Neuralynx
High Density Electrophysiology Recording Systems

Pegasus User's Manual

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Copyright Information

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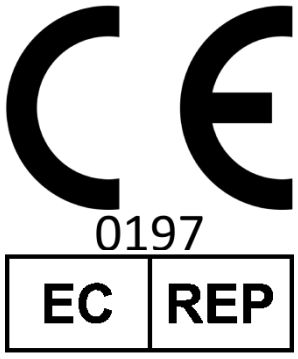

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1 Document Overview

This document covers the installation and general operation of the Pegasus Data Acquisition Software (DAS). This software must be used in conjunction with the ATLAS Neurophysiology System.

The information in this *User's Manual* is required for the daily operation of the Pegasus DAS.

1. General information on the intended use, indications for use, known contraindications, warnings, cautions, precautions, and special skills required to use the Pegasus software
2. Pegasus description, including system requirements
3. Installation instructions
4. General operation instructions
5. Troubleshooting tips

2 General Information

2.1 Manual Information

Manual Part Number	*01-0103-0020*
Manual Revision Number	1.1
Manual Revision Date	*2017/03/06*

Table 2.1. Manual Information

2.2 Symbols Glossary Location

For a complete list of symbols used for this product, please visit the following location: http://nlxneuro.com/gloss

2.3 Software Information

Device Part Number	REF *36-0301-0001*
Device Revision Number	v2.1.1

Table 2.2. Software Information

2.4 Contacting Neuralynx

If you have any questions or problems with the Pegasus Data Acquisition Software, the ATLAS Neurophysiology System, or would like to submit an RMA Request, please contact Neuralynx Support for assistance.

Email:	support@neuralynx.com
Phone:	(406) 585-4542
Fax:	(866) 585-1743
Mail:	Neuralynx, Inc. 105 Commercial Dr. Bozeman, MT 59715 USA
Website	www.nlxneuro.com

Table 2.3. Neuralynx Contact Information

2.5 Intended Use

The ATLAS Neurophysiology System is intended to be used for temporary (<30 days) recording and monitoring of brain electrical activity. The Pegasus data acquisition software is a component of the ATLAS Neurophysiology System.

2.6 Indications for Use

The ATLAS Neurophysiology System is indicated for the recording of multichannel brain electrical activity, usually in the case of epilepsy.

2.7 Special Skills Required

The Pegasus Data Acquisition Software is designed to be used by EEG Technicians and Nurses in the neurology field. This manual assumes the user has a basic knowledge of the concepts used to record brain electrical activity.

Caution!

Federal law restricts this device to sale by or on the order of a physician.

2.8 Known Contraindications

There are no known contraindications for use of the Pegasus Data Acquisition Software.

2.9 Known Adverse Reactions

There are no known adverse reactions to the use of the Pegasus Data Acquisition Software.

3 Warnings and Safety Notices

The conventions used in this document to call out Warnings, Cautions, Precautions, and Notes are described below.

Warnings are statements that alert the user to the possibility of injury, death, or other serious adverse reactions associated with the use or misuse of the device

Warning!

Description of potential harm.

Cautions are statements that alert the user to the possibility of a problem with the device associated with its use or misuse. Such problems include device malfunction, device failure, damage to the device or damage to other property. Cautions include a **Precaution** that should be taken to avoid the hazard.

Caution!

Description of potential harm. Recommended Precaution.

Notes provide general information for standard operation.

Note!

General information for standard operation.

4 Pegasus Overview

The Pegasus Data Acquisition Software (DAS) is designed to record and display CSC and Spike data, and when available, live video for a patient connected to the ATLAS Neurophysiology System. Pegasus is a configurable software program and the user will have the option to select and change settings associated with data acquisition and display. For collecting video data simultaneously with neurological data, the DAS supports the use of the Axis Video Camera model Q6045. A detailed description of the software features and functionality can be found in the Pegasus Reference Guide that accompanies the software installation.

Note!

If you do not have the Pegasus Reference Guide, please contact Neuralynx Support at support@neuralynx.com.

4.1 Minimum System Requirements

The Pegasus software should be installed on a computer that meets or exceeds the following system requirements:

1. Windows® 7 x64
2. HP Z820 Workstation or functionally equivalent
3. (2) 6 Core, 2.5 GHz processor
4. 16GB of RAM
5. 1000Mbps Ethernet adapter
6. Dedicated storage drive, 2TB or larger (7200 RPM)
7. AMD FirePro V3900 1GB Graphics or equivalent
8. DVD-RW drive
9. Optional: Axis Video Camera (model Q6045)

4.2 Definitions

Below is a listing of some of the terms that are used throughout this document. Detailed information for these terms and others presented in this document can be found in the Pegasus Reference Guide.

4.2.1 ATLAS Acquisition Amplifier

The ATLAS Acquisition Amplifier is a stand-alone acquisition system. The ATLAS Acquisition Amplifier consists of a chassis that contains input boards and, in most

instances, Digital Reference Selection (DRS) boards. The total number of boards it can hold is 16. Each board has 32 AD channels associated with it. Channel numbers increment starting from the left side of the chassis. A signal is input into each input board via the DRS board. The signal is digitized and then formatted and sent over the fiber optic cable to the fiber optic Ethernet card located in the PC.

4.2.2 Acquisition Entity

An acquisition entity (AE) is an object that is responsible for manipulating, saving and distributing data throughout the Pegasus software. Acquisition entities are the most important objects in Pegasus. There are multiple types of AEs in Pegasus:

- Spikes, or single units
- Continuously Sampled Channels (CSC), or EEGs
- Events
- Live video (VT)

Each type of AE has different properties and purposes, and will each generate their own output file.

4.2.3 CSC Acquisition Entities

Continuously Sampled Channels, or CSCs, will continuously process the incoming signal and save that signal to a file when recording. These channels can be used for EEG signals. When this data is saved, each CSC will have the file extension .ncs.

4.2.4 CSG Acquisition Entities

Continuous Signal Groups, or CSGs, will continuously process the incoming signal and save that signal to a file when recording. These objects are almost identical to CSC except for the fact that they can have multiple AD channels associated with a single group and will output a .dat and .lay file.

4.2.5 Spike

In Pegasus, Spike refers to the electrical waveform of a single nerve cell discharging. Spike or Spikes are not a reference to the Hans Berger “spike-and-wave” discharges of groups of neurons firing as an indicator or pre-indicator of an epileptic seizure. Identification of single nerve cell spikes is strictly for research purposes and has no diagnostic or treatment purpose.

4.2.6 Spike Acquisition Entities

Spike acquisition entities are incorporated to detect an action potential from the incoming neurological data. If these specific signals are detected in the incoming signal, the action potential data will be extracted from the incoming signal and saved to a spike record when recording. These AEs will have the file extension .nse, .nst or .ntt.

4.2.7 Acquisition

Data is processed and viewed in Pegasus, but nothing is saved to a file.

4.2.8 Recording

Data is processed and saved to data files.

