

WinSDR Version 4.xx Documentation

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Introduction and Download Link

WinSDR Version 4.1.9 can be downloaded at <http://psn.quake.net/winsdr>. This setup program will install all files needed to run WinSDR.

WinSDR is a Windows based (Win2K or XP) datalogger for the PSN-ADC-SERIAL Analog to Digital Converter boards and the new VolksMeter™ Sensor. This release of WinSDR supports both versions of the PSN Serial Output ADC board. The Version I and Version II ADC board has now been replaced by the Version III board.

WinSDR produces PSN event files that can be viewed and analyzed by WinQuake. WinQuake Version 2.8.9 can be downloaded here. This version of WinQuake and the new beta release have new features that allow it to work with WinSDR.

More information about WinSDR can be found in the WinSDR User mailing list archives. You can subscribe to this list using this web page: <http://www.seismicnet.com/maillist.html>

Feature List:

PSN-ADC-SERIAL ADC BOARD

- 16-Bit Resolution
- Records 1 to 8 channels
- Sample rates of 500, 250, 200, 100, 50, 25, 20, 10 and 5 samples per second (Note: Version I ADC boards can record up to 4 channels at 200 SPS. Version III Boards can record up to 4 channels at 500 SPS.)

VOLKSMETER™ SENSOR (Volksmeter™ is a trademark of the RLL Instruments Division of Zoltech Corporation)

- 24-Bit Resolution
- Records 1 or 2 channels
- Sample rates of 80, 50, 40, 25, and 10 samples per second

OTHER FEATURES

- Input data via standard RS-232 Comm port - Baud rates 57.6k, 38.4k, 19.2k, 9600, and 4800 (Note: Version I ADC boards do not support 57.6k baud)
- STA/LTA (Short Term Averaging / Long Term Averaging) and simple threshold event triggering
- Digital filtering of the data used for event triggering and real-time display
- All data saved to disk for post event extraction using the simple to use Replay process
- Accurate (< 5 ms) data time stamping when used with GPS, WWV or other time reference
- Saves event files in the following formats: PSN, SAC Binary and MiniSeed / Steim 2 encoding
- New event files can be automatically uploaded to an FTP server
- GIF image heliplots of the incoming data
- Heliplots can be uploaded to the PSN web site or FTP server using the Internet
- Digital filtering can be applied to the GIF image heliplots and event detection processes
- Proportional event alarm sound using sound card or PC speaker
- Designed to work with PSN event file viewer WinQuake
- Supports sending data to the USGS's Earthworm Seismic Processing System
- TCP/IP Server/Client mode and MiniSeed Data Server features

WinSDR Setup:

Using a standard straight through RS-232 cable, connect one end to the 9 pin Comm port connector on the A/D board and the other end to a free Comm port on your Windows system. Regarding Version I, II and III baud rates; Version II and III boards have a DIP switch that controls the baud rate. See table below:

Version II Switch 1 Settings:

SW-3	SW-4	Rate
Off	Off	9600
On	Off	19200
Off	On	38.4K*
On	On	57.6K

Version III Switch 1 Settings:

SW-1	SW-2	Rate
Off	Off	9600
On	Off	19200
Off	On	38.4K*
On	On	57.6K

* = Default

The baud rate on Version I boards are changed using a command sent to the boards. So WinSDR must be communicating with the board at the correct baud rate before the baud rate can be changed. Version I boards are shipped with a default baud rate of 38.4K.

Using WinSDR:

After starting WinSDR you may need to change the Comm port number. The default is Com1. You do this in the System Settings dialog box. To open this dialog box use the System/Settings menu items. Once you get things working and see a trace in the Real-time window, you can use this dialog box to change the sample rate, number of channels to record etc. Information about your sensor and station location should be entered for each channel using the Channel Settings dialog box. The Alarm Settings dialog box is used to control the system alarm and event triggering and the Display Settings dialog box is used to control the Real-time display window. Also in this dialog box the user should enter their local standard and daylight savings time abbreviations.

There are currently three windows in WinSDR. The main real-time display, single line display and the Replay window. You can save PSN event files from all three windows by using the mouse and double clicking at the beginning of an event, this will bring up a Save Event dialog box. When you click again at the end of the event you can then save the event file(s). The start and end times must be already saved to disk or you won't be able to select the time. WinSDR saves data every minute, so you won't be able to select a time near the end of the current trace in the main real-time window. You can use the mouse to see the time of the trace on the status bar, both UTC and local time are displayed.

The Replay window and the Replay Control dialog box are used to create PSN event files using the daily record file data. To use the replay window, go to the File/Replay menu items. This will open the Replay Control dialog box and Replay window. You start the replay process by either opening one of the daily record files using the Open File button or placing a start time in the control dialog box. The Report button is used to send the start time information using the systems clipboard and the report feature in WinQuake. Once you get a trace on the screen you can use the scroll bar to

move around in the record file. You create event files using the same process as the main real-time window.

Replay Data Editing and Stop Recording Data Features:

The Replay window can be used to zero out the data saved to the hard disk. This feature can be used to clean up your GIF images generated by WinSDR if your sensor records unwanted data. To use this feature, open the Replay window and display the data you want to clear out. You will need to adjust the number of lines and X-Scale so that the window displays just the data you want to zero out. To zero out the data use the *File/Zero Data* menu items.

The real-time data from the A/D board can also be zeroed out to prevent unwanted data showing up in the data saved to disk and your GIF images. This feature is activated by using the *File / Stop Recording Data* menu items. This will bring up the *Data Control* dialog box that is used to zero out the incoming data. When activated, the real-time window will continue to display the data from the A/D board but the data saved to disk will be zeroed out. To prevent this feature from being accidentally left on there is a 60 minute time limit. After 60 minutes WinSDR will close the *Data Control* dialog box and resume recording data.

Event File Data Field:

WinSDR now supports a new data field in the PSN Type 4 Format event file. The new information describes or breaks down the sensor/channel *Sensitivity* number in the fixed header section of the event file. The new sensor and channel information is stored in a SensorAmp AtoD structure. This structure has three floating point numbers:

- **Sensor Output Voltage** - This is the output voltage in Volts / Centimeter of movement
- **Amplifier Gain** - This is the gain, or attenuation, of the Amplifier between the sensor and A/D converter.
- **A/D Converter Input Voltage** - This is the peak or maximum input voltage of the converter chip. Example: If this field contains 10.0, the input range would be +-10 volts.

This information is entered in the *Channel Settings* dialog box for each channel. If all three fields are entered, WinSDR will calculate the proper *Sensitivity* number based on the number of A/D bits and the information supplied in the three fields. The user should fill in as much information about the sensor channel as possible. If the sensor output voltage and / or Amplifier gain are unknown, the A/D input voltage should still be filled in. Doing so will allow WinSDR to display the input voltage on the status line rather than just A/D counts.

The status line display type (A/D counts, input voltage etc) is controlled using the View/Display Mode menu items. All display types will be disabled if you are displaying more than one channel on the real-time display.

WinSDR Menu Bar Information

Real-Time and Single Line Windows:

When the Real-time or Single Line window is active, the following menu items can be accessed.

File:

Replay:

Opens the Replay window and Replay Control dialog box. This window and dialog box is used to create PSN event file(s) from the data stored to disk for each channel. Pressing the 'R' key will also open the Replay Window.

Force Event File:

Force WinSDR into an alarm state. Pressing the 'E' key will also force the system into an alarm state.

Stop Event Files:

Stops any event file(s) from being saved. Active if WinSDR is in the alarm state. Pressing the Ctrl+S keys will also stop event files from being saved.

Stop Teleseismic Event Files:

Stops any event file(s) from being saved if triggered by the teleseismic event detection process. Pressing the Ctrl+T keys will also stop teleseismic event files from being saved.

Dataset Volume Control:

Opens the Dataset Volume Control dialog box. PSN Dataset Volume files contain two or three event records in one file. This dialog box controls what channels will be associated with the dataset volume file.

Stop Recording Data:

Selecting this menu item will open *Data Control* dialog box. If you press the *Stop Recording Data* button, WinSDR will zero out any incoming data from the ADC board. This can be used if you will be doing any maintenance on your sensor(s). A time limit of 1 hour is used in case you forget to deactivate the stop recording of data feature.

Upgrade Firmware:

Opens the Upgrade A/D Board Firmware dialog box. This dialog box is used to upgrade the firmware or program that runs on the PSN-SERIAL-ATOD board.

WinQuake Location:

Used to input the location of the WinQuake program file winqk32.exe. WinSDR can open WinQuake after saving event files if it knows the location of this file. See the Save Event dialog box for more information.

Get Remote Channel Information:

This is part of the WinSDR TCP/IP Server/Client feature. This menu item will be active if WinSDR is running in the client mode. When selected, WinSDR will request that the WinSDR server send back channel information. This information is saved as a ini file for each channel. The ini file can then be loaded in using the Channel Settings dialog box.

Exit:

Exits the WinSDR application.]

Alarm:

Clear Alarm:

Stops the alarm sound. Active if the alarm is sounding using either the PC's speaker or sound card. Pressing the 'A' or Space key will also clear the alarm.

System Settings:

Opens the System Settings dialog box.

Reset Teleseismic Data:

Resets the teleseismic event detection process.

Channel 1-8:

Opens the Channel Settings dialog box to the selected channel. Pressing the Ctrl+1 through Ctrl+8 keys will also open the Alarm Settings dialog box to the selected channel.

Channel:

All:

Display all channels. Pressing the ESC key will also display all channels.

Channel 1-8:

Display one channel. Pressing the 1 through 8 key will also display the selected channel.

Settings:

Display:

Opens the Display Control dialog box. Pressing the F5 key will also open this dialog box.

Single Line Display:

Opens the Single Line display settings dialog box. This window resembles an oscilloscope where the trace scrolls to the left as new data is added to the display.

System:

Opens the System Settings dialog box.

FTP Upload:

Opens the FTP Upload Settings dialog box. This dialog box is used to control automatic event file uploads to an FTP server.

GIF Files:

Settings:

Opens the GIF File Settings dialog box.

Create Files:

Forces WinSDR to create a set of GIF file images.

Upload Settings:

Opens the GIF Image Upload Settings dialog box.

Upload Now:

Forces WinSDR to upload GIF file images.

GPS:

Check Time Using GPS:

Forces a GPS time test. Only active if GPS is selected in the Time Reference Type field of the System Settings dialog box. Pressing the G key will also activate this function.

Reset GPS Receiver:

Resets the ONCORE GPS receiver to its default settings.

GPS Location:

Opens the GPS Location dialog box. When this dialog box is open WinQuake will average the position data from the GPS receiver and display the results in this dialog box.

Channel 1-8:

Opens the Channel Settings dialog box to selected channel number. Pressing the Alt+1 through Alt+8 keys will also open the *Channel Settings* dialog box to selected channel.

View:

Pause Display:

Pauses the trace(s) in the real-time window.

Clear Display:

Clears the data and starts the trace at the top left hand side of the real-time window. Pressing F7 will also clear the display.

Redisplay:

Redisplays the data in the real-time window. Pressing F8 will also redisplay the real-time window.

Clear Min/Max:

Clears the Minimum and Maximum accumulators when displaying one channel. Pressing the C key will also clear the accumulators.

Clear Event Counter:

Clears the event counter displayed on the status bar. Pressing the Ctrl+C keys will also clear the event counter.

Display Mode:

The menu items below allow the user to display text data in the Real-time and Single Line windows in various formats.

A/D Counts:

When selected, the text data will be displayed in A/D counts from the converted chip. For a 16-Bit system the range is +-32767 counts. The ***Shift-C*** keys can also be used to display the data in this format.

A/D Volts:

When selected, the text data will be display in volts. To display volts you must place a value in the *A/D Input* field located in the Channel Settings dialog box. Normally the input range of the PSN-ADC-SERIAL is +-10 volt so a 10 should be placed in *A/D Input* field. The ***Shift-V*** keys can also be used to display the data in this format.

Amp Volts:

When selected, the text data will be display in volts as seen by the input to the Amplifier. To display data in this format the *A/D Input* and *Amp Gain* fields in the Channel Settings dialog box must have values in them. The ***Shift-A*** keys can also be used to display the data in this format.

STA/LTA:

When selected, STA/LTA (Short Term Averaging/Long Term Averaging) trigger information will be display. This information can be used to help set up the STA/LTA event trigger parameters. The ***Shift-S*** keys can also be used to display the data in this format.

Teleseismic STA/LTA:

When selected, Teleseismic STA/LTA (Short Term Averaging/Long Term Averaging) trigger information will be display. This information can be used to help set up the STA/LTA event trigger parameters for the teleseismic event detection feature. The ***Shift-T*** keys can also be used to display the data in this format.

Log File:***View Log File:***

Opens and closes the Log File Viewer window. When this viewer is open any debug information saved to the winsdr.log file will also be displayed in the window.

Delete Log File:

Deletes the current winsdr.log file.

Options:

Opens the System Settings dialog box to the log file settings tab.

Status Viewer:

Opens the Status Viewer dialog box. This dialog box has general WinSDR status information as well as status information of the remote A/D board

View GIF Files:

Uses PSNExplorer to display the GIF file images created by WinSDR. See the GIF File Settings dialog box for more information.

Single Line Display:

Opens the Single Channel window. This window resembles an oscilloscope where the trace scrolls to the left as new data is added to the display.

Last:

5 Min to 24 Hours. Various times that can be used to redisplay the Real-time and Single Line windows.

Window:***Cascade:***

Cascades all open windows.

Tile:

Tiles all open windows.

Help:***Help:***

Opens the WinSDR documentation using the PSNExplorer browser.

About WinSDR:

Opens the About WinSDR dialog box. This dialog box has information on the release version number, copyright and author information.

Replay Window:

When the Replay window and Replay Control dialog box are active, the following menu items can be accessed.

File:***Zero Data:***

This menu item can be used to zero out (set to 0) ADC data saved in the daily record file that is currently being displayed in the Replay window. This feature can be used to clean up your record files do to sensor maintenance etc.

WinQuake Location:

Used to input the location of the WinQuake exe file winqk32.exe. WinSDR can open WinQuake after saving event files if it knows the location of this file. See the Save Event dialog box for more information.

Close:

Closes the Replay window and Replay Control dialog box.

Window:

Cascade:

Cascades all open windows.

Tile:

Tiles all open windows.

Help:

Help:

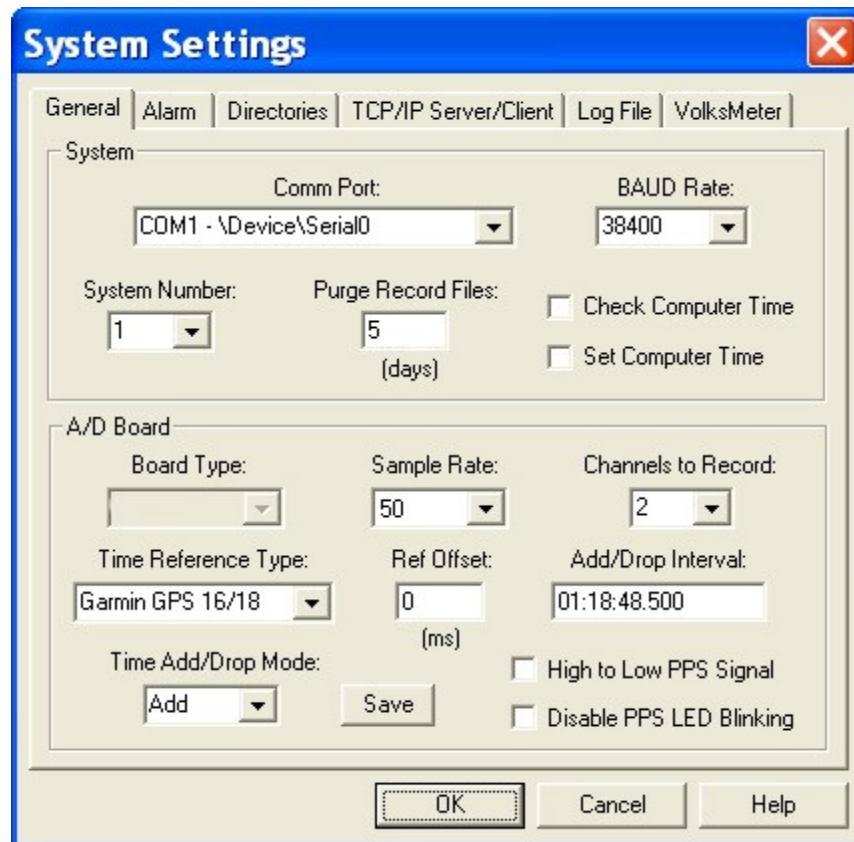
Opens the WinSDR documentation using the PSNExplorer browser.

About WinSDR:

Opens the About WinSDR dialog box. This dialog box has information on the release version number, copyright and author information.

SYSTEM SETTINGS DIALOG BOX

General Settings:



This tab of the *System Settings* dialog box is used to set the number of channels to record, sample rate, and other system wide settings.

System Group Box:

Comm Port Select Box:

Sets the RS-232 communication port that will be used to communicate to the ADC board. If set to *None - Replay Only Mode*, WinSDR will go into a Replay Only mode. In this mode WinSDR can only be used to Replay daily record files generated by another WinSDR system located on a LAN.

BAUD Rate Select Box:

Sets the RS-232 communication port speed. WinSDR will display an error message if you select a baud rate that is too slow for the number of channels being recorded and the sample rate.

System Number Select Box:

Used if you are running more than one copy of WinSDR. Each WinSDR system, either running on the same computer or on another system located on a LAN, should have a unique system number.

Purge Record Files Edit Box:

Controls how many days worth of data to save. Data from the ADC board is saved in a daily record file. WinSDR uses the data in the record files to create PSN formatted event files and for Replay and Real-time window display. The value in this field should be based on how much disk space you would like WinSDR to use. Depending on the sample rate and number of channels you are recording, the daily record file can be anywhere from a few megabytes to over 80 MB if you run all 8 channels at 100 SPS.

