

Signal Solutions LLC

SleepStats Batch Export App

V1.0



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1. Software Overview

The SleepStats Batch Export App provides convenient batch processing of all exports available in SleepStats4 PRO. Data records from single or multiple PiezoSleep recordings (datafiles) can be imported into the app, with single or multiple time intervals chosen for analysis from each datafile. Desired SleepStats exports can then be selected for batch processing.

The software has two main definitions: (1) **dataset** and (2) **export configuration**.

Dataset: Dataset entries are created using the Data Import tool (see **Importing Data**). A dataset is comprised of a set of defined time periods for specific channels in data files and their corresponding Group assignments. Dataset entries can be defined asynchronously for each channel (allowing overlap), and multiple entries can be defined from the same channel in the same file, provided that each defined period is assigned a unique **Group** label. When exports are generated, the group will be included in the export name to differentiate exports for a given channel.

Animal ID	Record Start	Record End	Group
Cage 1	13/10/2025 14:13:31	16/10/2025 11:42:31	Full-Recording ▼
Cage 1	14/10/2025 06:00:00	15/10/2025 06:00:00	First-Day ▼
Cage 1	15/10/2025 06:00:00	16/10/2025 06:00:00	Second-Day ▼

Export Configuration: The export configuration is defined by the set of selected exports and their relevant export parameters.

Once the dataset and export configuration have been defined in the software, exports can be generated using the “**BATCH EXPORT**” button (see **Generating Exports**). When processing data, the software will loop through dataset entries, extract the specified time region, and compute the relevant statistics for each selected export.

The dataset and batch export configuration can be saved/loaded using the “Save/Load Dataset” and “Save/Load Batch Config” options from the File menu (see **Saving/Loading Software Configuration**).

2. Importing Data

The Data Import tool can be accessed by selecting the **“Import Data”** button on the software front panel. Once a BIN/BINFB file is selected, a window will appear displaying the available channels, the start/end time of the recording, and will indicate any auxiliary files found alongside the data file (under *File Status*). Channels can be selected/deselected for import using the checkbox in the left-most “Incl” column. The *Start Time*, *End Time*, and *Group* can be edited by double-clicking in the table and editing the table values. Multiple entries can be modified at once, by selecting multiple rows on the table (using CTRL+A, SHIFT+Click, or CTRL+Click) and using the **“Apply to Selected”** controls below the table. Multiple time segments can be imported from the same channel within a file by re-importing the same file and changing the start and end times to process the data over that interval.

Import To Dataset:

File: C:\Users\Sigal Solutions\Desktop\data\10-13-25_mice test.binf

Incl.	Chan	Animal	Start Time	End Time	Group	Env. Sensor
☒	1	Cage 1	14/10/2025 06:00:00	16/10/2025 06:00:00	Group-A	A1C2E39E
☒	2	Cage 2	14/10/2025 06:00:00	16/10/2025 06:00:00	Unassigned	A1C2E39E
☐	3	Cage 3	13/10/2025 14:13:31	16/10/2025 11:42:31	Unassigned	<undefined>
☐	4	Cage 4	13/10/2025 14:13:31	16/10/2025 11:42:31	Unassigned	<undefined>

Start Time: 13/10/2025 14:13:31
 14/10/2025 06:00:00 Apply to Selected

End Time: 16/10/2025 11:42:31
 16/10/2025 06:00:00 Apply to Selected

Group: Unassigned Apply to Selected

File Status

.FeatVec File: ☒
 .br.Feat File: ☒
 .at.Feat File: ☒
 .WSS File: ☒
 .ENV File: ☒
 .MAT File: ☒

Light-Dark Times:

Light Onset: 06:00:00
 Dark Onset: 18:00:00
☒ Use Env Sensor for LD Times

IMPORT DATA

The **File Status** panel indicates the status of auxiliary files (required for various exports) found alongside the bin/binfb file. When generating exports, the app will check the file status registers to determine if the category of exports can be processed, otherwise, it will skip to the next group.

