MISTRAS

One Source for Asset Protection Solutions®

General Information

AEwin64™: What is new?

Date: 07/21/2023

AEwin64™: What is New?

MISTRAS Group is proud to announce the release of AEwin64™, a 64-bit Windows (10/11) compatible application for real-time “simultaneous” Acoustic Emission (AE) feature and waveform processing, display, fast storage, and replay. Used for true, real-time operation and control with PAC’s AE Systems.

AEwin64 is built for operation with a 64-bit OS for improved performance and memory usage. The software offers a new ribbon type Graphic User Interface and an improved graphics package.

Table of Contents

AEwin64™: What is New?

What is AEwin64™

AEwin64™ is a powerful 64-bit Windows (10/11) data acquisition and replay program designed specifically for PAC's AE Systems. It leverages Windows resources, allowing you to take advantage of features like screen resolution settings, printing, networking, multitasking, and multi-threading. AEwin64™ seamlessly integrates with PAC's standard (DTA) data files, enabling you to easily replay and analyze all your previously collected AE files.

The software is designed to be user-friendly, making it easy to learn, operate, and utilize. It encompasses all the essential features you would expect from an AE system, including acquisition, graphing, and analysis capabilities. Additionally, AEwin64™ introduces a range of new and enhanced features that simplify data analysis and visualization tasks.

You have the flexibility to run multiple instances of AEwin64™ simultaneously. One instance can be dedicated to acquisition, providing comprehensive display and analysis capabilities, while additional instances can be used for replay and further analysis purposes.

To run AEwin64™ effectively, it requires Windows 10 or 11 and an Intel i3, i5, i7, or i9 processor. We recommend a minimum configuration of a 2 GHz processor, 16 GB of RAM, a 256 GB SSD, and an HD display monitor with 1920 x 1080 resolution. Similar computer specifications are also recommended when using AEwin64™ for replay.

AEwin64™ offers a flexible framework for easily adding graphs and graph screens to the main system window. It provides a versatile line listings capability that can be displayed on any screen, scrolled up or down as needed. The software features a ribbon-based graphical user interface, including ribbons for Home, Test Setup, Post Analysis, Graph Setup, Waveform/Spectra, Data Selection, and 2D/3D Setup. All the previous features of AEwin64™ can be accessed under these ribbons. The software also includes numerous built-in enhancements such as data selection and analysis, graph zooming and panning, flexible graph setup, an expanded selection of graphs, and built-in filtering functions (graphical filters and post filtering). Graphs and screens can be easily printed, copied to the clipboard, or saved to a file.

Some of AEwin64™ graphing capabilities include:

- Exceptional 2-D and 3-D graphing capabilities. Multiple graphs can be displayed on a screen, limited only by the resolution of the screen itself.
- Graphs are individually sizable on a screen, making for a very flexible arrangement. The user can set up one (or more) large graphs for visualization with multiple supporting small graphs alongside or around the main ones.
- Multiple Graphs are arranged on a screen, however the user desires. Multiple screens can be set up, each accessible by selecting a user-labeled tab. Therefore, a user can set themes for screen layout (e.g., Location & Cluster analysis, waveform analysis, AE activity analysis, AE Feature correlation analysis, Alarm Analysis, themes, to name a few)
- Many different types of graphs can be set up, including histograms, point plots, 3-D graphs, waveforms, FFT's, line plots, multiple plot styles on a single graph with coloring options, etc.
- All graphs on a page are automatically resized when the software window is resized.
- All graphs have full Cursor Readout capability, either continuous or point-by-point movement.
- All graphs (2-D and 3-D included) can be zoomed in and panned for close-up analysis.

Key features regarding location include the following:

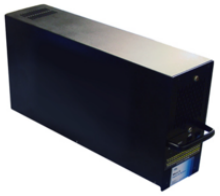
- Multiple (8) location groups standard (32 optional), each capable of using all the AE channels in the AE system. Mouse-oriented sensor setup includes manual sensors setup (click and drop), automated sensor setup for triangular setup, and easy sensor editing drag and drop or table entry-based sensor position.
- Multiple 1-dimensional, 2-dimensional, and 3-dimensional location modes.
- Flexible Clustering, cluster reporting, and Cluster statistics are available on any point plot graph screen (not just limited to location).
- User-selectable location structure visualization to ease setup. Options include Plate, vertical vessel, horizontal vessel, sphere, and Free, each with specific setup menus geared for easy setup of that structure, including automated and manual placement of sensors, weld lines, nozzles, etc.
- Visualization overlay planes to ease setup and viewing of location setup and results. Overlay planes include Sensors, grid, attenuation map, welds, and nozzles.
- Advanced Location setup capabilities provide improved event detection classification and accurate source location techniques.

AEwin64™ software licensing and updating your license to 64 bits

AEwin64™ can be licensed using either the MISTRAS License Key or MISTRAS License Files. The MISTRAS License Key is a portable USB dongle that allows you to run the licensed program on any computer where the key is plugged in. This feature provides convenience and portability. On the other hand, the MISTRAS License File licenses a single copy of the software to a specific computer, eliminating the need for a hardware key to be inserted for running the software.

When upgrading from an older version of AEwin™ to AEwin64™, it is necessary to reinstall the software and update the license key using a patch file or obtain a new license file. These updates, including the new software installer, patch files, or license files, are typically delivered via email. To ensure a successful upgrade, it is important to verify that the computer meets the minimum recommended system requirements. If you have a Micro II Express or Express 96 system running AEwin for Express 8, MISTRAS Group's Customer Service department offers hardware and software upgrades. You can request a quote for an upgrade from them.

Express-96 Hardware Upgrades:
Updating for Gen 12 i9, with PCIe x4 SSD, TPM 2.1 for Win 10



Micro2 Express Hardware updates:
Updating for Gen 12 i5, with PCIe x4 SSD, TPM 2.1 for Win 10

Upgrading an AEwin64™ License

To access additional software options such as "3D Location," or "LeakTEC/Online Crack Alarms" (along with many more options), you can simply contact Mistras Customer Service via email at customerservice@mistrasgroup.com. There is no need to reinstall the software or return the software License Key (if you use one) to the factory. Mistras Customer Service can upgrade your license remotely.