Check Computer Time Check Box:

If checked, WinSDR will check the local computer time with the time on the ADC board. The time difference will be written to the winsdr.log file and displayed in the Log File Display window every 5 minutes. The line below is an example of the time difference message:

DLL: Time difference between A/D Board and Host Computer=0.026 seconds

Set Computer Time Check Box:

If checked, WinSDR will set the local computer time if the time difference between the A/D board and WinSDR gets larger than 250 milliseconds. This check box should be checked if you are using **GPS or WWV** references. This check box will be disabled if you use the **Local** computer as the time reference.

A/D Board Group Box:

Board Type List Box:

This list box controls or displays the ADC board type. This list box will be grayed out once WinSDR knows what type of ADC board is connected to the Comm port. If the board type is unknown you can force WinSDR to use either ADC board.

Sample Rate Select Box:

Sets the sample rate that will be used to convert the incoming analog signal to digital data. This field can be set to 5, 10, 20, 50, 100 or 200 SPS. Note: Version I boards can only record up to 4 channels at 200 SPS.

Channels to Record Select Box:

Sets the number of channels that the A/D board will record. This field can be set to 1 through 8. Note: Version I boards can only record up to 4 channels at 200 SPS.

Time Reference Type Select Box:

Controls the time reference source that the A/D board should use for time keeping. Current options are: **Computer Time**, **WWV**, **GPS Garmin 16/18**, **ONCORE Binary** or **ONCORE NMEA**.

- The **Computer Time** option uses the time of the system that is running WinSDR as the time reference. The WinSDR system should be connected to some type of time reference source. This could be a GPS system or a NTP (Network Time Protocol) program. To use NTP, you must have a full time Internet connection.

- To use the **WWV** mode you must have the WWV timing option on your A/D board and a short-wave receiver tuned to one of the WWV frequencies. See <http://psn.quake.net/winsdr/wwv.html> for more information.

- The **Garmin 16/18** option uses a Garmin GPS 16 or 18 OEM antenna/receiver combination for time keeping. The **GPS ONCORE Binary and NMEA** options use a Motorola ONCORE receiver for time keeping. See <http://psn.quake.net/winsdr/gps.html> for more information. (Note: The **Computer Time** option should be selected if no timing reference source is available.)

Reference Offset Edit Box:

Used to compensate for the travel time of the radio waves of the WWV/WWVB time standard transmissions and the tone detector's capture time. This number is in milliseconds. The tone detector has a capture time around 20 to 25 ms. You should add 1 ms for every 300km (186 miles) between you and the transmitting station. GPS users should place a 0 in this field.

Add/Drop Interval Edit Box:

Time Adjust Add/Drop Interval time. See below for more information on this setting.

Time Add/Drop Mode List Box:

Time Adjust Add/Drop Interval mode. See below for more information on this setting.

Save Button:

This button saves the new Add/Drop Time Interval and Mode to the time.dat file.

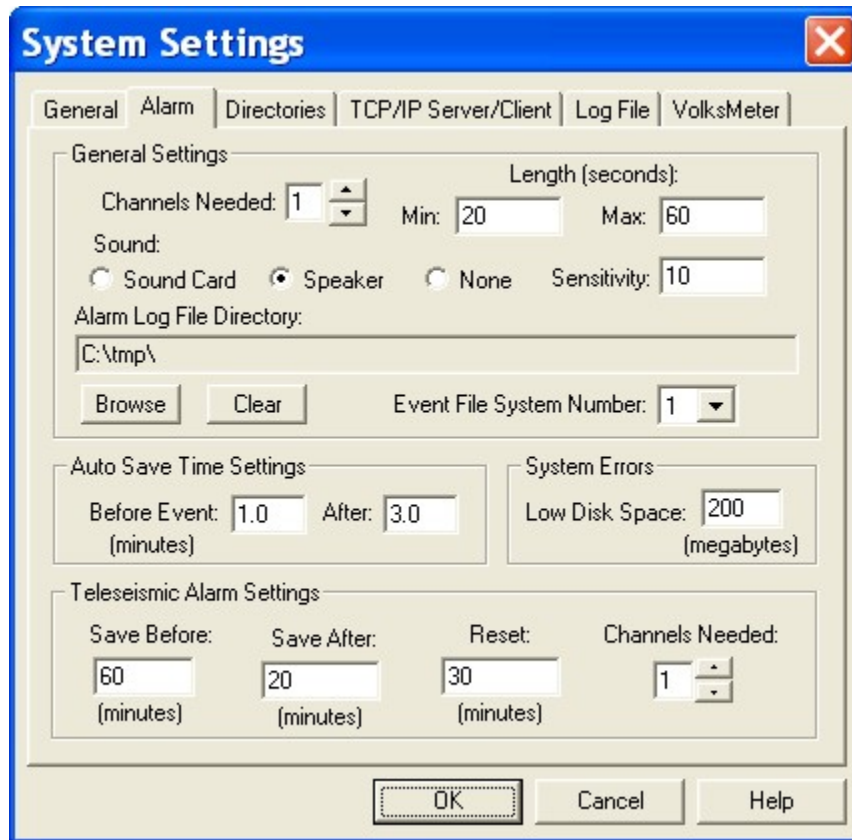
High to Low PPS Signal Check Box:

This check box set the direction of the GPS 1 PPS signal applied to the ADC board. The Garmin GPS 16/18 models supply a positive signal at the top of the second. The ONCORE receiver with the Webtronics ONCORE Interface board supplies a negative going signal, so this check box should be checked when using this timing system.

Disable PPS Led Blinking Check Box:

When checked, the LED on the ADC board will not blink at the top of the seconds. This feature was added because the 1 PPS signal can show up in the version I A/D boards event files with high gain Amp/Filter channels. This is not a problem with the version II boards.

Alarm Settings:



This tab of the *System Settings* dialog box is used to control the alarm settings.

General Settings Group Box:

Channels Needed Edit Box:

The number of channels that must be in a triggered state for the alarm to sound and auto save event to occur.

Length

Min Edit Box:

Minimum time, in seconds, to sound the alarm when an event is detected. WinSDR has a proportional alarm feature. Small events will sound the alarm for a short period of time. Larger events will sound the alarm for a longer period of time.

Max Edit Box:

Maximum time, in seconds, to sound the alarm when an event is detected.

Sound Check Boxes:

Controls what sound device to use or to disable all alarm sounds. Select the **Sound Card** option if you have a sound card in the system or select **Speaker** to use the internal speaker. Select **None** to disable all alarm sounds.

Sensitivity Edit Box:

Used to control the proportional alarm feature. This sets the sensitivity of the alarm tone and length change based on the size of the event. The larger the number the larger the event must be before the sound length will change and the alarm tone to proportionally change.

Alarm Log File Directory:

If a directory is placed in this field, WinSDR will create a file called ALARM.LOG in the directory whenever WinSDR goes into an alarm state. In the ALARM.LOG file WinSDR will place the time that the alarm occurred. The application using the alarm log file may delete the file after using it. If the file is already in the directory, WinSDR will append the new alarm time to the end of the file. A typical line in the ALARM.LOG file will look like this:

TRIGGER=12/01/2001 15:04:14

Event File System Number Select Box:

Used to trigger another WinSDR system on the same computer or a computer on a network. Enter the WinSDR system number to trigger in this field. When WinSDR goes into an alarm state it will use the ***Event Log File Directory*** field to create a ALARM.LOG file that another WinSDR system can use to save event files.

Auto Save Time Setting Group Box:

Before Event Edit Box:

Sets how many minutes to save before the event trigger time when WinSDR auto saves event file(s). Number maybe entered as a fraction. Example: 1.5 = 90 seconds.

After Edit Box:

Sets how many minutes will be saved after the event trigger time. Number maybe entered as a fraction.

System Errors Group Box:

Low Disk Space Edit Box:

Used to set the number, in megabytes, to test for low disk space. If the free disk space of the drive used to save the daily record files gets below this number WinSDR will sound an alarm. If you enter 0 (zero), no low disk test will take place.

Teleseismic Alarm Settings Group Box:

Save Before Edit Box:

Sets how many minutes to save before the event trigger time when WinSDR auto saves event file(s).

Save After Edit Box:

Sets how many minutes will be saved after the teleseismic event trigger time.

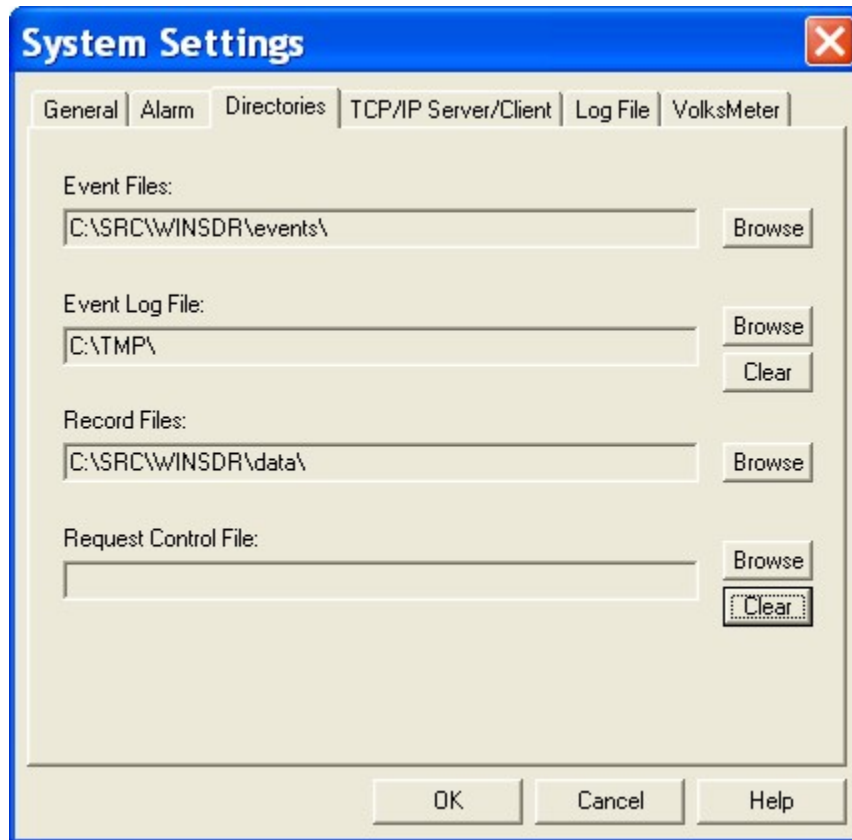
Reset:

The edit box controls how long WinSDR should wait after a teleseismic event to reset and begin looking for new events.

Channels Needed Control:

This is the number of channels that must be in a teleseismic event alarm condition before WinSDR will save event files and sound the alarm.

Directory Settings:



This tab of the *System Settings* dialog box is used to set various directories locations.

Event Files:

Sets the root directory where the PSN formatted event files will be placed. The event file, either created automatically or with the Real-time or Replay windows, will be placed in a sub directory based on the year and month (drive:\Root_Directory\YYMM). Use the ***Browse*** button to change or create the new directory. The directory can be located on another computer system by using a LAN and remote drive sharing. PSN formatted event files can be viewed and analyzed with WinQuake.

Event Log File:

If a directory is placed in this field, WinSDR will create a file called EVENT.LOG in the directory whenever WinSDR saves event files. In the EVENT.LOG file, WinSDR will place the UTC time that the files were saved, the number of files saved, the directory where the files were saved, and then the event file name(s). Fields are delimited by a comma. The application using the event log file may delete the file after using it. If the file is already in the directory, WinSDR will append the new event information to the end of the file. A typical line in the EVENT.LOG file will look like this:

Record Files:

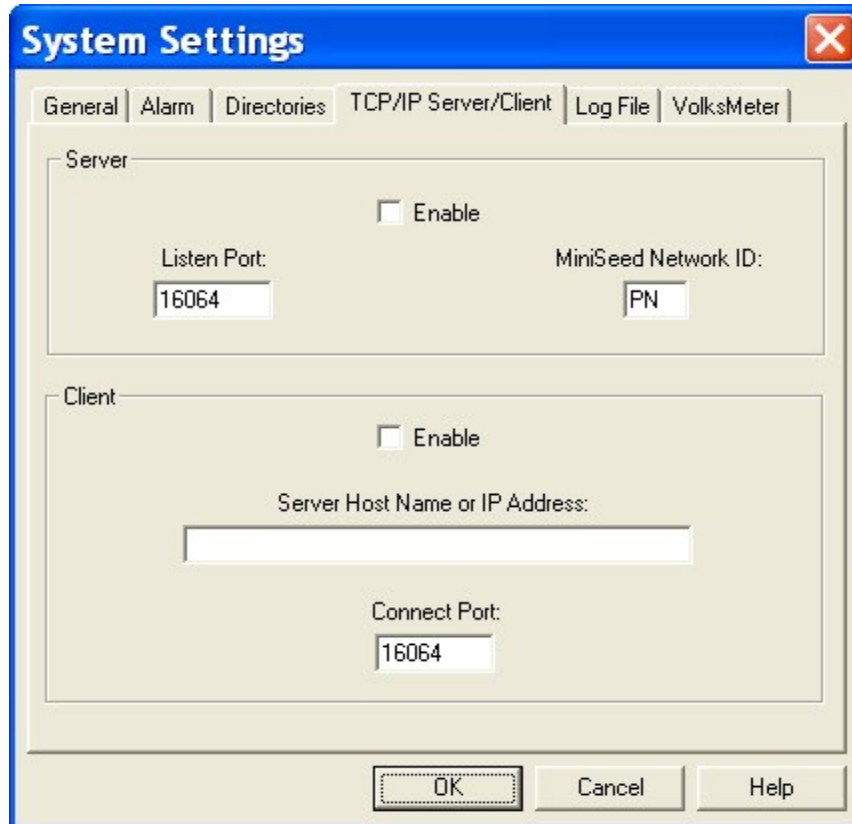
Sets the directory location for the daily record file. The daily record file holds the raw data from the A/D board. A new record file is created each day at 00:00 UTC. The directory holding the record files should be a drive on the same system that is running WinSDR. Using a LAN network and disk sharing, it is possible to place the record files on another system. The problem with this arrangement is your LAN and remote computer must be working all of the time. If the WinSDR system can not save data to the remote drive, do to the LAN not working or the remote system

being down, data will be lost. It will also take longer for the Replay and Real-time windows to read the data from the remote disk. Use the **Browse** button to change or create the new directory.

Request Control File:

Sets the directory that WinSDR will use to monitor for a request file. See Request Event File documentation for more information on this option. Use the **Browse** button to change or create the new directory or the **Clear** button to clear this field.

TCP/IP Server/Client Settings:



This tab of the *System Settings* dialog box is used to control the Server/Client TCP/IP settings.

TCP/IP Server Group:

Enable Check Box:

This check box enables the TCP/IP Server feature.

Listen Port Edit Box:

The TCP/IP listen port is the port that WinSDR will listen on for client connections. This number can be in the range of 1 to 65535.

MiniSeed Network ID:

This two character string will be used when WinSDR saves MiniSeed event files or sends MiniSeed packets to a TCP/IP Client.

TCP/IP Client Group:

Enable Check Box:

This check box enables the TCP/IP Client feature.

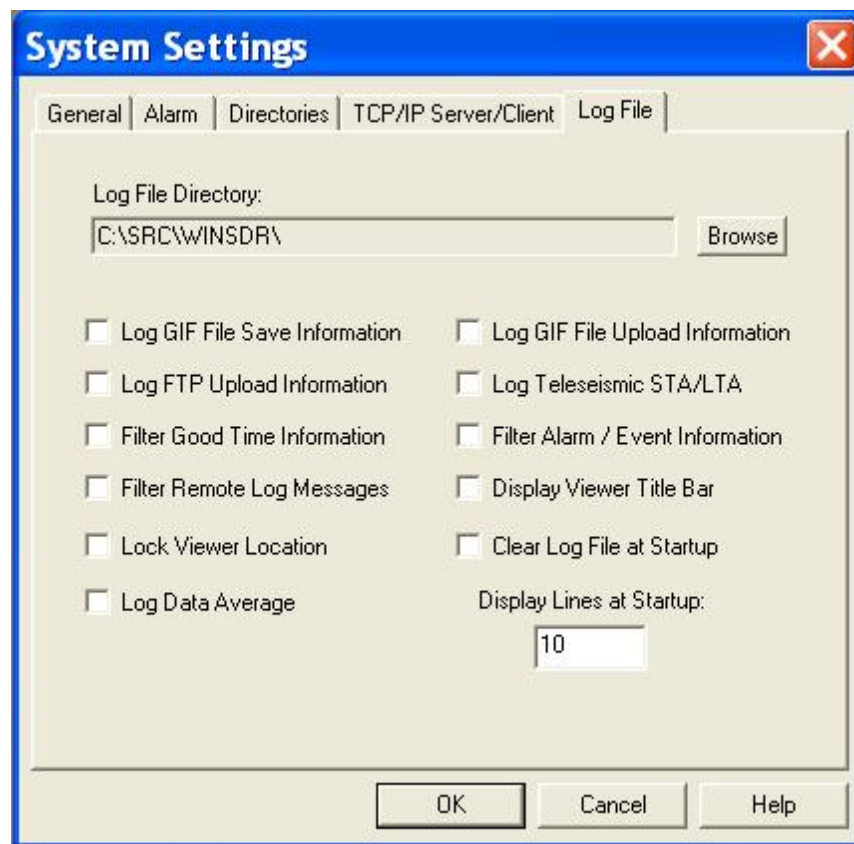
Server Host Name or IP Address Edit Box:

This edit box is used to enter the host name (Example: data.mydomain.com) or the IP address (Example: 10.0.0.3) of the WinSDR server system.

Connection Port Edit Box:

The connection port is the TCP/IP port that will be used to connect to the WinSDR server system. This number must match the *Listen Port* number in the Server settings group. This number can be in the range of 1 to 65535.

