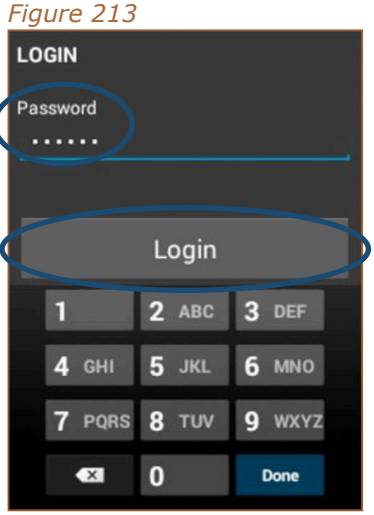


Figure 213



Creating a Widget

You may also create the Pb200i widget (large icon, Figure 182). To create the Pb200i widget, select “Widgets”, then scroll right to find the Pb200i app (Figure 183). If you do not see the icon, restart the system, and it will appear. Press and hold the app down (Figure 184, 185) and you will be taken to the home screen; center it and release it (Figure 186).

Figure 214

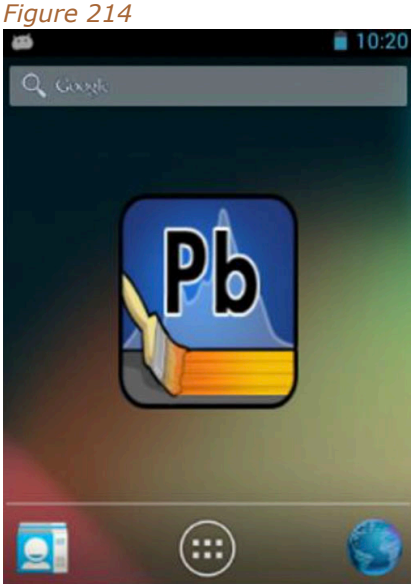


Figure 215

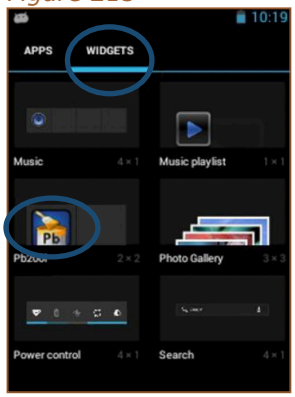


Figure 216

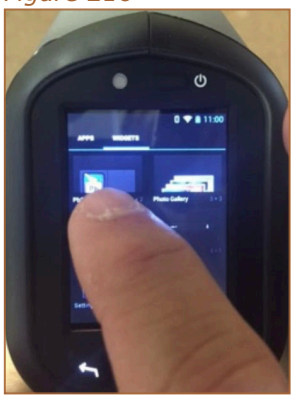


Figure 217

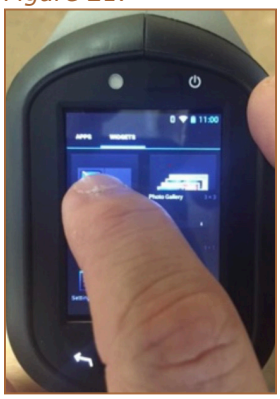
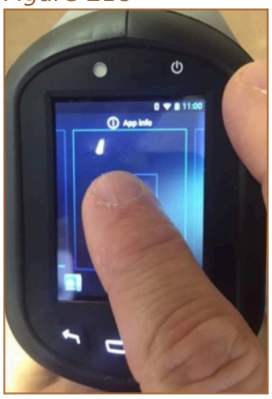


Figure 218



Uninstalling/Installing Pb200i.apk Software Updates

From time to time, you may be asked to delete the Pb200i .apk and re-install the software.

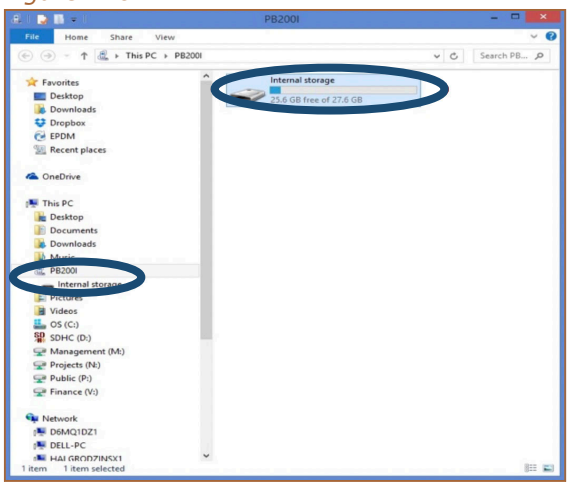
Warning: this will delete your data and settings.