- If you use a License Key, then Customer Service will send you a special file called a “Patch” file.
- If you use a License File, then Customer Service will send you a new one to replace it.

In either case, once the appropriate files have been received by email, the upgrade process takes just a few seconds to deploy.

Data file compatibility

Data collected with AEwin64™ is saved as a DTA file. The new AEwin64™ software maintains compatibility with the original data file structure, enabling it to read and display old .DTA data files. In the new AEwin64™ version, the initialization or setup files, known as "Layout" files, are identified by the .LAY64 suffix. These Layout files store all the AE test setup information for AEwin64™. While AEwin64™ can load layout files saved with previous software versions, it's important to note that layout files created with AEwin64™ (with the .LAY64 extension) cannot be read by older versions of AEwin.

Ribbon Interface

In AEwin64™, the old-style menu and toolbars have been replaced by a modern ribbon UI. Ribbon control replaces traditional toolbars and menus with categorized tabbed groups. Each tab is logically split into panels and each panel contains various controls and command buttons. In addition, the ribbon control provides a smart layout, which efficiently utilizes the available space. For example, if a panel has been stretched and has no place to display all available controls, it becomes a menu button which can display sub-items on a popup menu. The ribbon also presents visual tooltips for better explanation of functions.

The ribbon provides various options such as hiding, showing, or auto-hiding itself, allowing you to customize your workspace for the optimal user experience. AEwin64™ offers a range of color scheme selection options to provide users with several Microsoft Office visual styles and appearances.

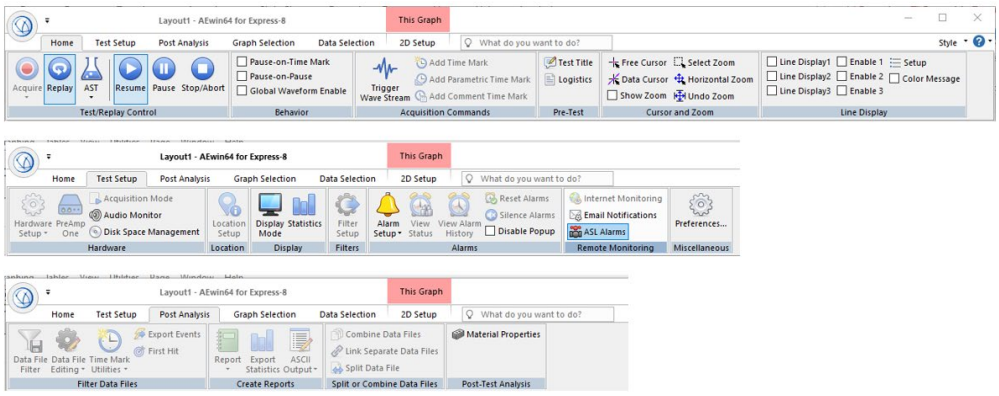


Figure 1: New updated ribbon interface for improved accessibility and ease of use (Part 1).

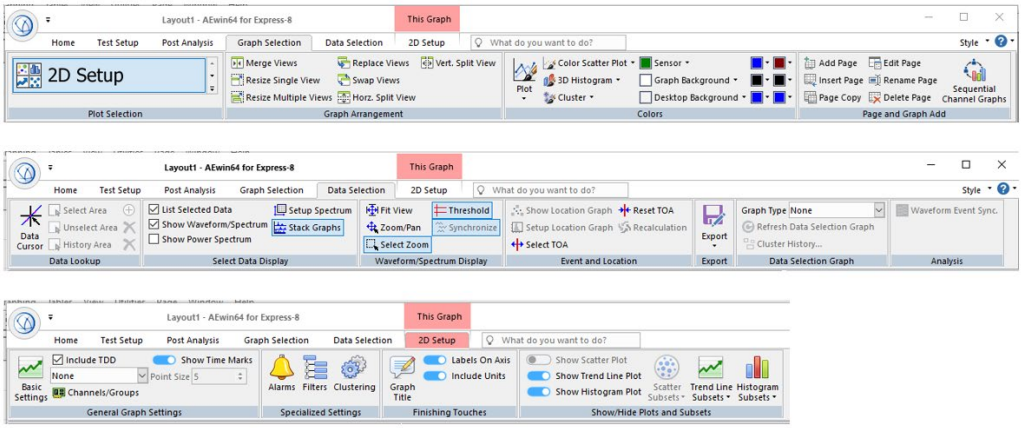


Figure 2: New updated ribbon interface for improved accessibility and ease of use (Part 2).

Quick Find and Help

The *"What do you want to do?"* search bar saves the user time by allowing you to use intuitive language to find the commands you need. When you start typing in the *"What do you want to do?"* bar, you don't have to stop and try to remember what something is called officially in the app.

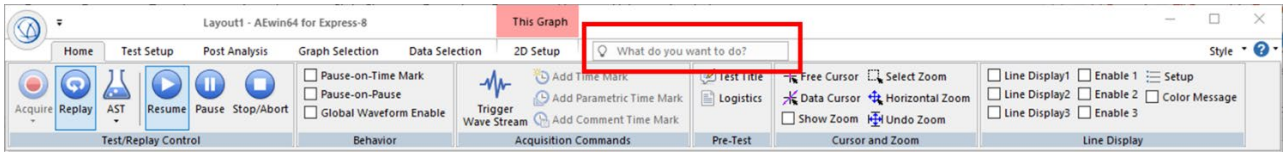


Figure 3: Ribbon interface showing the "What do you want to do?" help box.

Resizable Splits

AEwin64™, offers dynamic splitters, which allow the user to generate asymmetric grids with a few mouse clicks.