Log File Settings:



This tab of the *System Settings* dialog box is used to control the location of the winsdr.log file and what information will be saved in the log file and viewed in the Log File Viewer window.

Log File Directory:

Sets the directory where the debug log file (winsdr.log) will be located. This directory can be located on a local or remote drive. Use the ***Browse*** button to change or create the new directory.

Log GIF File Save Information Check Box:

If checked, WinSDR will save more GIF file generation messages in the log file.

Log GIF File Upload Information Check Box:

If checked, WinSDR will save more GIF file upload information messages in the log file.

Log FTP Upload Information Check Box:

If checked, WinSDR will save FTP upload information messages in the log file for both GIF file and event file uploads.

Log Teleseismic STA/LTA Check Box:

Displays and saves teleseismic trigger information in the log file.

Filter Good Time Information Check Box:

If checked, WinSDR will filter out normal time reference information messages generated by the A/D board. Time error messages will not be filter out..

Filter Alarm / Event Information Check Box:

If checked, WinSDR will filter out messages from the alarm / event detection process.

Filter Remote Log Messages:

Used when WinSDR is running in the TCP/IP Client mode. If checked, log messages generated at the WinSDR server system will be filtered from the local client's log file and display window.

Display Viewer Title Bar Check Box:

Toggles the Log File Viewer title bar on or off. By turning the title bar off, the viewer occupies less room on the desktop. When the title bar is turned off, the viewer can be moved by placing the mouse on the frame window and pressing and holding the left button. The title bar can also be toggled by double clicking on the window frame.

Lock Viewer Location Check Box:

If checked, the Log File Viewer will move with the main WinSDR window. If not checked, the viewer is stay in the same location on the desktop when the main WinSDR window is moved.

Clear File at Startup Check Box:

If checked, WinSDR will delete the current log file at program startup.

Log Data Average:

If checked, WinSDR will calculate the average ADC or CDC (VolksMeter) counts over a one minute period for each channel and save this information to a file named DataAverage.log. This information is also displayed in the Log File Viewer. The average is the raw data from the ADC or VolksMeter Interface board before any digital filtering. The DataAverage.log file is located in the WinSDR directory.

A typical entry in the log file looks like this:

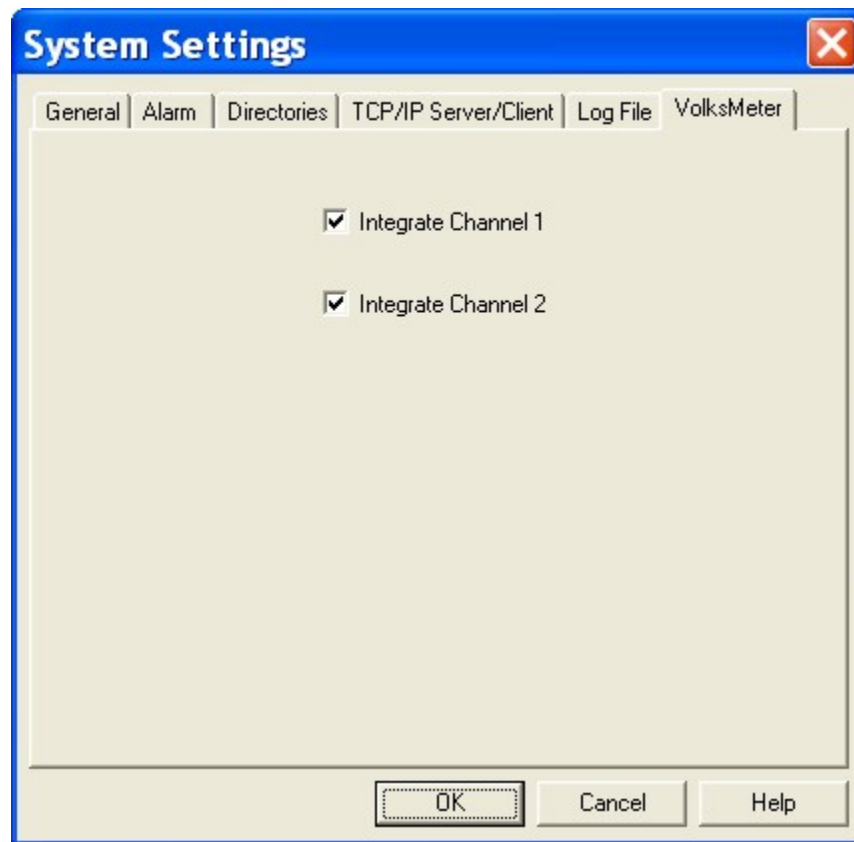
12/27/06,04:52:42,LCTST,-1123784

The line contains the Date, Time, Sensor ID and data average in ADC or CDC counts.

Display Lines at Startup Edit Box:

This edit box controls how many lines of the log file that will be displayed in the Log File Viewer at program startup. This edit box will only be enabled if the *Clear File at Startup* check box is disabled.

VolksMeter Settings:



This tab of the *System Settings* dialog box is used to enable integration of the VolksMeter data. Integration of the data produces a velocity channel to better display and detect teleseismic events. This tab of the dialog box will only be accessible if WinSDR is collecting data from a VolksMeter sensor.

Integrate Channel 1:

Enables integration of channel 1 data. If 1 channel recording is specified in *System Settings / General, Channels to Record*, the integrated channel will be channel 2. If *Channels to Record* is set to 2, the integrated channel (for channel 1) will be channel 3.

Integrate Channel 2:

Enables integration of physical channel 2 data. If data integration for channel 1 is enabled the integrated channel 2 data will be on channel 4. If integration for channel 1 is not enabled the integrated channel 2 data will be on channel 3.

Additional Information

Time Adjust Mode and Time Adjust Interval Information:

The Time Adjust Interval count is used to compensate for the timing reference crystal oscillator on the Serial Output A/D or VolksMeter Interface board not being exactly 8.000 MHz. The A/D board uses a 500 us interrupt generated by the reference oscillator. If the oscillator is a little fast or slow, the time of day will slowly drift. By adding or dropping 1 millisecond at some interval, it is possible to compensate for the oscillator being off frequency. The Add/Drop number is the number of milliseconds to wait before a millisecond time period is added to or dropped from the time

accumulator. The time adjustment information is stored in a file called *time.dat*. This file is located in the root directory of WinSDR.

If you use one of the time reference options (GPS, WWV, WWVB, or Comm Port), WinSDR will calculate the Add/Drop interval number and direction (add or drop) for you. If you can dedicate an inexpensive short-wave receiver turned to one of the WWV stations you will be able to keep your time within +/-15ms or less. You will probably need to run a long wire antenna so you can receive the station clearly enough for WinSDR to lock on the 800 ms tone sent at the top of the minute. See the WWV Time Correction Option for more information.

CHANNEL SETTINGS DIALOG BOX

Usage:

Channel Spin Control:

Changes the current channel number.

Save As Button:

Used to save the current channel settings to a file. The channel settings file should end in *.ini*.

OK Button:

Closes the dialog box. New information entered will be used by WinSDR.

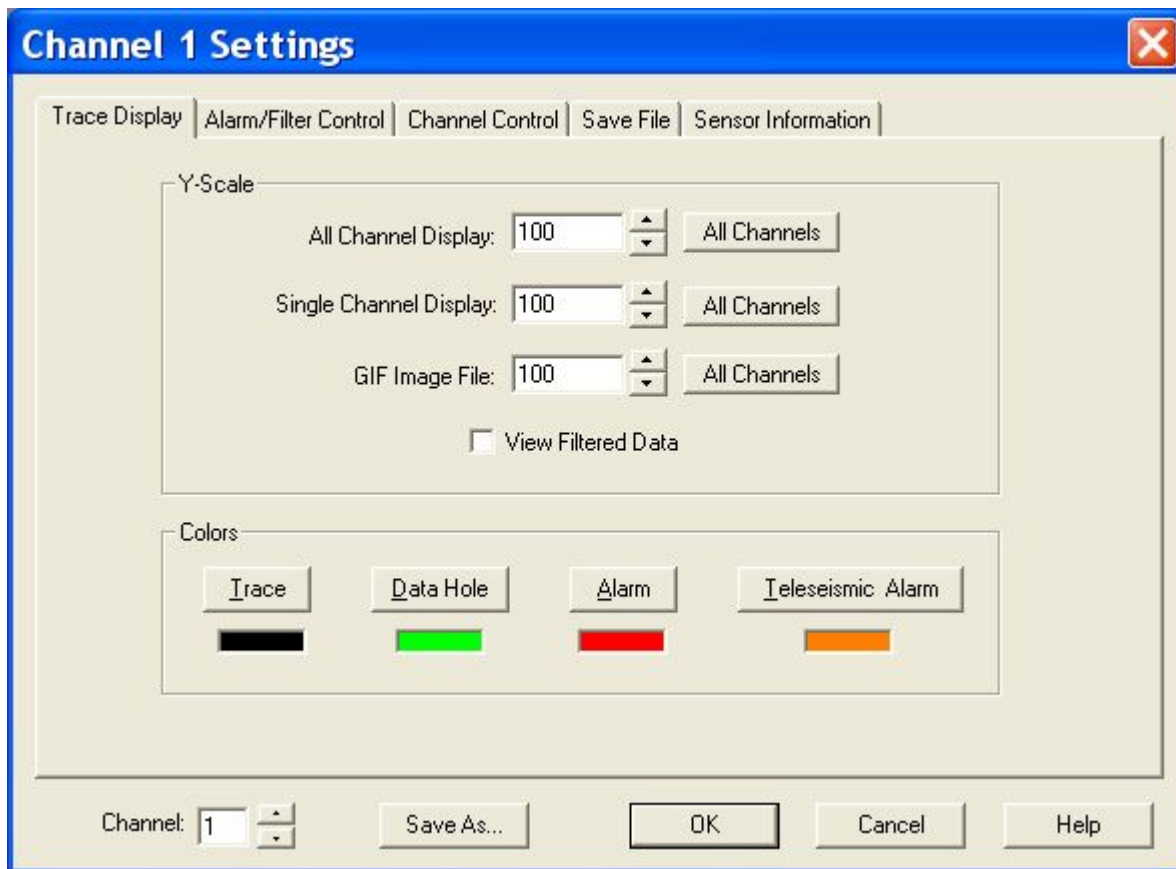
Cancel Button:

Closes the dialog box without making any changes to the channel settings.

Help Button:

Opens this documentation.

Trace Display:



This tab of the *Channel Settings* dialog box is used to control the trace Y-Scale and colors.

Y-Scale Group Box:

All Channel Edit Box:

Sets the vertical (amplitude) compression / expansion of the trace when the display window is displaying all channels. 1 = no compression or expansion. A positive number will compress and a negative number will expand the data.

Single Channel Edit Box:

Sets the vertical (amplitude) compression / expansion of the trace when the display window is displaying this channel. 1 = no compression or expansion. A positive number will compress and a negative number will expand the data.

GIF Image File Edit Box:

Sets the vertical (amplitude) compression / expansion of the trace when WinSDR creates GIF file images of the data. 1 = no compression or expansion. A positive number will compress and a negative number will expand the data.

All Channels Button:

This button can be used to set the *All Channels*, *Single Channel* and *GIF Image File* Y-Scale to the same value for all of the channels you are recording.

View Filtered Data Check Box:

If checked, WinSDR will display the filter data instead of the raw data from the ADC board. This check box will be disabled if the high-pass and low-pass filters are not enabled.

Colors Group:

Trace Button:

Sets the normal trace color for this channel.

Data Hole Button:

Used by the Replay window to indicate a hole in the data. The first minute of data after a time hole in the record file will be this color.

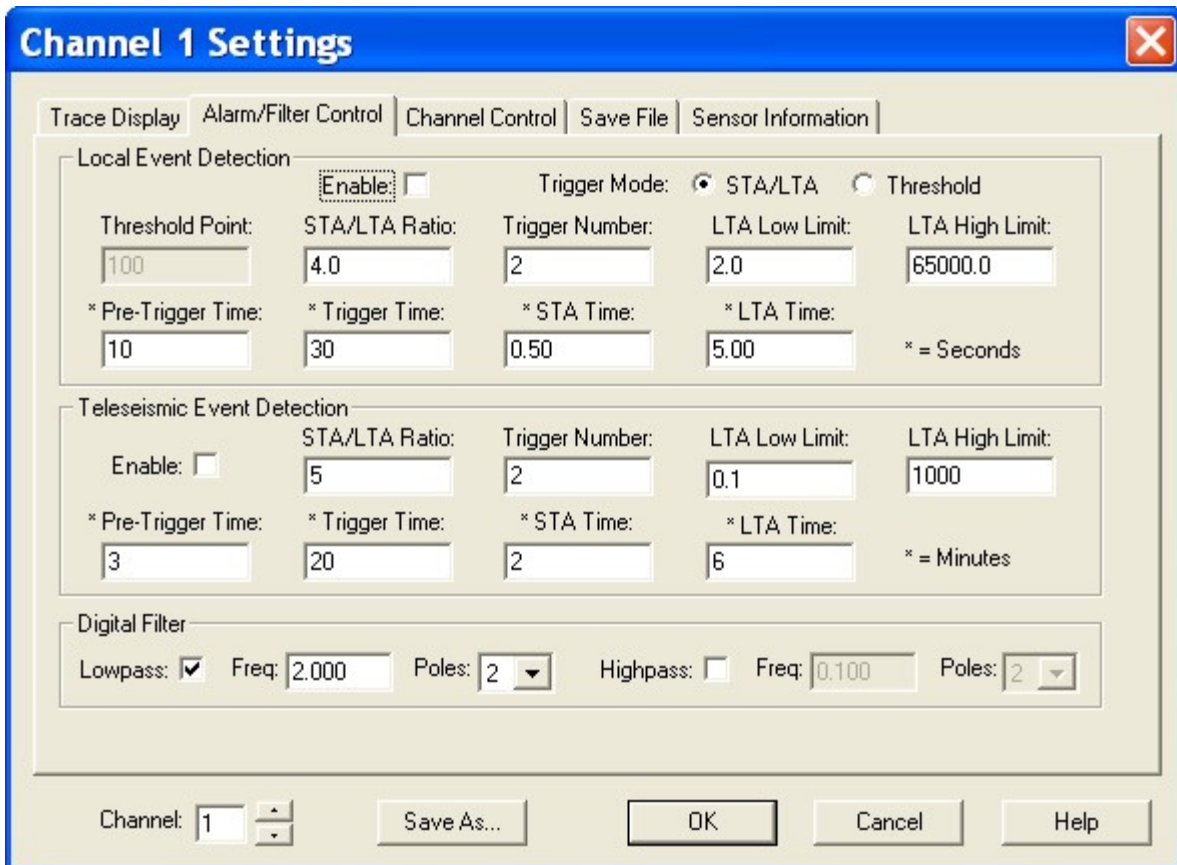
Alarm Button:

Sets the trace color when the channel is in an alarm or triggered state.

Teleseismic Alarm Button:

Sets the trace color when the channel is in a teleseismic event alarm or triggered state.

Alarm/Filter Control:



This tab of the *Channel Settings* dialog box is used to control event detection and digital filter parameters.

Local Event Detection Group Box:

Enable Check Box:

If checked, WinSDR will enable triggering and alarm functions for the channel based on the ***Triggering Mode***.

Triggering Mode:

If ***STA/LTA*** (Short/Long Term Averaging) triggering will be enable is this check box is selected and ***Threshold*** triggering will be enable if this check box is selected.

Threshold Point Edit Box:

Used for simple amplitude alarm triggering. Sets the threshold for the selected channel, if the alarm feature is enabled. Enter a positive number above your normal background noise level.

STA/LTA Ratio Edit Box:

Sets the STA/LTA threshold point. See WinSDR STA/LTA Triggering for more information.

Trigger Number Edit Box:

This field is used for both simple threshold (amplitude) and STA/LTA triggering modes. Sets the number of data points that must be exceeded above the Threshold Point or STA/LTA Threshold to trigger an alarm and auto save the event file(s). A number between 20 and 50 should be fine for amplitude triggering and 2 to 4 for STA/LTA triggering. See WinSDR STA/LTA Triggering for more information.

LTA Low Limit Edit Box:

Sets LTA minimum value. See WinSDR STA/LTA Triggering for more information.

LTA High Limit Edit Box:

Sets LTA maximum value. See WinSDR STA/LTA Triggering for more information.

Pre-Trigger Time Edit Box:

Sets the time in seconds the channel stays in the pre-trigger state. See WinSDR STA/LTA Triggering for more information.

Trigger Time Edit Box:

Sets the time in seconds the channel stays in an alarm or triggered state. See WinSDR STA/LTA Triggering for more information. This field is used for both simple threshold (amplitude) and STA/LTA triggering modes.

STA Time Edit Box:

Sets the STA average time, in seconds. Fractions of a second can be entered. See WinSDR STA/LTA Triggering for more information.

LTA Time Edit Box:

Sets the LTA average time, in seconds. Fractions of a second can be entered. See WinSDR STA/LTA Triggering for more information.

Teleseismic Event Detection Group Box:

Enable Check Box:

If checked, WinSDR will attempt to detect teleseismic events.

STA/LTA Ratio Edit Box:

Sets the STA/LTA threshold point. See WinSDR STA/LTA Triggering for more information.

Trigger Number Edit Box:

This field is used for both simple threshold (amplitude) and STA/LTA triggering modes. Sets the number of data points that must be exceeded above the Threshold Point or STA/LTA Threshold to trigger an alarm and auto save the event file(s). A number between 20 and 50 should be fine for amplitude triggering and 2 to 4 for STA/LTA triggering.

LTA Low Limit Edit Box:

Sets LTA minimum value.

LTA High Limit Edit Box:

Sets LTA maximum value.

Pre-Trigger Time Edit Box:

Sets the time in minutes the channel stays in the pre-trigger state.

Trigger Time Edit Box:

Sets the time in minutes the channel stays in an alarm or triggered state.