The software on the Pb200i can be updated by following the procedure outlined below. Please be aware that when this update is installed, the user passwords will be removed and must be reset.

1. Power the system on and connect the instrument via USB cable to your PC. Double click on the Pb200i “Internal storage” when the icon appears.

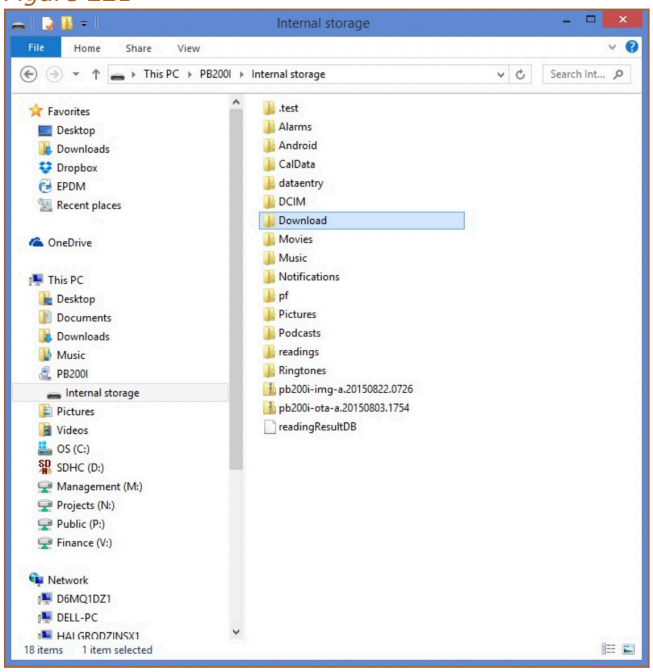
Figure 219

Figure 220



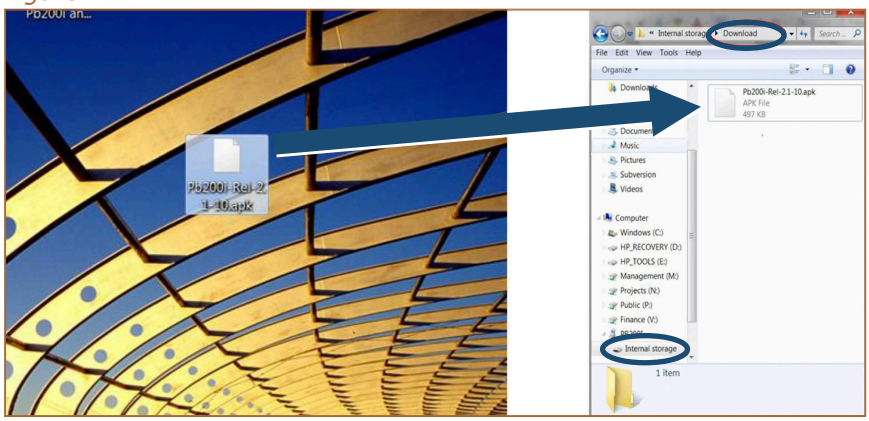
2. Double click on the “Download” folder.

Figure 221



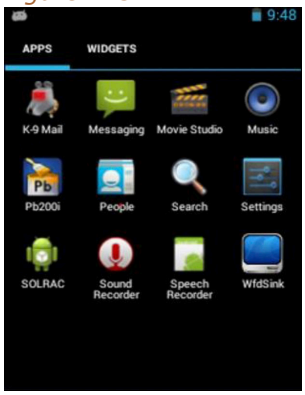
3. Drag or copy the new Pb200.apk into the folder from the location it is residing on your PC into the “Download” folder. Disconnect the USB cable.

Figure 222



4. Navigate to the Pb200i app.

Figure 223



5. Uninstall the Pb200i.apk by pressing down on the icon (Fig. 224). You will notice that the “Uninstall” location at the top of the screen will appear once you press down on the icon (Fig. 225-227). Drag the icon to the “Uninstall” bin (Fig. 225). The bin will turn red as you hover over it (Fig. 226-227). Release your finger from the LCD.