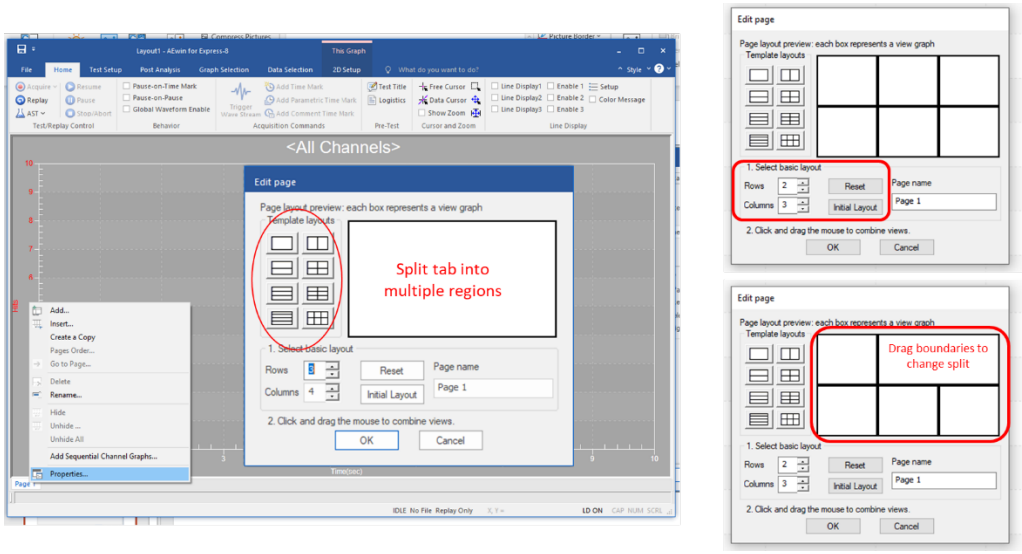


Figure 4: Controls for adding plots to a new tab in an easy to edit grid.

In AEwin64™, you have the flexibility to manipulate the views within any page using dynamic splitters. These splitters enable actions such as merging, splitting, swapping, replacing, or resizing views with a simple mouse interaction. One of the most useful improvements is the ability to rescale all plots in the tab as the software window is changed in size or as the file is run on a different resolution monitor.

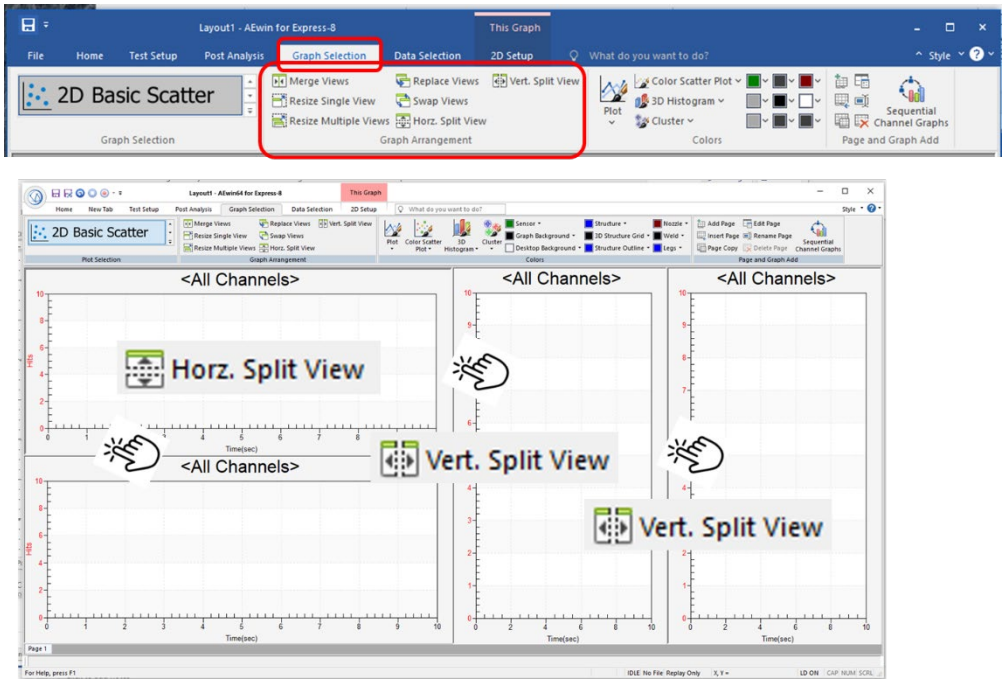


Figure 5: Example of new "Graph Arrangement" options available. Options are used to easily arrange plots in a page/tab.

Support of High DPI monitors

Windows 10 and 11 automatically choose the correct display scaling settings for each display based on its pixel density and resolution (for example HD and 4K). You can also have independent scaling settings for each display — so if you plug in an external monitor, Windows will automatically choose the correct scaling level. AEwin64™ supports any scaling.

Quick Access Toolbar

The 'Quick Access Toolbar' is a small toolbar in the upper left corner of AEwin64™. Buttons placed here are available regardless of which ribbon category is in view. The column on the left contains controls that you can add to it. The column on the right shows the ones currently in use by it.

