



AED-2000 Software

The AED-2000 has serial port communication for data-logging or data upload to a Windows-based PC. All 32-bit versions of Microsoft Windows are supported (recommended Win 98 or later).

The AED version 2.0.x software includes real time graphics displays of both thresholded hits/counts activity vs time, and RMS signal level vs time. In the RMS mode, ratios of Max RMS to Avg RMS and Max RMS to Min RMS are also plotted. These ratios are sensitive to the presence and spacing of transient burst-type signals, ideal for analysis of leakage, cavitation, and machinery health monitoring.

The AED-2000 can record data in several different modes

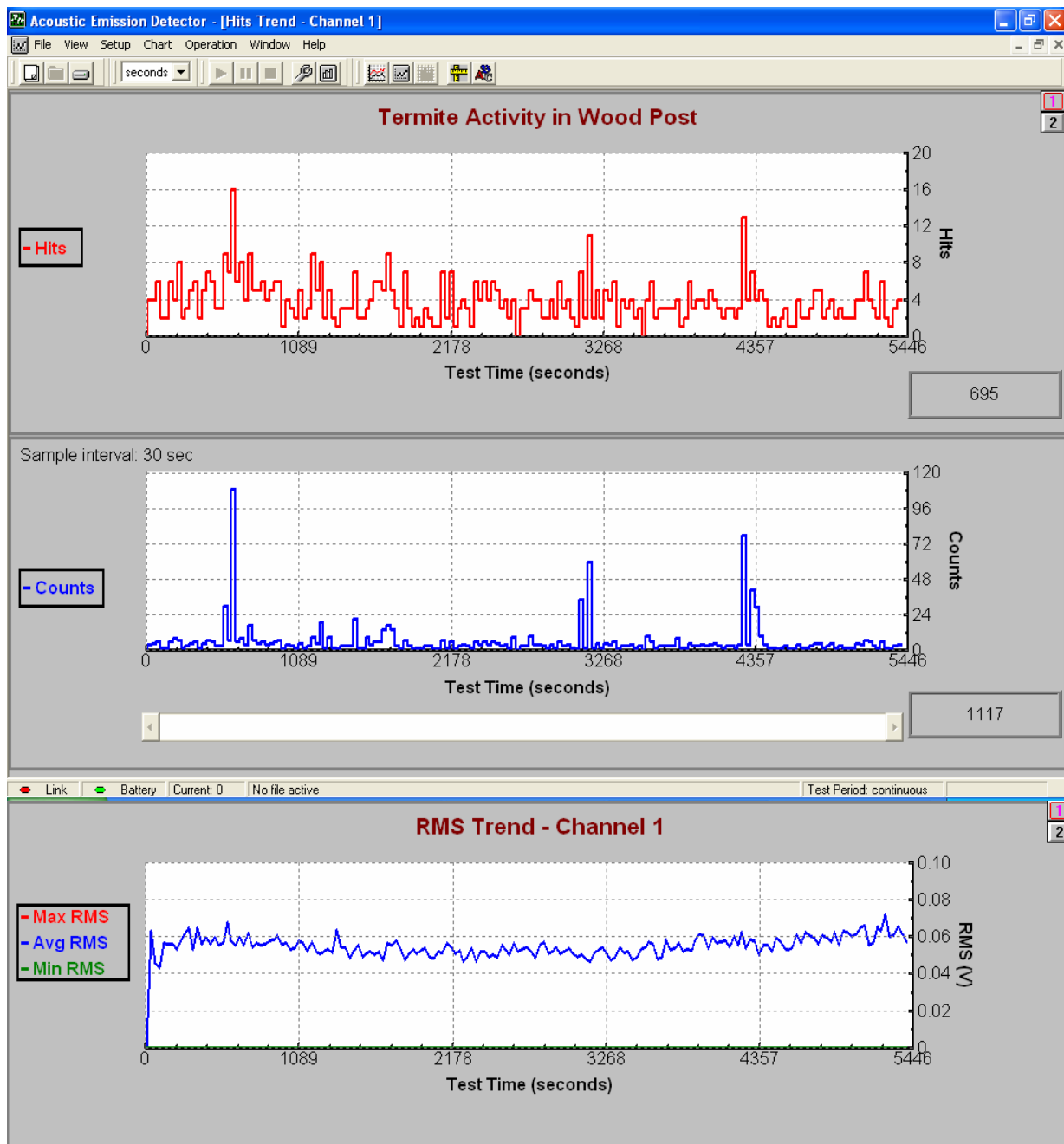
- To memory in the instrument (250 points max)
 - Individual data points acquired over a time segment (hits/counts or RMS)
 - Time sequence of data points (1- sec interval up to 250 secs)
 - Both individual data points and time sequence data can be mixed in storage
- Data logging to a PC directly
 - Selectable mode—hits/counts or RMS
 - Selectable output interval (secs, mins, hours)