Figure 224

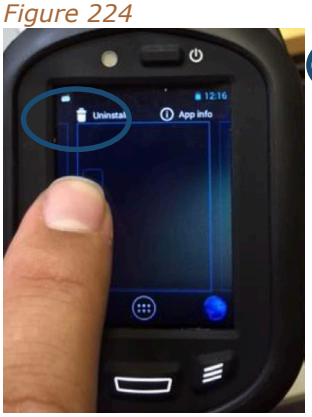


Figure 225

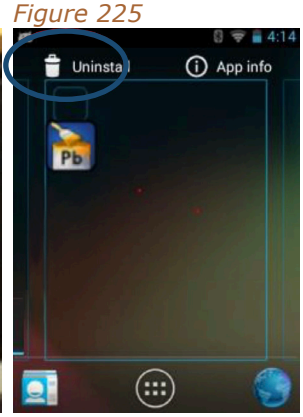


Figure 226

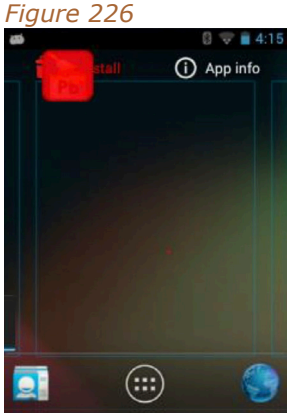
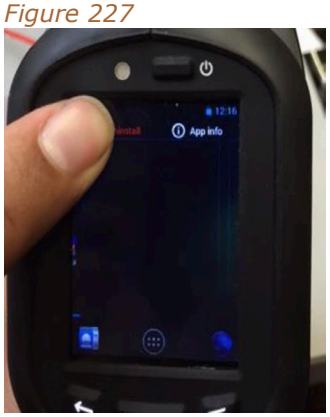
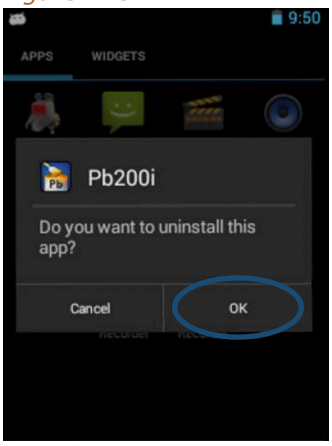


Figure 227



6. You will receive this prompt; select “OK”. The app will uninstall and not appear on your menu. Do not confuse “Uninstall” with “Remove”. “Remove” will simply remove the app from the home page.

Figure 228



7. Select the “File Explorer” app on the analyzer.

Figure 229

8. Click on the “Download” folder and click on the version of the Pb200i.apk application you wish to install.

Figure 230

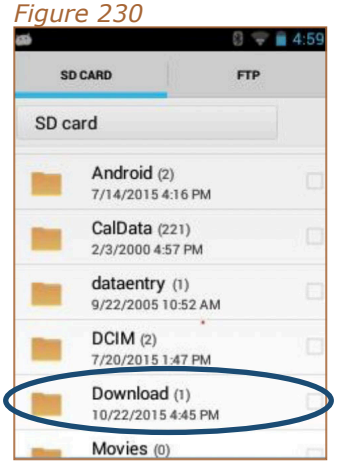


Figure 231

9. You will receive a prompt asking if you wish to install; select “Next” then select “Install”.

Figure 232

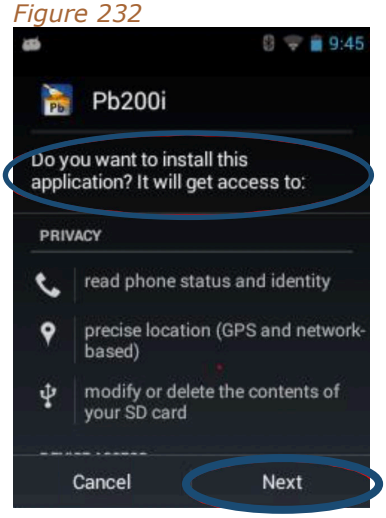
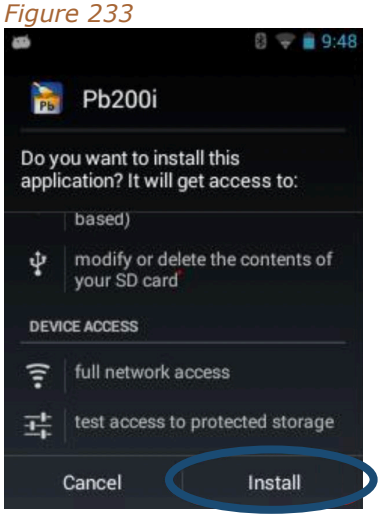
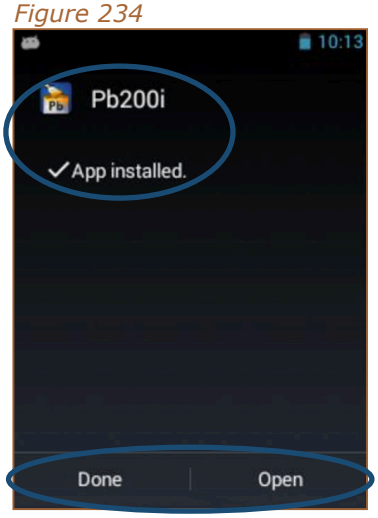