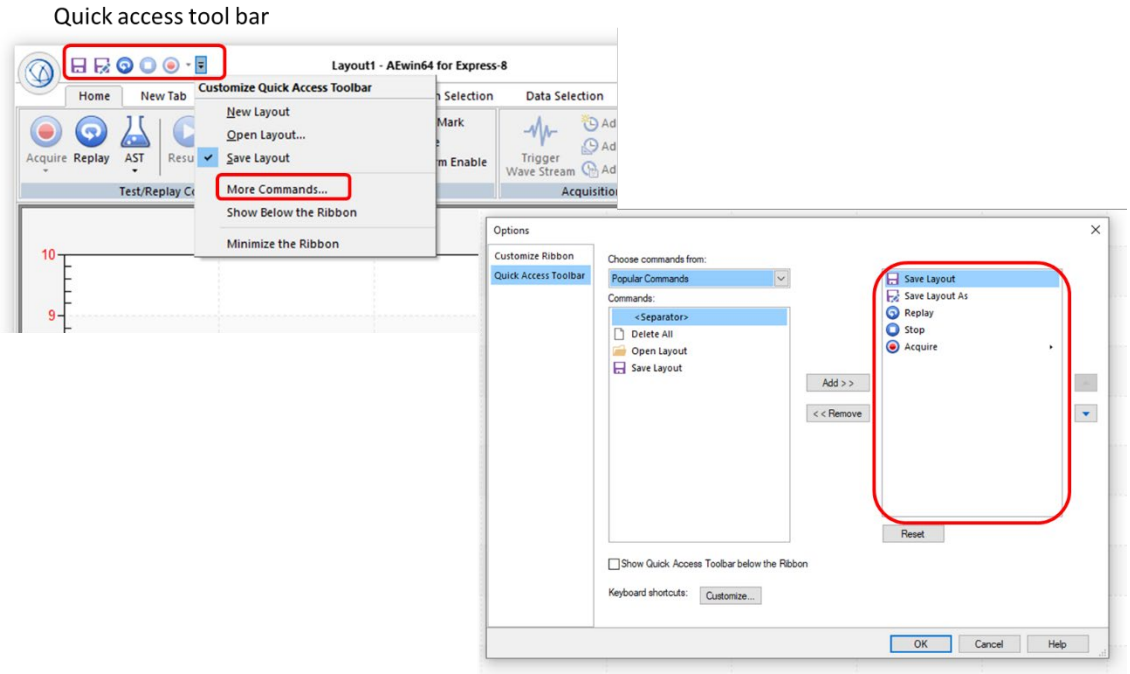


Figure 6: Definition of "Quick Access Toolbar" to allow the user to select specific tools for easy access during testing or analysis.

Customize Ribbon

The user can add controls to the ribbon itself as well. This works in similar fashion to the Quick Access Toolbar, providing a convenient place to define the most used tools, in order to streamline user data analysis and testing activities.

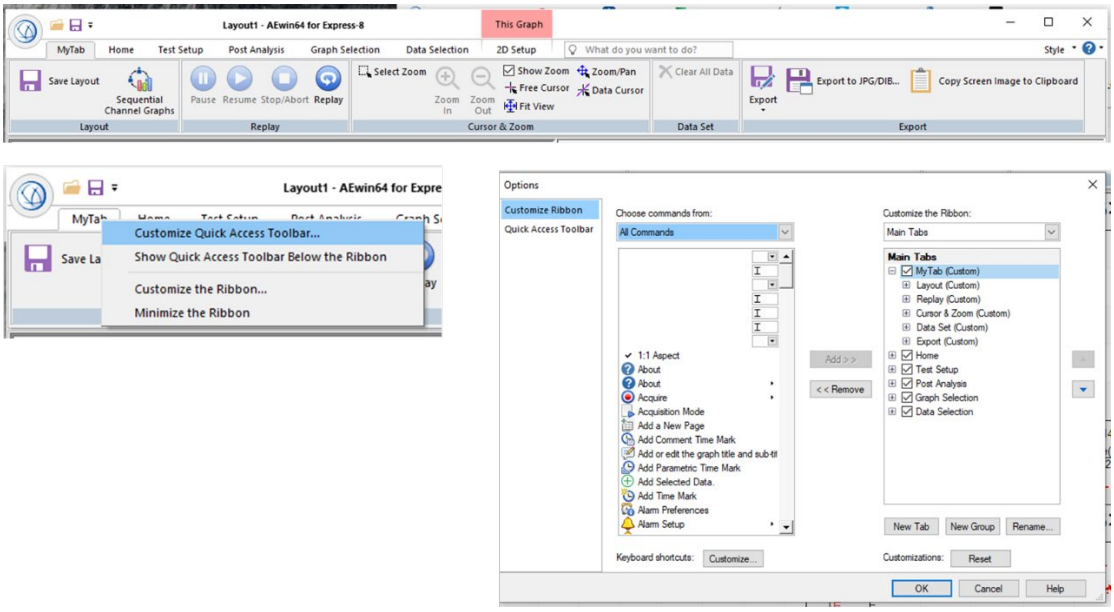


Figure 7: AEwin64™ offers ribbon customization to improve user experience.

Sizing and Moving the Line Listing Display

When the line listing display is enabled, it appears as a text box that spans the full width of AEwin's main window and remains anchored at the bottom. However, the line listing display can be easily moved, floated, or resized using standard Windows functions. To float the window, you can either double-click on its border or drag the window's title bar.

You can adjust the split easily by using the mouse, and the windows can be detached to be displayed on a different monitor or specific sections of the screen.

Once the line listing display window is floated, you can resize it using typical Windows sizing capabilities. Just move the mouse to the edge of the window border until the double-sided arrow appears. Then, left-click and drag the window's side to make it larger or smaller as desired. You can also move the floating line listing display window anywhere on the screen by left-clicking on the title bar. Additionally, you can anchor the line listing display to the top, bottom, or side of the screen by dragging it to intersect with the dock icon where you want it to be anchored.