STA Time Edit Box:

Sets the STA average time, in minutes.

LTA Time Edit Box:

Sets the LTA average time, in minutes.

Digital Filter Group Box:

Lowpass Check Box:

Enables lowpass filtering of the data going to the alarm / event detection process.

Lowpass Frequency Edit Box:

Sets the lowpass filter cutoff frequency.

Lowpass Poles:

Sets the number of poles, or the steepness of the filter, used to attenuate the incoming data.

Highpass Check Box:

Enables highpass filtering of the data going to the alarm / event detection process.

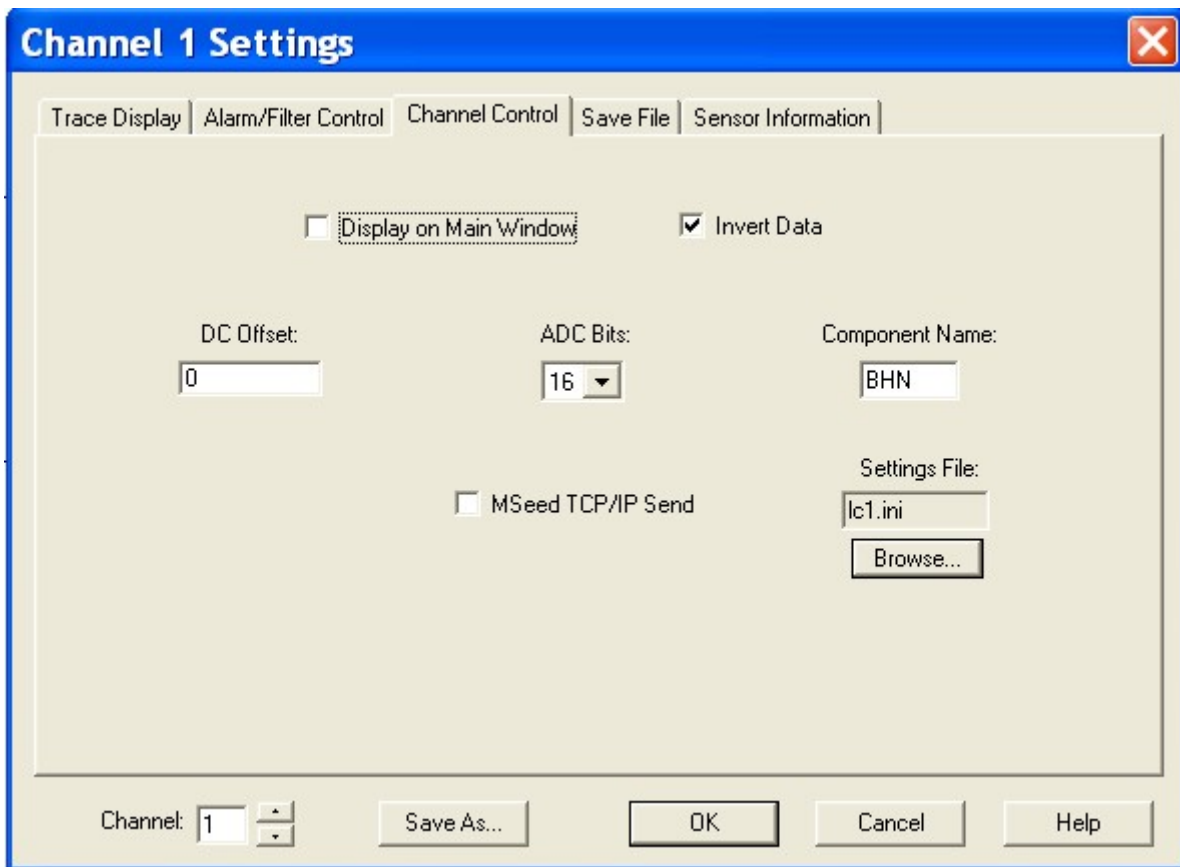
Highpass Frequency Edit Box:

Sets the highpass filter cutoff frequency.

Highpass Poles:

Sets the number of poles, or the steepness of the filter, used to attenuate the incoming data.

Channel Control:



This tab of the *Channel Settings* dialog box is used to control various parameters of the selected channel.

Display on Main Window Check Box:

Enables or disables the displaying of the selected channel on the real-time window when all channels are being displayed. Note: Data is still recorded if the channel is not displayed and event files will be produced when the system detects an event. The Replay mode can also be used to extract event files.

Invert Data Check Box:

Inverts the data for this channel.

DC Offset Edit Box:

Used to correct for any DC offset on this channel.

ADC Bits Select Box:

Selects how many ADC (or CDC Bits for the VolksMeter Sensor) to use from the ADC board. The options for the PSN-ADC-SERIAL 16 Bit board are 12 and 16 bits. For the VolksMeter sensor the options are 16 to 24 bits.

MSeed TCP/IP Send Check Box:

If checked, WinSDR will send data to a TCP/IP client when the client requests MiniSeed packets.

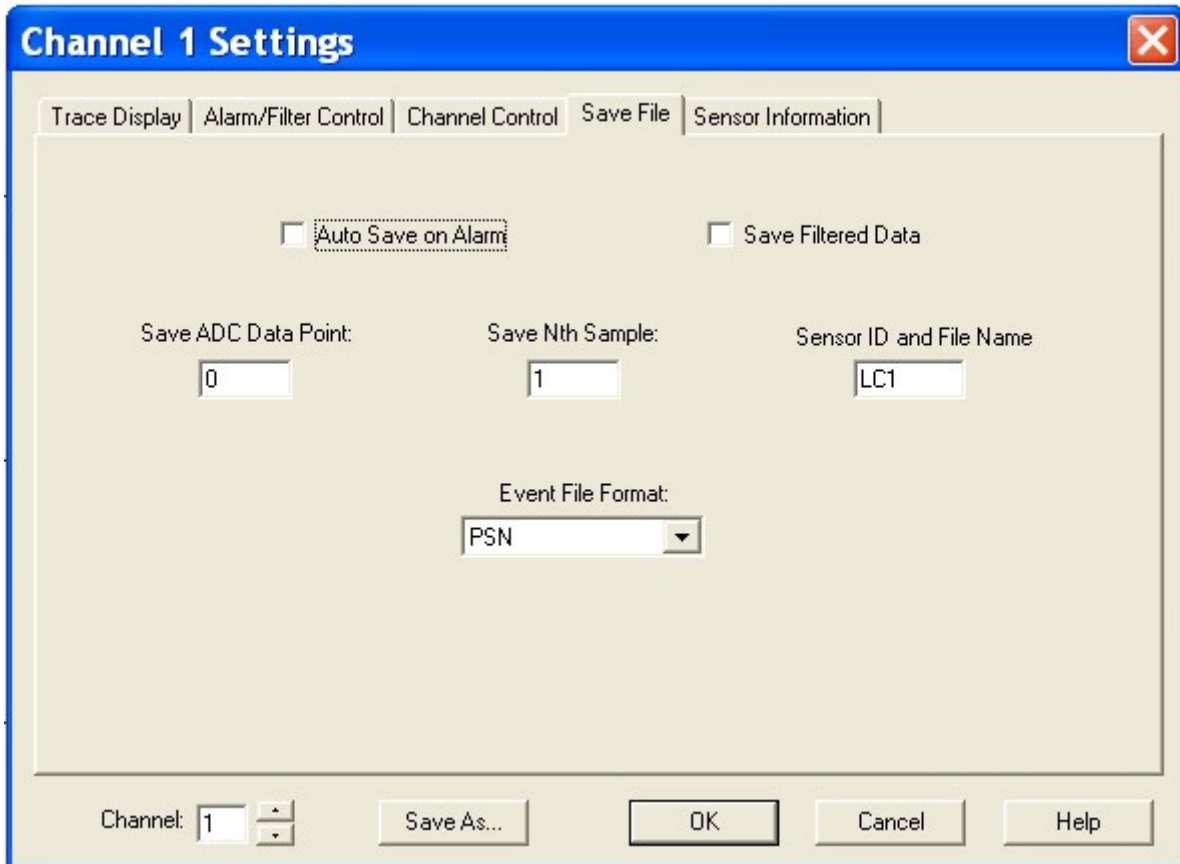
Component Edit Box:

Sensor Component Name. Used to describe the sensor. Example: BHZ or SHN

Settings File:

Used to select the settings file for this channel. Use the ***Browse*** button to select a new *.ini file.

Save File:



This tab of the *Channel Settings* dialog box is used to control various parameters when WinSDR saves event files.

Auto Save on Alarm Check Box:

If checked, WinSDR will save an event file for this channel when an event is detected.

Save Filtered Data Check Box:

If checked, and if a digital low-pass and/or high-pass filter is enabled in the Alarm/Filter Control tab of the channel settings dialog box, the filtered data will be used for display and saved in the daily record file. **Please Note: When this option is enabled, you will lose any data outside of the filter cutoff frequencies. It's best to save the raw data and do post filtering on the PSN event files using a program like WinQuake.**

Save ADC Point Edit Box:

Used to filter automatically saved event files. If a value other than 0 is entered, the peek data count during an alarm for this channel must be higher then the number entered in this field before an event

file will be saved. A value of 0 disables event file filtering. This setting should only be used if more than one channel is being recorded.

Save Nth Sample Edit Box:

When WinSDR automatically saves an event file it will use this number for the Save Nth value. Save Nth controls the sample rate of the event file.

Sensor ID and File Name Edit Box:

Sets the sensor ID string and event file extension from this channel. The sensor ID string should be 3 to 6 characters long.

Event File Format List Box:

Sets the event file output format. Currently WinSDR can save event files in the following formats: PSN, SAC Binary and MiniSeed with Steim 2 encoding.

Sensor Information:

Channel 1 Settings

Trace Display | Alarm/Filter Control | Channel Control | Save File | **Sensor Information**

Latitude: Longitude: Elevation: Orientation: Azimuth: Incident:
(meters)

Output Type: Output Voltage: Amp Gain: A/D Input: Sensitivity:
(volts / cm) (peak volts) (cm per A/D bit)

WinQuake Mag Corr: Filter Delay: Network:
(ms)

Location:

Information:

Poles and Zeros File:

Channel:

Latitude Edit Box:

Enter the Latitude of the sensor in degrees and decimal point not in degrees, minutes, seconds. Use a negative number for the Southern Hemisphere.

Longitude Edit Box:

Enter the Longitude of the sensor in degrees and decimal point not in degrees, minutes, seconds. Use a negative number for the Western Hemisphere.

Elevation Edit Box:

Elevation of the sensor in meters above or below (negative number) sea level. Use -12345.0 if unknown.

Orientation Select Box:

Set to Z for a vertical sensor, N for a North-South oriented sensor, E for a East-West sensor or ? if unknown.

Azimuth Edit Box:

Sensor azimuth angle in degrees with respect to the north through east. For a N-S or vertical sensor use 0. For a E-W sensor use 90. Set to -12345.0 if unknown.

Incident Edit Box:

Sensor incident angle in degrees with respect to vertical. For a N-S or E-W sensor use 90. For a vertical sensor use 0. Set to -12345.0 if unknown.

Output Type Select Box:

Select the sensor output type to either *Acceleration*, *Velocity*, *Displacement* or *Unknown*. See below for more information.

Output Voltage Edit Box:

Output voltage of the sensor in volts per centimeter of movement.

Amp Gain Edit Box:

Gain of the amplifier/filter channel that is between the sensor and the ADC input.

A/D Input Edit Box:

Specifies the maximum peak input voltage of the ADC channel. For the PSN-ADC-SERIAL this is usually set to 10 volts.

Sensitivity Edit Box:

The sensitivity of the sensor if known. See below for more information.

Mag Corr Edit Box:

A floating point number used by WinQuake to calculate magnitude. See the WinQuake documentation for more information.

Filter Delay Edit Box:

Used to compensate for any propagation delay through the low-pass filter for this channel. The number entered is in milliseconds. See this below for more information.

Network Edit Box:

Network affiliation. Example: PSN

Use GPS Average Button:

This button will set the sensor's latitude, longitude and elevation fields to the average GPS position data. The button will only be enabled if WinSDR is displaying the GPS Location dialog box.

Location Edit Box:

Sensor location string. Please keep as short as possible. Example: Redwood City, CA USA

Information Edit Box:

Sensor information string. Example: 12 Second Lehman or Geospace HS10 1Hz Geophone

Poles and Zeros File:

If specified, WinSDR will save the Poles and Zeros (frequency response information) contained in the file into the PSN Event file. Example of a Poles and Zeros file. Use the *Browse* button to locate the file and the *Clear* button to remove the file.

Additional Information

Sensor Sensitivity Field:

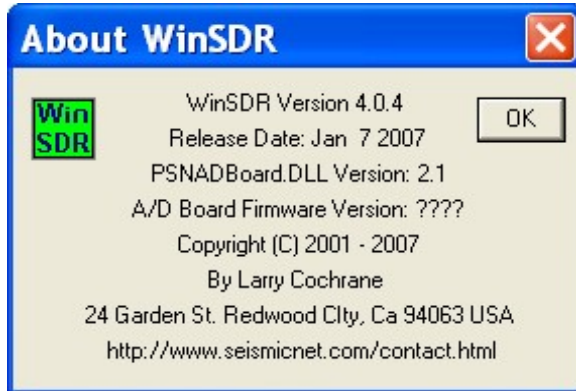
The Sensor Sensitivity field number depends on the Sensor Output Type field. If the sensor output is acceleration, sensitivity is in cm/sec/sec per A/D bit, if the output is velocity cm/sec per bit and if the output is displacement in cm per bit. This web page can be used to calculate the sensitivity number if you know the output voltage level of your sensor.

Sensor Filter Delay Field:

The Filter Delay setting is used to compensate for the propagation delay of the signal through the low-pass filter connected between the sensor and the A/D card. This is done by subtracting from the start time of the event file the number of milliseconds entered in this field. To measure the delay of your filter you will need a signal generator with a square wave output and a oscilloscope with two channels (or you could use two WinSDR channels). Feed the square wave into the amp / filter card. With the O-Scope or WinSDR look at the input signal with one channel and the output of the filter with the other. Measure the difference between the input and output signal in milliseconds and enter that number in the Filter Delay field for the channel. If you are using my Amp / Filter board with a 10 Hz low-pass filter you should use a value of around 50.

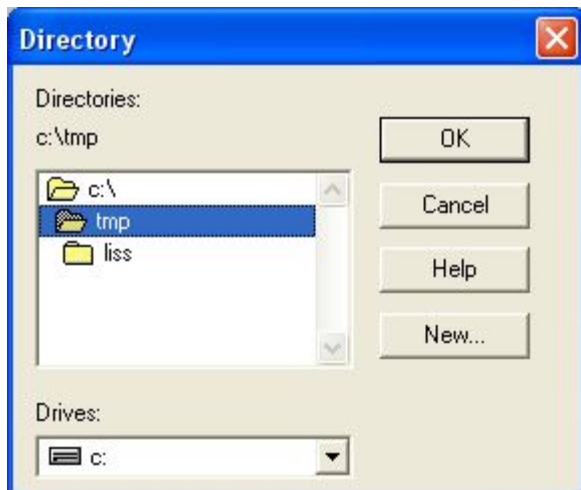
OTHER WINSDR DIALOG BOXES

About WinSDR:



This dialog box displays the WinSDR version number, release date, PSNADBoard.dll version number, ADC board firmware number, Copyright dates and author information. This dialog box is opened by using the **Help/About WinSDR** menu items.

Directory:



This dialog box is used by other dialog boxes to change or create a new directory or folder on your computer or networked computer systems.

Directory Text:

Displays currently selected directory.

Directory List Box:

Displays a list of directories based on the currently selected drive (see below). To select a directory, double click on one of the directory names.

Drives Select Box:

Used to select the disk drive used by the Directory List box.

OK Button:

Close dialog box and use directory.

Cancel Button:

Close dialog box without using directory.

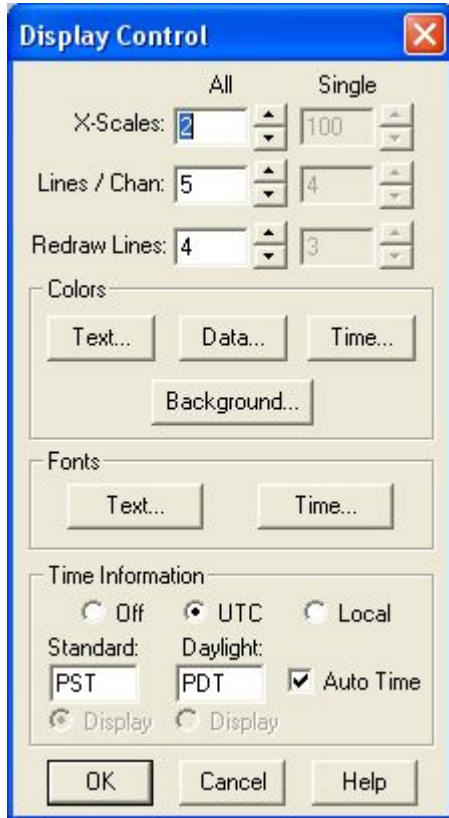
Help Button:

Opens this document.

New Button:

Used to create a new directory.

Display Control:



This dialog box is used to control the Real-time Window display.

All Edit Boxes:

X-Scale:

Trace speed when WinSDR is displaying all channels.

Lines per Channel:

Number of lines to display when displaying all channels.

Redraw Lines:

Number of lines to redraw after the trace reaches the end of the screen. Must be less than the *Lines per Channel* setting. Entering 0 will disable any history information from being displayed.

Single Edit Boxes:

X-Scale:

Trace speed when WinSDR is displaying one channel.

Lines per Channel:

Number of lines to display when displaying one channel.

Redraw Lines:

Number of lines to redraw after the trace reaches the end of the screen. Must be less than the *Lines per Channel* setting. Entering 0 will disable any history information from being displayed.