Figure 233



10. A verification will appear that the application has been successfully installed. You may select either “Done” or “Open”.

Figure 234



11. If you select “Done”: you will be taken back to the “Download” folder. You may close this folder at this time by holding down the center button; you will see the application minimized (Fig. 236). Swipe to the left to close the application (Fig. 237). Please note that if you chose “Done” at this time, you will still need to follow step 12 the first time you open the Pb200i application.

Figure 235

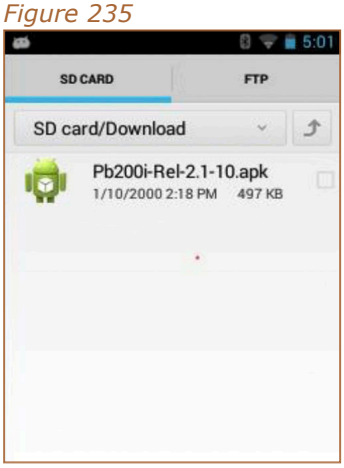


Figure 236

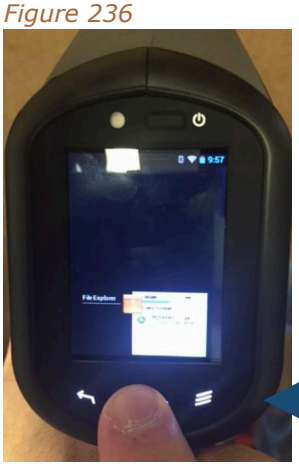
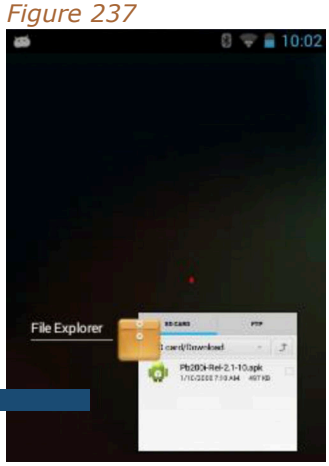


