VIVONOETICS

FEATURES

- Integrate multiple sensor data streams.
- Intelligent synchronization algorithms ensure accurate alignment.
- Synchronize data streams with a common event.
- Point and click manual synchronization methods.
- Visualize channels to assess accuracy of alignment.
- Easy to use wizard assists in merging channels from synchronized data streams.
- Eliminate unnecessary channels during merge process.
- Seamlessly merge annotations (events).

VIVOSENSE™ SYNCHRONIZATION AND MERGE MODULE

VivoSense™ Synchronization and Merge module solves the sensor integration problem by streamlining the process of integrating and aligning files from multiple simultaneous sensor recordings. VivoSense™ Synchronization and Merge module provides tools to visually align data from different data streams, and then synchronize them using either annotations, a simple point and click operation, or automatically, by quickly and accurately analyzing the data content to find the best match.

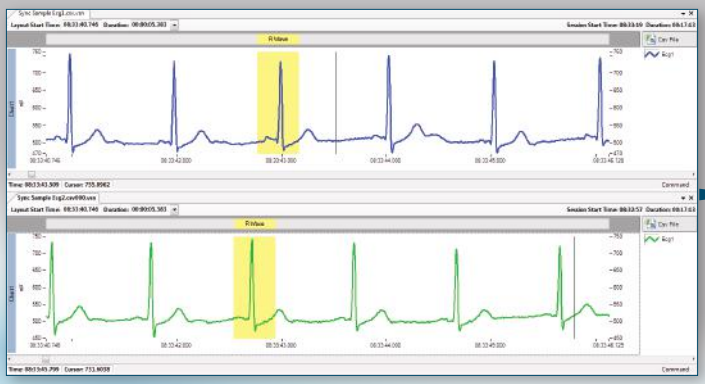
SYNCHRONIZATION

VivoSense™ offers three intuitive methods to synchronize disparate data streams.

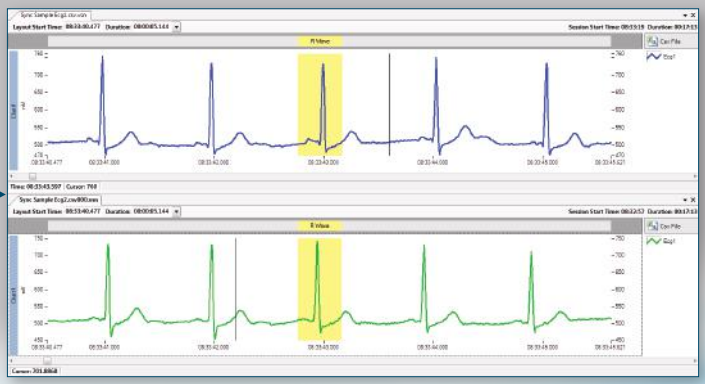
1. Point Synchronization: This is the simplest synchronization method. Allowing for a manual identification of the same point on the different data stream channels. Point synchronization is ideal for synchronize channels with the same type of data (e.g. ECG channels) and with easily identifiable points.

2. Annotation Synchronization: This method uses common, existing hardware or software annotations (events) in the data streams as guides for alignment. Annotation Synchronization allows quick and easy identification of the best synchronization points in the separate data streams.

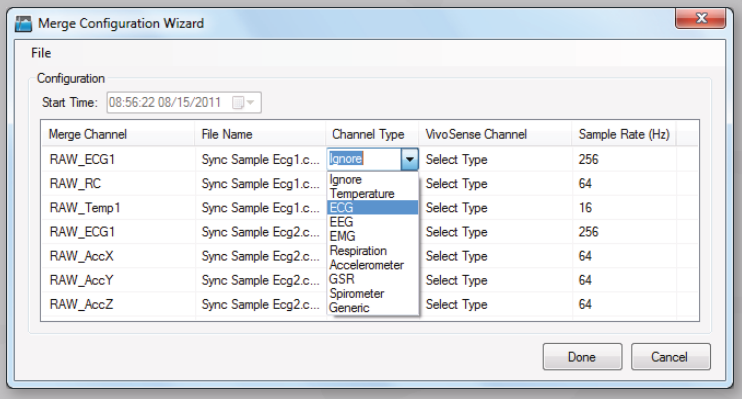
3. Intelligent Synchronization: Performs automatic scanning through pairs of channels in order to find the optimal synchronization point. With Intelligent synchronization algorithms, VivoSense™ searches through each data stream or a specified region of the data stream to find the best time shift for each session. More than two files can be intelligently synchronized at once, saving substantial time and effort when working with more than two simultaneous recordings.

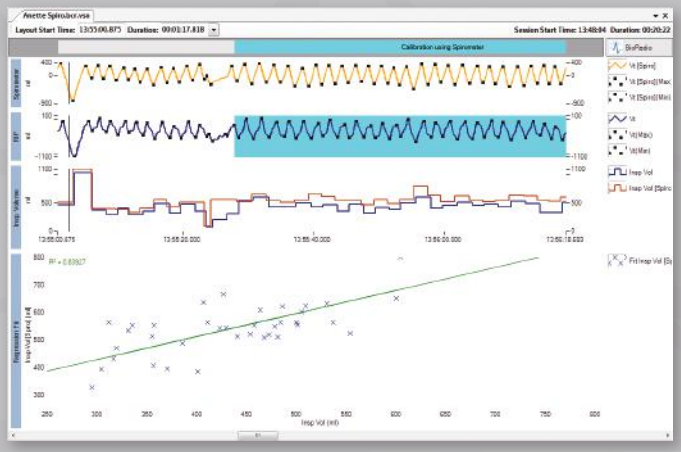


Unsynchronized ECG channels.



Annotation synchronized ECG channels.





VivoSense™ synchronization and merge used to synchronize spirometer with respiratory inductance plethysmography. Synchronized data was used to calibrate the respiration bands and the regression fit shows resulting accuracy.

MERGE

Quickly merge only the desired channels across multiple recordings, and then combine them into a single, time-synchronized file.

The Merge algorithm checks for and eliminates duplicate channel names to avoid channel overlap and create a seamless single file.

Seamlessly merge hardware and software annotations (events) from all data streams into the single file. The resulting merged file may be analyzed, visualized and shared within the VivoSense™ software as well as synchronized with additional data streams.

CASE STUDY

Respiratory inductance plethysmography (RIP) data was captured simultaneously with spirometric data using separate sensor systems.

VivoSense™ was used as the software solution to:
- import the separate sensor data into a single software platform.
- intelligently synchronize the data streams.
- and merge the RIP and spirometric sensor data into a single file.

The synchronized and merged spirometry data were then used to accurately calibrate the plethysmographic signals to study exercise induced breathlessness in COPD subjects.

CUSTOMIZATION

Vivonoetics offers customizations services for VivoSense™.

Contact us to discuss any additional desired synchronization requirements for your research protocol and we will work with you to incorporate these features.

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