

HV Power hints and tips: PQ-Box 100 Power Quality Recorder

Issue 6c

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Break measurement section updated 29/9/2010 to reflect operation using V1.5.37
Break measurement section updated 30/6/2011 to reflect operation using V1.5.49
General update 15/8/2013

This issue details the method of breaking measurements to allow interim downloads, related behaviour of unit when auxiliary power supply is lost during recording and interpretation of overview data.

Break measurement while downloading

When WinPQ mobil software is used to download PQ-Box 100 data, and the PQ-Box 100 is recording, the prompt "Measurement is running, do you want to break" is given (Figure 1): To download or delete any files on the PQ-Box 100, the recording must be temporarily stopped.

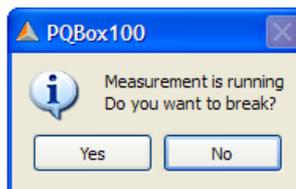


Figure 1. Break measurement prompt to allow data to be downloaded.

Select:

"No" - the PQ-Box will continue measurements, and files on the PQ-Box 100 cannot be accessed.

"Yes" - the PQ-Box 100 will temporarily stop measurement, allowing you to download the recorded file. You can also download earlier stored files and delete the current or earlier files.

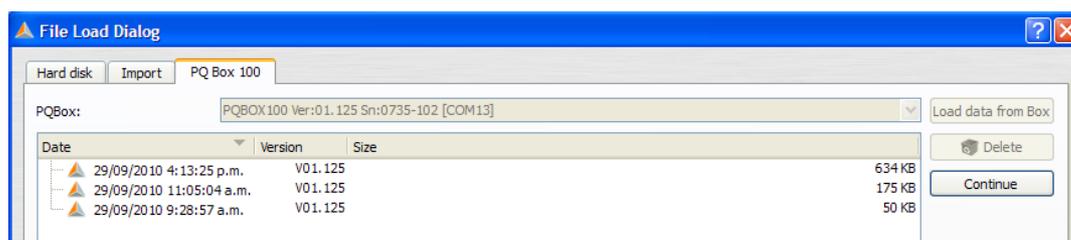


Figure 2. Break measurement "Continue" prompt.

Once you have completed the desired actions ["Load data from Box"/"Delete"], the "Continue" button (Figure 2) allows the recording to be restarted:

- If you deleted the current recording file from the PQ-Box 100, a new recording file will be started.
- If you did not delete the current recording file, the PQ-Box 100 starts recording again, **but appends the new data to the existing file.**
- *Canceling the File Load Dialog box will permanently stop the current measurement, and will not allow that measurement to be restarted. The PQ-Box 100 must measurement must be started again to start a new recording (using PQ-Box 100 Start key or "Setup/Start Measurement).*



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The facility to continuing recording can be useful, especially in two scenarios:

- 1) You are intending to record data over an extended period, such as a week, but an unexpected network fault occurs and you would like to immediately evaluate the fault data, but still continue the long term evaluation.
- 2) You start the PQ-Box 100 recording for a long term evaluation, but want to check setup to ensure connections are correct and data is being recorded correctly.

In both cases, simply download the data by breaking the measurement (do not delete the files from PQ-Box 100), then select "Continue".

NOTE that in these cases the final download will be one continuous file, however data is discarded from interrupted or incomplete measuring intervals:

- WinPQ mobil graphed permanent data will show a straight line between available data points (see Figure 4 for example).
- Exported ASCII data does not include these measuring intervals.

Generally the missing few minutes of data during an interim download period is not significant when compared to the normal length of the total recording period.

As described in Hints and Tips Issue #2, PQ-Box 100 downloaded files are stored in directory folders with name corresponding to the date/time of start of recording with sequential suffix (Unless using V1.5.37 or later, and the "comment text 1" is changed, therefore changing the directory folder name). Most often the increment of suffix occurs when same data is downloaded twice.



Figure 3. Sequential suffix of file downloaded twice.

However, in the case of interim downloads:

- If "comment text 1" has not been entered, a second or subsequent download of a continued recording, will overwrite the data in the existing directory
- If "comment text 1" has been entered, this will rename the default folder name. Any subsequent download of the continued recording will download to a new default direction (based on date/time of first start of recording)

NOTE that the PQ-Box 100 LCD display shows length of recording time, not the total elapsed time since initial starting. For example if the unit was started 24 hours ago, but measurement was interrupted for 5 minutes to download, then displayed elapsed time would show 23 hours 55 minutes. This behaviour also applies if PQ-Box 100 stops due to removal of auxiliary supply.

Loss of auxiliary power while recording

As described in Hints and Tips Issue #4, if auxiliary power is lost to the PQ-Box 100 during recording, the unit will shut down 20 seconds later, and restart when the power is reapplied, continuing measurement in a continuous file (in the same manner as above).