4.3 Installation and Set up

The Pegasus Data Acquisition Software will only function with the ATLAS Neurophysiology System.

4.3.1 Installation

If the Pegasus Data Acquisition Software (DAS) is not already installed on your computer, install the software from the provided executable, PegasusSetup_v200.exe, ensuring that the minimum system requirements for the computer are met (see section ***4.1 Minimum System Requirements***). Follow the prompts on the screen to complete the installation.

4.3.2 Set Up

The following steps outline a general approach to starting Pegasus. Since Pegasus can be configured in a multitude of ways, these steps outline one common way to start the program. Detailed information on the features and functionality of Pegasus can be found in the Pegasus Reference Guide that accompanies the software installation.

1. Turn the ATLAS Acquisition Amplifier ON and allow the system to boot. This can take several minutes.
2. Start the Pegasus Data Acquisition Software, either by clicking on the desktop icon (shown below) or from the Windows Start menu option.

Figure 4.1 Pegasus start icon

3. In the startup splash screen, select a Subject ID listed in the drop down menu, browse for a subject not listed or create a new subject.

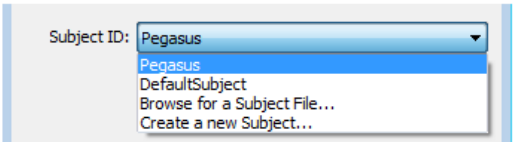


Figure 4.2 Subject ID selection on startup

4. In the startup splash screen, select a Session Name from the drop down menu or create a new session for the subject selected in Step 3.

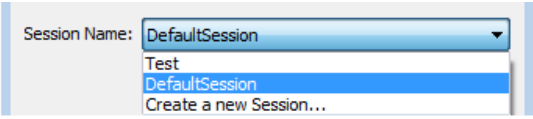


Figure 4.3 Session Name selection on startup

Note!

The Subject ID and Session Name specify the folder to which the Pegasus data will be written. This folder location has the following format:

<Subject_Location>\<Subject_ID>\<Session_Name>\<session_directory>

where Subject_Location was determined when the subject was created, Subject_ID and Session_Name are determined in Steps 3 and 4 above, and session_directory is the time and date when this session of Pegasus was started.

Warning!

Creating duplicate subject and session files in different locations may lead to confusion when analyzing data files. This may result in a misdiagnosis for the subject. It is recommended that there is a single root directory containing all subject and session data files.

Selecting the wrong subject and session files will cause the data recorded for the session to be stored in a location associated with the wrong subject.

5. Start Pegasus by either selecting the last configuration option or by choosing to select a different configuration file.

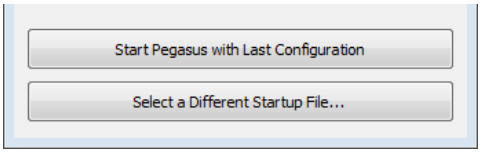


Figure 4.4 Pegasus configuration selection at startup

Note!

*If the Pegasus DAS is not licensed, you will receive a logfile error. Please refer to section **4.3.1.4.1 Licensing** for more information. If you are unable to run the software or locate your license file, contact Neuralynx at support@neuralynx.com.*

If Pegasus cannot find the last configuration, the option to Start Pegasus with Last Configuration will be grayed out.

6. Configure Pegasus to your desired settings, which can include adjusting the Input Range, Referencing, and Filter options. General descriptions of some Pegasus options are outlined in section ***4.4 Pegasus Options and Controls***. Detailed information on these parameters can be found in the Pegasus Reference Guide.
7. If a camera is being used with Pegasus, ensure that the camera is an Axis video camera, model Q6045.

Once Pegasus opens, the user can configure the software to record and display the data acquired from one patient. Some of these features and functionality are covered in sections below. For a detailed description of all the features and functionality of the software, please use the Pegasus Reference Guide.

4.3.3 Shut Down

To properly shut down the software, select the *File* submenu from the Main Window options, then choose *Exit*.

4.4 Pegasus Options and Controls

Once Pegasus starts, the user can set the parameters in the software for recording and viewing any of the acquisition entities created. When available, Pegasus can also stream and record live video that will easily be correlated with the neural data. For a detailed description of all the features and functionality of the software, please use the Pegasus Reference Guide. In this section a brief overview is given.

4.4.1 Main Window Options

The Main Window in the Pegasus software has five submenu options: *File*, *Acquisition*, *Window*, *View* and *Help*.

4.4.1.1 File Menu

The *File* drop-down menu provides the user with options to save the current Pegasus configuration, open a configuration file, view the logfile and properly exit the software.

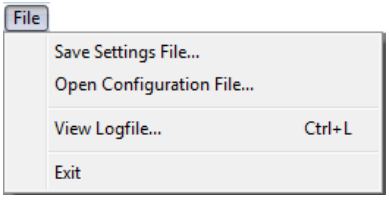


Figure 4.5 Main window *File* menu

- ***Save Settings File…*** allows the user to save the current Pegasus appearance and settings to a configuration file (.cfg)
- ***Open Configuration File…*** allows the user to open a configuration file (.cfg)
- ***View Logfile…*** allows the user to view the Pegasus log file, a text file containing all the messages generated in Pegasus
- ***Exit*** allows the user to properly exit Pegasus

Detailed information on configuration files can be found in the ***Configuration Files*** section of the Pegasus Reference Guide.

4.4.1.2 Acquisition Menu

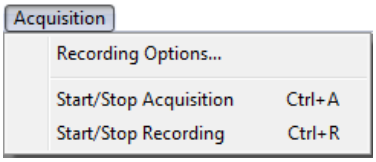


Figure 4.6 Main window *Acquisition* submenu

Selecting the *Acquisition* drop-down menu gives the user the option change the recording options, start and stop acquisition and start and stop recording.

- ***Recording Options…*** allows the user to open the Recording Options dialog box, where some options include saving a raw data file and specifying the data directory.

Warning!

Changing the data directory from one subject's directory structure to another subject's directory structure may cause confusion when analyzing the data files associated with either of the subject's data. This may result in a misdiagnosis for either of the subjects.

- ***Start/Stop Acquisition*** allows the user to toggle Acquisition on and off.
- ***Start/Stop Recording*** allows the user to toggle Recording on and off.

Detailed information on the recording options, starting and stopping acquisition and starting and stopping recording can be found in the ***Acquisition, Recording and Status*** section of the Pegasus Reference Guide.

Note!

When Pegasus is in Acquisition mode, data is not being written to the storage drive. Recording must be turned ON to save the data.

When recording, most files have a maximum length specified in the Recording Option… dialog. Before files reach their maximum length, Pegasus will automatically create new files and switch writing data to the new file at the appropriate time. During the time period when new files are being created and files are being changed over, turning recording off will not be permitted. This may take several minutes. Once the file changeovers have completed, recording toggling will function normally.

Changing data processing settings after initially recording to a data file will also cause Pegasus to create new files before recording is restarted.