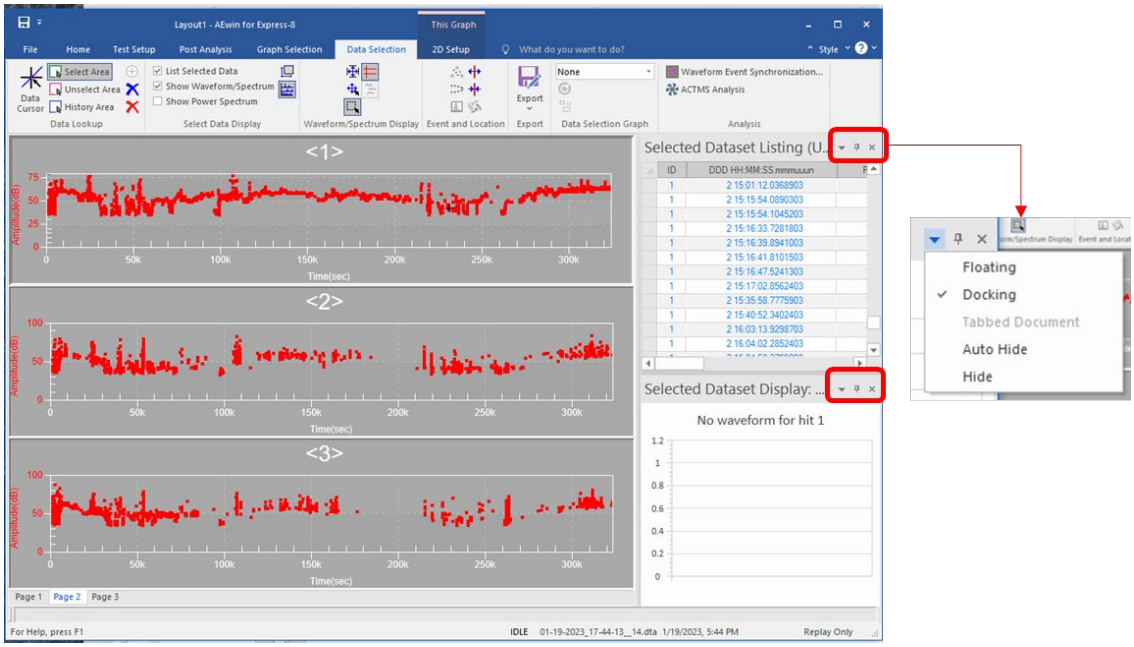


Figure 8: Example of tab/page including plots, line display and waveform display. The way the line display and waveform display boxes are shown is easily controlled by the user through the window controls.

Up to 3 different configurable line displays can be defined. This offers the capability to show different types of data separately, as well as control the format for the table generated.

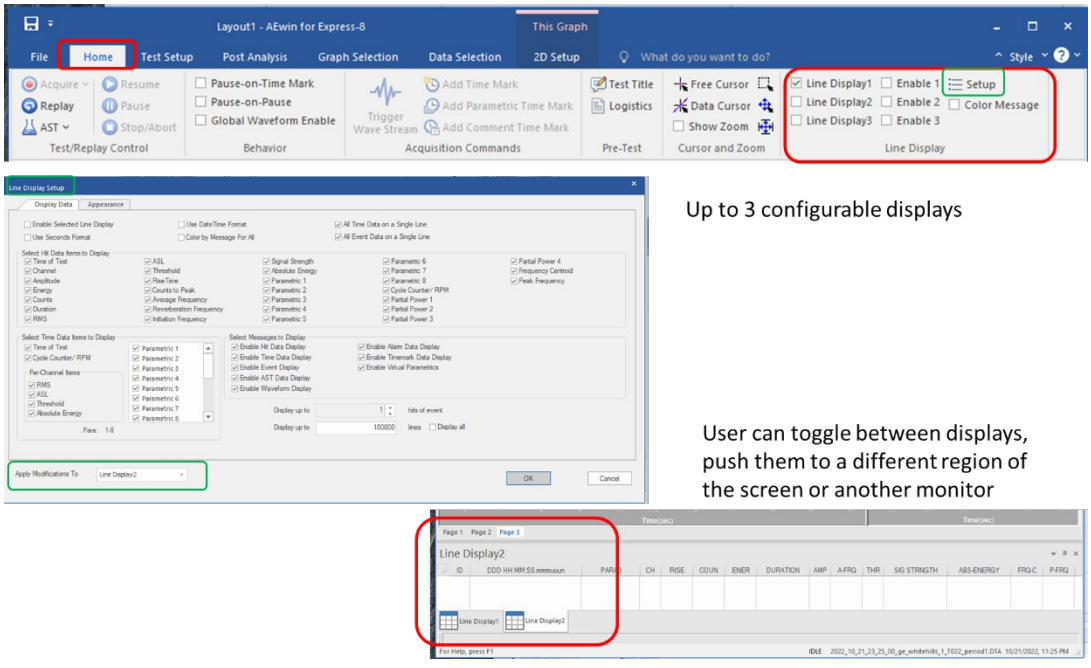


Figure 9: Figure showing Line Display options available on the HOME ribbon, Line display setup menu, and how the user can toggle among displays.

