LabMax-Pro PC data collection

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The Question.

With regards to data collection, one particular line of questioning often arises, "How do I save my data and how can I look at the data I have previously saved?" This application note should provide some insight as to how these functions work, and how they may aid you in the future.

Setting up data logging ahead of time.

Data logging, the easy way (*when you know ahead of time that the experiment you're going to perform needs to be saved*). To get your data saved all you need to do is select the ***Data Logging*** button 🔘 on the ***Home*** tab. Select the ***Data Logging*** button and you will see a wizard pop up (*see Fig. 1*) that will
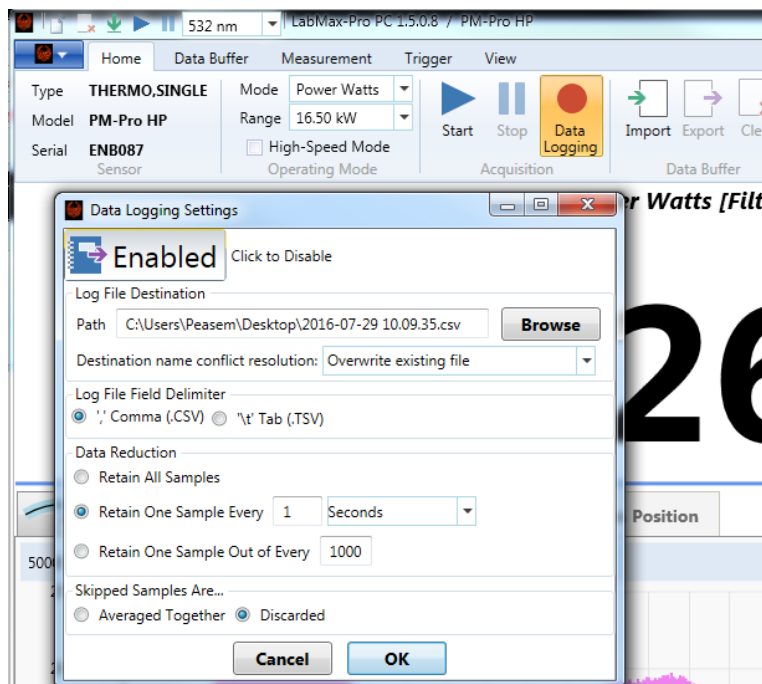

Figure 1

allow you to select attributes for the data collection that you are looking for. This includes what location you want the file stored, how you want the data to look, and how to limit the file size based on sampling of the data. It also provides some additional items like overwriting options and how to handle skipped samples.

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Exporting data after it's already collected.

If you have already captured data, and you forgot to predetermine where you wanted the data to go you can simply go to the main menu and select *the Import and Export* buttons (*Figure 2a*) or, go to the phoenix drop down in the upper left hand corner of your screen (*Figure 2b*). You will see a selection that says *Import/Export*, from here you can choose to export data to a location or import data from a previous collection.

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Importing and exporting data from the LabMax PRO.