4.4.1.3 Window Menu

The *Window* drop-down menu gives the user the option to add another window to

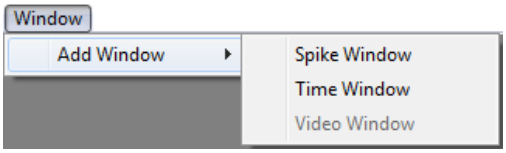


Figure 4.7 Main window *Window* submenu

the Pegasus display area.

- ***Add Window*** allows the user to add another spike window, time window, or if applicable, a video window.

General information on each of these windows can be found in this document. Detailed information on spike windows can be found in the ***Spikes*** section of the Pegasus Reference Guide; time windows in the ***Continuously Sampled Channels*** section; and video windows in the ***Video Trackers*** section.

4.4.1.4 View Menu

The *View* drop-down menu gives the user the option to open different dialogs boxes, including Acquisition System Status, Subject Properties, Event Display, Acquisition Entities and Display Properties, Audio Output Control, TTL Response, Hardware Properties, Digital IO Setup and Session Information, as well as toggle the focus among these displays.

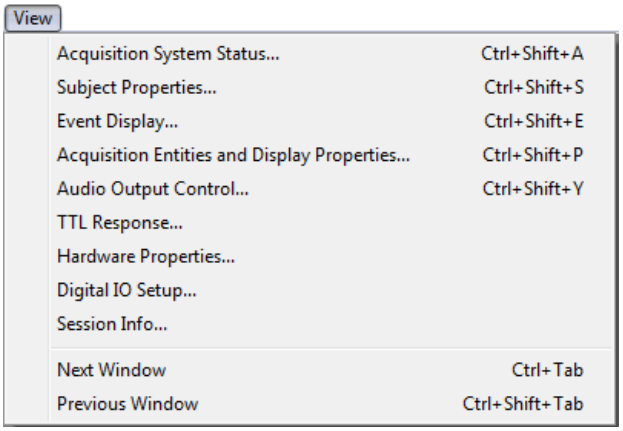


Figure 4.8 Main window *View* submenu

- ***Acquisition System Status…*** opens or brings to the foreground the Acquisition System Status dialog box, where one of the options includes toggling Acquisition and Recording on and off. This dialog box is typically opened when Pegasus starts.
- ***Subject Properties…*** opens or brings to the foreground the Subject Information dialog box, where one of the options includes entering personal information for the subject. This dialog box is displayed at the end of the Pegasus startup process.
- ***Event Display…*** opens or brings to the foreground the Event Display dialog box, where one of the options includes manually posting an event in Pegasus.
- ***Acquisition Entities and Display Properties…*** opens or brings to the foreground the Acquisition Entities and Display Properties dialog box, where the user can change the settings and display properties for each of the acquisition entities created in Pegasus. General information on this dialog box as it pertains to the different types of acquisition entities is covered later in this manual.
- ***Audio Output Control…*** opens or brings to the foreground the Audio Output Control dialog box, where the user can listen to individual acquisition entities.
- ***TTL Response…*** opens or brings to the foreground the TTL Response dialog box, where the user can view and setup TTL pulse responses.
- ***Hardware Properties…*** opens or brings to the foreground the ATLAS Properties dialog box, where one of the options includes selecting the active ground reference.
- ***Digital IO Setup…*** opens or brings to the foreground the Digital IO Setup dialog box, where one of the options includes setting the TTL ports to accept TTL inputs or allow TTL outputs.
- ***Session Info…*** opens or brings to the foreground the Session Information dialog box, where the user can view all of the session records for the subject and session created when Pegasus was started.

Note!

Functionality of Pegasus will be locked while the Session Information dialog box is open.

- ***Next Window / Previous Window*** allows the user to toggle through the windows currently opened in Pegasus.

More information on the Acquisition System Status can be found in the ***Acquisition, Recording and Status*** section of the Pegasus Reference Guide; Subject Properties and Session Info in the ***Subject and Session*** section; Event Display in the ***Events*** section; Acquisition Entities and Display Properties in the ***Properties Page*** section; Audio Output Control in the ***Audio*** section; TTL Response in the ***TTL Response*** section; and Hardware Properties and Digital IO Setup in the ***Hardware Systems*** section of the Pegasus Reference Guide.

4.4.1.5 Help Menu

Under the *Help* drop-down menu, the user can view licensing information, open the Pegasus Reference Guide, view a list of updates in the software and determine the version of the Pegasus software.

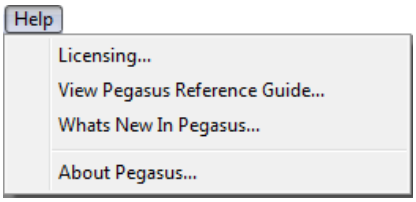


Figure 4.9 Main window *Help* submenu

- ***Licensing…*** opens the License Manager dialog box, where the user can view and update the Pegasus license.
- ***View Pegasus Reference Guide*** opens the Pegasus Reference Guide, where the user can find detailed descriptions of all the features and functionality available in the Pegasus software.
- ***What's New in Pegasus*** opens a text file listing the changes from each version of the software.
- ***About Pegasus…*** opens a dialog box showing the version of the Pegasus software.

Information on viewing and updating your Pegasus license can be found below, as well as a more detailed description in the ***Licensing*** section of the Pegasus Reference Guide.

4.4.1.5.1 Licensing

Selecting the *Licensing…* options brings up the License Manager dialog box, which displays both the name associated with the license and the Host ID of the computer licensed for the DAS.

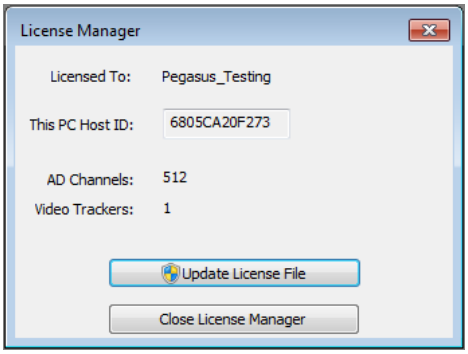


Figure 4.10 Pegasus license manager

Choosing the "Update License File" option will allow the user to select a license file. The file must have the filename NlxLicense.lic for the software to recognize it as a license. This file is located in <Installation drive>\ProgramData\Neuralynx folder. If you cannot locate your license file or do not have one, please contact Neuralynx at support@neuralynx.com.