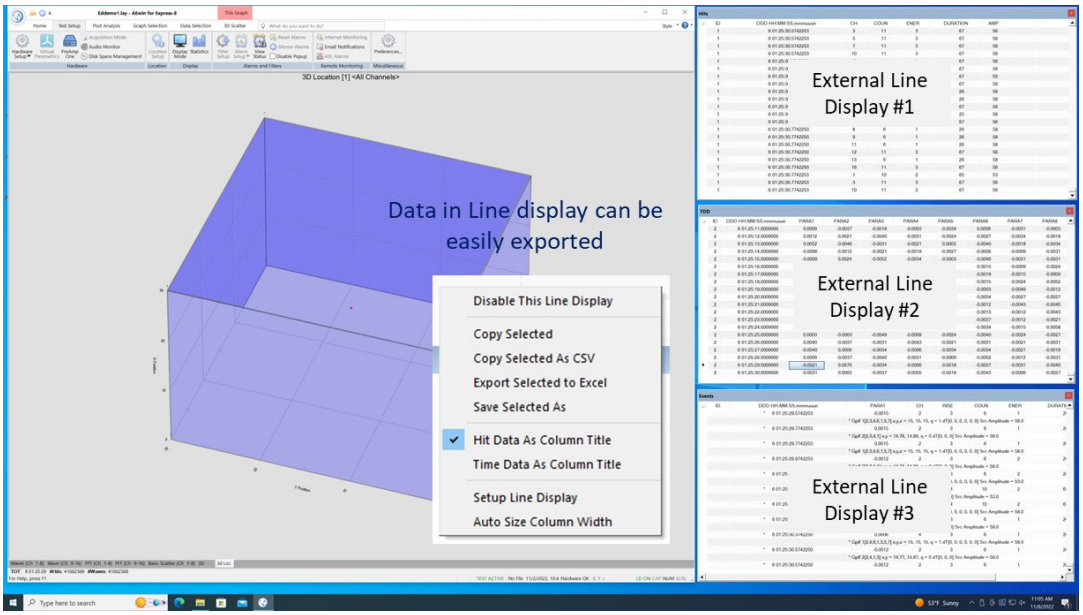


Figure 10: Example of 3 different Line Displays enabled. The Line Displays shown here are moved to another section of the screen or monitor for improved visualization. Data for each line display is easily exported to Excel or CSV format.

Graph Setup Improvements

The graphing capability in AEwin64™ is very extensive, as it should be since data visualization is very important in AE testing. AEwin64™ is able to provide multiple graphs, multiple plots within a graph, multiple graphs on a page, and multiple pages full of graphs. The graph types can be multi-dimensional (2D and 3D) graphs, multi-colored graphs, and multiple plot types, including Point plots, Histograms, Waveforms, and Spectrum graphs.

Multi-Plot 2D Graphs

This new type of graph offers the capability to freely mix plots of differing types together. There are several plot types, such as: 'scatter' (point plot) type, 'histogram' (bar plot) type, and 'line' type. AEwin64™ allows to mix one plot of each basic type (scatter, histogram, and line type) on the same graph. Most plot types allow the user to accommodate up to 10 y-axes in total.

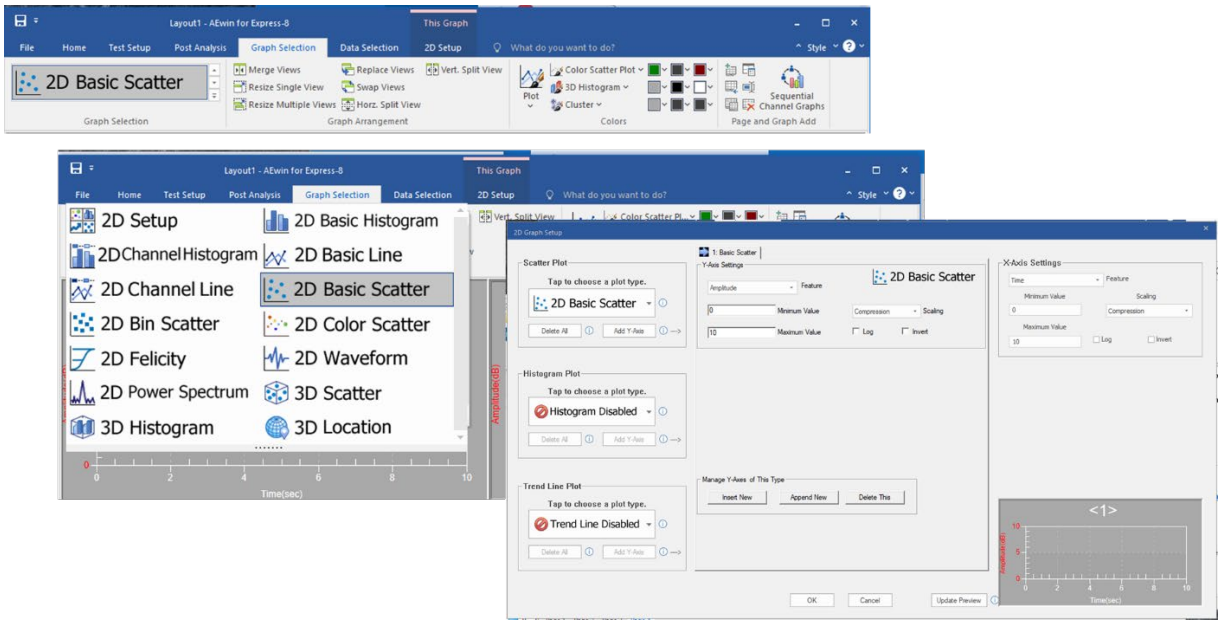


Figure 11: Figure showing the Graph Selection ribbon interface, the different available 2D plot options and an example of the new graph setup menu. The new menu is designed for easier plot definition.

Examples of new plotting capabilities

The new graphics package in AEwin64 offers tools to create informative screens for monitoring tests or postprocess data. The next screen shots show example layout screens involving several types of plot grids and plot types.