The **AED** software allows full user control of data acquisition via the PC:

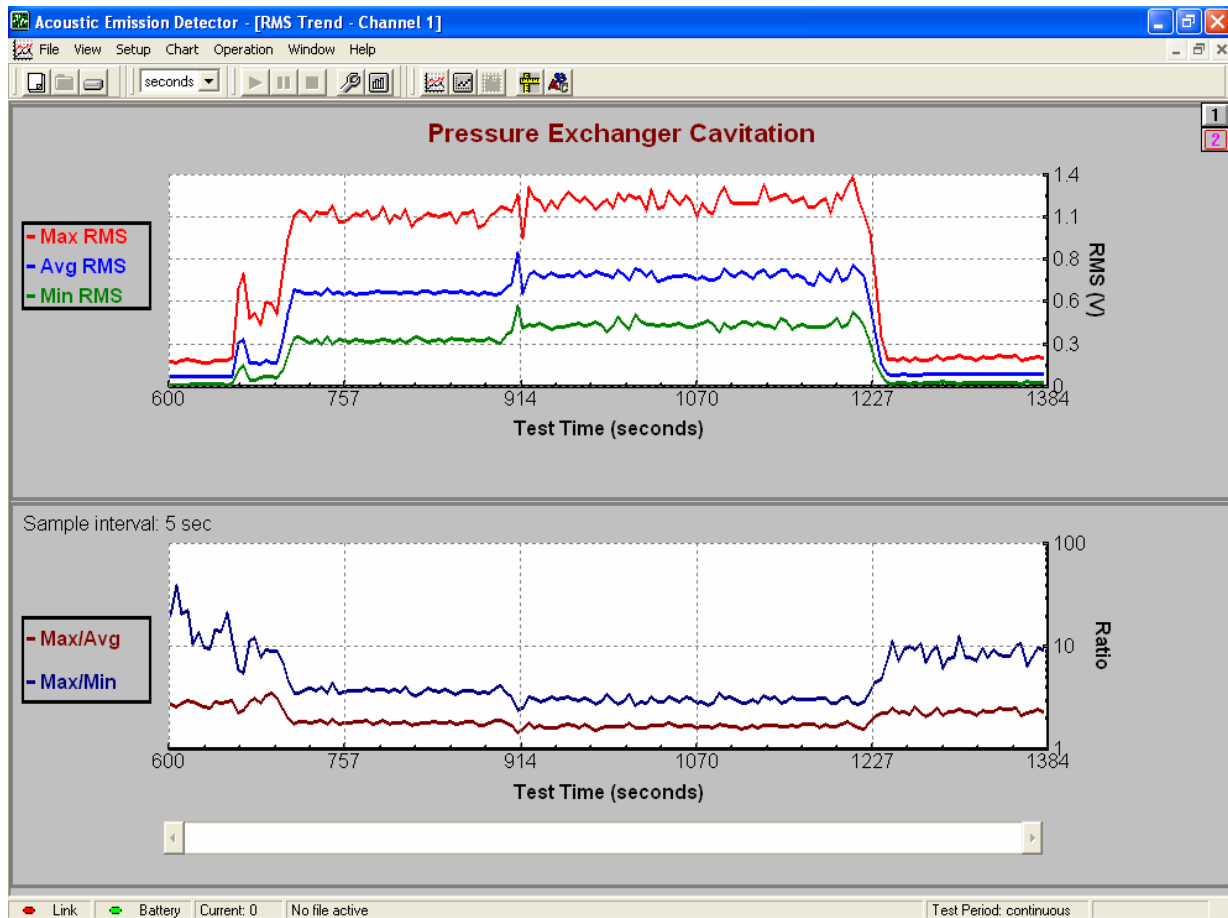
- Gain and threshold selections.
- Mode of operation (Hits/counts or RMS).
- Output interval (secs, mins, hrs).
- Start/stop acquisition, file controls.

The **AED** software also provides complete history of acquisition activities

- Message logger file stored with each data file. Records all activities including data mode, output interval, start/stop/pause times, threshold or gain changes, data overflow, and more.
- CSV output files contain date, time of day, elapsed time, data, gain, threshold, data overflow warnings.