Select the phoenix drop down in the upper left hand corner of your screen. You will see a selection that says *Import/Export*. From there you can choose to export data to a location or import data from a previous collection. (*Import Data /Export Data see Fig. 2*). Note that a window may pop up that asks you if you want to save the entire buffer or if you would like to choose a portion of the data. You can also import or export the settings. These selections allow you to save the attributes that were selected on the meter at the time that the data was collected. This can be very useful when trying to replicate tests from some time ago. You can also choose to import settings from a test and then import the data from that same test. This allows you so replicate measurement conditions from another time and place, even on another set of instruments. You can then choose to analyze the data and compare notes. There are other data analysis features in this window, such as exporting the pulse analysis report from your data collection, which provides you a report of the statistics data pane that's on the right hand side of the display.
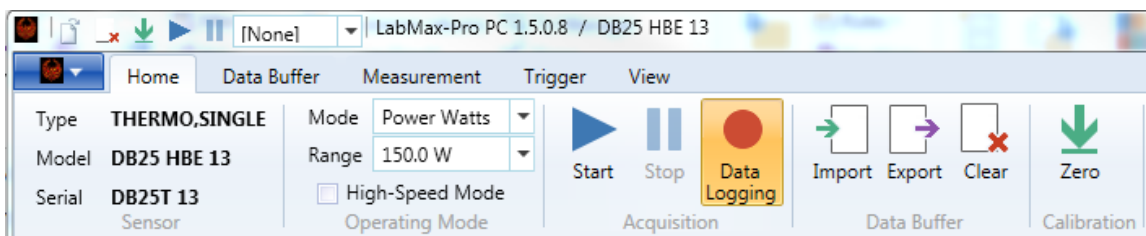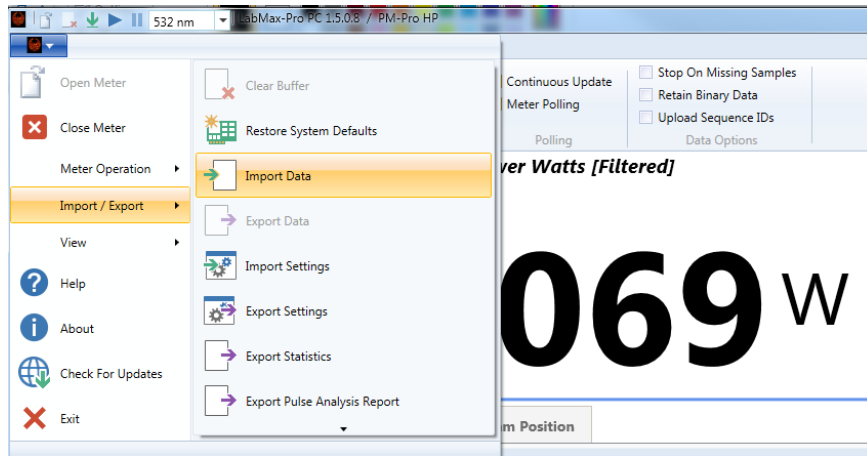

Figure 2a

Figure 2b

Reference Figure. 3, options for selecting a portion of the data in a trend or export the entire buffer. Notice the options in the window below.
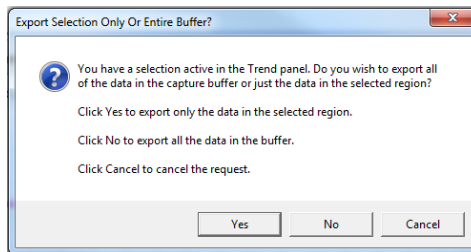

Figure 3

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Adding Sequence ID's to timestamps.

It should also be noted that, if you have a need for Sequence ID's in your time stamps for your data, that selection can be found in the *VIEW* tab. This selection is above the *Data Options* section called *Upload Sequence ID's*. These timestamps are defined as the time since pressing start in seconds, and sequence IDs are integer in microseconds. This adds the feature to the data exports. This timing is based on the internal clock of the LabMax-PRO meter.
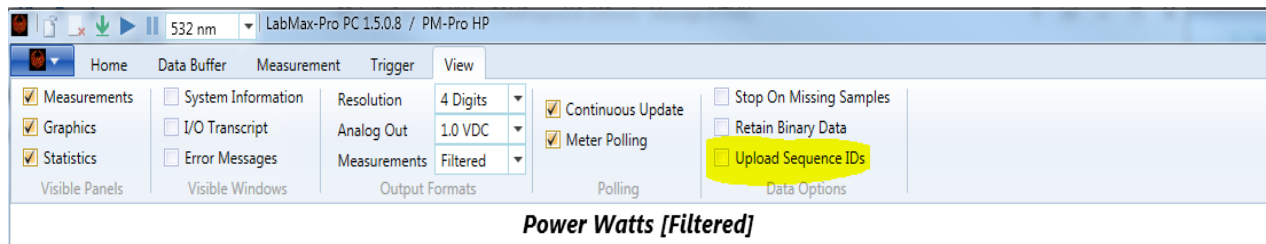

Figure 4

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LabMax-PRO data capacity.

