

# Olympus Delta pXRF Quick Start Guide

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## Introduction

The Handheld XRF gun makes contact elemental measurements on section halves and prepared powder mounts. The XRF emits a primary X-Ray beam that bombards the material and excites electrons. The movement of electrons emits secondary fluorescent radiation that is measured in the gun. These energy patterns are characteristic to elements and determine what is present.

The Handheld XRF can be run either independently or through an attached pc laptop. The Innov-x-Delta Advanced PC Software is available on both the gun and computer, and functions the exact same. However, layout and presentation of the software is different.

## Point of Interest

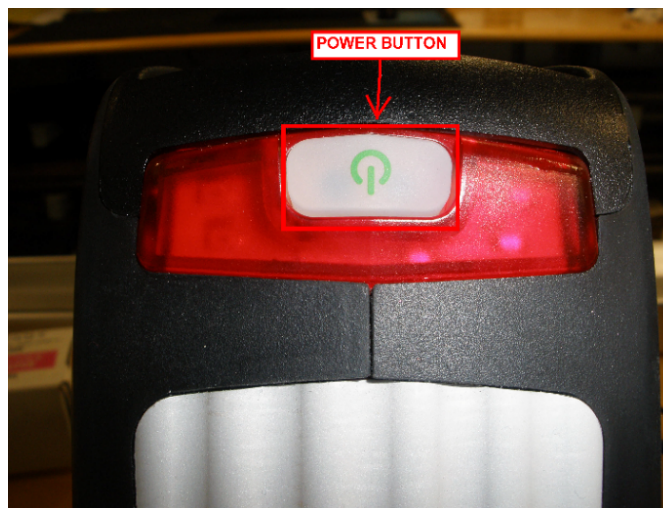
**The Handheld XRF can run independently. Meaning that measurements can be made using either the gun or the attached computer system. The two systems are independent, and do not communicate to each other when connected. Thus it is important to stay consistent in method choice. Either you use the gun or the computer system, without switching back and forth.**

The reason being is that the gun writes one file per day containing all the measurements taken in that 24-hour period. For example: if measurements are taken using the computer system, the gun is then detached, and measurements are then taken using the gun, if you re-attach the gun to the computer system (to export data) you will only be able to retrieve the data attached to the gun. Measurements taken earlier that day while attached to the computer system will have been overwritten and lost.

**Caution:** if using the computer system method do not un-plug the gun, turn off or exit the program, or turn off the gun prior to exporting data. If you do so, there is a possibility you will lose data.

## Getting Started

Turn on the pXRF by pressing the power button located on top of the machine (*Figure 1*). When the button turns **green** the pXRF is powered on.



*Figure 1. Power button to pXRF*

Connect the Gun to the computer through the Micro USB cable labeled **AC gun power**.

Click on the "Innov-x Delta Advanced PC Software" icon on the desktop (Figure 2).



Figure 2. XRF Software Icon

You will see this initial startup window (Figure 3). You may need to click on **Close Device App** Button first. Then, click on the **Import Data Only** Button. This allows data storage on the computer. **Do NOT click 'Import to PC' as this removes all configurations from the gun.**

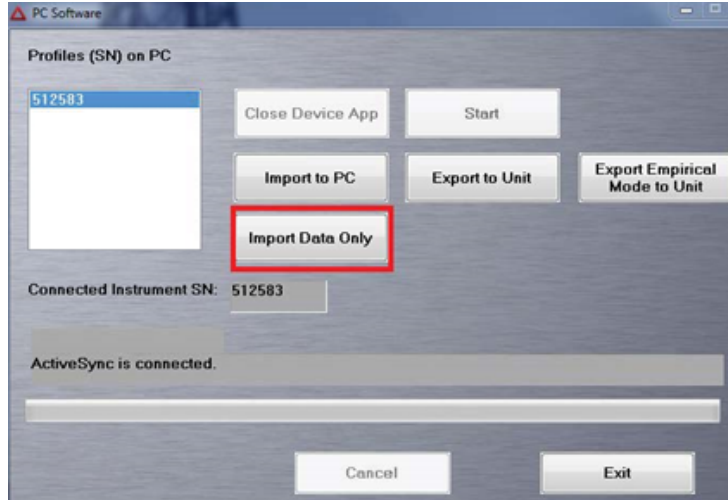


Figure 3. Initial Startup Window. The 'Import Data Only' Button is outlined in red.