4.4.2 Time Window Options

The Time Window has three submenus for the user, *File*, *Display* and *Audio*. These options only apply to the selected Time Window and will not be applied to any other open Time Window. The title of the Time Window will include the unique name of the

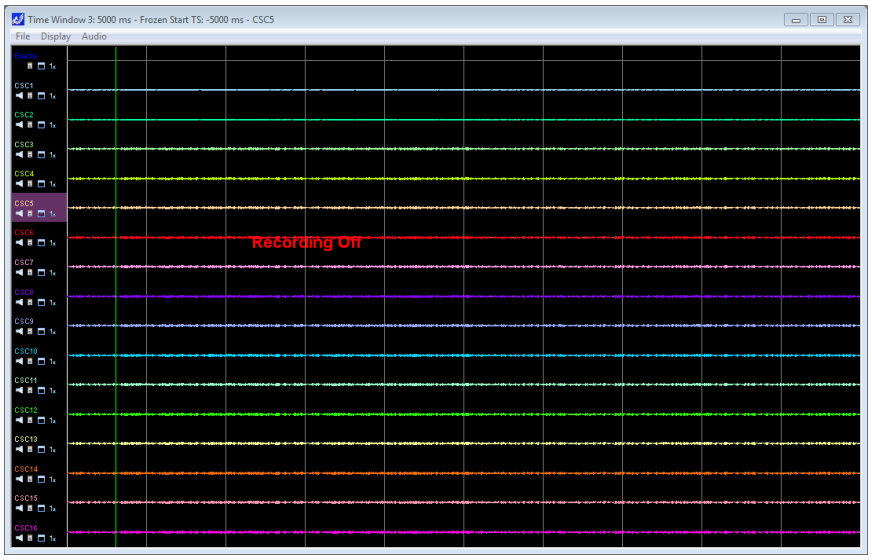


Figure 4.11 Time window

Time Window, the timeframe of the window in milliseconds and the selected CSC signal.

4.4.2.1 File Menu

The *File* drop-down menu provides the user with the option to close the selected Time Window. The hot key combination of **Alt+F4** will also close the selected Time Window.

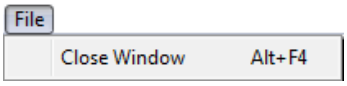


Figure 4.12 Time window *File* submenu

4.4.2.2 Display Menu

The *Display* drop down menu provides options for the user to configure the manner in which the data is displayed in the selected Time Window. The options only apply to the Time Window in which the drop down menu appears and will not be applied to any other Time Window. Each Time Window will need to be configured separately.

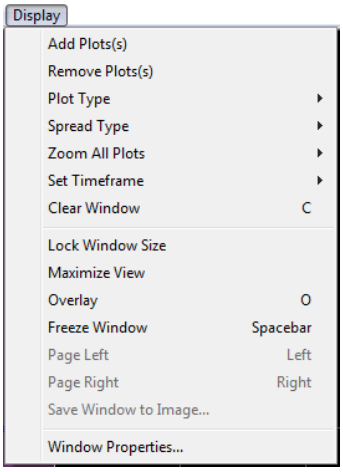


Figure 4.13 Time window *Display* submenu

The *Display* options allow the user to add and remove CSC plots in the selected Time Window, select a plot and spread type, choose a zoom option for all the data in the Time Window, change the timeframe of the Time Window, clear or freeze the data displayed in the selected Time Window, maximize one of the CSC plots, overlay the incoming data or lock the size of the window. The *Windows Properties…* option opens the Acquisition Entities and Display Properties dialog box for the selected Time Window. Detailed information on these options can be

found in the ***Continuously Sampled Channels*** section of the Pegasus Reference Guide.

4.4.2.2.1 Add Plot(s)

The *Add Plot(s)* option allows the user to add any CSC, CSG, Spike or Event acquisition entities created in Pegasus to the Time Window. Selecting *Add Plot(s)* opens a dialog box with the names of the available acquisition entities that can be added to the Time Window (see below). Select the acquisition entity or entities that you would like added to the Time Window and then select "Add Acquisition Entities". Using the Shift or Control keys allow for multi-selection of the AEs. The *Add Plot(s)* option can also be accessed by right-clicking in the selected Time Window.

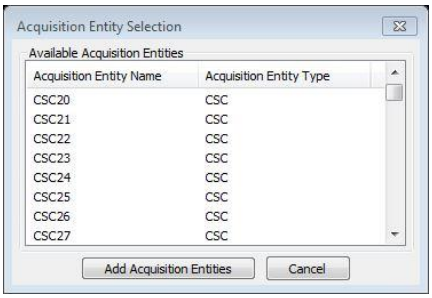


Figure 4.14 Time window *Add Plot(s)* options

4.4.2.2.2 Remove Plot(s)

The *Remove Plot(s)* option allows the user to remove any acquisition entities already displayed in the selected Time Window. Selecting *Remove Plot(s)* opens a dialog box with the names of the available acquisition entities that can be removed from the Time Window (see below). Select the acquisition entity or entities that you would like removed from the Time Window and then select "Remove Acquisition Entities". Using the Shift or Control keys allow for multi-selection of the AEs. The *Remove Plot(s)* option can also be accessed by right-clicking in the selected Time Window.

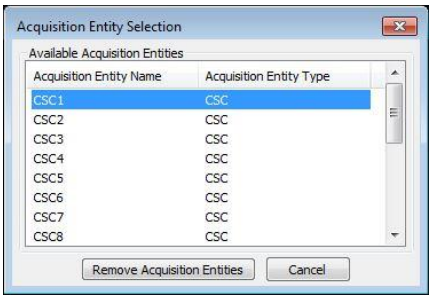


Figure 4.15 Time window *Remove Plot(s)* options

4.4.2.2.3 Plot Types

The *Plot Types* option allows the user to choose how the data is drawn in the selected Time Window. The options include Flash, Scroll and Sweep. Sweep is the default setting. More information on each of these can be found in the ***Continuously Sampled Channels*** section of the Pegasus Reference Guide.

4.4.2.2.4 Spread Types

The *Spread Types* option allows the user to choose the orientation and size of the CSC plots in the selected Time Window. The options include Spread, Half Spread and Common Zero. Spread is the default setting. More information on each of these can be found in the ***Continuously Sampled Channels*** section of the Pegasus Reference Guide.

4.4.2.2.5 Zoom All Plots

The *Zoom All Plots* option provides a means for the user to increase the viewing amplitude of the all the CSC plots in the selected Time Window. There are six different zoom options: *1x*, *2x*, *4x*, *8x*, *16x* and *32x*. The zoom factor is a multiplier used only when plotting the electrophysiology data and does not change the manner in which the data is collected in Pegasus. The default value is *1x*. This option can also be accessed by right-clicking in the selected Time Window.

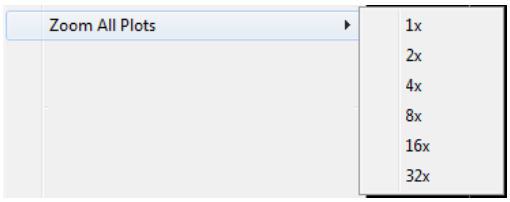


Figure 4.16 Time window *Zoom All Plots* options

4.4.2.2.6 Set Timeframe

The *Set Timeframe* option allows the user to specify the length of time in milliseconds that data remains in the selected Time Window. The options are 100, 200, 500, 1000, 2000, 5000 and 10000 milliseconds. The default value is 5000ms. If the user changes the Timeframe, the data will be cleared from the selected Time Window and displayed according to the newly selected Timeframe. The title of the Time Window will change to reflect the new Timeframe. This option can also be accessed by right-clicking in the selected Time Window.

