

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

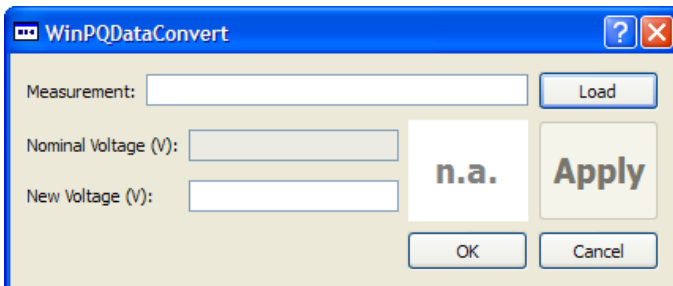
Issue 5a

May 1<sup>st</sup> 2009

Dcon note added (30/6/2011)

**WinPQ Dcon - DataConvert**

With release of PC software WinPQ mobil, Version 1.426 a separate utility program “WinPQ Dcon.exe” is included in the program root directory. This program does not automatically appear on desktop or start menu, you must navigate to the WinPQ mobil installation directory to find this, and create shortcuts or add to menu manually if required.



WinPQ Dcon screen.

\* Prior to 2010 (firmware MCU 1.119/DSP 1.220) the EN standards defined voltage harmonic measurement relative to the set nominal voltage. From this point on, harmonic voltage measurements are relative to fundamental voltage, and therefore “Nominal Voltage” setting no longer influences harmonic results.

WinPQ Data Convert provides a small utility to allow the correction of “Nominal Voltage” settings to be made on recorder data, rescaling the voltage harmonic information. That is, if the PQ-Box 100 data was recorded with an incorrect nominal voltage setting, this utility allows the downloaded permanent recorded harmonic voltage data to be rescaled, thus also correcting the EN 50160 analysis results.

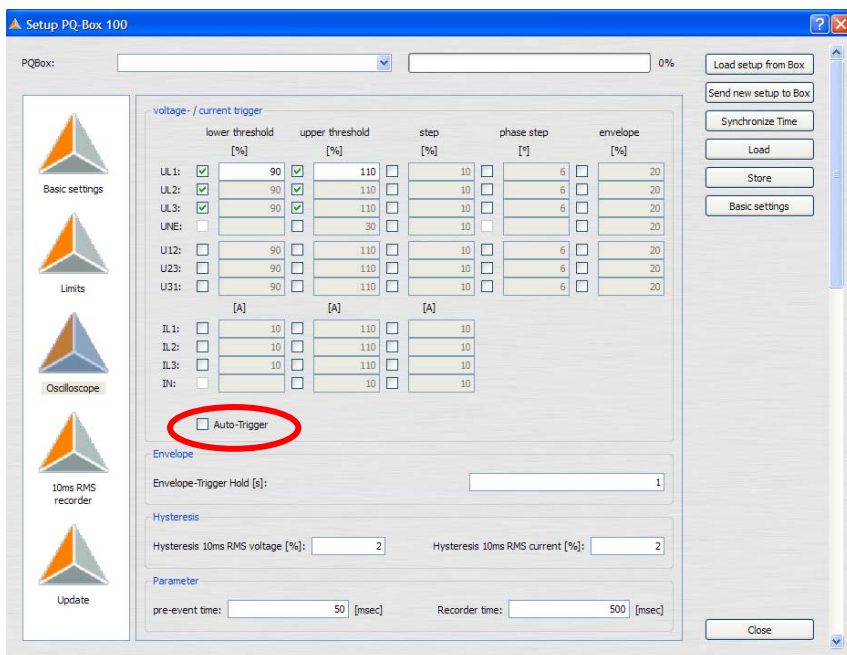
Effect of incorrect nominal voltage setting	Effect of using WinPQ Data Convert
<ul style="list-style-type: none"> <li>PQ-Events trigger incorrectly</li> </ul>	<ul style="list-style-type: none"> <li>✗ WinPQ Data Convert does not correct PQ-Event data</li> </ul>
<ul style="list-style-type: none"> <li>Oscilloscope and RMS events trigger incorrectly</li> </ul>	<ul style="list-style-type: none"> <li>✗ WinPQ Data Convert does not correct triggered data</li> </ul>
<ul style="list-style-type: none"> <li>Ripple Control events trigger incorrectly</li> </ul>	<ul style="list-style-type: none"> <li>✗ WinPQ Data Convert does not correct triggered data</li> </ul>
<ul style="list-style-type: none"> <li>Permanent recording, Individual voltage harmonic distortion levels (odd, even and interharmonics) is scaled incorrectly</li> </ul>	<ul style="list-style-type: none"> <li>✓ Win PQ Data Convert will rescale permanent recorded voltage harmonic data</li> </ul>
<ul style="list-style-type: none"> <li>Permanent recording, “U eff R” ripple control data is scaled incorrectly</li> </ul>	<ul style="list-style-type: none"> <li>✗ Win PQ Data Convert does not rescale U eff R data</li> </ul>
<ul style="list-style-type: none"> <li>Permanent recording, Divergence data is scaled incorrectly</li> </ul>	<ul style="list-style-type: none"> <li>✓ Win PQ Data Convert does correct divergence data</li> </ul>
<ul style="list-style-type: none"> <li>EN 50160 report data which is based on above harmonic voltage levels are incorrect</li> </ul>	<ul style="list-style-type: none"> <li>✓ Win PQ Data Convert rescales permanent recorded voltage harmonic data, correcting EN 50160 reports.</li> </ul>

