

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

Issue 3 Dec 10th 2008

Selecting 3W or 4W settings?

The selection of 3-wire system or 4-wire system in the Basic setting configuration (LCD Parameter Net type) has two main effects*:

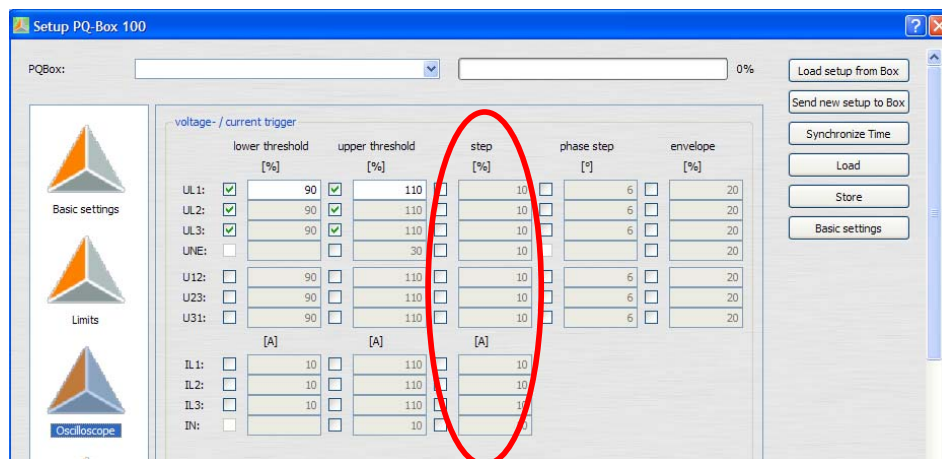
- 1) PQ-Box 100 LCD
 - a) 4-wire setting will show voltages as Line-to-Earth values
 - b) 3-wire setting will show voltages as Line-to-Line values
- 2) PQ-Box 100 Software EN50160
 - a) 4-wire setting will result in EN50160 reports showing voltages as Line-to-Earth values
 - b) 3-wire setting will result in EN50160 reports showing voltages a Line-to-Line values

Regardless of 3-wire or 4-wire setting, all values (L-L, L-E and N-E) are available for graphing via the permanent recording.

Oscilloscope and 10ms RMS recorder triggers are set independently for L-E and L-L events, and are available for 3-wire and 4-wire setups. By default (Basic Settings) only L-E triggers are enabled, therefore, if measuring a true 3-wire system you need to turn off L-E triggers and turn on L-L triggers.

*Above assumes a 4U/4I PQ-Box 100, which is standard unit within NZ.

Voltage trigger setup



The “step %” voltage and current trigger settings for 10 ms RMS recorder and Oscilloscope are triggers that functions by measuring difference between each successive 10 ms value. For example if the voltage or current between successive 10 ms samples changes by more than the programmed % (of nominal), then a trigger event will occur.



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This is a “fast RMS voltage/current” change that compares between two successive 10ms RMS samples. The step% trigger does not operate as a step function such as triggering an event as voltage rises past say each 10% step above nominal.

The step% function can be set independent of upper and lower thresholds (i.e. upper and lower thresholds do not need to be active for step% to operate)

What is the upper current range of the 20 A mini-clamps?

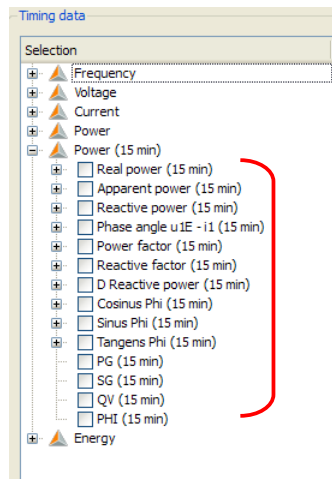
The mini-clamps are rated for measurements from 100 mA to 22 A. Readings of up to 25 A are possible. If the current is above 25 A (40 A peak), current and derived data should not be relied upon - current, phase angle, distortion and derived measurements will have a large error.

Using the mini clamps, the PQ-Box 100, A/D converter upper limit is 40 A (pk), thus any larger current will be measured as 40 Apk. Oscilloscope recordings with this excessive current will show flat tops to sine waves.

In addition to the 1-2560 A Rogowski current clamps, now available are:

- 10 mA to 1 A CT mini clamps (idea for direction checks using line charging currents)
- 200 A clamps
- 5500 A Rogowski clamps (910 mm head length)
- Adaption of old RMP clamps to connect to PQ-Box 100

15 Minute Power Data



For use in revenue/metering test applications, new in V1.4, is the Permanent Recording of a “Power (15 min)” data class. This uses a 15 minute interval time which is independent of the user set interval time (measuring interval). The 15 minute data class interval is synchronized to the 15 minute multiple of the hour. For example if the PQ-Box 100 is set with a 10 minute recording interval and is started at 12:18 am, then first complete interval for permanent recordings (15 minute data excluded) would cover 12:20 to 12:30. The first complete 15 minute Power data will cover 12:30 to 12:45.