Figure 237



12. If you select “Open”: enter the default password 371945 and create a new user/password.

Figure 238

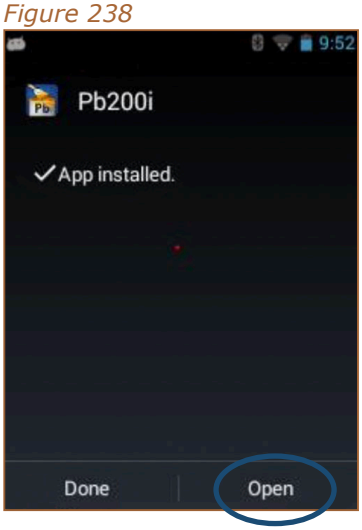


Figure 239

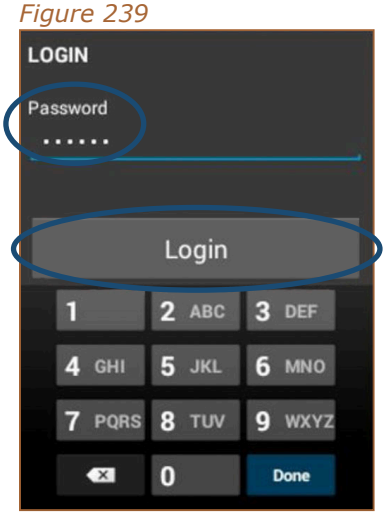
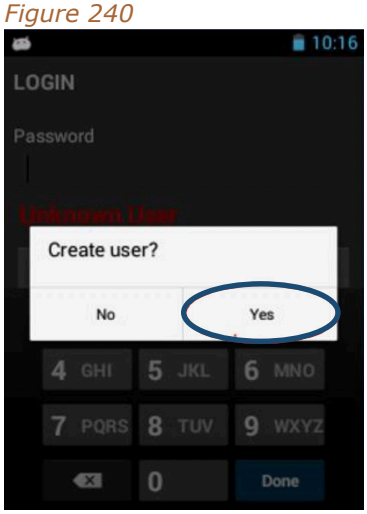


Figure 240



Radiation Safety

Every Viken Detection Pb200i Lead Analyzer is designed to be as safe as possible. As with any device that produces ionizing radiation, you should follow basic radiation protection precautions to ensure the maximum safety for you and those around you.

The Viken Detection Pb200i is approved for a 370 MB1 (10 mCi) 57Co sealed radioisotope; typically, the device is supplied to customers with a 185 MBq (5 mCi) source. The radioactive material is contained in a sealed capsule (referred to as a “sealed source capsule”). The capsule is fully contained by the shutter mechanism and cannot be accidentally (or deliberately) removed from the device without disassembling the instrument.

The sealed source capsule is located in the instrument’s snout. When the shutter is open, gamma rays and x-rays from the source are emitted in the forward direction from the front of the device.

There are two controls that need to be activated before the shutter will open. First, the proximity sensor at the front of the snout must be depressed. To do this, press the front of the instrument against the surface to be measured. Second, the trigger on the handle must be pressed. Opening the shutter starts the reading. Releasing the trigger or lifting the snout of the instrument from the sample so that the proximity sensor is not fully depressed will stop a reading in progress.

In an Action Level Mode where the measurement stops automatically, the shutter will automatically close when the reading is complete.

Caution: The proximity switch must be pressed before the trigger is pressed, or the shutter will not open. The shutter of the device will automatically close when a reading is complete, even if you continue to hold the instrument against the sample. The large majority of the instrument readings will take less than two seconds.

The Pb200i is designed so you cannot accidentally open the shutter. The instrument requires a password to operate the shutter. Be sure to release the trigger before you remove the instrument from the surface being tested. If you accidentally keep the trigger depressed when you lift the instrument, the shutter will close automatically, as the proximity switch will not be activated.

The shutter should only be opened when the instrument is placed against the sample. Do not hold the sample to be measured, or any body parts, in the path of the primary x-ray beam. When measuring a surface such as a wall or door, make sure no one is located within 1m (approximately 36”) on the direct opposite side of the surface being measured.

During testing, a strong beam of radiation (gamma-rays and x-rays) is continuously emitted through the aluminum faceplate at the front of the Pb200i. Some radiation is produced at the top, sides, and bottom of the snout of the instrument. There is also negligible radiation where your hand holds the instrument.

Warning: Always treat radiation with respect. Do not put your hand on the front end of the Pb200i while taking a measurement. Never point the Pb200i at yourself or anyone else when the shutter is open.

Caution: When testing the exterior of a window from the inside of a room, avoid standing in the path of the Pb200i’s radiation beam. The beam emits upwards from the front of the instrument.

	Typical dose rates (5 milliCurie [185 MBq] source) with the shutter closed, in milliREM/hr., are as follows:		
	5 cm	**30 cm**	**100 cm**
Left	0.75	0.03	<0.01
Right	0.48	0.025	<0.01
Top	0.25	0.025	<0.01
Bottom	0.55	0.025	<0.01
Front	1.0	0.035	<0.01
Rear	0.05	0.015	<0.01

	Typical dose rates (5 milliCurie [185 MBq] source) with the shutter open, taking a reading on wood, in milliREM/hr., are as follows:		
	5 cm	**30 cm**	**100 cm**
Left	1.3	0.045	<0.01
Right	1.7	0.06	<0.01
Top	1.9	0.055	0.015
Bottom	0.70	0.04	<0.01
Rear	0.20	0.025	<0.01

Operating Conditions & Other Safety

Please follow these operating conditions when using the Viken Detection Pb200i:

- Your organization's radiation safety officer (RSO) should set up and assign the passwords for users who are permitted to take measurements. Safety options for users can be mandated and assigned by the RSO.

