Watchdog Documentation V2.0

Watchdog32

Watchdog is a single panel application that is used to load data from the Sony EX Data Acquisition System. The module monitors a user specified directory for the presence of XMR (Freq domain) and XMX(Time domain) data files. If new files are detected the user has the option to load the file automatically or to be prompted. The Monitoring interval, spectral types and max file load size can be configured by the user.

From version 2.0 the Watchdog module includes the ability to calculate Articulation Index scores. This can be applied to XMX, XMR and WAV file types. For XMX and WAV data the time domain data will be processed through a third octave filter bank before the AI scores are derived.

The module dialog has the following elements:

Watchdog Run Status

The status of the Watchog will be indicated at the top of the panel by either a flashing green light or a static red light. The Watchdog can be started of stopped by clicking on the "Start | Stop" button at the bottom left of the panel. When the Watchdog is running the "Options" button will be disabled. The "Cancel" button is only enabled when the digital octave filtering operations are in progress.

Watchdog Runtime information

The Watchdog will report any files it has processed in the large text area. This text area will present the last 100 messages.

PROCESSING OPTIONS

Click on the "Options…" button to show the following dialog.
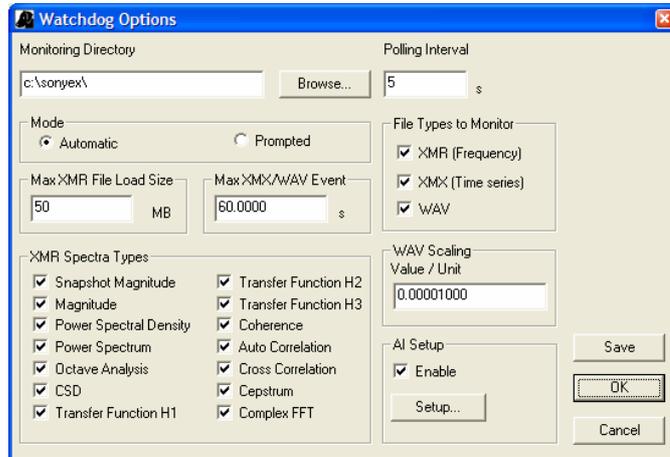
"**Monitoring Directory**" allows the user to set the directory where the Watchdog module will scan for XMR and XMX files. If the directory does not exist then the user will be prompted to create the directory:
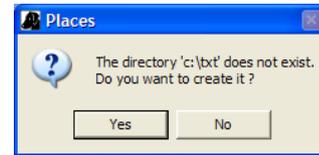
The user can also browse their PC for an existing directory by clicking on the "Browse" button.

"**Polling Interval**" allows the user to set the frequency of the watchdog. The time must be entered in seconds and must be greater than 1s.

"**Max XMR File Load Size**" allows the user to set the maximum amount of data that will be loaded from one file. This limit can be any value above 1MB and should be set according to the resources available on your machine. The value relates to the data loaded into "PCScanIV Post" and will account for any spectral options selected and the events loaded by the Watchdog module.

"**XMR Spectral Types**" allows the user to set which spectral data will be extracted from the XMR file. This selection will be applied to either Automatic or Prompted modes.

"**File Types to Monitor**". Select whether to poll for XMX, WAV, XMR.

"**Max XMX Event**" allows the user to set the maximum duration for data imported for a given event. As a example, an XMX file may contain 8 channels each with sample duration of 10minutes within each event. The amount of data in this example source file could easily exceed the available resource on the machine running PCScanIV Post. Setting the import duration to 1 minute would reduce the amount of data imported by a factor of 10. Only 1 minute of data would be imported for each channel in each event.

"**AI Setup**" group allows Articulation Index calculation routines to be enabled. See the dedicated section in this document for more information on this setting.

Click on **"Save"** to store the settings so that they will be reused when the Watchdog is restarted. Click on **OK** to only use the settings for the current session. Click on **"Cancel"** to abort your changes.