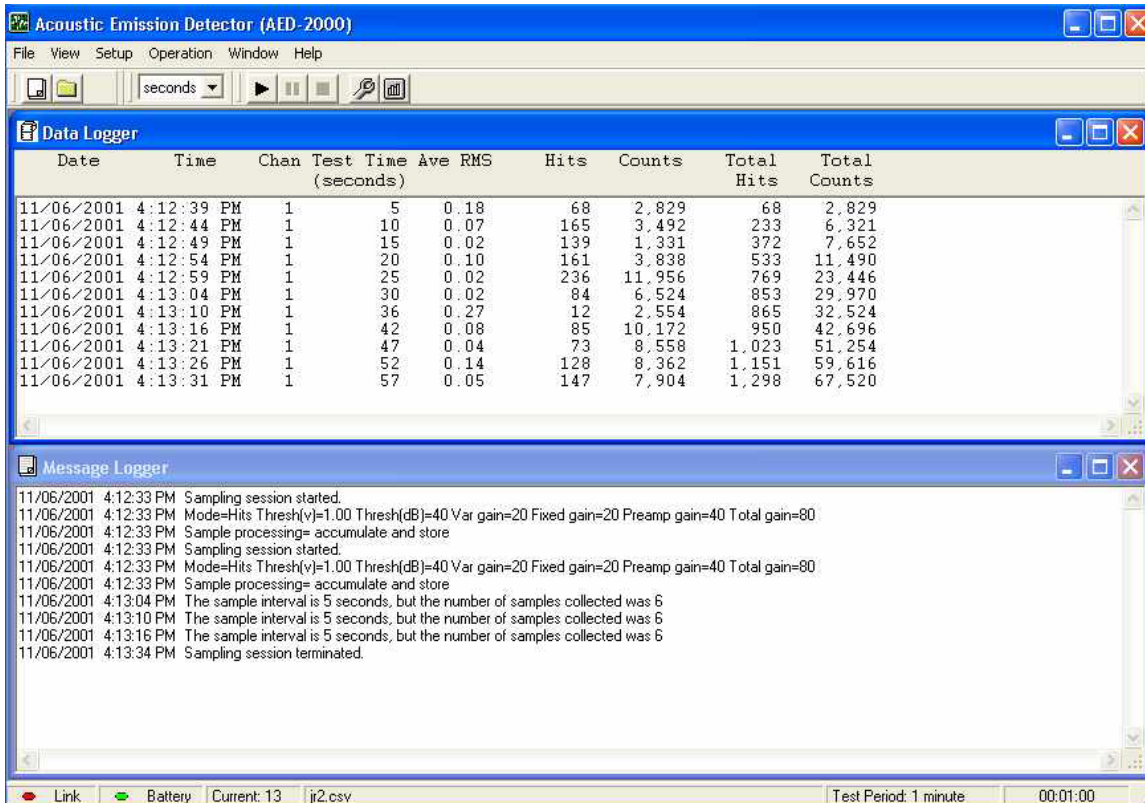


Examples of real time graphics available in the AED ver 2.0.x software program. In the threshold mode, hits, counts and avg RMS are plotted as a function of time. Controls include colors, labels, scaling (log or linear on y-axis), and panning on the x-axis. 250 data points are displayed, and 2500 points are retained in memory for panning. Data can also be played back from file with selectable time segment for plotting.