Note that accuracy and “success” of the rescaling may be affected by the magnitude of the rescaling factor, especially if this large. The success of data conversion can also be dependent upon if the original nominal voltage setting was higher or lower than the correct setting.

## Auto-Trigger for Oscilloscope and 10ms RMS triggers

With PQ-Box 100 firmware Boot 1v100, MCU V1.111+/DSP 1.216+ the Auto-Trigger option is now effective. Enabling the Auto-Trigger option causes the PQ-Box 100 to monitor the number of Oscilloscope and/or 10ms RMS events, and if the rate of occurrence is determined to be too high, the PQ-Box 100 will automatically decrease the trigger sensitivity.

Oscilloscope and 10ms RMS Recorders have separate Auto-Trigger functions. Auto-Trigger functions do not monitor/affect Ripple Control triggers or PQ-Text events (EN 50160 settings).



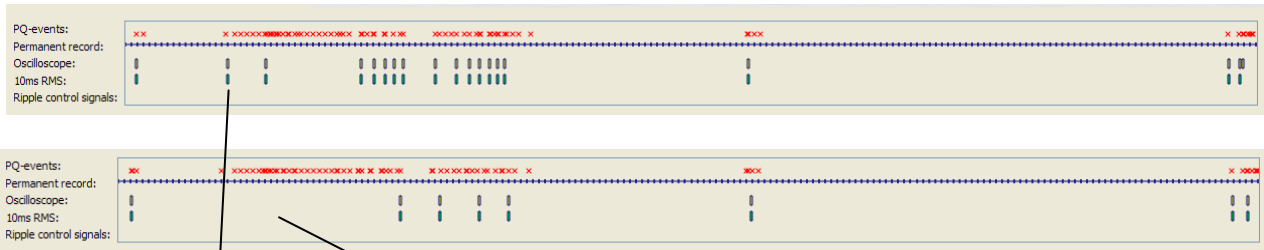
Auto-Trigger check box for Oscilloscope Events.

Enabling this option on PQ-Box 100 units with earlier firmware has no effect.

The following graphic shows the overview trace for Oscilloscope and 10ms RMS events for two PQ-Box 100's connected to the same test voltage supply. With the exception of only one unit having Auto-Trigger enabled, settings for both PQ-Box 100 units were identical. In viewing operation it appears that if rapid triggering occurs, the new function decreases sensitivity of the trigger. However, if no trigger events occur for a period, then the trigger levels again become more sensitive.



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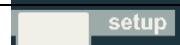


Auto-Trigger = No

Auto-Trigger = Yes

## Useful PQ-Box 100 key presses

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	Start/Stop
	Manual Trigger
	Scroll Display
	Setup

PQ-Box 100 front panel keys

### Lock/Unlock keys

- Pressing the 4<sup>th</sup> key (Setup) > 5 seconds after the start of a measurement disables the keys. Pressing again for > 5 seconds reactivates keys.

### Update firmware

- Press 1<sup>st</sup> & 3<sup>rd</sup> keys (Start & Scroll Display) as power is applied to PQ-Box 100 to enter firmware update mode.

### Clear memory

- Press and hold 2<sup>nd</sup> and 4<sup>th</sup> keys (Manual Trigger & Setup), as power is applied to PQ-Box 100 to clear PQ-Box 100 memory. Hold the keys till PQ-Box 100 prompts for a further confirmation key press to delete memory.

Accepting the prompt, clears all recorded data from PQ-Box 100 memory. Deleted data cannot be recovered. Clearing memory does not affect setup parameters. Memory can be deleted during either Aux or USB power ups.

This document was written referencing features of PQ-Box 100 firmware Boot 1.100, MCU 1.111, DSP 1.216 and PC software WinPQ mobil 1.426. Features and functionality may differ with other versions.