ARTICULATION INDEX SETUP
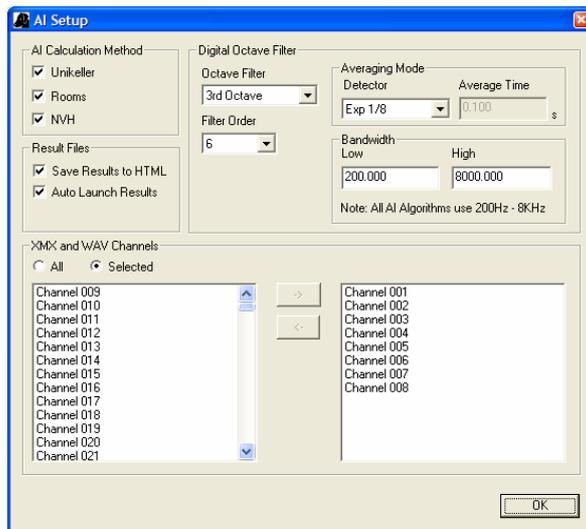
"**AI Calculation Method**" group allows the user to select any of the three AI methods supported by PCscanIV.

The "**Octave Filter**" list box permits the user to select the type of octave analysis should be conducted. The user may choose between Full, Third, Twelfth, Twenty-fourth, Forty-eighth and Ninety-sixth octave band analysis. Octave filters will be used to process XMX and WAV input file types.

The "**Detector**" list box permits the user to select the type of detector. The detector will be applied to the output of each of the digital octave filters used in the AI analysis. The exponential detectors have a fixed range of averaging times whereas with linear averaging, the user may supply the averaging time by entering a value in the averaging time edit box.

"**Bandwidth**" allows the user to set the maximum frequency range over which the AI should be calculated. The calculated upper bandwidth will be the minimum of either the setting in this dialog or the value determined from the signal sample rate.

"**Save Results to HTML**" will cause the AI results to be written to a series of HTML documents. An index page will be created that allows the user to quickly open specific event detail reports.

"**Auto Launch Results**" will cause the AI results HTML index document to be automatically loaded into a web browser once the calculations have completed. This enables a quick overview of the results without the need to load the resulting matrix objects into the PCscan graphing modules or to search the PC for the report files.

Channel Section

The AI calculation will only be applied to certain channels as specified in the following dialog. This list is simply an enumerated list of channels. Channel 01 will be the first channel loaded from an XMX or WAV file, Channel 02 the second and so on. This dialog has no apriori knowledge of the Sony EX channel configuration.
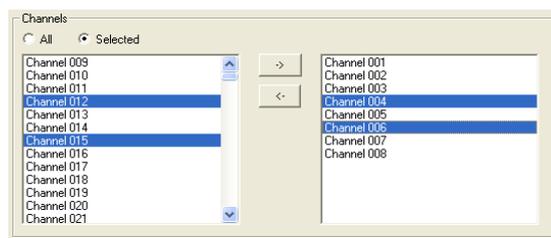
To process all channels click on the "**All**" radio button.

To process only specific channels, click on the "**Selected**" radio button. The lower section of the Channels group will now be enabled. The left hand list is the source channel list whilst the right hand side list contains the list of channels that should be processed for AI.

SONY EX AND PCSCANIV CONFIGURATION

In order for the Watchdog module to correctly identify completed files it is important that the XMR and XMX rename option in the PCScanIV software is **disabled**. All files should have the Sony EX data format eg

```
140605-121826_1.xmr
```

In prompted mode the user will be given the opportunity to rename the XMR, XMX file as part of the Watchdog load process.