Colors Group Box:

Text Button:

Opens the *Colors* dialog box. The dialog box is used to change the color of the text part of the status information displayed on the bottom of the window.

Data Button:

Opens the *Colors* dialog box. The dialog box is used to change the color of the data part of the status information displayed on the bottom of the window.

Time Button:

Opens the *Colors* dialog box. This dialog box is used to set the color of the GMT/UTC time information on the left hand side of the Real-time and Replay windows. This button will be enabled if UTC or Local Time is selected in the Time Information group box.

Background Button:

Opens the *Colors* dialog box. This dialog box is used to change the background color of the window.

Fonts Group:

Text Button:

Opens the *Font* dialog box. This dialog box is used to change the font of the status information text.

Time Button:

Opens the *Font* dialog box. This dialog box is used to change the font of the time information on the left hand side of the Real-time and Replay windows. This button will be enabled if UTC or Local Time is selected in the Time Information group box.

Time Information Group Box:

Off Button:

Turns off the time information text on the left hand side of the Real-time and Replay windows.

UTC Button:

Enables the time information text on the left hand side of the Real-time and Replay windows. UTC time is displayed.

Local Button:

Enables the time information text on the left hand side of the Real-time and Replay windows. Local time is displayed.

Standard Time Edit Box:

Enter your local Standard Time Zone abbreviation in this edit box. Example: PST (Pacific Standard Time) or EST (Eastern Standard Time).

Standard Time Display Button:

If checked, and the *Auto Time* check box is not checked, WinSDR will always display the Standard Time string in the GIF image files, if both GMT and Local time are being displayed, and in the Real-time window.

Daylight Time Edit Box:

Enter your local Daylight Time Zone abbreviation in this edit box. Example: PDT (Pacific Daylight Time) or EDT (Eastern Daylight Time).

Daylight Time Display Button:

If checked, and the *Auto Time* check box is not checked, WinSDR will always display the Daylight Time string in the GIF image files, if both GMT and Local time are being displayed, and in the Real-time window.

Auto Time Check Box:

If checked, WinSDR will automatically change the Standard and Daylight string based on the current day and time. If not checked, WinSDR will display the Time Zone string based on the *Display Time* check boxes.

OK Button:

Closes the dialog box. New information entered will be used by WinSDR.

Cancel Button:

Closes the dialog box without making any changes.

Help Button:

Opens this documentation.

FTP Upload Settings:



This dialog box is used to control the uploading of new event files to an FTP server after WinSDR has saved them to the local disk drive. This will happen when WinSDR detects an event using the Alarm detection process or if the user forces WinSDR to produce event files by using the ***File / Force Event Files*** menu items. By forcing WinSDR to produce and transfer event files, the user can check that everything is working correctly. Currently if you save event file(s) using the Replay or Real-time windows, the event files will not be transfer to the FTP server. If the ***Log FTP Upload Information*** check box in the ***Log File Settings*** dialog box is check, WinSDR will save FTP upload status information in the Log file and Log File Viewer. This information can be used to debug any problems you may be having uploading files to the FTP server. To control the uploading of GIF image files using the FTP protocol see the ***GIF Image Upload Settings*** dialog box.

User Name Edit Box:

Enter the user name in this edit box. You must have a user name and password for event file transfers to an FTP server located on the Internet or local LAN.

FTP Password Edit Box:

Enter the FTP server password in this edit box.

Host Name or IP Address Edit Box:

Enter the host name (Example: ftp.somedomain.com) or IP address (Example: 196.100.1.1) of the FTP server.

FTP Remote Directory Edit Box:

Enter the directory where WinSDR should place the new event file(s). WinSDR will create this directory if needed.

Enable FTP Uploads Check Box:

This is the master On / Off switch. If checked, WinSDR will upload new event file(s).

Place in Subdirectory Check Box:

If checked, WinSDR will save the event files in a subdirectory under the directory specified in the *FTP Remote Directory* edit box. The subdirectory name is based on the year and month of the event file. The format is YYMM (YY = year MM = Month). Example: If the remote directory is set to **quakes** and the event happened March 2002, WinSDR will save the event file(s) in **/quakes/0203/**.

Delete Local File:

If checked, WinSDR will delete the file on the local drive after the file has been transferred to the remote system.

Upload Channels Check Boxes:

Used to select the channel(s) that will be uploaded to the FTP server.

Ok Button:

Closes the dialog box. New information entered will be used by WinSDR.

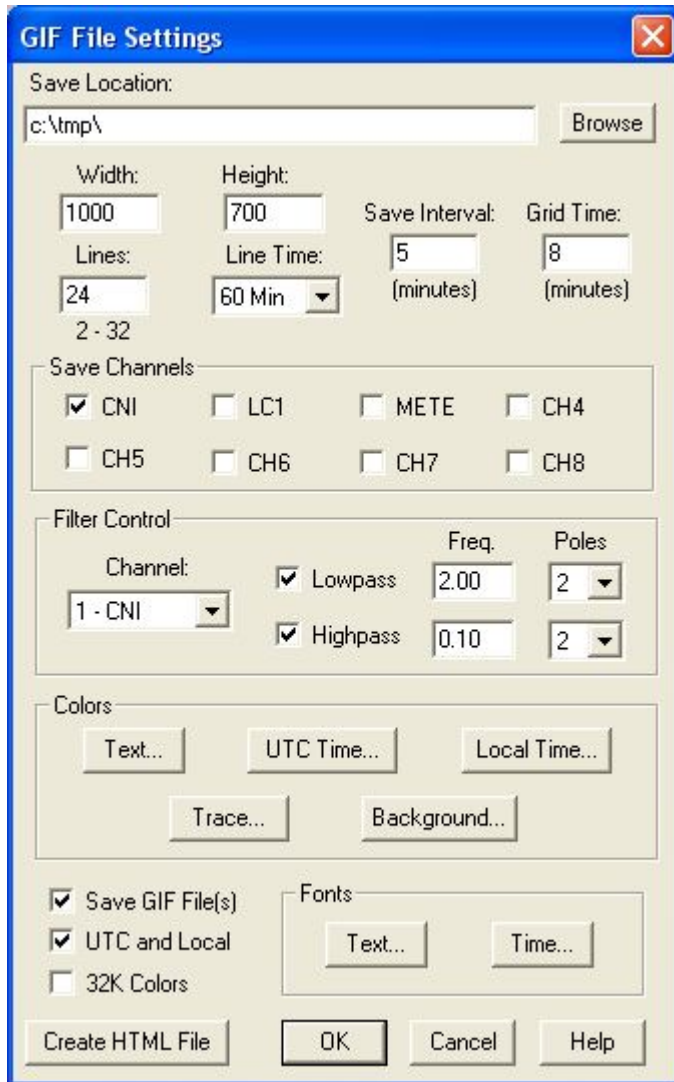
Cancel Button:

Closes the dialog box without making any changes.

Help Button:

Opens this documentation.

GIF File Settings:



This dialog box is used to control GIF image file generation. The images will be saved in the directory specified in the **GIF File Location** edit box. The file name of each image is the Sensor_ID.gif.

GIF File Location Edit Box:

Used to enter the directory of the GIF file(s). You can also use the **Browse** button to select a directory.

Browse Button:

Used to select the directory that will be used to save the GIF image file(s).

Width Edit Box:

Controls the pixel width of the image. Input range 100 to 2000 pixels.

Height Edit Box:

Controls the pixel height of the image. Input range 100 to 2000 pixels.

Lines Edit Box:

Controls the number of lines to display. Input range 2 to 32 lines.

Line Time Select Box:

Controls how many minutes each line will be.

Save Interval Edit Box:

Controls how often WinSDR saves image file(s). Input range 5 to 60 minutes.

Grid Time Edit Box:

Controls how many grid lines WinSDR will display. 0 = No grid lines. Input range 0 to 30 minutes.

Save Channels Check Boxes:

This is the On / Off switch for each channel. If enabled WinSDR will create a GIF file.

Filter Group:

This group controls digital filtering of the data used to create the GIF images. A lowpass and / or a highpass filter can be enabled for each channel.

Channel Select Box:

Used to select the channel to enable or disable digital filter.

Lowpass Check Box:

Enables lowpass filtering of the selected channel.

Lowpass Frequency Edit Box:

Sets the lowpass filter cutoff frequency.

Lowpass Poles:

Sets the number of poles, or the steepness of the filter.

Highpass Check Box:

Enables highpass filtering of the selected channel.

Highpass Frequency Edit Box:

Sets the highpass filter cutoff frequency.

Highpass Poles:

Sets the number of poles, or the steepness of the filter, used to attenuate the incoming data.

Colors Group:

Text Button:

Sets the text information color.

GMT Time Button:

Sets the GMT or UTC time information color.

Local Time Button:

Sets the Local time information color if the *GMT and Local* check box is checked..

Trace Button:

Sets the trace color.

Background Button:

Sets the background color.

Save GIF File Check Box:

This is the master on/off switch for creating GIF images. If checked, WinSDR will save GIF image file(s).

GMT and Local Check Box:

If checked, WinSDR will display GMT and local time on the left hand side of the GIF image. Your local time zone strings (Example: PST or PDT) should be entered in the Display Control dialog box before enabling this option.

32K Colors Check Box:

Check this box if you have your video display set to 32 K colors.

Fonts Group:

Text Button:

Opens the *Font* dialog box. This dialog box is used to change the font of the text information text.

Time Button:

Opens the *Font* dialog box. This dialog box is used to change the font of the time information on the left hand side of the image.

Create HTML Button:

Used to create a HTML file called CURRENT.HTML. This HTML file will display all of the selected channels in a web page. After creating this file, you can use the View / View GIF Images menu items to open the PSN Explorer Web browser and display the images in a browser window. The file will be created in the root directory of WinSDR.

OK Button:

Closes the dialog box. New information entered will be used by WinSDR.

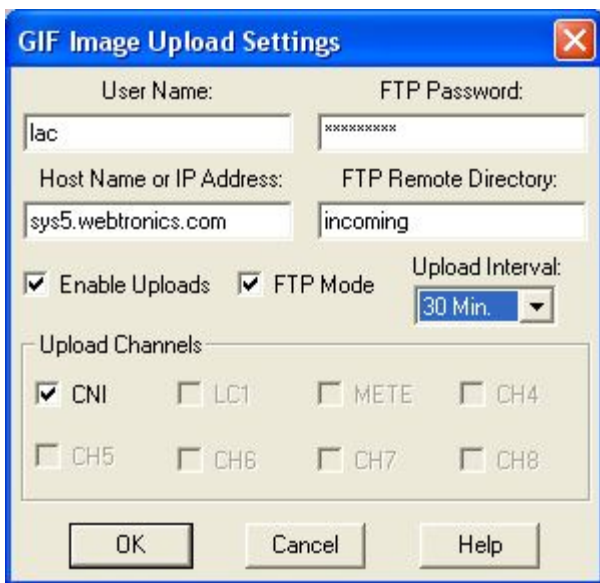
Cancel Button:

Closes the dialog box without making any changes.

Help Button:

Opens this documentation.

GIF Image Upload Settings:



This dialog box controls the uploading of GIF image files to an FTP server or the PSN web site.

User Name Edit Box:

Enter the user name in this edit box. This field is used for both FTP transfers and uploading to the PSN Web site. You must have a user name, and password for FTP transfers, to upload image files to the PSN Image Server or an FTP server located on the Internet or local LAN. Please contact me if you would like to upload your image files to the PSN Web site.

FTP Password Edit Box:

Enter the FTP server password in this edit box. This field is only enabled if the *FTP Mode* check box is checked.

Host Name or IP Address Edit Box:

Enter the host name or IP address of the PSN web site or FTP server that will receive the image file(s). This field should be set to www.seismicnet.com or psn.seismicnet.com for **non** FTP transfers.

FTP Remote Directory Edit Box:

Enter the directory where WinSDR should place the GIF image file(s). This field is only enabled if the *FTP Mode* check box is checked. WinSDR will create this directory if needed.

Enable Uploads Check Box:

This is the master On / Off switch. If checked, WinSDR will upload GIF image file(s).

FTP Mode Check Box:

If checked, WinSDR will use the FTP protocol to transfer GIF image files.

Upload Interval Select Box:

Controls the upload interval. Possible settings are 10, 15, 30, and 60 minutes.

Upload Channels Check Boxes:

Used to select the channel(s) that will be uploaded to the FTP server or PSN web site.

Ok Button:

Closes the dialog box. New information entered will be used by WinSDR.

Cancel Button:

Closes the dialog box without making any changes.

Help Button:

Opens this documentation.

GPS Location:



WinSDR can receive both A/D and GPS data from the ADC board. Once enabled, WinSDR will average all 3-D position fixes calculated by the GPS receiver when three or more satellites are being tracked.

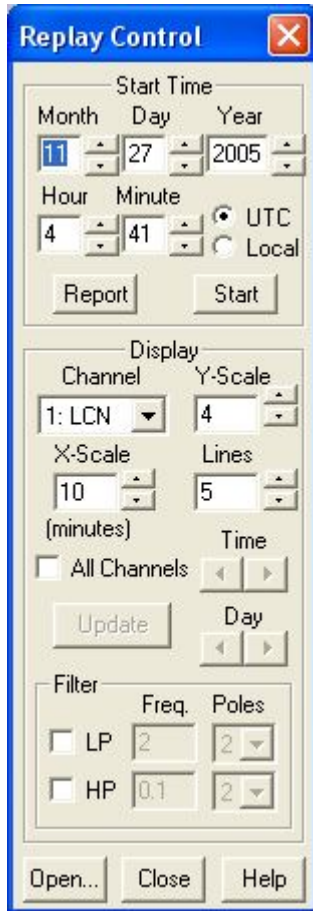
Once 100 or more averages have been calculated, the *Use GPS Average* button in the *Channel Setting* dialog box will be enabled. If selected, the sensor's latitude, longitude and height information will be updated with the current GPS position average information. To get an accurate location, the user should average the GPS data over a few days.

The PGRMT Message box displays the Garmin GPS 16/18 \$PGRMT status message. The message is sent out once per minute and contains data like the firmware version number and other information including the temperature. See the Garmin GPS 16/18 documentation for more information.

Note: This feature should be disabled once the user has determined their stations location to reduce the traffic on the the RS-232 line between the A/D board and WinSDR.

Replay Control:

This dialog box is opened with the Replay window when the user enters the Replay mode. The Replay process is used to look for events not automatically saved by WinSDR. If an event is found the user can then save one or more event files.



To start the replay process, the user can either enter a start time in the Start group, import an event report from WinQuake using the Report button or select one of the daily record files using the Open File button. To use the Report button you must use WinQuake (Version 2.8.5 and up) to select an event report in the Event Report dialog box. You must check the *Save On Clipboard* check box. If you do not see this check box you are running an older version of WinQuake. After selecting an event report, WinQuake will place the report information onto the system clipboard. This information can then be used to seed the Replay start time by pressing the *Report* button.

After entering the start time information, and pressing the *Start* button, WinSDR will try and find the time in one of the daily report files. If the time is found, the Replay window will display one or more traces based on the settings below.

The other way of starting the replay process is to open one of the daily record files using the *Open File* button. This will open the Open File dialog box. Choosing one of the daily record files will start the replay process at the beginning of the record file. The user can then use the scroll-bar in the Replay window or the left-right arrows in the Replay dialog box.

Event files can be created by entering a *Save Time* in the *Save Event* dialog box. This dialog box will be opened for you if you enter a start time, or use the *Report* feature, and then press the *Start* button. You can also specify an end time and then save the event by double clicking in the Replay window. If you use the Open File button, you will need to select a start time by double clicking in the Replay window. You can then enter a Save Time or double click on the end time in the Replay window.

Start Time Group:

Month Edit Box and Spin Control:

Start time month.

Day Edit Box and Spin Control:

Start time day.

Year Edit Box and Spin Control:

Start time year.

Hour Edit Box and Spin Control:

Start time hour.

Minute Edit Box and Spin Control:

Start time minute.

UTC Check Box:

If checked, the start time is UTC time.

Local Check Box:

If checked, the start time is local time.

Report Button:

Imports a WinQuake event report. Seeds the start time based on the event time. See above for more information.

Start Button:

Starts the replay process at the specified start time.

Display Group:

Channel Select Box:

Selects the channel that will be displayed, if the *All Channels* check box is not checked, and the Y-Scale edit box will control.

Y-Scale Edit Box and Spin Control:

Controls the Y-Scale of the channel selected by the *Channel Select Box*.

X-Scale Edit Box and Spin Control:

Controls the X-Scale or time display. Time is in minutes per line per channel.

Lines Edit Box and Spin Control:

Sets the number of lines per channel to display.

All Channels Check Box:

If checked, all channels will be displayed in the Replay window. If not checked, only the channel selected in the *Channel select box* will be displayed.

Update Button:

After changing one or more items above, you will need to press this button to update the Replay window with the new setting(s).

Time Spin Control:

Scrolls the Replay window left or right.

Day Spin Control:

Opens the previous or next day's record file.

Digital Filter Group Box:

LP (Lowpass) Check Box:

Enables lowpass filtering of the data displayed in the Replay window for the selected channel.

Lowpass Frequency Edit Box:

Sets the lowpass filter cutoff frequency.

Lowpass Poles:

Sets the number of poles, or the steepness of the filter, used to attenuate the incoming data.

HP (Highpass) Check Box:

Enables highpass filtering of the data displayed in the Replay window for the selected channel.

Highpass Frequency Edit Box:

Sets the highpass filter cutoff frequency.

Highpass Poles:

Sets the number of poles, or the steepness of the filter, used to attenuate the incoming data.

Open Button:

Opens the Open File dialog box. This dialog box is used to select one of the daily record files to start the Replay process.