The LabMax-Pro has a limited amount of buffer capacity. The maximum data available is 1,000,000 data points. However, when data logging you don't need a huge capture buffer since the data is being put into a log file. You can use the buffer capacity feature to specify the number of data samples that are saved during the data acquisition, the default being 50,000. The intent of the buffer is to allow you to get high resolution data while managing the size of data that you capture. The Key problem is that most PCs don't have the horsepower to handle huge data sets. Even the allowed 1M samples may be too large for some computers. Not that you can't request it, but in practice the overall system won't be able to keep up with the stream of data being sent by the SSIM. There's no flow-control between the SSIM and the PC. When the meter is running, it spews at full speed, and if the receiving end can't keep up, the data gets lost and you will see "Missing Samples." You can always stop the data at any time before the buffer is filled, or let the buffer complete its collection. With the button checked, the continuous mode buffer is continually overwritten and the meter is running continually. When collecting data in continuous mode you should be aware of the following: Snapshot is special and is not actually "continuous" even though there's a checkbox for it. The meter records a single snapshot then stops. "Snapshot Continuous" means the software is doing the following…

1. Starts the meter acquiring data, and waits for it to finish.
2. Then it uploads the data (*while the meter is stopped*), and displays a preview.
3. The PC then restarts the meter for the next snapshot.

It is a series of distinct snapshots, not actually a continuous stream of data.

If you want a continuous stream, then need to do it at high speed (or slower), but even then "continuous" collects 1 buffer's worth of the most recent data. This would be ideal except for the data logging feature. Data logging allows the user to append data to a disk file continuously, indefinitely. However, saving all samples at high speed generates enormous amounts of data. For example; data log at high speed for 60 seconds, produces 40 MB of data, and over 1.18 million data samples.

The logger should have no problem saving all samples at high speed on most modern PCs. On slower machines, the system may run into some problems trying to process all this data. The likely symptoms would be non-zero "Missing Samples" statistics, and a possible error dialog. If that happens, the only solution is to (a) configure data logging for Data Reduction so that not all of the samples are retained (*this is described in the section above called data logging ahead of time*) or (b) get a faster computer.

The continuous mode will run until you stop the data acquisition, and once you select stop only the information in the buffer is available for analysis. If the **Continuous Mode** is not selected when you hit the start button, the meter will collect the number of samples in the buffer capacity selection and then stop collecting data on its own. This data is now ready for export.
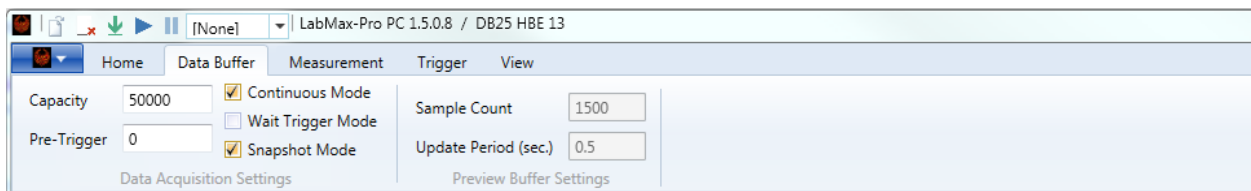

Figure 5

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Data Buffer trigger features.
The Pre-Trigger feature allows the user to collect a data sample of events before the trigger. With the example below, the user means to collect 100 data samples prior to the actual triggered event. This is useful when looking for the state of the signal being measured up to the time when the sensor captures its first data point above the trigger threshold. When **Wait Trigger Mode** is selected, no data points are saved until the first trigger event is collected.
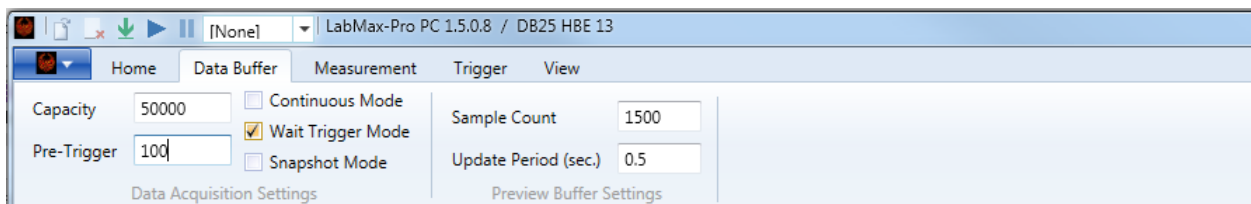

Figure 6

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