Then Click the **Start** button. This brings up a login screen where you will enter the following information and then click **Login** (Figure 4):

**User Name: innovx**  
**Password: 1776**

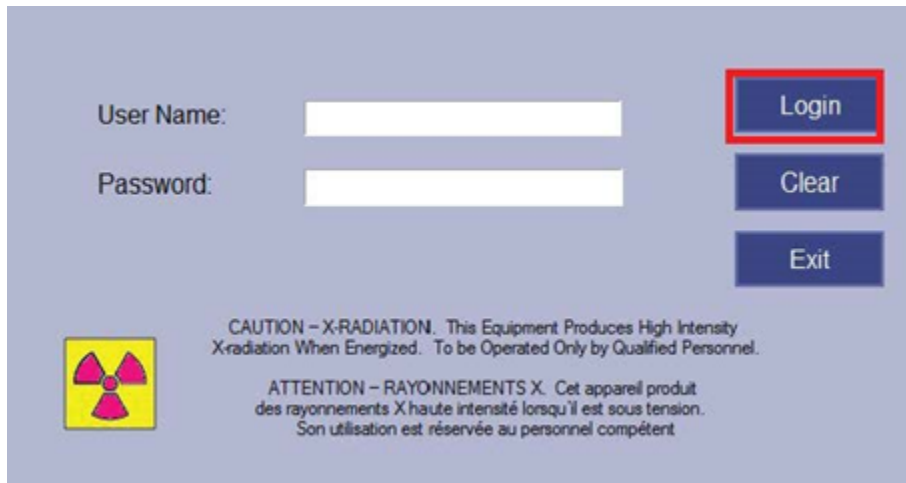


Figure 4. The Login Screen. Login Button is outlined in red

This takes you into the main software page.

## Setting Parameters

You are now in the main measurement window. First set the Mode to measure in. The gun has a Geochemical and Soil Mode. Each mode has different scanning parameters which preferentially pick up some elements better than others. The gun will remember the chosen mode and does not have to be chosen each time a new measurement is taken or the Gun is turned off/on.

**Choosing a Mode (Soil or Geochem)**

- To access the Modes click on **Mode** at the top of the screen (Figure 5). This directs you to the 'Mode' Screen and in the left panel you can choose between the **Geochemistry** and **Soil** modes. Click on each to see the features of each Mode and select the one best for your analysis.

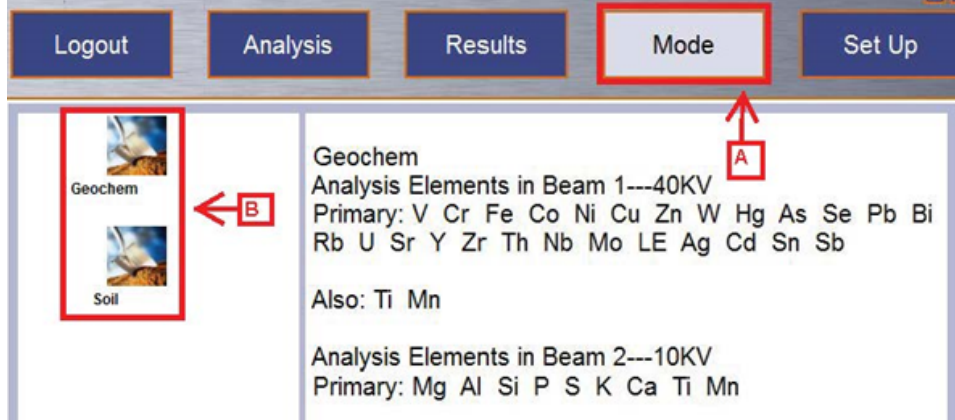


Figure 5. Mode Window. A. Mode Button to access the screen. B. Geochemistry and Soil Modes (on display: Geochemistry mode)

- Now that the Mode is set, establish a measuring time for each beam.