To take a reading with the Pb200i, the instrument must be held against a surface. [The shutter will not open unless the proximity switch is activated. The shutter will close as soon as the Viken Detection Pb200i is no longer pressed against a surface. The shutter will close at the end of each reading.]

The shutter should be open only during a measurement.

The shutter should be open only when the instrument is in use, taking a measurement.

- Never point the Pb200i at yourself or anyone else when the shutter is open. Remember, the radiation can penetrate doors, walls, etc. No one should stand within 1m (approximately 36") of the wall opposite the measurement location.
- The Viken Detection Pb200i clearly indicates any time the shutter is open with red warning lights at the top and sides of the instrument. Always observe the status of the warning lights.
- Always transport the device in accordance with the regulations of the jurisdiction in which you are located. Always transport the device in the hard plastic case supplied with the instrument. This case can be transported in a cardboard and foam over pack for additional protection. Be sure to use all transportation labels required by the regulatory jurisdiction(s) where you are travelling. For more information consult the Viken Detection DOT training presentation.
- Only those trained and authorized to use the Pb200i should operate the device. The Viken Detection Pb200i must be under the control of an authorized user and stored in an authorized and secure location at all times.
- When removing the instrument from its storage location, it is critical to maintain a log of dates and times removed and returned, location of use, and the name of the authorized user in possession of the instrument. Include a comments section for noting any issues related to the instrument or its use.
- The holster for the instrument contains shielding for emergency situations. If you suspect a problem with the instrument, such as the shutter staying open, place the instrument firmly in its holster. This ensures safe handling and protection against inadvertent exposure to radiation.

Radiation Dosimetry

Radiation dosimetry is worn to monitor radiation levels. It should be worn when required by your regulatory jurisdiction, company safety policy, or RSO. Typically several rounds of dosimetry are used, along with exposure time and use estimates to determine whether dosimetry should be discontinued. If no dosimetry is used, a written justification must be kept on file.

Dosimetry can be obtained for companies such as:

Radiation Detection Company
3527 Snead Drive
Georgetown, TX 78626

Landauer Corporate Office
2 Science Road
Glenwood, IL 60425-1586

Dosimeters can be worn on a finger with a ring badge or on the body using a whole-body badge. Your organization should have an established dosimetry program to determine the required use and type of dosimeters. Always follow the instructions provided by the vendor when using dosimetry badges. Dosimeters should be returned to the vendor for analysis.

Dosimetry badges are changed on either a monthly or quarterly basis. The correct option depends on the dose received. If dosimetry is used, most users require a quarterly change – but this also depends on whether the user is receiving a dose from another source.

Electronic dosimeters can also be used to electronically display the dose. Electronic devices are sold by companies such as:

Canberra Industries, Inc.
800 Research Parkway
Meriden, CT 06450

Whatever method you select, be sure to maintain the proper records as mandated by your local regulatory agency. Be sure to check for the time required in your jurisdiction. Some regulators require that records are kept until the license is terminated, and then transferred to the regulatory agency.

Leak Testing

A leak test must be performed at least every 12 months on the Viken Detection Pb200i, as specified in the Registry of Radioactive Sealed Sources and Devices, Safety Evaluation of Device, No: MA-1397-D-101-B.Certain regulatory jurisdictions, especially States requiring a Specific License, may require leak tests every six months.

The leak test kit is provided by the laboratory that performs the leak test analysis. A leak test involves wiping the seams of the front of the instrument to assess whether radioactive material has leaked from the sealed source (extremely unlikely) and contaminated the outside of the instrument (Figure 111)

State radiation control programs maintain lists of approved leak test laboratories.

Two options include:

Valley Safety Services Associates
330 Old Enfield Rd.
Belchertown, MA 01007

Troxler Electronic Laboratories, Inc.
3008 Cornwallis Road
P.O. Box 12057
Research Triangle Park, NC 27709

A copy of the leak test results must be kept on file at your primary location of storage. It is also useful to keep a copy of the leak test results with the instrument, as this may be required or desired in certain transport situations. Viken Detection recommends keeping a copy of the leak test results inside the instrument transport case at all times.

It is important to maintain all leak test reports, even after expiration. Regulations vary on how long test results should be maintained, but Viken Detection recommends keeping leak test results for a minimum of two years. Be sure to check your regulations to ensure compliance.