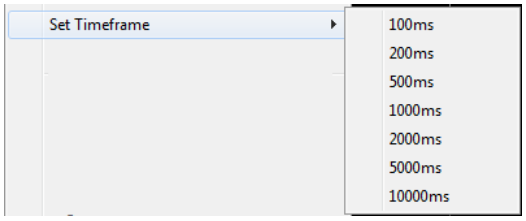


Figure 4.17 Time window *Set Timeframe* options

4.4.2.2.7 Clear Window

Selecting the *Clear Window* option clears all the data from the active Time Window. The hot key **C** will also perform the same function. This option can also be accessed by right-clicking in the selected Time Window.

4.4.2.2.8 Lock Window Size

The *Lock Window Size* option prevents the user from resizing the selected Time Window. A check mark will appear next to the *Lock Window Size* option in the *Display* drop-down menu. To disable this option, the user will need to select it again from the drop-down menu.

4.4.2.2.9 Maximize View

The *Maximize View* option allows the user to maximize a selected CSC plot to encompass the entire Time Window in which it appears. A check mark will appear next to the *Maximize View* option in the *Display* drop down menu. To return to the original view with all plots displayed, the user will need to select *Maximize View* again. This option can also be accessed by right-clicking in the selected Time Window.

4.4.2.2.10 Overlay

The *Overlay* option allows the user to continuously write data for all plots in the selected Time Window, with new data written on top of previously displayed data. A check mark will appear next to the *Overlay* option in the *Display* drop-down menu. The hot key **O** will also perform the same operation. To return to the original view, the user can either select the *Overlay* option from the *Display* drop-down menu or use the **O** hot key.

4.4.2.2.11 Freeze Window

Selecting the *Freeze Window* option will result in no new data being drawn in the active Time Window. The hot key for this operation is the **Spacebar**. Once the *Freeze Window* option has been selected, a check mark will appear next to the *Freeze Window* option in the *Display* drop-down menu (see image below); the title of the selected Time Window will be updated to reflect that the data is frozen; and three new options become available to the user, *Page Left*, *Page Right* and *Save Window to Image…*. The user can scroll through past data using the *Page Left* and *Page Right* options. An image of the selected Time Window can also be saved by selecting the *Save Window to Image…* option. New data will not be shown in the Time Window until "Freeze Window" is selected again or the Spacebar is pressed. This option can also be accessed by right-clicking in the selected Time Window.

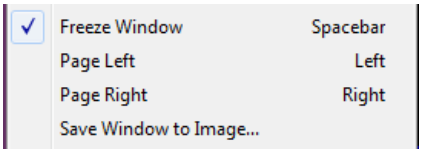


Figure 4.18 Time window *Freeze Window* option

4.4.2.2.12 Right-Clicking in the Time Window

Right-clicking in the Time Window opens a menu that includes many of the

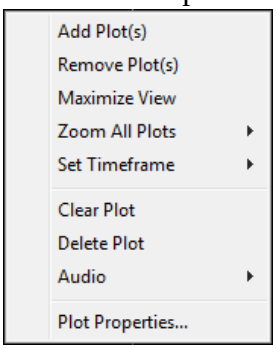


Figure 4.19 Time window right-click menu

previously mentioned features, but also adds the possibility to clear or delete a plot, as well as listen to a plot.

- ***Add Plot(s), Remove Plot(s), Maximize View, Zoom All Plots, Set Timeframe*** summaries of these functions are outlined in sections ***4.3.2.2.1 Add Plot(s)*** through ***4.3.2.2.9 Maximize View*** above. Detailed descriptions can be found in the ***Continuously Sampled Channels*** section of the Pegasus Reference Guide
- ***Clear Plot*** allows the user to clear the data for a selected CSC plot
- ***Delete Plot*** allows the user to delete a selected CSC plot from the active Time Window. This plot can be added back using the *Add Plot(s)* option
- ***Audio*** allows the user to listen to selected CSC plots. A brief summary on the audio options is outlined below in section ***4.3.2.3 Audio Menu***. More detailed information is provided in the ***Audio*** section of the Pegasus Reference Guide.

4.4.2.3 Audio Menu

The *Audio* drop down menu provides the user with options to listen to CSC data, mute the data being played through the speakers or open the audio options dialog box.

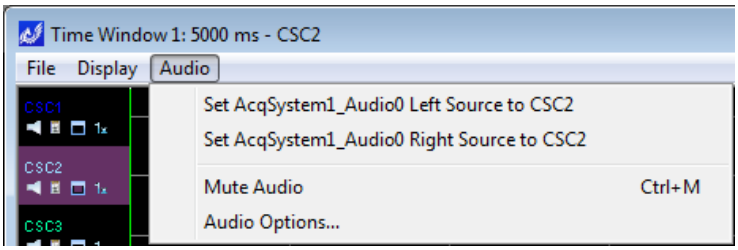


Figure 4.20 Time window *Audio* submenu

- ***Set AcqSystem1_Audio0 Source*** allows the user to set a CSC/EEG channel as the source for either the right or left output of the AcqSystem1_Audio0 device. The currently selected acquisition entity will be the "Set to" source, as illustrated in Figure 4.20 above.
- ***Mute Audio*** allows the user to mute all audio output
- ***Audio Options…*** opens the Audio Output Control dialog box.

Detailed information is provided in the ***Audio*** section of the Pegasus Reference Guide.

4.4.3 Spike Window Options

The Spike Window has three options for the user, *File*, *Display* and *Audio*. These options only apply to the selected Spike Window and will not be applied to any other open Spike Window. The title of the Spike Window will include the unique name of the Spike Window and the selected Spike signal.

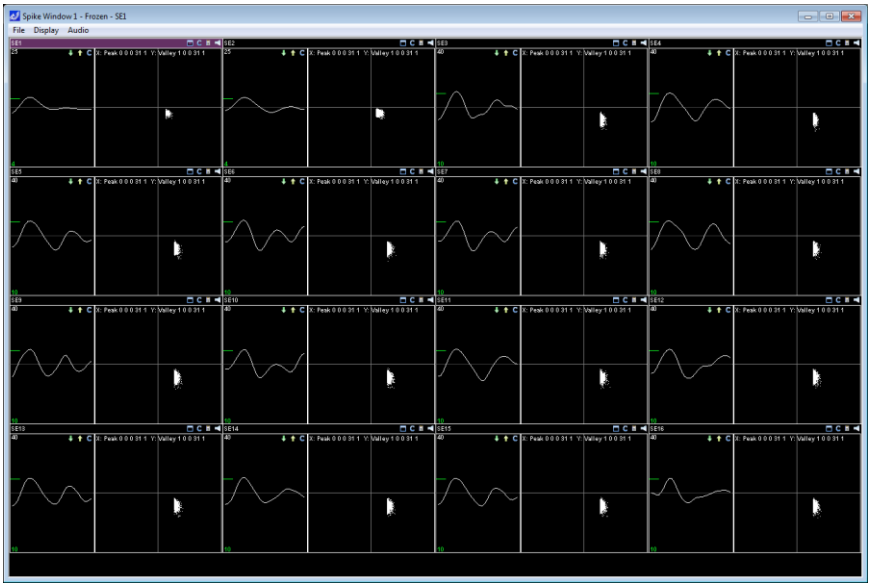


Figure 4.21 Spike window

4.4.3.1 File Menu

The *File* drop-down menu provides the user with the option to close the selected Spike Window. The hot key combination of **Alt+F4** will also close the selected Spike Window.