**Timing each beam**

- Each Mode has preset measuring times but these are changeable. To access the Measurement Time click on the **Setup** Button at the top of the screen (Figure 6). Then in Left Panel click on **Test Condition**. This brings up a screen that shows the Minimum and Maximum time currently set for each beam. Adjust the settings to your liking and click **Save**.
- Note: In exp. 392 the "Test End" was set to LiveTime after having some issues with exporting spectrum files. For further notes please see pXRF user guide. 16 Feb 2022

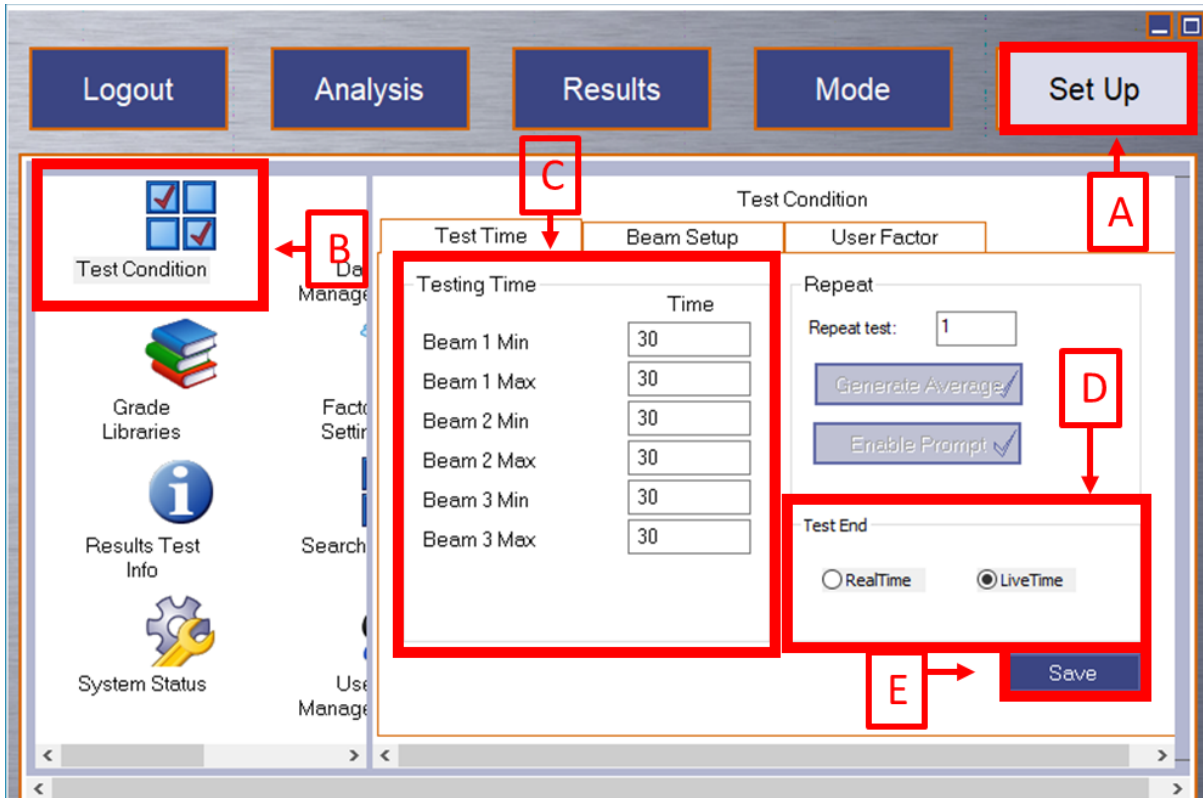


Figure 6. Test Condition Window. A. 'Setup' Button on the top right of the screen. B. 'Test Condition' Option in the Left Panel. C. Minimum and Maximum Time Settings for each beam. D. LiveTime is the preferred Test End time. E. 'Save Button

Note: If the minimum time is set to 1 and the maximum to 30, if the gun determines it has a good profile in less than 30 seconds it will stop actively measuring. If you want to ensure it measures for the full time, set the minimum and maximum time to the same number.

Ex: Beam 1 Min 30s

Beam 1 Max 30s

Beam 2 Min 30s

Beam 2 Max 30s

## Making a Measurement

When you turn on the gun for the first time you need to make a **Cal Check** before any other measurements are taken. Place the gun in its stand as shown in Figure 7.