Note: MAT files are generated when a datafile is opened in SleepStats. If a MAT file is present, the Batch Export App will load the sleep-wake threshold from the file. In cases where the stored threshold is not desired, delete or move the MAT file to prevent this behavior. In the event that thresholds need to be manually set, the file must be opened in SleepStats 4 Pro and adjusted (and saved to MAT file) before running the SleepStats Batch Export App.

Export Group	Required Files
Sleep-Wake	.FeatVec*
Breath Rate	.FeatVec*, _br.Feat*
Activity	.FeatVec*, _at.Feat*
Wake-REM-NREM	.FeatVec, .WSS
Environmental Sensor	.ENV

The **Light-Dark Times** panel can be used to modify the Light-Dark times. If an ENV file is found alongside the primary data file (indicated in the **“File Status”** area), the **“Use ENV Sensor for LD times”** control will be enabled – selecting this option will use the Lux data to override the Light-Dark times. When checked, an additional “Env Sensor” column will be added to the data table for assigning Env Sensors to channels. (Note: leaving env sensor <undefined> on channels not selected for import will cause a warning to appear at data import. This warning can be disregarded if all channels to be imported have Env Sensor assignments). Currently, the only way to remove an imported dataset entry, is to save the dataset to CSV, delete the row, and import the file back into the Batch Export app. Native entry deletion will be included in a later release.

3. Modifying Group Label Options

Group labels serve as a “Tag” to indicate context for dataset entries. The group label will be included in the export file name to allow differentiating exports from the same data file and can be edited in a number of ways.

Adding a Group Label: New group labels can be defined by (1) manually typing in the Group column at data import by double-clicking to select text and editing (see 2. Data Import), (2) manually typing in the Group column in the main window after data import by double-clicking to select text and editing, or (3) from the Label Editor (opened using the “**Modify Group Labels**” button). If a new label is manually typed into a table dropdown, the new item will appear as an option in the group dropdowns in the table. If adding from the Label Editor, select “**Add Group**” and type a new Group Label into the blank space and click “**Save**”. The new Group will then be an option from any group selection dropdowns.

Modifying a Group Label: To modify a group label, open the Label Editor using the “**Modify Group Labels**” button, and double click to select the desired label text and edit accordingly.

Deleting a Group Label: To delete a group label, open the Label Editor using the “**Modify Group Labels**” button, and double click the label and delete the text to leave a blank row. Click the Save button to apply.

Group labels cannot be edited/deleted if assigned to dataset entries.

4. Generating Exports

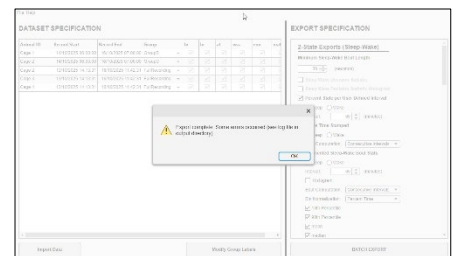
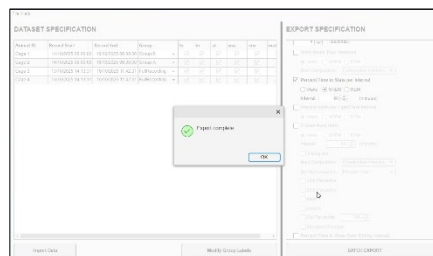
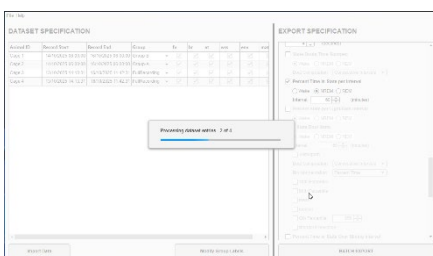
Exports of interest can be selected using the checkbox controls in the right panel. Some exports have additional configuration parameters (interval, state, statistic specification, etc).

Once the dataset and export parameters have been configured in the software, the data can be processed using the “**BATCH EXPORT**” button. A folder selection dialog will appear to specify the base directory for exports. The app will create a series of folders and files within this directory.