4.4.3.2 Display Menu

The *Display* drop down menu provides options for the user to configure the manner in which the data is displayed in the selected Spike Window. The options only apply to the Spike Window in which the drop down menu appears and will not be applied to any other Spike Window. Each Spike Window will need to be configured separately.

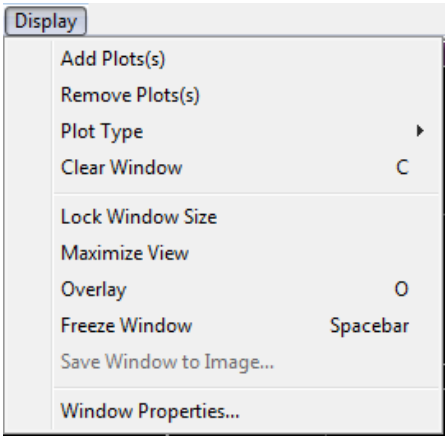


Figure 4.22 Spike window *Display* submenu

Brief descriptions of these options are either given in previous sections or described below. Detailed information on each of these options can be found in the ***Spike*** section of the Pegasus Reference Guide.

- ***Add Plot(s)*** see section ***4.3.2.2.1 Add Plot(s)*** in the Time Window chapter above for a brief description.
- ***Remove Plot(s)*** see section ***4.3.2.2.2 Remove Plot(s)*** in the Time Window chapter above for a brief description.
- ***Plot Type*** allows the user to select the type of plot to be displayed for the Spike acquisition entity selected. The options include *Waveform*, *Feature* and the combination of both *Waveform and Feature*. Waveform displays the extracted waveform from a detected spike, where Feature shows the calculated feature information in an XY scatter plot. The default setting is Waveform\Feature.

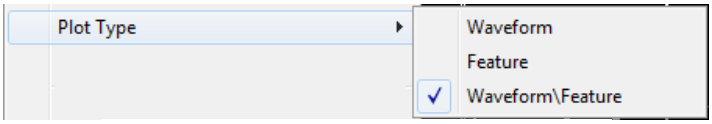


Figure 4.23 Spike window *Plot Type* options

- ***Clear Window*** see section ***4.3.2.2.7 Clear Window*** in the Time Window chapter above for a brief description.
- ***Lock Window Size*** see section ***4.3.2.2.8 Lock Window Size*** in the Time Window chapter above for a brief description.
- ***Maximize View*** see section ***4.3.2.2.9 Maximize View*** in the Time Window chapter above for a brief description.
- ***Overlay*** see section ***4.3.2.2.10 Overlay*** in the Time Window chapter above for a brief description.
- ***Freeze Window*** allows the user to freeze the window, where no new data will be drawn in the active Spike Window. The hot key for this operation is the **Spacebar**. Once the *Freeze Window* option has been selected, a check mark will appear next to the *Freeze Window* option in the *Display* drop-down menu (see image below), the title of the selected Spike Window will be updated to reflect that the data is frozen, and a new option *Save Window to Image…* becomes available to the user. By selecting the *Save Window to Image…* option, an image of the selected Spike Window can be saved. New data will not be shown in the Spike Window until "Freeze Window" is selected again or the Spacebar is pressed. This option can also be accessed by right-clicking in the selected Spike Window.

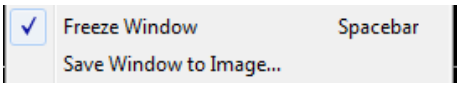


Figure 4.24 Spike window *Freeze Window* options

- ***Right-clicking in the Spike Window*** Right-clicking in the Spike Window opens a menu that includes many of the previously mentioned options, and also adds the possibility to clear or delete a plot, listen to a plot as well as zoom into certain quadrants of the Feature space. The *Plot Properties…* option opens the Acquisition Entities and Display Properties dialog box for that Spike Window.

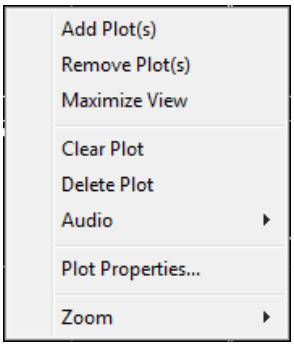


Figure 4.25 Spike window right-click menu

- ***Add Plot(s), Remove Plot(s),*** and ***Maximize View*** are covered in previous sections.
- ***Clear Plot*** allows the user to clear the data for a selected Spike plot
- ***Delete Plot*** allows the user to delete a selected Spike plot from the active Spike Window. This plot can be added back using the *Add Plot(s)* option
- ***Audio*** allows the user to listen to selected Spike plots. A brief summary on the audio options is outlined below in section ***4.3.3.3 Audio Menu***. More detailed information is provided in the ***Audio*** section of the Pegasus Reference Guide.
- ***Zoom*** allows the user to zoom into a specific quadrant of Feature space. To have this option available, the user must right-click within the Feature portion of the display, if available.

4.4.3.3 Audio Menu

The *Audio* drop down menu provides the user with options to listen to Spike data, mute the data being played through the speakers or open the audio options dialog box.

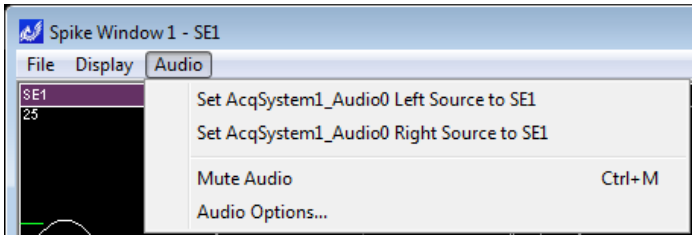


Figure 4.26 Spike window *Audio* submenu

- ***Set AcqSystem1_Audio0 Source*** allows the user to set a Spike channel as the source for either the right or left output of the AcqSystem1_Audio0 device. The currently selected acquisition entity will be the "Set to" source, as illustrated in Figure 4.26 above.
- ***Mute Audio*** allows the user to mute all audio output
- ***Audio Options…*** opens the Audio Output Control dialog box.

Detailed information is provided in the ***Audio*** section of the Pegasus Reference Guide.

4.4.4 Video Window Controls and Options

The Video Window has two options for the user, *File* and *Display*. A panel also appears within the Video Window that allows the user to pan, tilt and zoom the camera. If available, the audio from the camera will be played through the PC speakers.

4.4.4.1 File Menu

The *File* drop-down menu provides the option to close the Video Window. The hot key combination of **Alt+F4** will also close the active Video Window.