Figure 7: Handheld XRF gun resting in stand


Then click on the **Cal Check** button on the bottom left of the screen (Figure 8). This tells the gun to measure the stainless steel disk located in the stand. This is an internal calibration which ensures the gun is measuring properly.



Figure 8. Cal Check Indications. A. Cal Check Measurement Button. B. Message to perform Cal Check. C. Disabled Start Button

This measurement is taken when the gun is turned on and every 10 hours. When a Cal Check is needed the white bar will say 'Perform a Cal Check' and the 'Start' button will gray out and be disabled until the Cal Check is completed (Figure 8). When successfully completed the white bar will say 'Cal Check completed successfully'.

## Naming a Measurement

In the Analysis Window, click  button in the upper left corner (Figure 9, arrow B). The white bar shows the current run number (arrow A).

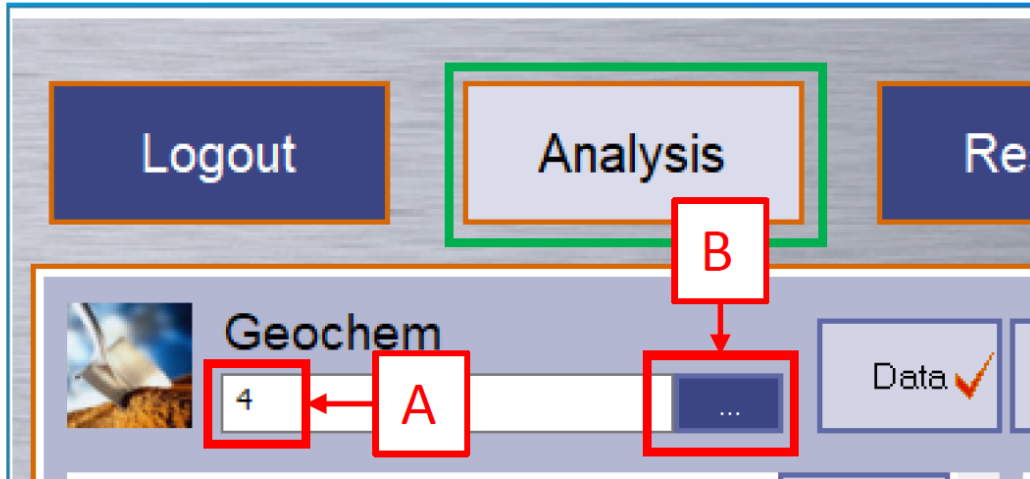


Figure 9. Analysis Window A. Current run number, B. Blue button "... " to name measurement (see Figure 10).

Now you are in the measurement naming window (Figure 10). Enter sample information here.