Determining an occurrence of interrupted records

The WinPQ mobil “Overview data” window can be used to determine if the PQ-Box 100 has had power removed during recording, or measurement has been broken to allow intermediate download. In these cases the Permanent Record trace (in the Overview data window) will be missing some of the smaller ‘tick’ markers used to indicate the end of each measuring interval (refer red circles Figure 4 to Figure 6).

Additionally the reported Number of Intervals may be used to determine if measurement has been broken. Compare the number of Intervals to the Duration/Interval.

Exercise some caution, as the main Permanent Record graph (Figure 4) simply shows a straight line connecting data points between measurements. When recording is interrupted, data, including max/min values, is discarded from that measuring interval, until the first full interval after recording restarts.

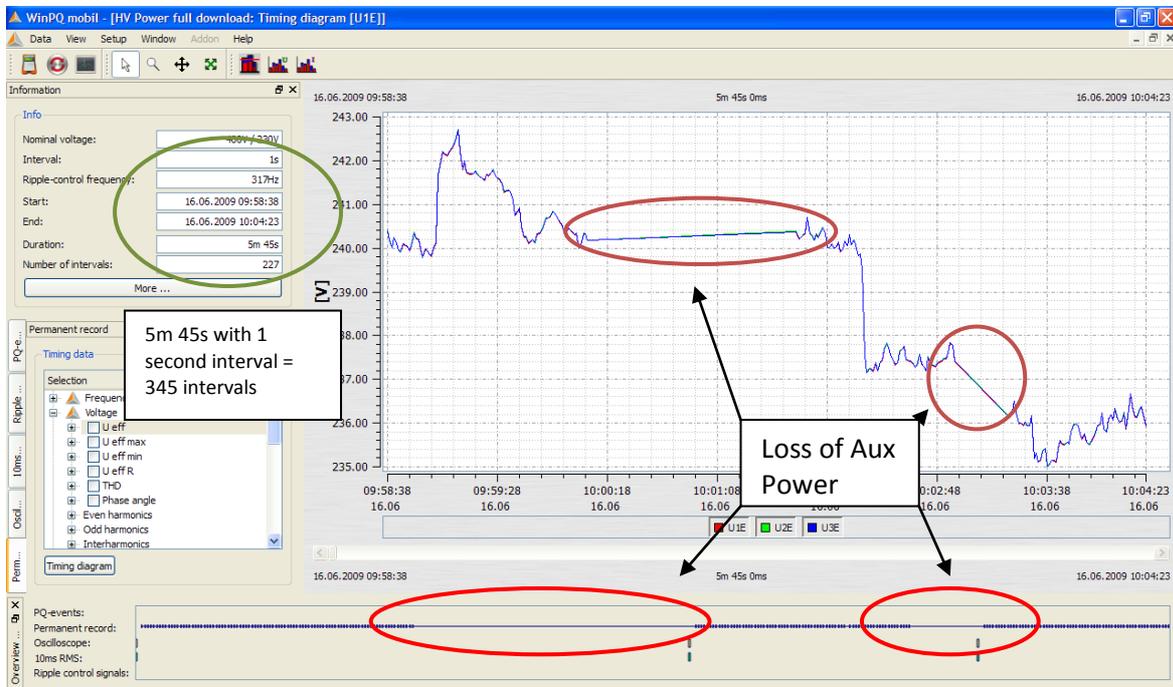


Figure 4. Loss of Aux power.



Figure 5. Loss of Aux power, additional example.