4.4.4.2 Display Menu

The *Display* drop-down menu provides the options to add or remove images from the selected Video Window, clear or freeze the image in the Video Window as well as lock the size of the window.

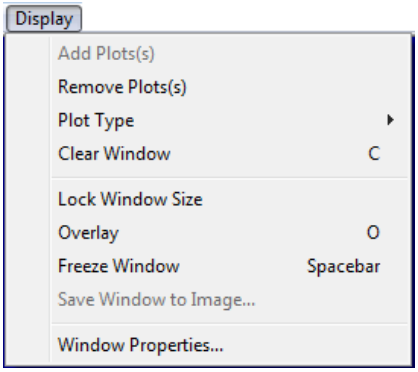


Figure 4.27 Video window *Display* submenu

4.4.4.2.1 Add Plot(s)

The *Add Plot(s)* option allows the user to add any video acquisition entities created in Pegasus to the selected Video Window. Selecting *Add Plot(s)* opens a dialog box with the names of the available acquisition entities that can be added to the Video Window.

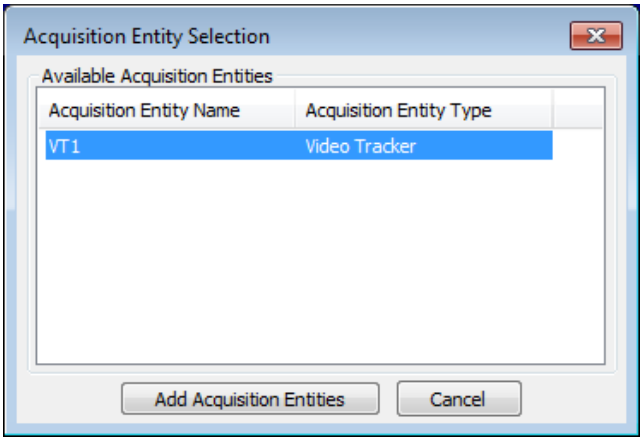


Figure 4.28 Video window *Add Plot(s)* option

The Video Window only supports one plot per window. Therefore, if a video acquisition entity is already assigned to the Video Window, the option to add a

plot will not be available. To add a different video acquisition entity to the Video Window, the user must first remove the plot.

4.4.4.2.2 Remove Plot(s)

The *Remove Plot(s)* option allows the user to remove a video acquisition entity from the selected Video Window. Selecting *Remove Plot(s)* opens a dialog box with the name of the available acquisition entity that can be removed from the Video Window.

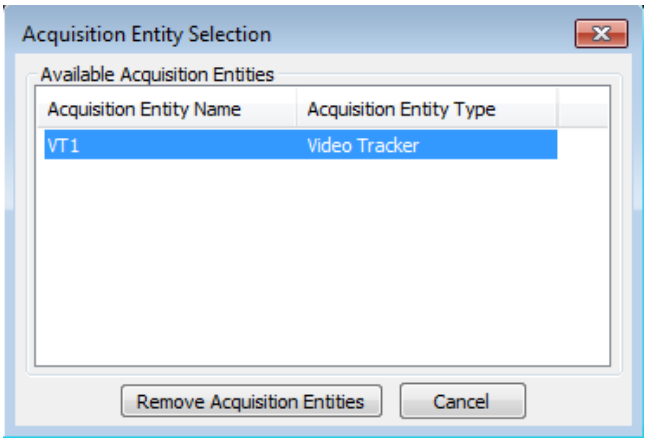


Figure 4.29 Video window *Remove Plot(s)* option

The Video Window only supports one plot per window. Therefore, once a video AE is removed from the Video Window, nothing will be displayed in the window until another AE is added. Additionally, when the video AE is removed, all settings associated with the display of that AE are also removed. If a video acquisition entity is not already assigned to the Video Window, the option to remove a plot will not be available.

4.4.4.2.3 Plot Type

"Live Video" is the only *Plot Type* option in the Pegasus software version 2.0.0.

4.4.4.2.4 Clear Window

Selecting the *Clear Window* option clears the data from the active Video Window. The hot key **C** will also perform the same function. This option can also be accessed by right-clicking in the selected Video Window.

4.4.4.2.5 Lock Window Size

The *Lock Window Size* option prevents the user from resizing the selected Video Window. A check mark will appear next to the *Lock Window Size*

option in the *Display* drop-down menu. To disable this option, the user will need to select it again from the drop-down menu.

4.4.4.2.6 Freeze Window

The *Freeze Window* option allows the user to freeze the image displayed in the Video Window. The hot key for this operation is the **Spacebar**. Once the *Freeze Window* option has been selected, a check mark will appear next to the *Freeze Window* option in the *Display* drop-down menu, the title of the selected Video Window will be updated to reflect that the data is frozen, and a new option *Save Window to Image…* becomes available to the user. By selecting the *Save Window to Image…* option, an image of the selected Video Window can be saved to the computer. The video feed will not go live again until "Freeze Window" is selected again or the Spacebar is pressed. This option can also be accessed by right-clicking in the selected Spike Window.

4.4.4.3 Options in the Video Window (PTZ Control)

When the Video Window opens, a Control Panel appears in the upper left-hand corner of the Video Window.

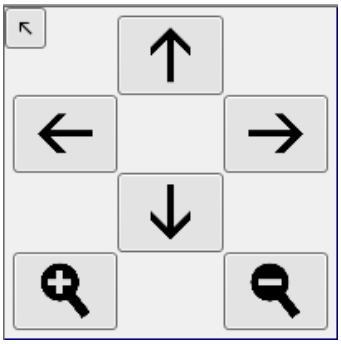


Figure 4.30 Video window pan, tilt and zoom (PTZ) control panel

The user can select the ← and → arrows to pan the camera, the ↑ and ↓ arrows to tilt the camera and the and options to adjust the zoom. The option in the corner of the panel will minimize the Control Panel. Once the Control Panel is minimized, the icon will appear. Clicking on this icon will bring up the Control Panel once again.

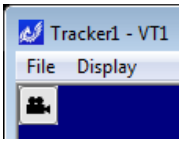


Figure 4.31 Video window PTZ control panel minimized

Detailed information on live video feed can be found in the ***Video Trackers*** section of the Pegasus Reference Guide.

4.4.5 Acquisition Entities and Display Properties Dialog Box

The Acquisition Entities and Display Properties (AEDP) dialog box allows the user to view and update the current settings for all plots, plot windows and acquisition entities created in Pegasus. One of the ways in which the AEDP dialog box can be launched is from the *View* submenu of the Main Window in Pegasus.