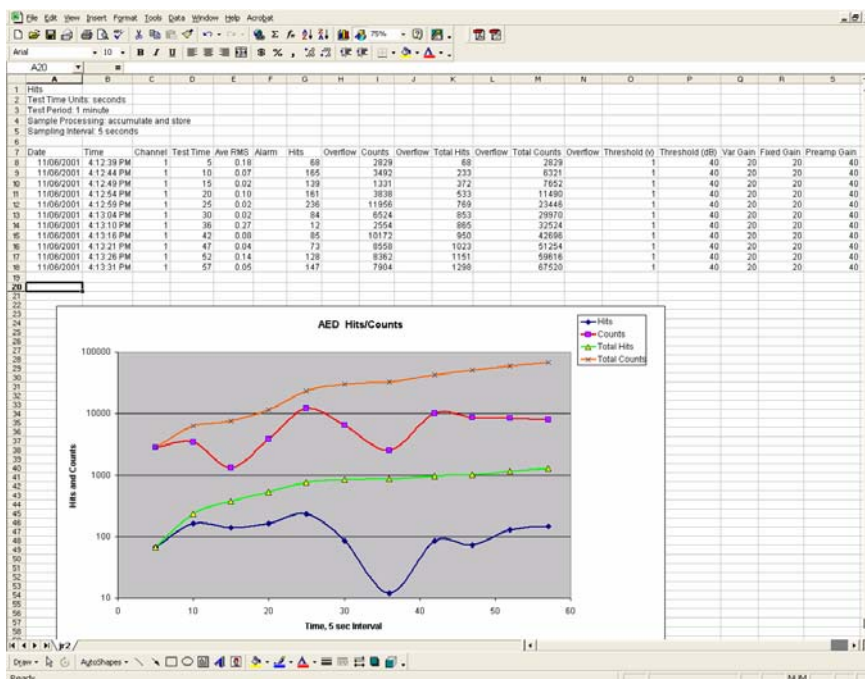


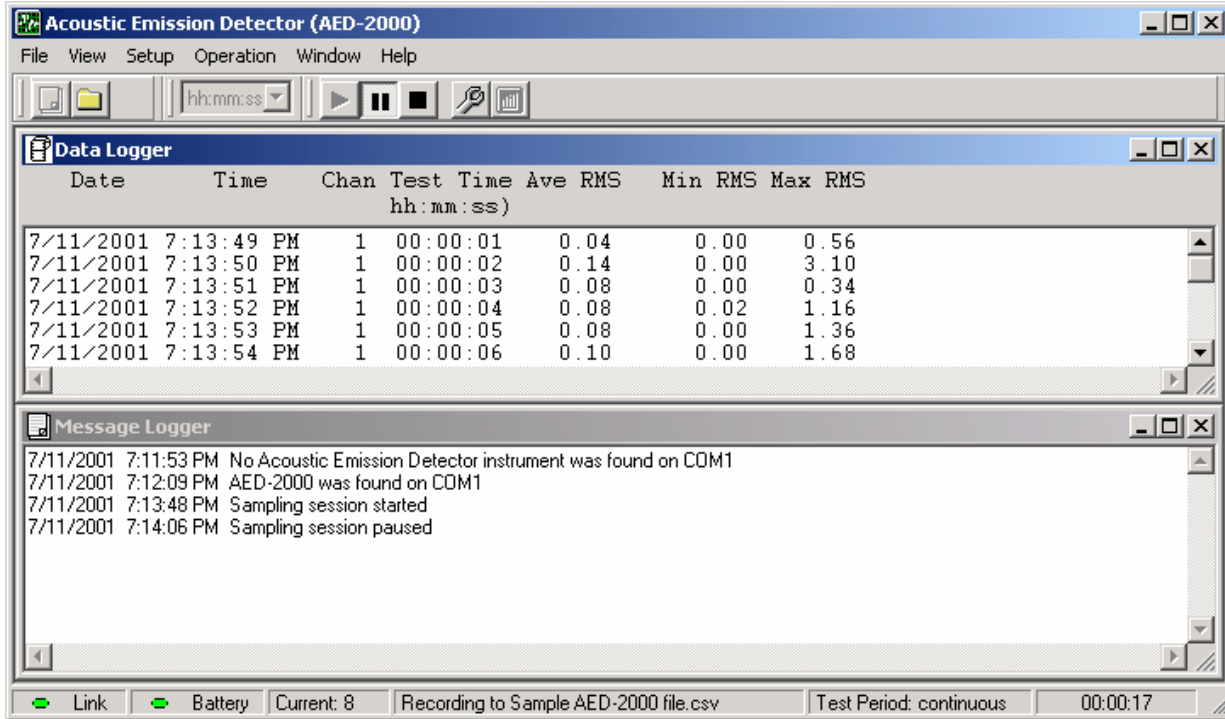
This is an example of the plots for the AED 2.0.x software in the RMS signal processing mode. The top plot shows the Max, Avg, and Min RMS values per plotting interval. The AED-2000 samples the RMS circuit 90 times/sec. The user can select to average the values, or select the absolute values, per time interval. The bottom plot shows the ratios of Max/Avg and Max/Min RMS values. If there are no burst-type transient signals in the mix, the ratios will have low values. In the case where the burst type signals are less frequent, the Max/Min ratio can be large. When the transient signals come at more frequent intervals, the ratios will trend to lower values. The signals being processed in the above example come from a pulsed-flow system, where all of the signals are transient in nature. As fluid velocity increases, the pulses come closer together, as represented by the increased levels of all RMS values in the top graph.

Real world applications often involve mixtures of continuous noise background punctuated with transient burst-type signals. These include leakage noises through cracks and valves in pressurized systems, loss of lubrication and spalling in bearings, and cavitation in pumps and hydroturbines in fluid flow systems. Tensile testing of metals through the proportional limit (plastic deformation) also will yield continuous and burst-type emission. In testing of composites, high data rates are common as strength is exceeded, and delaminations produce distinctive RMS response.



Above is a screen shot of the AED Program acquiring data in the "Hits" mode. The top window shows the data logger. Hits, counts (and their totals) have been acquired over a 5-sec interval for one minute. The bottom window shows the message logger, recording all significant test details. Data was stored to a CSV formatted file, which can be read directly into an Excel or other spreadsheet (below).





Above is a screen shot of the AED program acquiring data in the RMS mode. The top window shows the data logger. Avg, min and max RMS was acquired (averaged) over a 5-sec output interval. The bottom window shows the message logger, recording all the significant test details. Data was stored to a CSV formatted file, which can be read directly into an Excel or other spreadsheet (below).