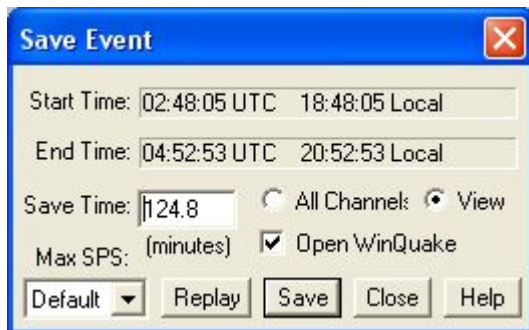
Close Button:

Closes the dialog box.

Help Button:

Opens this documentation.

Save Event:



This dialog box is used to save PSN formatted event files that can be viewed and analyzed with WinQuake. This dialog box is activated when the user selects an event start time by using the mouse and double clicking in the Real-time or Replay windows. When the user double clicks again at the event end time, or specifies a save time, the user can save the event file(s) by pressing the Save button.

The location of the saved event files is based on the **Event Files** field in the System Settings dialog box and the time of the event file. A subdirectory located under the **Event Files** directory will be created if need based on the year and month (YYMM) of the event file. Example: If the **Event Files** directory is set to *d:\events* and if the event file(s) is created on 12/26/2004, then the file(s) will be located in a directory named *d:\events\0412*.

The *Save Event* dialog box has two other features. It can control the sample rate of the event file(s) being saved, and open the Replay window from the Real-time window or zoom into the data from the Replay window.

Start Time Display:

Displays the current selected event start time. Both UTC and local time are displayed.

End Time Display:

Displays the current selected event end time. Both UTC and local time are displayed.

Save Time Edit Box:

Displays the time difference between the start and end times. The user can also specify a save time by entering the number of minutes to save in this edit box.

All Channels Check Box:

If check, all channels will be saved.

View Check Box:

If check, only the channel being displayed will be saved.

Open WinQuake Check box:

If checked, WinSDR will open WinQuake after saving the event file(s). If one event file is saved, WinQuake will display the new file. If more then one event file is saved, WinQuake will display the Open File dialog box listing the new event files. To use this feature you must first use the Locate WinQuake dialog box to locate the WINQK32.EXE file. This is usually located in this

directory: c:\program files\winquake\. To open this dialog box use the *File / WinQuake Location* menu items.

Max SPS List Box:

Controls the sample rate of the event file(s). In the Default mode, the sample rate of the event file will be set by the sample rate of system divided by any Save-Nth number specified in the Channel Setting screen. If you select a sample rate, the event file(s) will be forced to the value selected in the list box.

Replay / Zoom Button:

If the *Save Event* dialog box is opened from the Real-time window, the button will be labeled "Replay". When selected, the Replay window will be opened with the *Start Time* displayed in the Replay window. If this dialog is opened from the Replay window the button will be labeled "Zoom". Then selected, the Replay window will view the data specified by the *Start* and *End Times*.

Save Button:

When pressed, WinSDR will save the event file(s) based on the start and end times or user supplied save time.

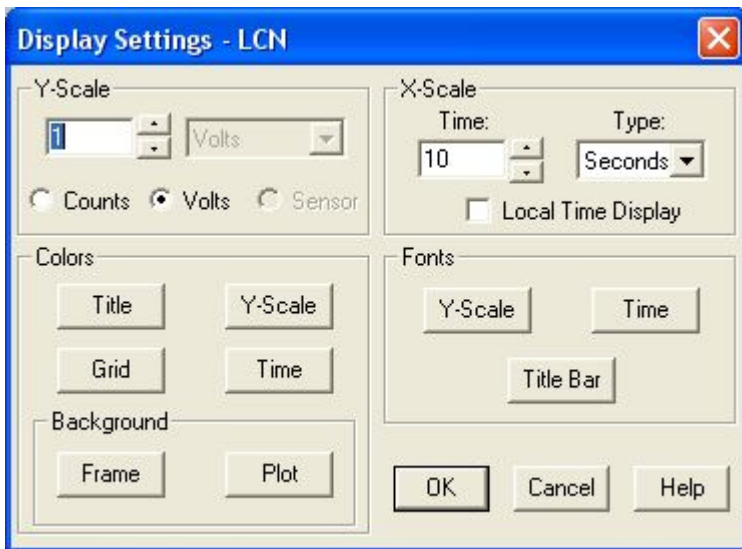
Close Button:

Closes the dialog box without saving any event file(s).

Help Button:

Opens this documentation.

Single Line Display Settings:



This dialog box controls the Single Line Display window. To open the this window use the *View / Single Line Display* menu items.

Y-Scale Group:

Edit Box:

Used to control the Y-Scale value.

Counts:

If selected, the Y-Scale will be displayed in A/D counts.

Volts:

If selected, the Y-Scale will be displayed in volts into the A/D converter channel.

Sensor:

Currently not implemented.

X-Scale Group:

Time Edit Box:

Used to control the control time. Enter the number of seconds, minutes or hours to display across the Single Line plot.

Type List Box:

Used to set the X-Scale time to seconds, minutes or hours.

Local Time Display:

If selected, local time will be displayed instead of UTC/GMT time.

Colors Group:

Title Button:

Opens the *Colors* dialog box. This dialog box is used to change the color of the title of the display.

Y-Scale Button:

Opens the *Colors* dialog box. This dialog box is used to change the color of the Y-Scale text.

Grid Button:

Opens the *Colors* dialog box. This dialog box is used to change the color of the plot grid lines.

Time:

Opens the *Colors* dialog box. This dialog box is used to change the color of the time or X-Scale text.

Frame:

Opens the *Colors* dialog box. This dialog box is used to change the color of the frame around the plot window.

Plot:

Opens the *Colors* dialog box. This dialog box is used to change the color of the plot.

Fonts:

Y-Scale Button:

Opens the *Fonts* dialog box. This dialog box is used to change the font of the Y-Scale text.

Time Button:

Opens the *Fonts* dialog box. This dialog box is used to change the font of the Time or X-Scale text.

Title Bar Button:

Opens the *Fonts* dialog box. This dialog box is used to change the font of the plot title bar.

Ok Button:

Closes the dialog box. New information entered will be used by WinSDR.

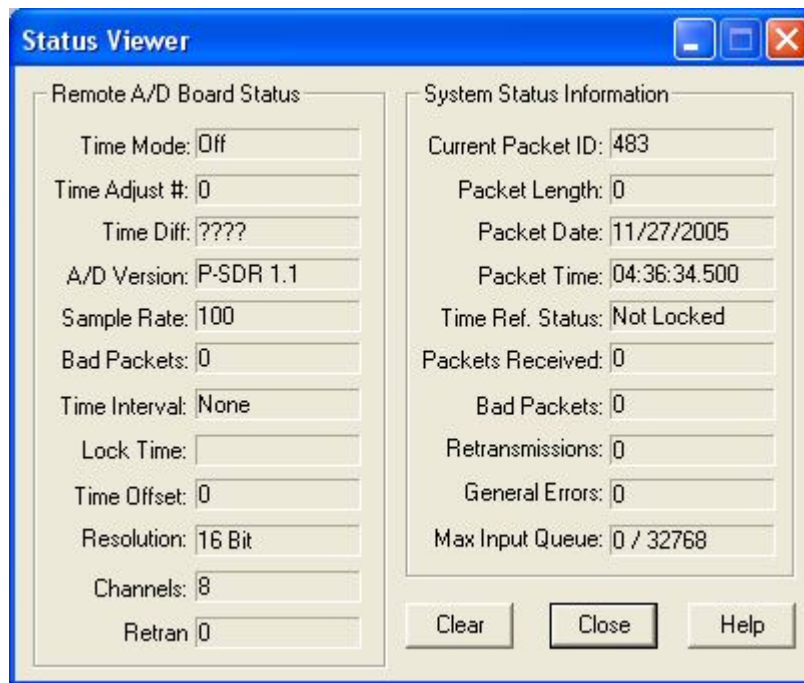
Cancel Button:

Closes the dialog box without making any changes.

Help Button:

Opens this documentation.

Status Viewer:



This dialog box displays WinSDR and the remote A/D board status information. The Status View is opened using the **View / Status Viewer** menu items. The fields are update once per second as the data from the A/D board is received by WinSDR.

Remote A/D Board Status:

Time Mode:

Displays the current time interval mode. This can be either Add Time, Drop Time or None. None indicates that no time interval has been calculated yet by WinSDR.

Interval:

Time interval between 1 millisecond adjustments to the internal time of the A/D board to keep it near GPS or WWV time.

Adjust #:

Number of 1 milliseconds adjustments made to the internal A/D board time to keep it near GPS or WWV time.

Lock Time:

The time in days, hours and minutes that the remote A/D board has been locked to one of the timing references source (GPS, WWV etc).

Time Diff:

This is the time difference in milliseconds between the internal time of the A/D board and GPS or WWV time.

Time Offset:

Time offset in milliseconds. Used to fine tune the timing accuracy of WinSDR. This value should match the **Reference Offset** number in the **System Settings** dialog box.

Version:

This field displays the firmware version number of either the Serial Out A/D board or the VolksMeter™ Interface board program.

Resolution:

Number of A/D bits used to record the analog data.

SPS:

The sample rate the remote A/D board is using to record the analog data. This value should match the *Samples Per Second* number in the *System Settings* dialog box.

Channels:

Number of channels the remote A/D board is recording. This value should match the *Channels To Record* number in the *System Settings* dialog box.

Bad Packets:

Number of bad packets received by the remote A/D board.

Retran Errs:

Number of times the remote A/D board sent out retransmission packets.

General Status Information:**Current Packet ID:**

Displays the current packet ID. Each packet from the A/D board has a unique packet ID.

Packet Length:

Length in bytes of the current packet.

Packet Date:

Displays the date time stamp of the current packet.

Packet Time:

Displays the time of day of the current packet.

Time Ref. Status:

Displays the time reference lock status. This field can be "Not Locked" indicating the A/D board is not locked to one of the time references, "Locked" indicates the internal time of the A/D board is within a few milliseconds of UTC time. "Was Locked" indicates that at some time the system was locked to a time reference source but it has been over 12 hours since the system has been locked to the time reference.

Packets Received:

Number of packets received by WinSDR from the A/D board or VolksMeter Interface board.

Bad Packets:

Number of bad packets received by WinSDR. Each packet from the A/D board includes a checksum byte. WinSDR uses this checksum to verify the integrity of the data received from the A/D board. If a packet is bad, WinSDR will request that the A/D board resend the packet.

Retransmissions:

Number of retransmissions requested by WinSDR. If WinSDR receives a bad packet it will request that the A/D board retransmit the packet again.

General Errors:

Number of general errors encountered by WinSDR.

Max. Input Queue:

This field displays the maximum bytes that were saved in the serial port input queue by the system. WinSDR opens the serial port with input queue size of 32768 bytes. If the max queue number gets near this number your system is too busy doing other things and WinSDR is not getting enough CPU time to read the data from the serial port.

Clear Button:

Clears or resets the following fields: Packets Received, Bad Packets, Retransmissions, General Errors and the Max. Input Queue.

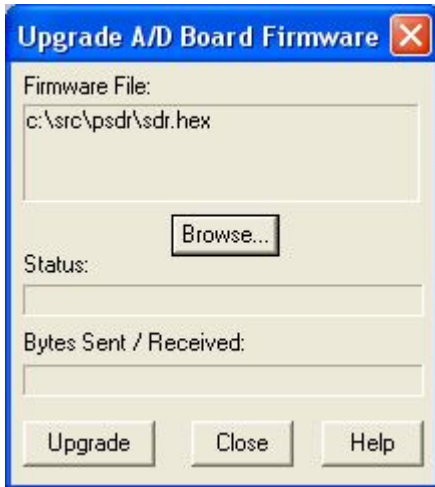
Close Button:

Closes the *Status Viewer* dialog box.

Help Button:

Opens this documentation.

Upgrade Firmware:

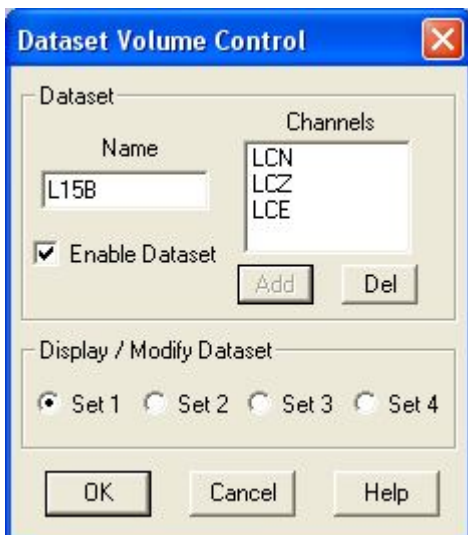


This dialog box is used to upgrade the firmware on the PSN-ADC-SERIAL board. See the Upgrade Firmware manual page for more information.

Volume Dataset Control:

Dataset volumes contain data from two or channels in one event file. The format of the dataset file is documented at <http://psn.quake.net/psnformat4.html#Volume>. **Note:** The current beta version of WinQuake (2.9.2 or higher) must be used to view dataset files.

The *Dataset Volume* dialog box is used to control what channels are saved in dataset files. This dialog box is opened using the **File / Dataset Volume Control** menu items. Up to four datasets can be defined and each dataset can have two or three channels associated with the dataset.



The *Name* Edit box is used to enter the dataset name. This is used as the file extension when WinSDR creates the dataset file name. The format of the file name is the event file start time, dataset name and then "PSN". Example:
030208.123023.LCL15B.PSN

The *Channels* list box lists the channels associated with the dataset.

The *Enable Dataset* checkbox is used to enable or disable the dataset volume. If enabled, WinSDR will save the channels in the dataset volume. If turned off, the channels will be saved as individual event files.

The *Add* button opens the *Add Channel* dialog box. This dialog box lists the available channels that can be added to the dataset. Up to three channels can be added to the dataset list.

The *Del* button is used to delete the currently selected channel in the *Channels* list box. The Sel 1 to Sel 4 radio buttons are used to display and modify one of the four dataset volumes that can be created in WinSDR.

WINSDR STA/LTA TRIGGERING INFORMATION

Introduction:

STA/LTA stands for Short Term Averaging / Long Term Averaging. More information about STA/LTA triggering can be found here [Tuning of Seismic Networks](#). This is an excellent description on how STA/LTA works and what range of numbers should be used for the different channel menu items used for triggering event files.

Channel Settings:

To enable this mode of triggering go to the Alarm Settings dialog box and select the STA/LTA Triggering Mode for each channel you would like to use for triggering event files. The following menu items are used for STA/LTA triggering:

STA/LTA Threshold:

When the STA/LTA ratio goes above this number the channel will go into a pre-trigger or trigger mode depending on the ***Trigger Number***. Input is a floating point number usually in the range of 3.0 to 50.0. Default for this field is 4.0.

Trigger Number:

For a channel to go into an alarm or trigger state the STA/LTA threshold must happen ***Trigger Number*** of times within the ***Pre-Trigger Time***. Normal numbers for this field are 1 to 4. If set to 1, the channel will trigger whenever the threshold is reached. Default for this field is 2.

Pre-Trigger Time:

The time in seconds the channel stays in the pre-trigger condition. Default for this field is 10 seconds.

Trigger Time:

The time in seconds the channel stays in the trigger or alarm state. The default for this field is 60 seconds.

STA Time:

STA average window time in seconds. The number entered may be a floating point. Example, entering 1.5 will create a 1.5 second STA window time. The actual window time depends on the system sample rate. At 100 samples per second the resolution is 10 milliseconds, at 50 sps the resolution is 20 ms etc. Default for this field is 2 seconds.

LTA Time:

LTA average window time in seconds. The number entered may be a floating point. Like the ***STA Time*** above, the actual time depends on the system sample rate. Default for this field is 20 seconds.

LTA Minimum:

This field sets the minimum value the LTA can go down to. This sets the overall trigger sensitivity of the channel. The higher the number the less sensitive the channel will be to noise or a real event. Default for this field is 0 or no LTA minimum limit.

LTA Maximum:

This field sets the maximum value the LTA can go up to. Default for this field is 65000 or no LTA maximum limit.

Digital Filtering:

The data supplied to the alarm / event detection process can be filter using a lowpass and / or highpass Butterworth digital filter. The user can view the filtered data by using the ***View / Display Filtered Data*** menu items. This image shows the difference between filtering the data and not filtering the data. The first 4 minutes is with the ***View / Display Filtered Data*** enabled and the last 6 minutes disabled. The data is from a 1 Hz vertical geophone and the filter was set to a 2 Hz 6 pole lowpass filter.

Lowpass Check Box:

Enables lowpass filtering of the data going to the alarm / event detection process.

Lowpass Frequency Edit Box:

Sets the lowpass filter cutoff frequency.

Lowpass Poles:

Sets the number of poles, or the steepness of the filter, used to attenuate the incoming data.

Highpass Check Box:

Enables highpass filtering of the data going to the alarm / event detection process.

Highpass Frequency Edit Box:

Sets the highpass filter cutoff frequency.

Highpass Poles:

Sets the number of poles, or the steepness of the filter, used to attenuate the incoming data.

STA/LTA Status Display:

To monitor the STA/LTA process go to the single channel display screen by pressing the 1 through 8 key or use the Channel menu item. Pressing the 'S' key, or using the View / Display STA/LTA menu items, will toggle between the normal data high / low display and the STA/LTA status display. The status numbers are:

Input Avg: The A/D data averaged over one second. Number is in A/D counts.

STA: The current STA number.

LTA: The current LTA number.

Ratio: The ratio of the STA and LTA numbers.

Max: The maximum STA/LTA ratio number. Use the 'C' key to clear this field.

Additional Information:

WinQuake (versions 2.75 or higher) can display the STA/LTA ratios within an event file. This feature can be used to help you select the best STA/LTA parameters in WinSDR. The STA/LTA Ratio dialog box can be opened using the Calculate / STA/LTA Ratio menu items.

A command line (DOS Box) utility program called StaLta (StaLta.zip) has been written to generate a STA/LTA ratio report similar to the WinQuake feature above. Please see the readme.txt file for more information.