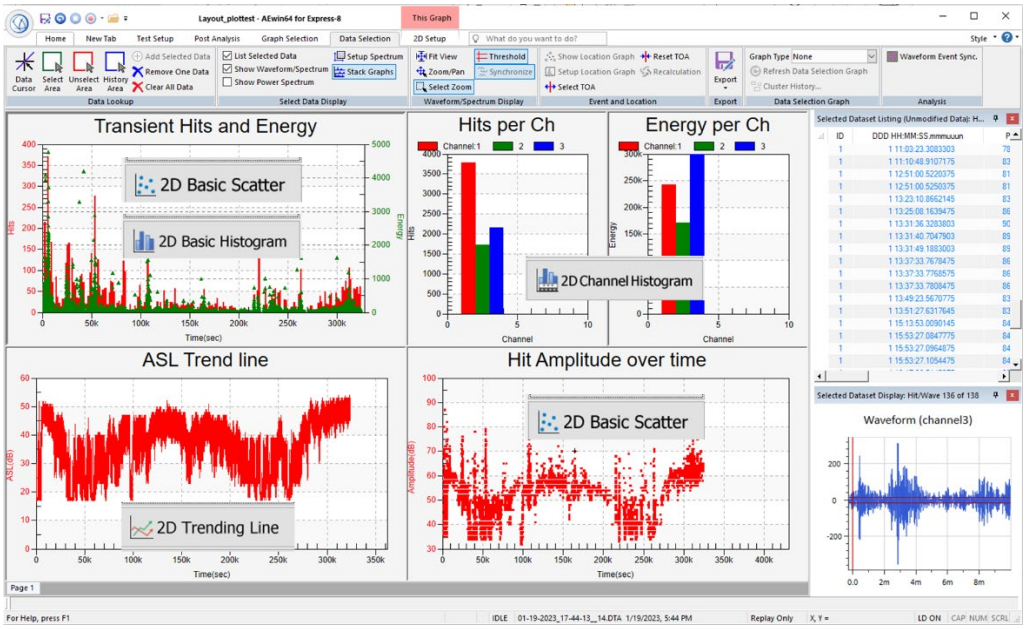


Figure 12: Example of single tab page showing several different types of 2D plots. Clockwise: Scattered and histogram combined plot, bar cumulative plots, line displays, waveform display, scattered plot and trend line plot.

Plot formatting options are now available

AEwin64 now offers the ability to easily change color of series in plots, change marker size, as well as adding user define titles and subtitles to plots.

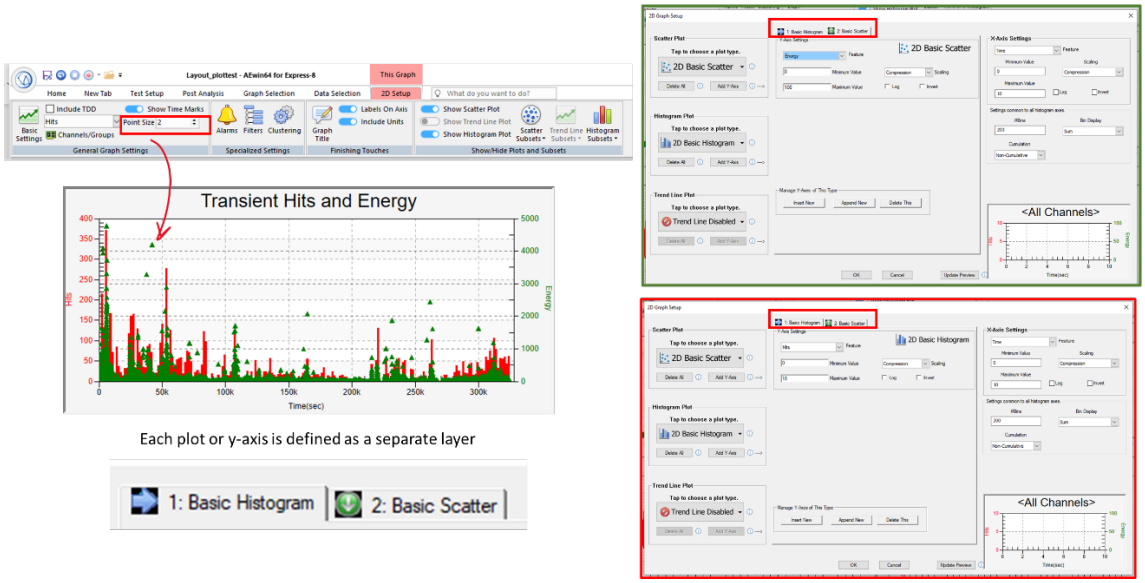


Figure 13: AEwin64 allows to integrate different types of plots (histogram/scatter/trends) that share the same x-axis into a single figure, and provides the user the capability to make design and format selections easily form the ribbon menu.

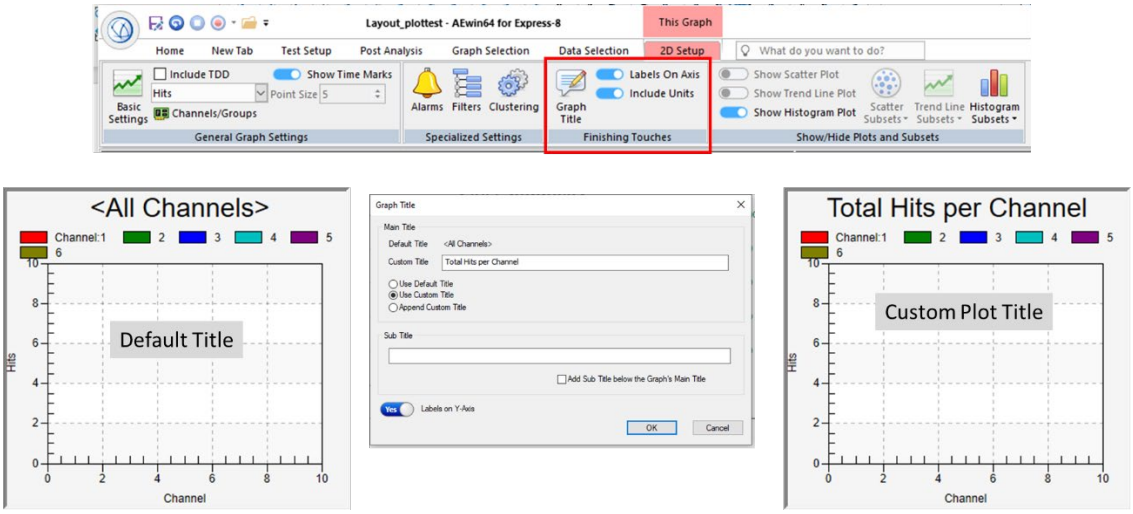


Figure 14: Tools for plot formatting, such as including user defined titles among other color and marker format are now available in AEwin64.

Show/Hide Plots and Subsets

The controls here are used to temporarily hide/unhide subsets or entire plots. For purposes here, a 'subset' usually means 'y-axis.' The exceptions are for plot types like 'Color Scatter' and 'Channel Histogram,' where a single y-axis is shared across multiple colors. Each color is considered a 'subset.'