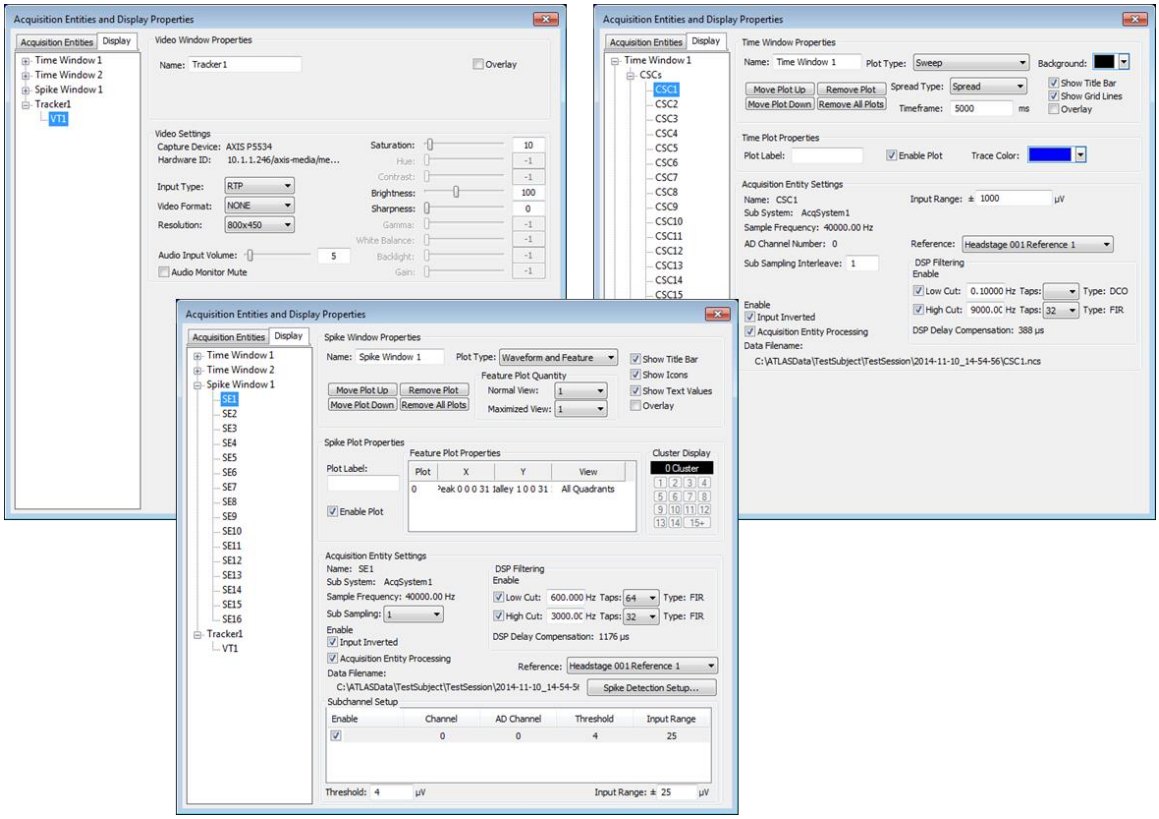


Figure 4.32 The Acquisition Entities and Display Properties dialog box for Time, Spike and Video Windows

The settings for each type of acquisition entity created in Pegasus can be adjusted individually or globally in the AEDP. Additionally, the display settings for each type of window can also be adjusted. Some of these settings have been briefly covered in this document. An overview of the AEDP can be found in the ***Properties Page*** section of the Pegasus Reference Guide. Time window properties are covered in the ***Continuously Sampled Channels*** section of the Pegasus Reference Guide, spike window properties in the ***Spikes*** section and video window properties in the ***Video Trackers*** section of the Pegasus Reference Guide.

Warning!

Changing the Reference property for CSCs, Spikes or CSG object while recording is on will result in data file headers only storing the last reference value specified. If this occurs, the file headers will direct the user to the log file where log messages are stored documenting any reference changes that were made. Events will also be generated any time a reference change may cause a conflict for a particular data file.

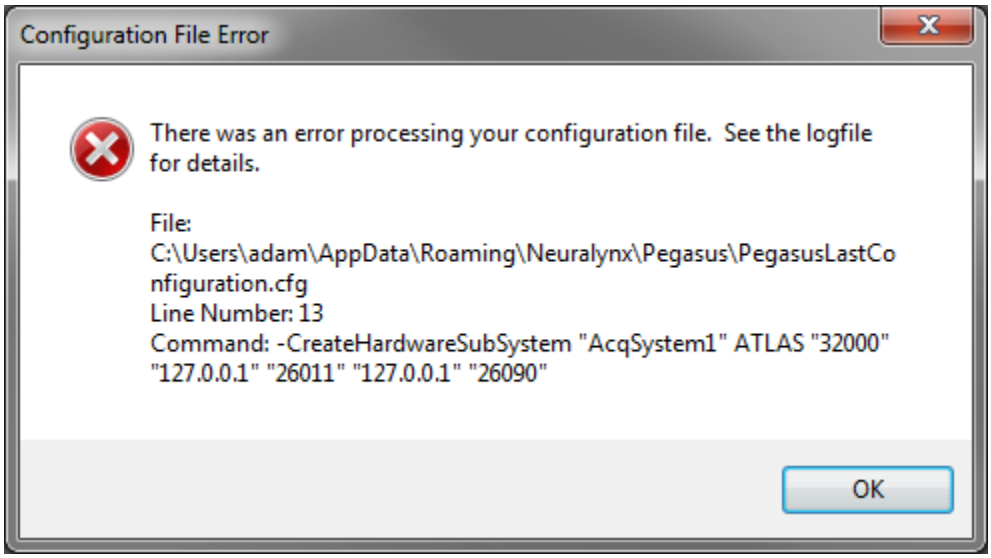
5 Troubleshooting

This section addresses situations that you may experience when using the Pegasus software. If you experience an issue that is not found in this section, please contact Neuralynx at support@neuralynx.com.

A log file will be used to store diagnostic information from the application during execution and will automatically be created every time the application is run. This file can be found here:
<DataDrive>\<NeuralynxData\Pegaus\<SubjectID>\SessionName>\<Date>\PegasusLog File.txt

Example:
C:\NeuralynxData\Pegasus\Test-Subject\Test-Session\2014-12-03_10-37-53\PegasusLogFile.txt

Pegasus displays a Configuration File Error upon startup.



The error displayed above is due to the Atlas Acquisition Amplifier hardware not being powered on or Pegasus has been started prior to the Atlas Acquisition

Amplifier hardware completing its boot cycle. Close the error window and insure the hardware is on and completed its boot cycle. Further information on the Atlas Acquisition Amplifier hardware can be found in the *Atlas Instructions for Use Manual*.

If a similar error window is generated, even though the hardware is on and booted, an invalid configuration file may have been selected. This will prevent Pegasus from booting. Close Pegasus and select a valid startup file.

Acquisition / Recording are on, but the time window is not displaying current data.

The Time Window may be in the "Frozen" state. This is when the user has struck the spacebar on the keyboard, causing the current information to stay static in the active Time Window. Striking the spacebar again will unfreeze the window. More information on this is located in the Pegasus Reference Guide.

Other troubleshooting issues.

If the previous topics do not address the issues with running or starting Pegasus, please contact the Neuralynx support team (support@neuralynx.com) or your sales representative.