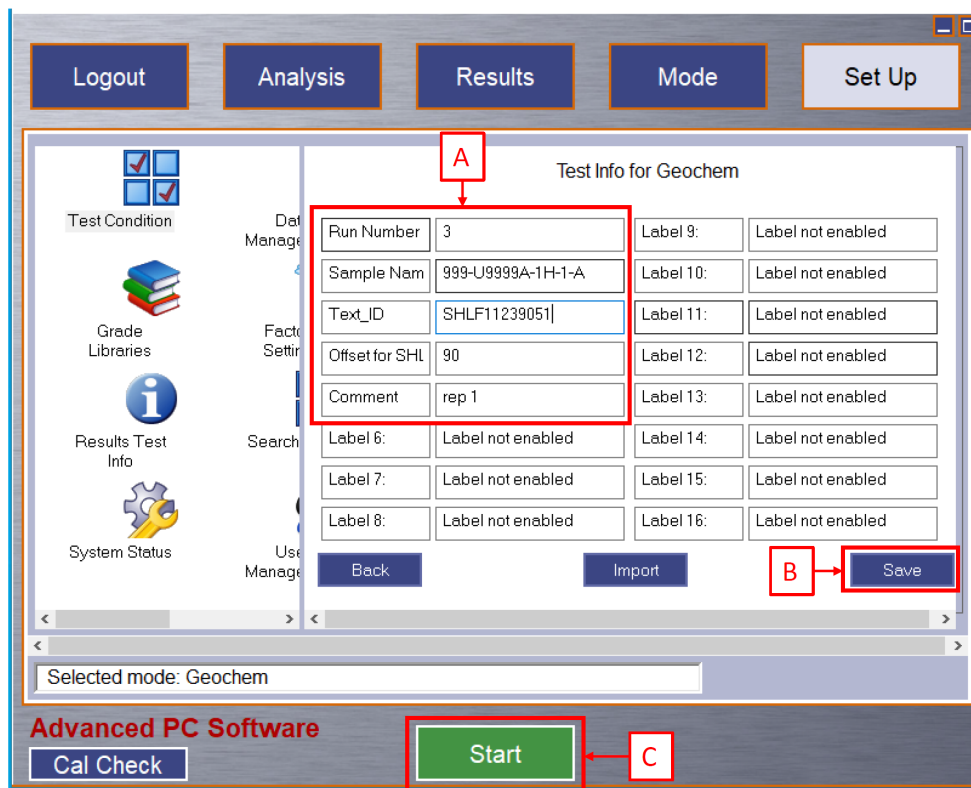


Figure 10. Test Information Window. A. Editable fields for each measurement: Run Number, Sample Name, Text\_ID, Offset for SHLF, Comment. B. Save Button. C. Start button

Editable fields are as follows: Run Number, Sample Name, Text ID, SHLF Offset, and Comment (optional field).

**Enter the run number manually:**

**Run Number:** A sequential number increased by +1 with every measurement, ex: 1, 2, 3... This number should start at 1 for the first measurement of the expedition. The run number should be unique throughout the expedition, so the use of a logsheet is highly recommended.

Use a scanner to enter the **Sample Name** and **Text ID**:

When using the scanner make sure to run the [pXRF Barcode Rules Feb 2022.pdf](#) first when changing from measuring section half to discrete or standard samples. If you do not the Barcode Rules the sample name will not scan properly and the sample name will show commas and punctuations.

**Sample Name:** Sample Name according to the sample or section half label. For a section half use the end cap label. For a powder mount scan the label on the bag.

Ex:

Section Half: 999-U9999-1H-1A

Discrete: 999-U9999A-1H-1W XRF

Standards: QAQC XRAYPXRF pXRF\_BHV0 2

**Text ID:** Unique 11 digit ID for each sample or section half located under the barcode on the label. The Text ID will populate automatically with the scanner after you enter your Sample Name with the scanner.

Ex: SHLF11239051

Enter the **Offset for SHLF** and **Comment** manually:

**Offset for SHLF:** The point where a measurement is made on a section half, measured as distance from the top of the section. This field will only have a value for section half measurements. When using the pXRF on discrete or standard samples Offset for SHLF will always be zero. **The offset must be a single number** (e.g., 100, 120.5), entering a range is not valid.

**Comment:** A brief description of the measurement. An optional field. You may enter a brief description of the measurement in the 'Comment' Field (e.g., Rep1, Rep2 for repeated measurements on the same point).

**Click 'Save' in the lower right portion of the screen.** There is no confirmation that the information has been saved. If you do not click 'Save' the information will revert back to the prior run and there will be two measurements with the same name. The measurements are parsed by time so measurements will not overwrite one another there will just be multiple measurements with the same information.

## Fill out LogSheet

Remember to manually fill out the LogSheet as you are naming your measurement. LogSheets can be downloaded here [XRF Log Sheet Template.xlsx](#)

## pXRF Instrument Set up

Now that a Cal Check has been performed and the sample information is updated you can start measuring.

Take the gun out of the stand and either attach it to the Flex Stand base (Figure 11b) and snap in the sample chamber (Figure 11a) into the nose of the gun for discrete measurements (Figure 11-1). For section half measurements (Figure 11-2) set the gun on the leaded mat (Figure 11c) and screw it into place using the two screws on the leaded mat (Figure 11d). **Keep a hand on the handle while measuring to ensure it does not fall.**