EXAMPLE PROCESS USING PROMPTED MODE

1. Configure the Watchdog to monitor the "C:\sonyex" folder
2. Set the Mode to "Prompted"
3. Select all spectral types
4. Set the polling interval to 5s
5. Ensure the "XMR" options is checked.
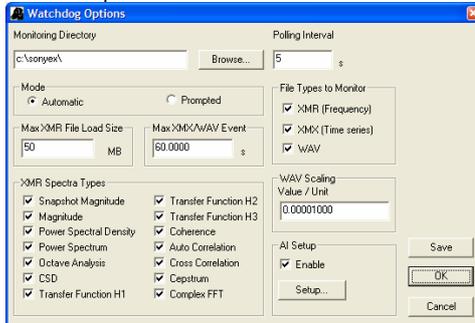
6. Click on the Setup… dialog in the AI Setup Group
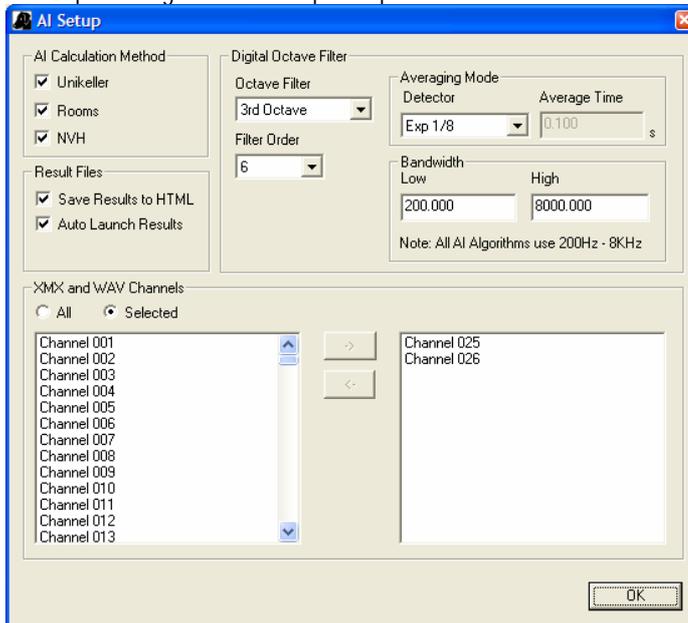
7. Ensure that the options are configured as shown in the dialog above.
8. Click on OK to confirm the AI options.
9. Click on OK to confirm all settings.
10. Start the Watchdog module by clicking on the Start button.