TCP/IP SERVER / CLIENT FEATURE

TCP/IP Server:

If this feature is enabled using the **Systems Settings** dialog box, WinSDR will allow other WinSDR or WinPlotGPS systems to receive real-time A/D and or GPS data using a TCP/IP connection. The connection can be over an internal LAN or over the Internet, if the user has a fast-enough Internet connection. To receive data over a TCP/IP connection, the WinSDR or WinPlotGPS programs must be configured as TCP/IP Clients. Currently up to 8 clients can simultaneously connect to WinSDR and receive data over a TCP/IP connection.

WinSDR now supports sending out packets in the MiniSeed format. Packets are 512 bytes long and encoded using Steim 2 compression. This is the same format as the Live Internet Seismic Server (LISS) system. The Earthworm module LISS2EW under Windows has been tested with the MiniSeed packets sent out by the program.

One or more channels must be enabled before WinSDR will send MiniSeed packets. The *MSeed Send* check box in the *Channel Settings* dialog box is used to control what channels will be sent to the client. If no channels are enabled the connection will be dropped. In the WinSDR Server/Client mode all channels are sent to the client. Currently there is no way of enable/disabling individual channels.

The packet type, either WinSDR or MiniSeed, sent to the client will depend on how the client connects to WinSDR. When a WinSDR client connects to a server system, a dialog is established between the two systems and the server will send WinSDR packets. If a client connects to the server and does not send any commands, WinSDR after a 5 second timeout period, will switch to the MiniSeed mode.

Allow IP File:

If the file *allow.txt* is located in the root WinSDR directory, WinSDR will check to see if the IP address of the client is located in the file. If the IP address is found, the client will be allowed to remain connected and receive A/D or GPS data. **NOTE: If the file is not found or if there are no valid IP address in the file, WINSDR will allow all connections.**

If you would like to restrict access to your system, you will need to create this file with a text editor and enter one or more IP addresses that can have access to the WinSDR server. You should only place one IP address per line. Any comment lines starting with a ! will be ignored. The IP address can have the wild-card character * as one of the subnets. **Example: Entering 10.0.0.* will allow all IP address in the 10.0.0.1 to 10.0.0.255 range to connect to the WinSDR server.** Only IP address should be entered in the allow.txt (except comments). Host names like data.mydomain.com should not be used in the allow.txt file.

TCP/IP Client:

In this mode, WinSDR receives the A/D data from a WinSDR system configured to be a TCP/IP Server. Once the connection is established, the real-time window will be updated with the data sent by the WinSDR server.

In the client mode, all of the normal data processing features like event detection, saving data to a daily record file, etc. should work the same as if the program were receiving the data directly from the A/D board.

Additional Information:

WinPlotGPS can receive GPS data from the GPS receiver connected up to the 16-Bit Serial Output A/D board. To use this feature you will need to have the current firmware release installed on the Version I A/D board. This firmware release allows WinSDR to receive A/D data and GPS data at the same time. WinPlotGPS receives the GPS data through a TCP/IP connection between the program and WinSDR.

To view the GPS data in WinPlotGPS you first need to enable the TCP/IP Server feature in WinSDR. See above for more information. WinPlotGPS is then configured to be a TCP/IP Client. When WinPlotGPS connects to WinSDR, WinSDR will request that the A/D board send GPS data down the RS-232 line. This data is received by WinSDR, placed into packets and then sent to WinPlotGPS. For more information, see the WinPlotGPS documentation.

Upgrading PSN-SERIAL-ATOD Firmware using WinSDR

Firmware Download Links:

Version I ADC Board - Version 2.5: <http://psn.quake.net/software/rsdr25.zip>
Version II ADC Board - Version 2.8: <http://psn.quake.net/software/psdr28.zip>
Version III ADC Board - Version 1.2: <http://psn.quake.net/software/dsdr12.zip>

Introduction:

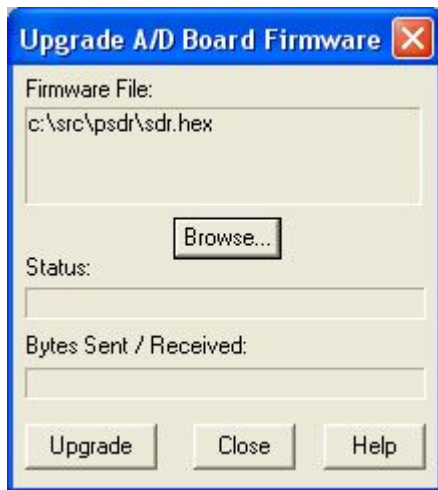
WinSDR can upgrade the firmware on the Serial Output A/D board. If you are having problems using WinSDR to upgrade your **Version I** board you should try the RFU Program (see: <http://psn.quake.net/winsdr/firmware.html>). For Version I firmware release notes, please see: <http://psn.quake.net/winsdr/releasenotes.html#Serial>.

This document describes how to upgrade the firmware (program) that runs on the PSN-SERIAL-ATOD board. The user will need a serial cable that support full handshaking. The upgrading the A/D board will not work correctly if the serial cable only has transmit, receive and ground connect. Pins 1 through 8 must be connected at both ends of the cable, pin 9 is not used.

Upgrading the Firmware:

Step 1: Download one of the firmware files above. Unzip and copy the .bin or .hex file to the root WinSDR directory.

Step 2: Open the Upgrade A/D Board Firmware dialog box using the *File / Upgrade Firmware* menu items. This will open the following dialog box:



Step 2: Press the *Browse* button to open the standard Windows File Open dialog box. Use this dialog to select the A/D board firmware file. This .bin or .hex file will start with RSDR, PSDR or DSDR.

Note: Version I ADC users should do Step 3, Version II, III and VolksMeter user should skip this step.

Step 3: On the A/D board locate the three pin jumper JP1. Move the jumper block from pins 2-3 to 1-2. This will enable the firmware program mode of the RabbitCore CPU module. Also, make sure that the A/D board has power.

Step 3: Now press the *Upgrade* button. If everything is working correctly you should see the *Bytes Sent* number increase as WinSDR sends the new firmware to the A/D board. The upgrade process takes about 30 seconds.

Note: Version I ADC users should do Step 4, Version II, III and VolksMeter user should skip this step.

Step 4: After the firmware has been downloaded you will be asked to replace the JP1 jumper back to the 2-3 position.

Step 5: After closing the dialog box, WinSDR will reset the A/D board. You can verify that the new firmware version is running on the A/D board by opening the Status Viewer. To open this viewer use the *View / Status Viewer* menu items. When WinSDR receives the status information from the A/D board it will display the firmware number in the *Version* field of the *Remote A/D Board Status Information* group box.

Upgrading PSN-SERIAL-ATOD Firmware using RFU

Current Firmware Version 2.5 File: <http://www.seismicnet.com/software/rsdr25.zip>

Note:

The following directions are only for **ADC Version I** board users.

WinSDR version 2.0.5 and above can directly upgrade the firmware on the Serial Output A/D board. See this page for more information. If you are having problems using WinSDR to upgrade your board you should try the RFU program documented below. Please see this page for firmware release notes.

Introduction:

This document describes how to upgrade the firmware (program) that runs on the PSN-SERIAL-ATOD board. The user will need a serial cable that support full handshaking. The program (RFU.EXE) that upgrades the A/D board will not work correctly if the serial cable only has

transmit, receive and ground connect. Pins 1 through 8 must be connected at both ends of the cable, pin 9 is not used.

A note about the RFU (Rabbit Field Utility) program. This program is supplied by the manufacture of the CPU module on the A/D board. It is not very user friendly. For the dialog boxes to show correctly the screen size should be 800 X 600 pixels. Before running the program you might want to temporarily set the screen size to 800 X 600.

Upgrading the Firmware:

Step 1: Download and run this file: rfusetup.exe It will install the RFU program on your system. This setup program also contains the current firmware file rsdr25.bin. If you already have RFU installed on your system you can download the current firmware version here. You will need to unzip the file before downloading it to the A/D board using RFU.

Step 2: On the A/D board locate the three pin jumper JP1. Move the jumper block from pins 2-3 to 1-2. This will enable the firmware Program mode of the RabbitCore CPU module. Also, make sure that the A/D board has power.

Step 3: Start the RFU (Rabbit Field Utility) program.

Step 4: Under the *Setup* menu item select *Communications*. In the *Communications Options* dialog box make sure that the *Use Serial Connection* is selected. Enter the *Comm Port* (COM1 COM2 etc) that will be used to upgrade the A/D board. The baud rate must be set to 115200. When entering the *Comm Port* name use only one 'M'.

Step 5: Under the Setup menu item select the *Boot Strap Loaders* menu item. In the *Choose Loaders* dialog box select or enter the following files:

Cold Loader: *c:\program files\winsdr\rfu\coldload.bin*

Pilot BIOS: *c:\program files\winsdr\rfu\pilot.bin*

The files coldload.bin and pilot.bin files are installed by the setup program.

Note: Even if these file names show up in the edit boxes when you first open the dialog box you may, for some reason, need to reenter the file names or select the files using the browse buttons (if visible). If you fail to do this the download process may not work correctly. If you manually enter the file name use the full path (directory and file name).

Example: C:\PROGRAM FILES\WINSDR\RFU\COLDLOAD.BIN

Step 6: Under the File menu item select *Load Flash Image*. In the *Choose Flash Image* dialog box enter the full path to the RSDR18.BIN file or the use the browse button to locate the file.

Step 7: Selecting the OK button in the *Choose Flash Image* dialog box will start the upgrade process. If the RFU program can properly talk to the A/D board, and if it can find all of the files needed for the upgrade process (COLDLOAD.BIN, PILOT.BIN and RSDR18.BIN files), you should see a *Progress* dialog box open up. The upgrade process takes about 30 seconds. If no errors have occur, the *Progress* dialog box will close and the A/D board will have the new firmware loaded in the flash memory.

Step 8: Remove the power to the A/D board. Now place the JP1 jumper block back to pins 2-3 and reapply the power. Moving the JP1 jumper back to the normal position and recycling the power will place the CPU module back into the normal mode where it can communicate to WinSDR.

Step 9: After starting WinSDR, you can verify that the new firmware version is running on the A/D board by opening the Status Viewer. To open this viewer use the *View / Status Viewer* menu items. When WinSDR receives the status information from the A/D board it will display the firmware number in the *Version* field of the *Remote A/D Board Status Information* group box.

REQUEST EVENT FILE INFORMATION

Introduction:

This document describes how to use the request event file feature of WinSDR. The purpose of this feature is to allow an other program to request event files from WinSDR. I use this feature in WinQuake and for the Request Data Web page at <http://www.seismicnet.com/request.html>.

How it Works:

WinSDR checks a directory every 10 seconds for a request file. The request file has information in the file that is used by WinSDR to create the event file. This file has the start time, number of minutes to save, save nth data point (time compression), channel name, and a file name to call the saved output event file(s).

It's up to you to write a program that takes the information from the user, this could be a CGI script connected to a Web page form etc, and create the request file in the directory that WinSDR is checking every 10 seconds. If WinSDR finds a request file, it parses out the information and tries to create the event file(s). WinSDR does this by doing an automatic Replay to create and save the event file data.

After WinSDR reads the request file it deletes it. Your program needs to wait for the event file(s) to show up in the output event file directory. DO NOT have WinSDR save the event files in the same directory as the request file. The request file shared directory should only be used for the request file. WinSDR has to check this directory every 10 seconds. If there are any other files in this directory it will take longer for WinSDR to search for request files. Your program should wait for about 30 to 45 seconds for the event file or files to show up. If after this time period there is no event file found there was an error over at the WinSDR end or there is a setup problem.

WinSDR will report back an error condition by using the output file and placing a small error message in it. The user should check the file size of the event file, and, if its under 200 bytes long then there was an error, and WinSDR placed an error message (one line of ASCII text) in the file instead of the actual PSN formatted event file data.

Setting Up WinSDR:

The only thing you need to do in WinSDR is set the *Request Control File* field in the **System Settings** dialog box. Use the *Browse* button to select the directory that will be used to check for the request files.

Request File Name and Format:

The name of the request file is: RQ?????.SYn where the ?????? can be any characters to make the file name unique, and n is the system number. The system number can be changed under the System Settings dialog box, and is usually 1 if you only have one WinSDR system running. For the ?????? part of the name I use the hour, minute and seconds of the current time that the request file is created. The full file name and path used to create the request file should look something like this: C:\SDR\REQUEST\RQ142308.SY1.

If you have more than one WinSDR system, it is up to your program too know what system the channel is on. I use a simple file that my Request Web page CGI script reads to do the channel to system number mapping.

The content of the file is one single line of text with the request information in it. The fields are separated with spaces. The format of the line is:

MM DD YY HH MIN UTC/LocalChar SaveTime SaveNth# ChannelName_or_list OutputName

Where:

MM is the start time month (1 -> 12).

DD is the start time day (1 -> 31).

YY is the start time year (97 or 98 etc).

HH is the start time hour (00 -> 23).

MIN is the start time minute (00 -> 59).

UTC/LocalChar tells WinSDR if the start time is Local or UTC. This needs to be single uppercase U or L character.

SaveTime is the number of minutes to save.

SaveNth is used to control the sample rate of the event file. A 1 in this field will tell WinSDR to save every sample. A 2 in this field will save every other sample producing an event file 1/2 the size of an event file saved with a 1 for SaveNth. The sample rate of the event file will be 1/2 of the system sample rate. A 3 in this field will save every third sample (Note: WinSDR averages the data between saved samples).

ChannelName_or_list is the file name extension that is set by each Channel Setting screens. On my system the channel / file extension are called LC1 LC2 etc. More then one channel can be replayed per request file by placing more then one file name in this string. File names should be separated by a coma with out any spaces. Example: LC1,LC2 If more then one file is specified, the OutputName field directory and root name are used to create the full file name for each channel.

OutputName is the full path and file name that WinSDR will use to create the event file or it will hold an error message string if WinSDR encounters any problems. The path part of the name needs to point to a directory that WinSDR has access too. The file name part can be anything. I use the month, day, hour, minute and then the channel name for my CGI script. Example:

g:\WinSDR\reqdata\02151238.LC1. This field is not used if more then one ChannelName file name is present.

When WinSDR creates an event file it appends ".psn" to the file name. The program creating the request file must look for an output file ending with ".psn". Example of the text command in a request file: 02 15 97 12 23 U 10 1 LC1 G:\WinSDR\REQFILE\02151223.LC1.

This command will request a LC1 channel event file starting at 02/15/97 12:23 (Note that seconds are not used) UTC time. The file should be 10 minutes long and have no time (Save-Nth = 1) compression. The event file will be called G:\WinSDR\REQFILE\02151223.LC1.PSN WinSDR can be forced into an alarm state by placing the the keyword "TRIGGER" (without the "") in the first line of the request file. When WinSDR finds a request file with this keyword, the program will create one or more event files.

If you need any help getting this working please feel free to contact me.

REPLAY ONLY MODE

Introduction:

Users who have more than one computer system on a LAN can run one or more WinSDR programs in the Replay Only Mode. In this arrangement one system collects data from the A/D board and saves it to a local disk. This disk is shared on the network so other computer system(s) running WinSDR can map to the drive. The remote WinSDR system is then placed in the Replay Only Mode so that it does not try to communicate with the A/D board. In this mode the user can Replay and extract event files remotely over the LAN.

Setup:

Step 1: Allow sharing on the drive containing the daily record files. This is done in the My Computer Dialog box / Drive Letter / Sharing dialog boxes.

Step 2: On the system that will be used in the Replay Only Mode, map one of the drive letters to the shared drive in step 1. This is done in the My Network Places dialog box.

Step 3: Install WinSDR on the second system.

Step 4: Copy the WINSADR.INI file and all of the channel INI files from the main WinSDR system to the Replay Only systems.

Step 5: Start the remote WinSDR and go to the System Settings dialog box and set the *Comm Port Number* to None. This enables the Replay Only Mode.

Step 6: In the **System Settings** dialog box change the *Record File* field to the drive and directory containing the daily record files produced by the main WinSDR system.

Step 7: Also in the **Systems Settings** dialog box the *Request Control File* field should be blank and you should change the *Debug Log File* to the directory where you installed the Replay Only copy of WinSDR. You may also want to change the *Event File* field depending on where you want to save the event files.

Using the Replay Only Mode:

When WinSDR is in the Replay Only mode the main Real-time Window will be minimized and Replay Control dialog box and display window will be opened for you. The Replay Control dialog box and Replay Display Window are used the same way as the main WinSDR system. If you use the *Open File* button in the Replay Control dialog box you should see a list of record files. If you don't, check your drive mapping and that you have the correct directory specified in the Record File field of the System Settings dialog box.

Important Note:

If you change the number of channels to record or the sample rate on the main WinSDR system you will also need to change the setting on the remote WinSDR system. Also, if you change any of the channel settings fields like the sensor location, sensitivity etc you will need to make the same change on the remote WinSDR system, or copy the channel INI file for the main system to the remote system..

GPS TIMING OPTION

Introduction:

This page documents how to use the Garmin GPS 16/18 OEM Sensor or the Motorola ONCORE GPS Receiver and Interface Board for WinSDR time keeping. It is important to note that the actual time keeping process occurs on the A/D board or the VolksMeter Interface board, so the A/D data is time stamped before it is sent to the WinSDR system. WinSDR does not use the computer time for time keeping unless you have the *Computer Time* reference mode enabled in the System Settings dialog box under *Time Reference Type*. To use the Garmin GPS option you must have firmware version 2.0 or higher running on your Serial Output A/D board. This option is currently not supported in SDRServer.exe.

Hardware Connection:

To use the GPS option, attach the GPS receiver to the male 9-pin DB9 connector on the Serial Output A/D or VolksMeter Interface board.

The following RS-232 lines are used by the A/D and VolksMeter boards:

Pin 1 - Data Carrier Detect. Used for the 1 pulse per second signal from the GPS receiver.

Pin 2 - Serial output data from the GPS receiver.