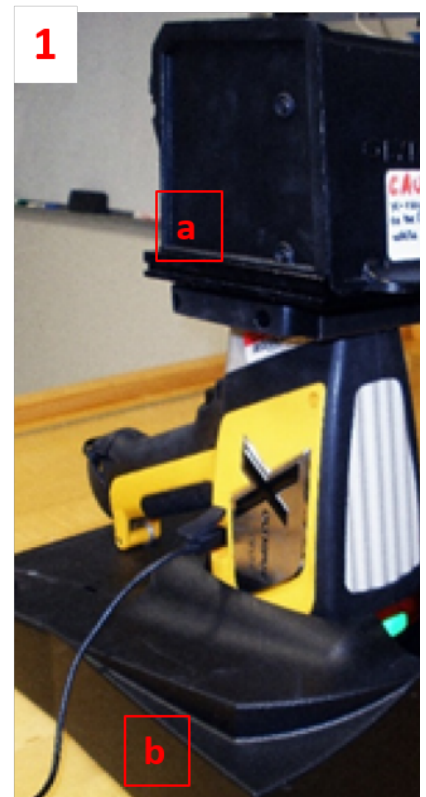


Figure 11. Sample Chamber (a) snaps into the gun of the nose for measuring discrete samples (1).  
Leaded Shielding(c) for Section Half measurements (2). The nose of the gun goes into the opening and  
is tightened with the side screws(d).

Press the **START** Button in the bottom left of the screen to start the measurement. This can be done while in the 'Test Information' window (Figure 10, arrow C) or you may click to the Analysis page and then click **Start** (Figure 12, arrow D).

Record each measurement taken on the paper log sheets provided by the technician. **Do not forget to export the files regularly.**

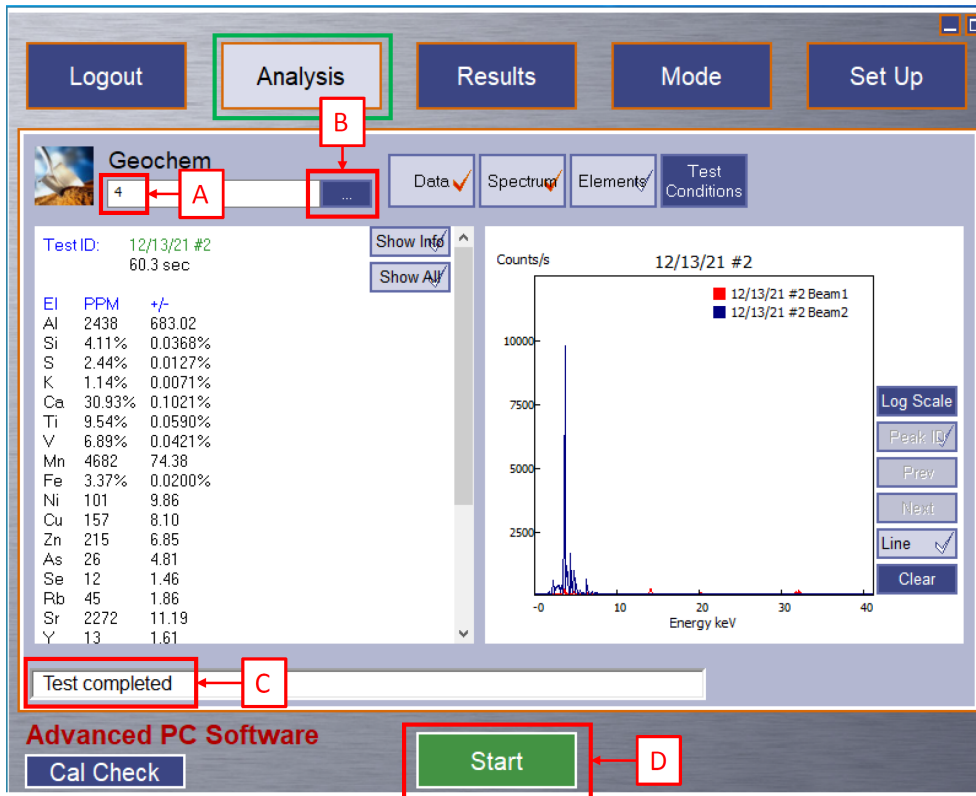


Figure 12. Analysis window: Test completed. A. Current run number, B. To enter test information (see Figure 10), C. Test completed, D. Start Button to start next measurement

## Exporting Files

The gun writes one file per day that contains all the measurements taken in that 24 hour period. Until that file is exported the measurements are not permanently attached to the file. If files have not been exported do not disconnect the gun, turn off the software, or turn off the gun otherwise those un-exported measurements will be lost.