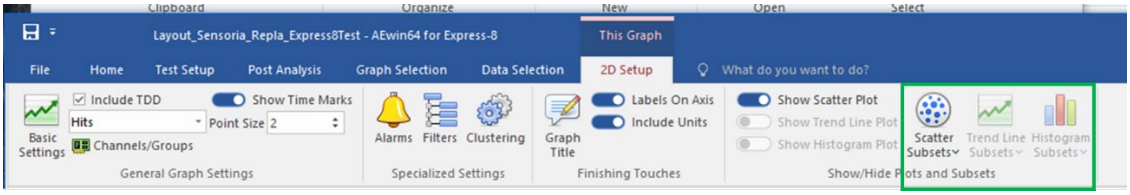


Figure 15: AEwin64™ has now the ability to define plot subsets, which can be turned on and off in a plot. Minimizing the need of replay, saving time and effort in analysis.

Subsets are particularly important in a multilayered plot and provide the user with the capability to turn off one of the layers or subplot without the need to replay the data. For instance, the plot below shows how the histogram subset can be turned off (bottom section). The intent of using subset plot definitions to easily declutter plots and speed up postprocessing.

Figure 16: Example showing how subsets in a plot can be turned on and off to declutter plots or reduce the complexity of a layout file.

Interactive and Sliding Zoom on Plots

AEwin64™ now includes the “Show Zoom” option, in which a small-scale full plot is shown at the bottom of the figure and the user can slide the window that should be zoomed. This allows better identification of regions of interest in plots during data interpretation.

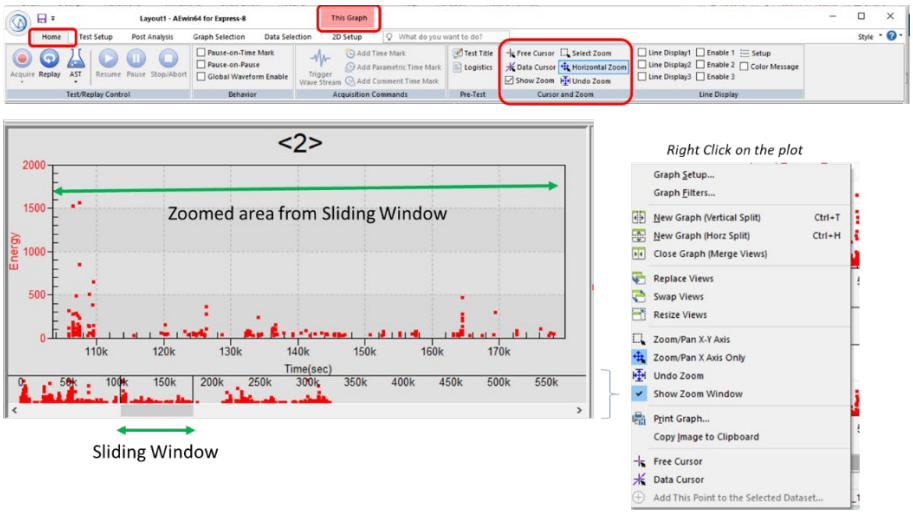


Figure 17: AEwin64™ has a "Show Zoom" option that when active will provide a sliding window to zoom the selected plot.

Waveform Observation in Located Events

AEwin64™ provides enhanced options for visualizing waveforms collected from hits that form a located event. The user can choose to view the waveforms in synchronized mode based on their time of arrival or in stacked mode, which facilitates waveform shape and mode comparisons.

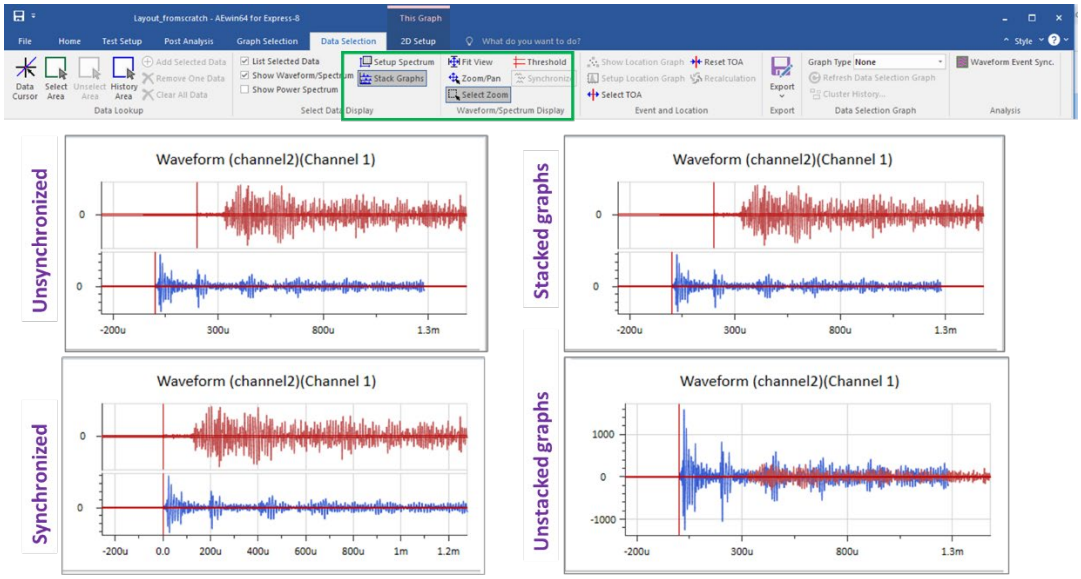


Figure 18: AEwin 64 offers the capability to stack and synchronize waveforms forming an event. Which is useful when analyzing modes and waveform changes.

MISTRAS GROUP
195 Clarksville Road
Princeton Junction, NJ 08550
USA

CONTACT
customer.service@mistrasgroup.com

+1 833-MISTRAS

mistrasgroup.com