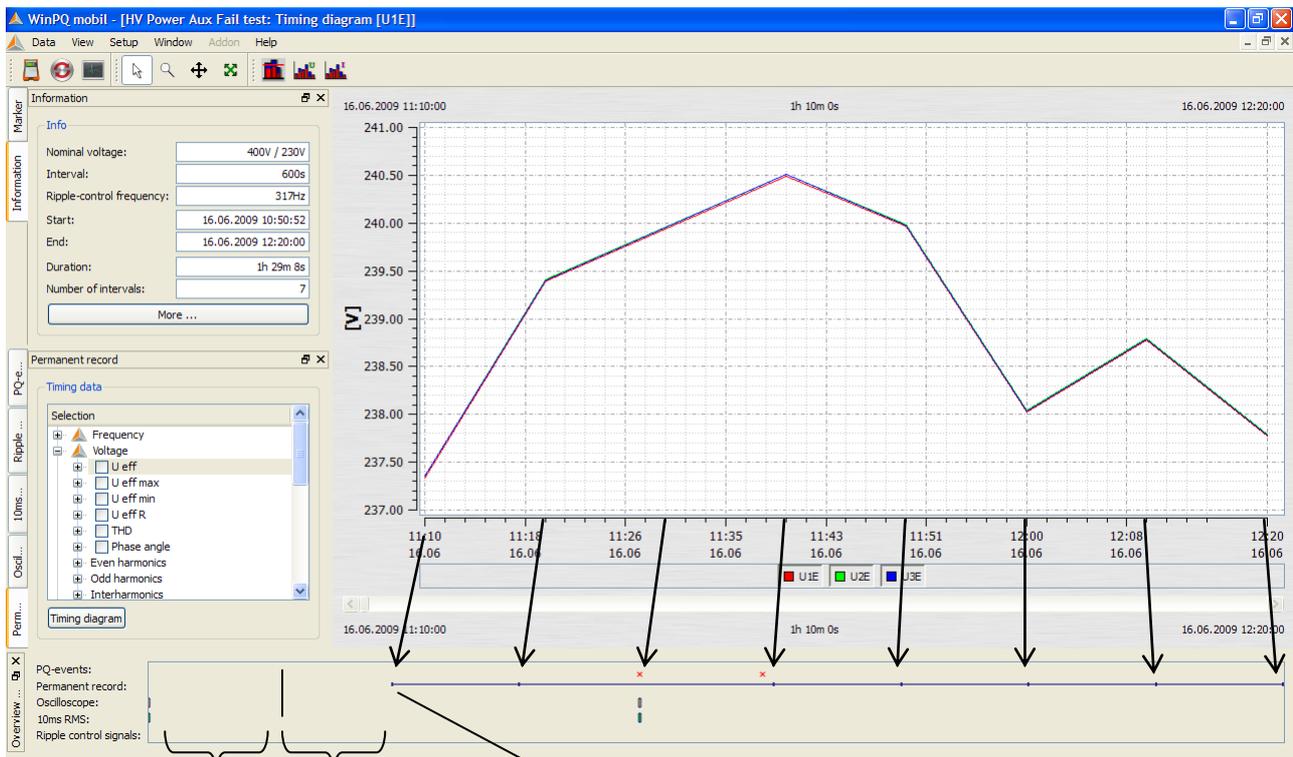
Figure 6. Loss of Aux power, additional example.

In Figure 6, the occurrence of loss of auxiliary power is less obvious, as only one permanent record end of interval marker is missing (in red circled area). The green circled area is described in the next section.

Start of measuring interval

As described in Hints and Tips Issue #1, the pressing of the start button does not define the start of the permanent record measuring interval. The measuring interval starts at the next whole multiple of the measuring interval from 00:00. For example, in Figure 7 the PQ-Box 100 was set with 600 second measuring interval, and started at 10:50:52am. Therefore the first measuring interval starts at 11:00:00 and ends at 11:10:00 hence first graphed point is 11:10:00.

Note that triggered events (e.g. oscillograph or 10ms RMS recordings) will be captured during the first incomplete and first full interval.



Representation of incomplete interval

Representation of first complete interval

Marker representing end of first interval

Figure 7. Overview data with event occurring in first incomplete interval.

In Figure 7, the Overview data, Permanent record region shows a clear area to left to represent first incomplete interval and first interval. This is to allow a triggered event to be represented at the appropriate time (an Oscilloscope and 10ms RMS event that occurred at start-up). Note that the representation of the (first) incomplete interval size is not proportional to its duration (the size shown would have been the same if the incomplete interval had been 1 or 9 minutes).

In Figure 8, the Overview data is simplified as it does not show first incomplete interval or first interval as no triggered events occurred during this period.



Figure 8. Start-up incomplete interval data is not represented if events do not occur in this time.

End of measuring interval

The PQ-Box 100 is never precisely stopped at the exact end of a measuring interval, and when stopped the permanent recorded data for the last incomplete interval is discarded.

However, should triggered events occur during the last incomplete measuring interval, they will be retained, and Overview data will reflect this (Figure 9).

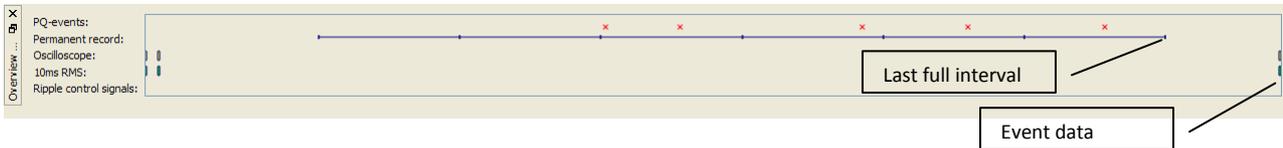


Figure 9. Overview data showing event data during last incomplete interval.

General Recommendations

As permanent recording data is not obtained during first incomplete and last incomplete interval, and time stamps of max/min values for first complete interval are not recorded, it is recommended that for short duration measurements, that the measuring interval be set sufficiently small, so that at least 10 intervals occur during the intended measurement period.

This document was written referencing features of PQ-Box 100 firmware Boot 1.100, MCU 1.112, DSP 1.216 and PC software WinPQ mobil 1.4.29. Sections were update with regard to V1.5.37. Features and functionality may differ with other versions.