To export a file go the **Set Up** in the top right and then click **Data Management** in the left panel (Figure 13).



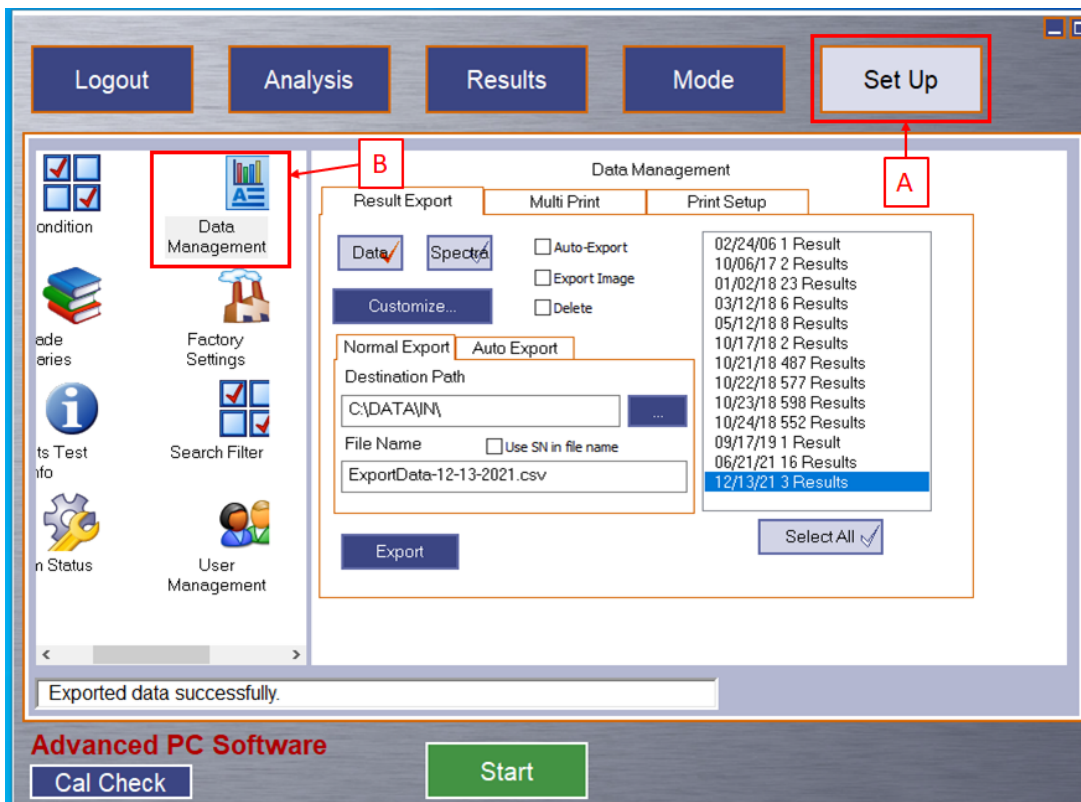


Figure 13. Data Management Window. A. Set Up Button B. Data Management Button

The Data Management Screen is now up and files can be exported. First select the date file you want to upload in the right panel (Figure 14). A **Data** and **Spectra** file need to be exported per file. The active file type has the red check highlighted in the type Box. In the Figure below, the Data file type has the red check so it is the active file-type. The Filename for each file needs to be the same and in the format of 03-17-2020.csv (remove the "Exportdata") . The file extension for the data file is ".csv" and the file extension for the spectra file is ".spm". Follow this naming convention: "MM-DD-YYYY"