Pin 3 - Serial input data to the GPS receiver.

Pin 4 - +5 volt DC power for Garmin GPS 16 GPS Sensor. A/D board version 1.5 or higher.

Pin 7 - Ground signal for Garmin GPS 16 GPS Sensor. A/D board version 1.5 or higher.

Pin 5 - Ground

The Garmin GPS 16 GPS receiver and antenna combination can be connected to the A/D board using a 8 pin RJ-45 female to 9 pin RS-232 female adapter (www.jameco.com PN: 66211). The adapter should have the following pins connected together:

RJ-45 Pin 1 (Blue) to RS-232 Pin 4 - +5 V power

RJ-45 Pin 2 (Orange) to RS-232 Pin 5 - Ground

RJ-45 Pin 3 (Black) to RS-232 Pin 7 - GPS Enable

RJ-45 Pin 4 (Red) to RS-232 Pin 3 - Serial Data Input to Receiver

RJ-45 Pin 5 (Green) to RS-232 Pin 2 - Serial Data Output from Receiver

RJ-45 Pin 6 (Yellow) to RS-232 Pin 1 - 1 PPS Output

RJ-45 Pins 7 (Brown) & 8 (White) are not used.

Note: The wire colors above are for the Jameco adapter not the GPS sensor cable.

WinSDR Settings and Usage:

To enable this option in WinSDR, open the System Settings dialog box using Settings / System menu items. In the *Time Reference Type* drop box select either the GPS ONCORE or GPS GARMIN item. When you close the dialog box, the A/D board will attempt to lock on to GPS time.

On the Real-time window you will see the lock status of WinSDR and the A/D board. If you see a (N) after the local time display, WinSDR is not locked to the time reference. When you see a (L), WinSDR is locked to GPS or GMT time. A (?) indicates that WinSDR was locked at same time, but was unable to lock within the last 12 hours.

When you first connect up the GPS receiver to WinSDR, you should issue a reset command to the receiver. By issuing this command you will insure that that receiver is sending out accurate time information. To reset the receiver, use the Settings / GPS / Reset GPS Receiver menu items. When asked, press the Yes button. After resetting the receiver it will take 15 minutes or more, the actual time depends on how many satellites the receiver is seeing, for the almanac to be downloaded into the GPS receiver. Once the almanac is download, the receiver will start to send out time information.

To monitor the time keeping status, the user should look at the winsdr.log file. This file by default is located in the root WinSDR directory. The location of this file can be changed using the System Settings / Log File dialog box. You should also make sure that the *Filter Good Time Information* check box is not check in this dialog box, if you want to monitor the time keep information.

Another way of viewing the time status information, and other information messages produced by WinSDR or the A/D board is to open the Log File Viewer using the View / Log File / View Log File menu items. Once opened, this window will display any new messages added to the winsdr.log file.

Here is a typical log file. Below is information on the messages in the log file. If you see any of the following error messages in the log file, there is a problem with the GPS receiver or RS-232 cable connection:

GPSRef: No Data from Receiver

GPSRef: No 1PPS Signal

GPSRef: Reset A/D Board Time - Sts:xx 1PPS Diff:xx

When the A/D board locks to GPS time, you will see this message:

GPSRef: First Reset - Time Diff:-0.046

Time Diff: The time in milliseconds between the A/D boards internal time and GPS time before the A/D board adjusts the time to GPS time.

After the A/D board locks to GPS time you will see the following message every 5 minutes if the time difference between the A/D board and GPS time is less then 2 milliseconds:

GPSRef: Sts:2 Lck:2 Sats:06 AdjTm:12:41.6 S LckTm:00:03 MsAdj:0 MsOff:0 1PPSDif:0

Sts: This is the current time statues. 0 = No Add/Drop time interval,

1 = Calculation interval, 2 = Time interval has been calculated.

Lck: GPS Receiver lock status. 0 = not locked, 1 = 2D fix, 2 = 3D fix and 3 = differential fix using WAAS.

Sats: Indicates the number of satellites the GPS receiver is receiving. This number must be above 2 for initial lock and then above 1 after WinSDR is locked onto GPS time.

AdjTm: The current Add/Drop time interval and mode. Interval time in hours, minutes and seconds. Mode: S = Subtract time, A = Add time and ? = Unknown.

LckTm: The time in days, hours and minutes WinSDR has been locked to GPS time.

MsAdj: The number of 1 millisecond adjustments made to the time accumulator on the ADC/VolksMeter board to keep 1PPSDif: within 1 millisecond.

MsOff: This is the sum of MsAdj and 1PPSDif values.

1PPSDif: This is the time in milliseconds between the GPS time and the time accumulator on the A/D or VolksMeter board.

If you have the *Set Computer Time* check box checked in the *Systems Settings* dialog box, you will see the following message indicating that WinSDR has set the time of the computer running

WinSDR. This will happen whenever the time difference between the system run WinSDR and the A/D board (or SDR server) is greater then 250 milliseconds or 1/4 of a second.

Adjusting computer time by xxx seconds

xxx = the adjustment made to the system time.

WWV TIME CORRECTION OPTION

Introduction:

With a short-wave receiver tuned to one of the WWV time signal stations (2.5Mhz, 5.0Mhz, 10.0Mhz and 15.0Mhz) it is possible to keep WinSDR's (and your event files), time to within +-20 milliseconds. This is done by taking the audio out of the receiver, usually from the external speaker or earphone jack, and connecting it to the WWV Input connector on the Serial Output A/D board.

How it works:

Every minute (except at the top of the hour) WWV broadcasts an 800 millisecond 1000Hz tone. On the A/D board, if you purchased this option, there is a phase locked loop tone decoder with a bandpass filter tuned to 1000Hz. This 800 millisecond tone burst is uses to keep track of time on the A/D board.

Short-wave Receiver and WWV:

The short-wave receiver should be a digital type so it will stay tuned to the WWV station you select. Radio Shack has a portable digital receiver for around \$80.00 (Model DX-375). You will probably need to have an external antenna. This can be a long piece of wire run between two trees or on top or your roof. For WinSDR to keep correct time, it needs to have fair reception to one of the WWV frequencies for a few hours each day. You most likely will not get 24 hour reception on any one WWV frequency. At my location I get best reception on 5.0Mhz at night and during the day 10.0Mhz or 15.0Mhz. I normally keep my receiver tuned to 5.0Mhz because I get better, and longer, reception at night.

Using the WWV Option:

Before starting WinSDR, you need to set the time and date on your computer system to within 15 seconds of local time. You can do this by listening to WWV and setting the time at the top of the minute. After setting the time, start up WinSDR. WinSDR will read the time from the system and send it to the A/D board. It is important too remember that the only information the A/D board gets from WWV is the minute mark. You must set the system date and time to +- 15 seconds of local time for the time to lock and have good time information for your event files.

After starting up WinSDR, and connecting the audio to the A/D board, you will need to adjust the audio level on the receiver. First open the Log File Viewer by using the View / Log File / View Log File menu items. This will display the status of the time keep information and other debug messages. The messages also written to a file called WinSDR.log.

To enable the WWV timing option in WinSDR, go to the System Settings dialog box and select WWV in the *Time Reference Type* drop down box. Start with the volume control about 1/3 of the way up. At the top of the minute you should see the following sequence on the Log File Viewer:

02/15/02 15:39:01 WWV - Not Locked - Lock Count:1 Diff:435ms
02/15/02 15:41:01 WWV - Not Locked Count:2 Width:812 Diff:423ms Avg:432ms Set:1
02/15/02 15:43:01 WWV - Not Locked Count:3 Width:828 Diff:436ms Avg:427ms Set:1

The format of each line is:

Date/Time of message.

Not Lock Count: Number of good locks.

Width: Width of the 800 ms pulse detected by the tone decoder.

Diff: This is the current 800 ms pulse start offset in time from the running average.

Avg: This is the running average of the start of the 800 ms pulse.

When the Not Locked Count gets to 6, the system will be locked to WWV. This process may take from 6 to 10 minutes, if you have very good reception, to several hours if you have poor reception. If you are not getting any time messages, and you are getting good reception to WWV, you should increase the volume a little. At some point on the volume control you should start to see the time messages. This will take some time and patience.

When WinSDR is locked you will see the following messages on the debug line:

02/15/02 17:35:01 WWV- Lock Time:1 01:23 Locks:4/12 Diff:3ms Avg:-4ms
02/15/02 17:38:01 WWV - Lock Time:1 01:26 Locks:5/12 Diff:-10ms Avg:-3ms
02/15/02 17:39:01 WWV - Lock Time:1 01:27 Locks:6/12 Diff:-8ms Avg:-4ms
02/15/02 17:42:01 WWV - Lock Time:1 01:30 Locks:8/12 Diff:-1ms Avg:-4ms
02/15/02 17:42:01 WWV - Lock Time:1 01:30 Locks:8/12 Diff:-1ms Avg:-4ms

The format of each line is:

Date/Time of message.

Lock Time: The time in days, hours, and minutes that WinSDR is locked to WWV.

Locks: Current number of good 800 ms pulses / last number of good pulses. This is updated every 15 minutes.

Diff: The current pulse start offset in time from the running average.

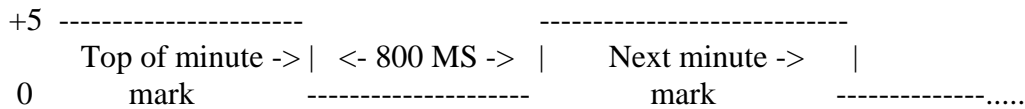
Avg: The running average of the start of the 800 ms pulse.

One Second Output:

The CPU module on the A/D board produces a one second output square wave on pin 12 of the DB-25 connector. The rising edge of this output marks the beginning of each second. You can use this output to monitor how well the A/D board is keeping track of time. If you have an oscilloscope you can monitor this output and compare it to some other reference. One reference can be the audio output from your WWV receiver and comparing it to the 1 second tick you hear (this tick is 5 cycles a 1000hz) and seen on the oscilloscope.

Simulating the WWV Signal:

If you have access to another time source, you can simulate the WWV signal. You can then feed a one pulse per minute TTL signal into TP 1 on the A/D board. The digital signal needs to be an 800 millisecond (+/- 20 milliseconds) pulse that is normally high (+5VDC) and goes low (0VDC) at the top of the minute. See the example below:



WWVB TIME CORRECTION OPTION

Introduction:

This page documents how to use a WWVB receiver for WinSDR time keeping. This option is similar to the WWV Time Correction feature. To use Radio Shake's WWVB Radio Controlled Clock please see the web page at <http://www.seismicnet.com/wwvbsdr.html> for more information.

Please note that this timing option is currently not available in Version II ADC board.

Hardware Connection:

The following information applies only to the Serial Output A/D board. If you are using SDR Server please see the SDR documentation at <http://www.seismicnet.com/sdrdocs/wwvb.htm> for information on how to use this option with my ISA A/D board.

The output of the WWVB interface circuit must be converted to standard RS-232 signal levels. A MAX-232 type of RS-232 interface IC chip should be used to convert the TTL (0 - 5V) signal level from the interface board to the +- 12V RS-232 signal levels. The WWVB signal should be connected to pin 1, the Carrier Detect line, of the 9 pin GPS Comm Port J3.

WinSDR Settings:

To enable this option in WinSDR, go to the System Settings dialog box and select WWVB in the *Time Reference Type* drop down box.

PSN EXPLORER VERSION 1.2 DOCUMENTATION

Introduction:

PSN Explorer is a Web browser that uses Microsoft's Internet Explorer technology to interface between earthquake event files on the Internet and WinQuake. Using this program, users can download and view event files from the Public Seismic Network as well as other sites on the Internet by simply clicking on an event file link. PSN Explorer will download the event file using HTTP or FTP protocols and then display the file using WinQuake. This program is also used by WinQuake and WinSDR to display help Web pages.

This program is part the WinQuake and WinSDR releases and installed on your system when you run the WinQuake and WinSDR setup programs.

System Requirements:

- Win95, Win98, WinNT 4.0, Win2000, ME and XP
- Microsoft Internet Explorer version 4.0 and above installed on the system

Using PSN Explorer:

Since PSN Explorer is very similar to Internet Explorer the users should refer to the Internet Explorer's help web pages for general information on using this web browser. Information below documents the changes between the two programs.

PSN Explorer has several hooks into Internet Explorer so that event files can be download and viewed directly with WinQuake. First the user must specify a directory that will be used for downloading the event file. Under the *Files* menu item the *Download Directory* dialog box is used to select or create a directory that will be used to download all event files. WinQuake will use this directory to view the event file after the download has been completed.

The following sites on the Internet will can be used to automatically download event files:

- Redwood City Public Seismic Network at www.seismicnet.com. This site has event files in the PSN format.
- Incorporated Research Institutions for Seismology (IRIS) at www.iris.washington.edu/pub/farm/. This site has seed volumes that can be read by WinQuake.

As with Internet Explorer, PSN Explorer can download any file. By using PSN Explorer on one of the sites above the user can click on a event file link, or seed volume, and the download will start immediately. When the transfer is complete WinQuake will be started, or notified if it is already running, and it will display the new event file. If another web browser is used, the user will need to select a download directory and then use WinQuake to open the file.

Menu Items:

File:

Download Directory:

This menu item opens the change or new Download Directory dialog box. The directory selected will be used for event file downloading.

Locate WinQuake:

This menu item opens the Open File dialog box. It is used to locate WinQuake (winqk32.exe) if the program is not in the same directory as PSN Explorer.

Print:

Prints the current page.

Close:

Closes PSN Explorer.

View:

Toolbar:

Toggles the toolbar on and off.

Status Bar:

Toggles the status bar on and off.

Stop:

Stops or cancels the download of the current web page. Same as the *Stop* button.

Refresh:

Reloads the current page. Same as the *Refresh* button.

Go:

Back:

Reloads the previous page. Same as the *Back* button.

Forward:

Reloads the next page. Same as the *Forward* button.

Start Page:

Loads your default home page. Same as the *Home* button.

New Event Page:

Opens the PSN New Event File web page www.seismicnet.com/cgi-dos/event.exe. Same as the *Event* button.

PSN Event Archives:

Opens the PSN archive directory list www.seismicnet.com/quakes/.

IRIS Seed Archives:

Opens the IRIS archive directory list www.iris.washington.edu/pub/farm/.

Favorites:

Displays a list of favorite web sites. This is the same list as the one in Internet Explorer. Internet Explorer should be used to add or delete items on this list.

Help:

Help on PSN Explorer:

Opens this document.

About PSN Explorer:

Opens the About dialog box.

RELEASE NOTES
Last Updated: 05/28/2008

WinSDR Release Notes:

Version 4.1.x Changes - Release Date 05/2008

Added support for PSN-ADC-SERIAL Version III board. Add All Channels buttons to the Channel Settings dialog box.

Version 4.0 Changes - Release Date: 01/2007

Added support for VolksMeter sensor. The System and Channel control dialog boxes now have tab controls to allow for more parameters.

Version 3.0 Changes - Release Date: 02/2006

Added MiniSeed and SAC Binary event file support. Added MiniSeed TCP/IP server feature. Improved GPS timing with new PSNADBoard.dll. ADC data saved to the daily record files can now be filtered. Fixed a problem with the TCP/IP Client data collection.

Version I Serial A/D Board Firmware Notes:

Version 2.5 Changes - Release Date: 03/11/2003

Data from the GPS receiver can now be sent to the host computer while collection A/D data. WinSDR version 2.0.9 and above has the ability to send the raw GPS data, via a TCP/IP connection, to WinPlotGPS.

Version 2.4 Changes - Release Date: 02/09/2003

Added a new flag in the configuration message to disable the 1 PPS output signal. This flag was added to prevent the 1 PPS signal from showing up in the analog data when an Amplifier / Filter board is mounted to the Serial Output A/D board. This signal can be found on pin 12 of the 25 pin I/O connector. The rising edge of this signal happens at the top of the second when the A/D board is locked to a time reference.

On P.C. board Rev 1.6 and higher, this signal also drives the Power LED. If the CPU module is driving the LED, and the 1 PPS signal is enables, the LED will blink at a 1 PPS rate. The length of time that the LED stays on indicates the time lock status. If the duty cycle is 900 milliseconds on and 100 ms off, the board is not locked to a time reference (WWV GPS etc). If the duty cycle is 500 ms on and 500 ms off, the board is locked to a time reference. The Systems Settings dialog box in WinSDR (Version 2.0.8 and higher) has a check box to control the 1 PPS output signal.

Corrected a problem with the GPS pass through mode.

Do to limited code space, the Port Time reference mode has been removed from the A/D board firmware Version 2.4) and WinSDR.

Version 2.0 Changes - Release Date: 07/21/2002

Added support for Garmin GPS 16 time keeping. Added GPS pass through mode.

Version 1.8 Changes - Release Date: 03/16/2002

Added support for more sample rates and fixed a problem with sample rates below 50 SPS. This version of the firmware should only be used with WinSDR 2.0.3 or above.

Version 1.7 Changes - Release Date: 03/08/2002

Fixed a problem in the time keeping code. Made a few minor changes to the log file time messages.

Version 1.6 Changes - Release Date: 02/24/2002

Added code to deal with no system block information in the flash memory. Without the system block information the program would not initialize the Comm port properly. This information should be programmed into the flash by the manufacturer of the CPU module. The last batch of modules I purchased did not contain this information, so I hard coded the location in flash memory where the program configuration information should be located.

Version 1.5 Changes - Release Date: 01/12/2002

Added Time Server output using the AUX serial comm port. This is similar to the time server output of SDR.

Support for the Port time reference input using the GPS port. This is similar to the Port time reference feature in SDR.

Fix a bug around how the program initializes the WWV time buffer.

Better support for the Local Time Reference feature.

Version 1.1 Changes - Release Date: 12/26/2001

Added support for different baud rates. Baud rate is saved in the flash memory.

Fixed a bug when changing the number of channels to record.

Version 1.0 - Release Date: 12/18/2001

Released to beta testers.