The watchdog will now monitor the C:\SONYEX folder waiting for completed XMR files. When a file is detected the load process will start:
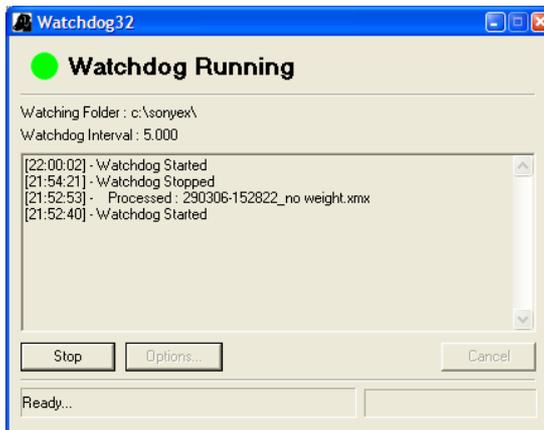
1. In prompted mode the user will be asked if they wish to rename the source XMR file. The current name will be displayed by default and can be accepted by clicking on either "Next>>>" or "Finish". Clicking on "Next>>>" will display the Events dialog. Clicking on Finish will automatically select all Events in the XMR file.
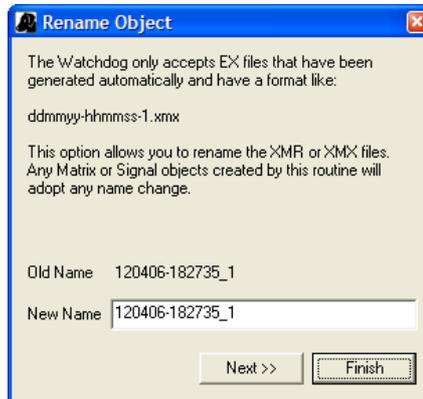
2. Once the name has been accepted the user will be asked to choose which events they wish to load. *This dialog will only be displayed if more than one event exists in the file.*
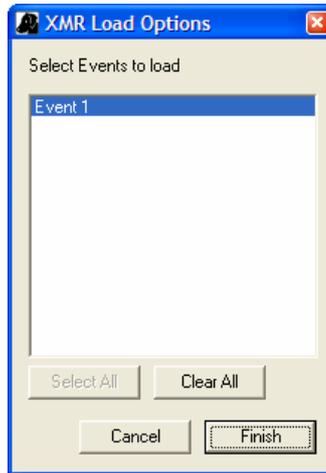
3. The data will now be loaded and a series of matrix objects will be created. The number of matrices created will depend upon the Spectral data types enabled in the options dialog and the number of events selected.
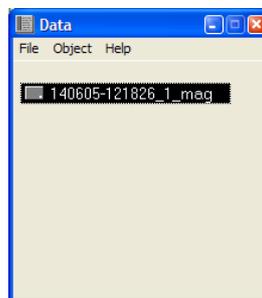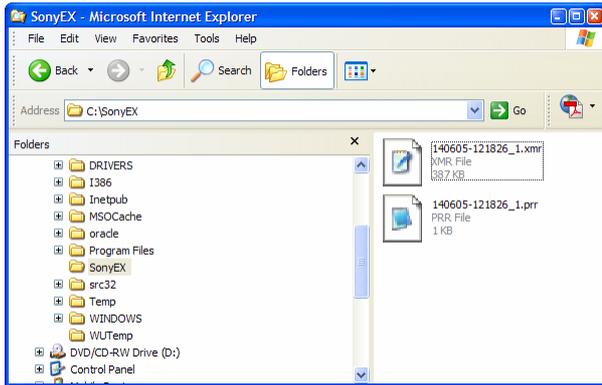
Prompt Options for XMX file imports
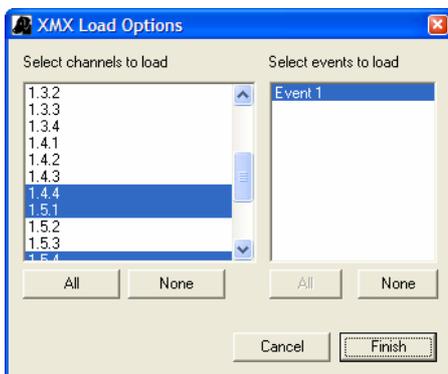
When and XMX file is detected and "Prompt" mode is selected then the following dialog will be displayed.

The user may select the Events and channels to be loaded. At least one channel and one event must be selected.

These settings will be remembered for future file imports. If the channel selections will remain unchanged between different loads, then the user will be able to click on "Finish" when the file rename dialog first appears.

Creation of .prr and .prx files
When an XMR or XMX file is successfully processed the Watchdog module will create a new file in the watchdog directory that has the same name as the source XMR or XMX file. The extension will be either .prr or .prx. The presence of a PRR or PRX file is used to tell the Watchdog module that it has previously loaded the corresponding XMR or XMX file and that it should now be ignored.

In the above screen shot you can see that the XMR file has a corresponding PRR file.

```
140605-121826_1.xmr                    Source XMR file
140605-121826_1.prr                    Watchdog generated file
```

Deleting the .prr file relating the an XMR file will cause the corresponding XMR file to be processed by the Watchdog module at the next polling interval.