If the leak test expires on an instrument, the device must be taken out of use and placed in its secure storage location. The instrument must be clearly marked as unusable until a valid leak test is conducted. The instrument must have a valid leak test for transportation.

Conducting the Leak Test

Following the instructions of the leak test kit, wipe the areas shown in Fig. 241.

Figure 241

LEAK TEST WIPE LOCATIONS ON THE Pb200i

Emergency Procedures

CAUTION: This page contains important information that should be available to the Pb200i user AT ALL TIMES.

Lost or Stolen Instrument
If this instrument is lost or stolen, notify your Radiation Safety Officer (RSO) or the equivalent responsible individual at your organization. The RSO must notify the local radiation regulatory authority and the local police. In addition, please notify Viken Detection of the loss.

Damaged Instrument
Minor damage:

If the instrument is intact but the case is cracked, the shutter mechanism has failed, or the warning lights stay lit when the shutter should be closed, do the following:

1. Place the instrument securely in its protective shielded holster. This should eliminate any external hazard from radiation.
2. Place the instrument and holster securely in the instrument's carrying case.
3. Notify your organization's RSO.
4. Contact Viken Detection for help and instructions.

Major damage:

If the instrument is not intact (i.e., the snout of the instrument is broken open, crushed, melted, etc.), do the following:

1. Do not touch or move the instrument.
2. Establish a 10' (2m) control area around the damaged instrument.
3. Do not leave the area unattended.
4. Approach the instrument only with a radiation survey meter capable of measuring in the millirem range. Make sure you have proper training to perform this operation.
5. Contact your organization's RSO or equivalent individual.
6. Contact hazardous materials response operations in your area for assistance, if required.
7. Regulations vary by state, each branch of the military, and on property under exclusive federal jurisdiction.
8. Contact the local radiation regulatory authority and the local police.
9. Contact Viken Detection immediately for help and instructions.
10. Conduct a contamination survey in the event of major damage.

Caution: A broken instrument does not necessarily indicate radioactive contamination from the event. While there may be radiation emitting from the instrument, the radioactive material may still be sealed in the source capsule.

Emergency Numbers

Please fill out the following fields in case of emergency:

Regulatory authority _____

Your organization's RSO _____

Additional company contact(s) _____

Storage location _____

City police _____

State police _____

Fire department _____

Viken Detection emergency contact: Jim Blute 978-337-4517 (call or message any time)

You should also know the contact information for the police and fire departments where you are using the instrument.

Police _____

Fire _____

Other contacts:

_____ _____

_____ _____

Your organization contact information (in case the Pb200i is lost and somebody finds it and is trying to return it to you): _____

_____

Caution: These contacts should be kept on the operator's person and with the instrument.
If you encounter any issues or have questions related to the safe operation of the device, call the Viken Detection Radiation Safety Officer, Jim Blute, 1-978-337-4517 or email: jblute@vikendetection.com.

Warranty

Seller warrants that the Products will operate or perform substantially in conformance with Seller's published specifications and be free from defects in material and workmanship, when subjected to normal, proper and intended usage by properly trained personnel, for the period of time set forth in the product documentation, published specifications or package inserts. If a period of time is not specified in Seller's product documentation, published specifications or package inserts, the warranty period shall be one (1) year from the date of shipment to Buyer in the country of purchase. Any part replaced on an instrument, covered by the original factory warranty, will be warranted for the remainder of the instrument's factory warranty. Seller agrees during the Warranty Period, to repair or replace, at Seller's option, defective Products so as to cause the same to operate in substantial conformance with said published specifications; provided that Buyer shall (a) promptly notify Seller in writing upon the discovery of any defect, which notice shall include the product model and serial number (if applicable) and details of the warranty claim; and (b) after Seller's review, Seller will provide Buyer with service data and/or a Return Material Authorization ("RMA"), which may include biohazard or other Radiation safety decontamination procedures and other product-specific handling instructions, then, if applicable, Buyer may return the defective Products to Seller with all costs prepaid by Buyer. Replacement parts may be new or refurbished, at the election of Seller, the warranty of these parts expire with the instrument warranty. All replaced parts shall become the property of Seller. Shipment to Buyer of repaired or replacement Products shall be made in accordance with the Delivery provisions of the Seller's Terms and Conditions of Sale. Accessories and Consumables are expressly excluded from this warranty.