Example: Data File: 03-17-2020.csv  
Spectra File: 03-17-2020.spm

*Note: If you would like a different data file-type let the technician know*

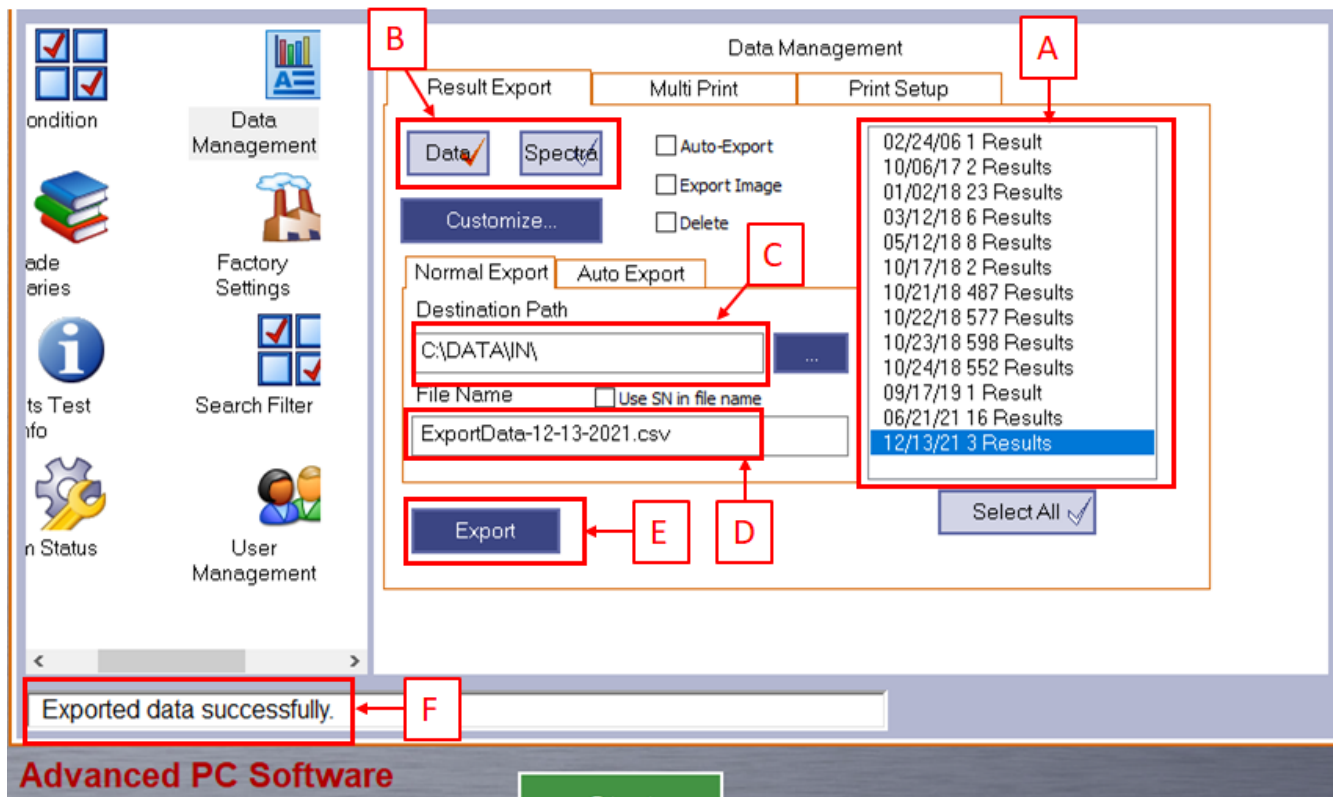


Figure 14. Export a file. A. Panel listing files available files. B. Data and Spectra File Types. C. Bar displaying the Path files save to. D. Filename. E. Export Button. F. Successful data export.

Click the **export** button for the data file and then repeat for the spectra file and click **export**. A message 'Exported data file successfully' will appear in the white bar. After the files have been exported the measurements are attached to the file. Multiple exports can be done in the same day, however the measurements will still be written to the same date file. The measurements are appended to the same date file, not overwritten.

For example: 10 measurements are exported at 11:00 on 03-15-2017. Then 5 new measurements are taken and exported at 15:00 on 03-15-2017. The 03-15-2017 file now has 15 measurements that are exported in spite of 10 measurements being exported earlier in the day.

## Credits

This document originated from Word document XRF\_QSG\_374 (see Archived Versions below for a pdf copy) that was written by N. Lawler and A. Armstrong. Credits for subsequent changes to this document are given in the page history.

## Archived Versions

[LMUG-pXRFQuickStartGuide-230220-2007-196.pdf](#)

[XRF\\_QSG\\_374.pdf](#)