AI Processing
When AI Processing is enabled on XMX or WAV files, selected channels will be processed by a series of fractional octave filters prior to having the AI scores calculated. Depending on the duration of the signal and the sample rate used, the calculation of the fractional octave values could take a significant length of time. Watchdog will provide the user with status information and the ability to abort a data calculation.
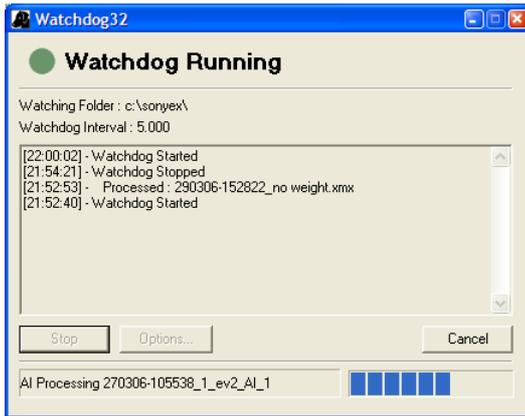
If a user chooses to produce an AI results report, the results will be available once processing has completed. The module will produce a series of HTML files in the PCscan Save Place. If the option is enabled the index page for the results will be automatically launched in a web browser.
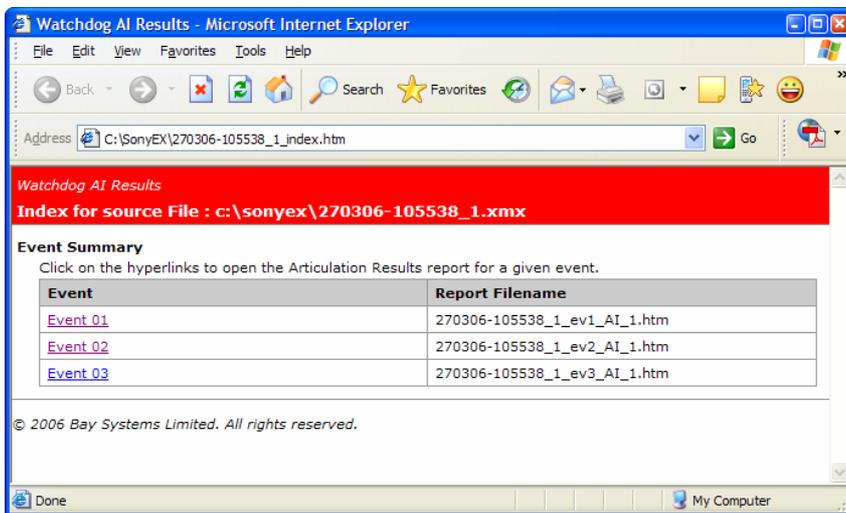
If a processed XMX file contains multiple events then the results index page will contain hyperlinks to reports for each event. Clicking on one of these links will show the AI report for that event.

Watchdog AI Results - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address 🗎 C:\SonyEX\270306-105538_1_ev1_AI_1.htm

Watchdog AI Results
Results for source File : c:\sonyex\270306-105538_1.xmx

Report Summary for event 001
Signal File : **270306-105538_1_ev1_1**
Matrix File : **270306-105538_1_ev1_AI_1**
Report Created : **Sunday, 02 April 2006 at 22:14:44**

Average Articulation Index scores are as follows:

Channel	Unikeller (%)	Rooms (%)	NVH (%)
1.1.1 - drv rt ear	-26.86	16.96	2.01
1.1.2 - drv left ear	-27.08	16.92	1.93

top

Worst Articulation Index scores are as follows:

Channel	Unikeller (%)	Rooms (%)	NVH (%)
1.1.1 - drv rt ear	-28.07 @ 0.6250s	16.00 @ 1.1250s	1.37 @ 1.1250s
1.1.2 - drv left ear	-28.07 @ 0.6250s	16.00 @ 1.1250s	1.37 @ 1.1250s

top

Channel : 1.1.1 - drv rt ear

Time (s)	Unikeller (%)	Rooms (%)	NVH (%)
0.0000	-20.17	18.00	4.31
0.1250	-25.56	17.00	2.29
0.2500	-26.36	17.00	2.24
0.3750	-26.80	17.00	1.70
0.5000	-27.31	17.00	1.93
0.6250	-28.07	17.00	1.40
0.7500	-27.15	17.00	1.68
0.8750	-26.79	17.00	1.92
1.0000	-27.57	17.00	1.73
1.1250	-27.51	16.00	1.37
1.2500	-27.19	17.00	1.83
1.3750	-27.09	17.00	1.89
1.5000	-27.33	17.00	1.90

Done   My Computer

KNOWN LIMITATIONS OF WATCHDOG WITH AI PROCESSING

1. AI processing cannot detect if data has been pre-weighting with A, B , C filters. This is a limitation of the PCScan driver. Not weighting filters should be used on the source data otherwise AI calculation will yield incorrect results.
2.