Notwithstanding the foregoing, Products supplied by Seller that are obtained by Seller from an original manufacturer or third party supplier are not warranted by Seller, but Seller agrees to assign to Buyer any warranty rights in such Product that Seller may have from the original manufacturer or third party supplier, to the extent such assignment is allowed by such original manufacturer or third party supplier.

In no event shall Seller have any obligation to make repairs, replacements or corrections required, in whole or in part, as the result of (i) normal wear and tear, (ii) accident, disaster or event of force majeure, (iii) misuse, fault or negligence of or by Buyer, (iv) use of the Products in a manner for which they were not designed, (v) causes external to the Products such as, but not limited to, power failure or electrical power surges, (vi) improper storage and handling of the Products, (vii) use of the Products in combination with equipment or software not supplied by Seller, (viii) Moderately heavy or excessive impact against any object, including but not limited to floors, walls, furniture, sample or other objects, (ix) Excessive water, moisture or condensing humidity that breaches the instrument seals, (x) Excessive or extreme ambient or direct temperature or (xi) Heavy vibrations directly to the instrument for extended periods of time. If Seller determines that Products for which Buyer has requested warranty services are not covered by the warranty hereunder, Buyer shall pay or reimburse Seller for all costs of investigating and responding to such request at Seller's then prevailing time and materials rates. If Seller provides repair services or replacement parts that are not covered by this warranty, Buyer shall pay Seller therefore at Seller's then prevailing time and materials rates.

ANY INSTALLATION, MAINTENANCE, REPAIR, SERVICE, RELOCATION OR ALTERATION TO OR OF, OR OTHER TAMPERING WITH, THE PRODUCTS PERFORMED BY ANY PERSON OR ENTITY OTHER THAN SELLER WITHOUT SELLER'S PRIOR WRITTEN APPROVAL, OR ANY USE OF REPLACEMENT PARTS NOT SUPPLIED BY SELLER, SHALL IMMEDIATELY VOID AND CANCEL ALL WARRANTIES WITH RESPECT TO THE AFFECTED PRODUCTS.

THE OBLIGATIONS CREATED BY THIS WARRANTY STATEMENT TO REPAIR OR REPLACE A DEFECTIVE PRODUCT SHALL BE THE SOLE REMEDY OF BUYER IN THE EVENT OF A DEFECTIVE PRODUCT. EXCEPT AS EXPRESSLY PROVIDED IN THIS WARRANTY STATEMENT, SELLER DISCLAIMS ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, ORAL OR WRITTEN, WITH RESPECT TO THE PRODUCTS AND INCLUDING WITHOUT LIMITATION ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. SELLER DOES NOT WARRANT THAT THE PRODUCTS ARE ERROR-FREE OR WILL ACCOMPLISH ANY PARTICULAR RESULT.

Specific warranties of common accessories:

- Battery charger and battery packs are warrantied for twelve (12) months
- Standard instrument accessories are warrantied for twelve (12) months
- Parts or spare parts sold, installed or supplied outside of the product warranty period are warrantied for twelve (6) months

Appendix A

Permissions and Settings

The Permissions and Settings on the Pbi200 are used to allow users the ability to use and set the functions on the instrument.

Permissions are given to the User by an Administrator or a Supervisor for various functions. These functions are those that control certain radiation safety features (such as shutter operation) or the handling of data (such as the ability to erase data).

Settings on the Pb200i can be set by the User, Supervisor, or Administrator. Certain settings require permission from the Administrator or the Supervisor to change.

Use of Permissions and Settings

- The permissions are controlled by the Administrator and/or the Supervisor. The is accomplished through the Password system.
- In the most basic configuration, the Administrator (set up in the initial use of the instrument) would configure a User and set the Permissions for that User. The Administrator can also set up the initial settings on the instrument. This allows each user to have the initial settings be consistent with all users. Unless restricted by permissions set by the Administrator, the User can change the settings.
- A less basic configuration allows the Administrator to add a Supervisor level above the User. The Supervisor can set permissions for the User. In this configuration, the Supervisor permissions override the Administrator permissions.
- The User cannot change permissions. The User can change settings that are not restricted by the permissions given. The exception to this is that the User can always change a setting to a more restrictive option for the setting. For example, if a User is not given permission to delete data then they cannot change that setting. If, however, they are given permission to delete data, they can change the setting so that they cannot delete data (and change it back from there).

All permissions and settings are saved and continue with the next use of the instrument, for that User.