

**NAME**

burstareas – calculate area under curve for bursts in run

**SYNOPSIS**

**burstareas** [-c wfnum] [-d cols] [-a] [-f c] [-h] [-m] runfile ...

**DESCRIPTION**

*Burstareas* calculates the area under the burst amplitude curve for waveform activity bursts in the specified *runfiles*.

The *runfile* arguments specify one or more run file names to be measured. There is no default file, so at least one *runfile* must be specified. The output appears on the standard output, which will generally be redirected to a *.csv* file.

**Options**

**-c** *wfnum*

specifies the waveform number for the marked up bursts or a list of waveform numbers separated by commas (default is 0).

**-d** *cols*

specifies the data columns to be included in the output, by letter name for each column: S=start, E=end, B=burst duration, C=cycle duration, M=mean amplitude, A=area, P=peak amplitude, L=LDP amplitude (default is SEMA, for start, end, mean, area).

**-a** specifies that the peak or LDP amplitude should be measured in the active phase only, ignoring samples between the end of one burst and the start of the next one. When using this option, you must be careful to ensure that the the marked cycle bursts for the waveforms you analyse include a portion of the signal from which the analysis can reliably read the minimum level for the baseline reference: it's still trying to calculate a peak-to-peak measurement, so it needs the lower peak (or trough) to be in the range of samples it's measuring in each burst. If the active phase only includes the upper peak, the calculated measurement won't make sense.

**-f c** specifies an alternate field separator "*c*" to be used instead of the default comma ",".

**-h** specifies that headings should appear above the columns and run file names appear above those column headings (default is to output only the numbers).

**-m** specifies that multiple runs of data should be merged together into a multi-column format, just the way multiple waveforms are merged into columns for a given run. (By default, a separate set of rows of data is generated for each run.)

Output will, by default, be of the form:

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Start,End,Mean-ampl.,Area
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but other columns can be specified using the **-d** option as shown above. The start and end times indicate where each burst occurred in the run. The cycle and burst durations are calculated from the start and end values, with burst duration as end-start, and cycle duration as next-current start. For the last burst, the cycle duration is given as the burst duration, as there is no next start time to use for this calculation. The time units are as selected in the analysis parameters for the run (typically seconds or ms, which is the default). The mean amplitude will be as calibrated or as selected in the analysis parameters (typically mV), and the area will be as a product of the time and amplitude units (typically mV x s or mV x ms).

The peak amplitude is determined as a peak to peak value within the entire cycle for each burst, i.e. maximum – minimum level from the start of the burst to the start of the next burst (or end of the last burst).

The LDP amplitude is also determined as a peak to peak value within each cycle as the peak amplitude above, but using the W.F. L.D.P. amplitude vs cycle analysis method with a 30 ms sampling window. For many types of data, we feel this produces more accurate measurements of peak amplitude.

Because the cycle duration and peak or LDP amplitude measurements depend on whole cycles, you may want to ignore the value given for these at the last burst in any given waveform. In the last burst, only

the active burst is measured, and the portion after the end of the burst is not included. In the case where you use the **-a** option, the peak or LDP amplitude measurements only depend on the active burst for each cycle, so only the cycle duration calculation on the last burst is inaccurate.

**EXAMPLES**

**burstareas -c 7,8 -d CBPA aojedro4damp02 > aoje4d2w78cbpa.csv**

Exports the cycle duration, burst duration, peak amplitude and area under the burst amplitude curve for waveforms 7 and 8.

**burstareas -m -h -f ; -c 36 -d CL exp87\_run01\*.frm > e87runs10-17.csv**

Exports cycle duration and LDP amplitude for waveform 36 in multiple runs, into a multi-column format with headings, and with fields separated by semi-colons.

**FILES**

\*.frm frame file containing run header

\*.w?? waveform files

**SEE ALSO**

analysis(1), wfampls(1)