If any dataset entries are less than 24 hours, a prompt will appear asking whether to force fitting a threshold, or leave default value of zero (recommended). (Note: if a MAT file is present alongside the bin/binfb file, the software will load the threshold from the mat file).

When exports are generated, they will be grouped into folders for each datafile in the dataset. Within these folders, there will be a file for each selected export for each dataset entry. The file names will generally follow the format *exportName-State-AnimalID-Group.csv* (in some cases, the file name will vary slightly).

A progress dialog will appear, showing an “Export complete message when finished. The time to complete processing will depend on the size of the dataset, which exports are selected and the hardware specifications of the host machine. If any errors occur throughout processing, the triggering routine will be skipped and logged to a log.txt file in the export directory. In this case, a warning will appear when processing completes.



5. Saving / Loading Software Configuration

The dataset and export configuration definitions can be saved to file for loading back into the software for processing new data, replicating analysis, applying different export configurations etc. Go to File > save dataset. To reload a dataset, go to File > load dataset after launching the program. Reload Export configuration after loading all desired datasets for export.

Dataset CSV File Spec:

The dataset file is a CSV with the following format

Row1	Group Labels:	<Label-1>	<Label-2>	...						
Row2	Path	File	Chan	StartTime	EndTime	Group	LightOnset	DarkOnset	Env_Sensor	UseEnv
Row3	<FilePath>	<FileName>	<ChanNum>	<StartTime>	<EndTime>	<GroupLabel>	<LOTime>	<DOTime>	<EnvSensor>	<useEnv>
...	...	...	...	...	...	...	...	...	...	...

<*> denotes user editable values

<FilePath>: Location of data file (e.g. C:\Users\User\Documents\Data\)

<FileName>: Name of data file (e.g. myDataFile.binfb)

<ChanNum>: Channel number of recording =: {1, 2, 3, 4, ...}

<StartTime>: Start of dataset entry (DD/MM/YYYY HH:mm:ss)

<EndTime>: End of dataset entry (DD/MM/YYYY HH:mm:ss)

<GroupLabel>: Group assignment (Must be member of values defined in Row1)

<LOTime>: Light Onset time (HH:mm:ss)

<DOTime>: Dark Onset time (HH:mm:ss)

<EnvSensor>: Environmental Sensor assigned to Channel

If no ENV file present: <undefined>

If ENV File present AND useEnv = 0: <undefined>

If ENV file present AND useEnv = 1: DEVICE_SERIAL (e.g. A1B2C3D4)

<useEnv>: Use Environmental Sensor data to override Light-Dark Times

If no ENV file present: 0

If ENV file present: 0 or 1

If modifying the dataset CSV directly, great care should be taken to ensure all data specified in the file is valid (e.g. file paths are accurate, start/end times are within range of data file, etc).

Batch Export Config XML File Spec:

The Batch Export Configuration is saved as an XML file. The XML is grouped according to the categories of exports:

<SleepWake_exports>

<breathRate_exports>

<activity_exports>

<wakeNremRem_exports>

<envSesnor_exports>

Under each heading, each export has namespace block, e.g:

<swDecHist>

<Value>>false</Value>

</swDecHist>

The first <Value> block within the export namespace block will define whether the export is enabled (**true** or **false**). There are two exceptions to this: **swMinBoutLength** and **wrnMinBoutLength**. The <Value> for these blocks must be a positive-valued integer (specifying minimum bout length).

Some exports will have additional parameter blocks within the export namespace. Valid **Value** options for parameter blocks are as follows:

<u>Export Parameter</u>	<u>Options (case sensitive)</u>
<boutMethod>	Consecutive Intervals Round-Up
<boutNorm>	Percent Time Number of Bouts
<state>	
(sw Exports)	Sleep Wake
(wrn Exports)	Wake NREM REM
<interval>	[positive integer] (e.g, 60)
<increment>	[positive integer] (e.g, 10)
<qThresh>	[positive integer] (e.g, 256)

Otherwise, export parameter blocks will generally use **true** or **false** to specify whether to enable a given export parameter (e.g., *q10*, *mean*, *histogram*, etc)