



SAFViewXP Host Software

User's Guide

This user's guide is an evolving document. If you find sections that are unclear, or missing information, please let us know. Check our website periodically for updates.

WET Labs, Inc.
PO Box 518
Philomath, OR 97370
(541) 929-5650
wetlabs@wetlabs.com

1. Software Overview

The SAFire host software, SAFViewXP, provides real-time data collection and display functions for a single SAFire and optionally a single GPS. SAFViewXP receives data from the meter on standard serial ports, applies SAFire calibration values, displays data to the screen, and saves data to a host PC.

2. Install Host Program

SAFViewXP software is shipped on a CD and can be run from any host PC running Windows 95 or newer. We recommend at least 250 MB of free disk space and a minimum processor speed of 1 GHz to run the Host program.

Create a directory for the SAFViewXP files to be copied into. Insert the SAFViewXP Host software CD into the host computer and copy the program into the newly created directory on the host PC. Copy the SAFire's device file to the same directory. It may be desirable to create a shortcut for the host program for quick access: right-click on the SAFViewXP.exe file and in the resulting popup menu select "Create Shortcut." Drag the resulting icon to the computer's desktop or other desired location.

3. Connect the SAFire to Host PC

Ensure the power supply to the meter is turned off, or the battery is disconnected from the meter and the host computer is turned off. If using a power supply, set the supply's voltage to 14 volts DC (+/-4VDC) prior to attaching the host cable to the SAFire. If using a battery pack, make sure the voltage supply is >10 VDC and <18 VDC.

To collect data from a SAFire using the SAFViewXP, you will need either the WET Labs-supplied test cable or a sea cable that has the same pin-out as the test cable. The test cable's connector mates to the SAFire bulkhead connector, a DB-9 connector to be attached to the Host PC, and two power leads.

1. Connect the test cable's DB-9 serial connector to the host computer's RS-232 COM port. (Newer computers may not have an RS-232 COM port—you'll need a USB-to-RS-232 converter.)
2. Connect the blue connector/white wire of the host cable or battery cable to the ground (-) terminal on the power supply.
3. Connect the red connector/black wire of the host cable or battery cable to the voltage (+) terminal on the power supply.
4. Connect the 6-pin mating cable end to the SAFire's bulkhead connector.

3.1 Connecting Optional GPS to Host PC

To collect GPS data with SAFViewXP, it is necessary to have two standard COM ports on the host PC. These COM ports can either be built into the PC, or more likely, a USB-, Ethernet-, or PCMCIA-to-serial adapter that provides COM port functionality.

While it is up to the user to ensure that the DB-9 connector is configured correctly (unless the GPS and/or GPS cable is supplied by WET Labs), please contact WET Labs if assistance is needed in correctly wiring the DB-9 connector for the GPS data.

SAFViewXP can process GPS data using any of the following NMEA-0183 data formats: GPGGA, GPGLL, or GPRMC. Please contact WET Labs if assistance is required to determine whether a given GPS receiver is SAFViewXP-compatible.

4. Set up SAFViewXP

1. Start the Host program. Under the File pull-down menu, select **Load Device File**. Browse to the SAFire's device file and select **Ok** to load it. At this point, the background color on the **Device File:** line in the **SAFire Status** box will turn gray and the device file name will be shown.
2. Turn on power (12 VDC) to the SAFire and GPS (if used).
3. On the Data Input tab, select the appropriate COM port and baud rate for the SAFire and GPS (if used).

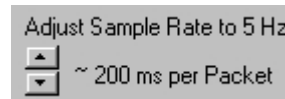


Safire Port:	COM1	19200
GPS Port:	COM2	4800

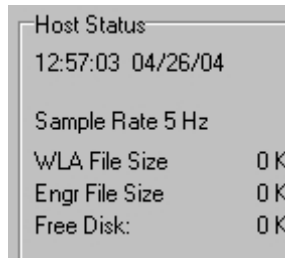
The correct baud rate for the SAFire is 19200.
The correct baud rate for most NMEA-0183 compliant GPS receivers is 4800.

In the example to the right, SAFire data will be received on COM1 and GPS data will be received on COM2.

4. On the Data Input tab, adjust the ms per Packet until the **Sample Rate** in the **Host Status** box on the upper left edge of the display show a consistent 5 Hz. This adjustment is necessary to compensate for variances in Windows versions and hardware timings.

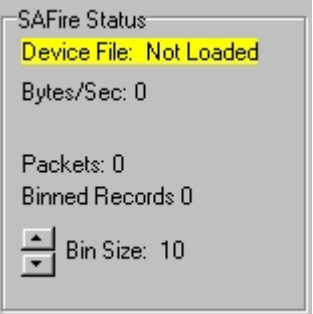


Adjust Sample Rate to 5 Hz
~ 200 ms per Packet

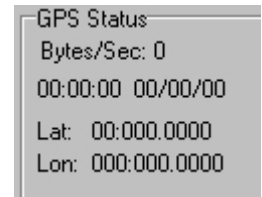


Host Status	
12:57:03 04/26/04	
Sample Rate 5 Hz	
WLA File Size	OK
Engr File Size	OK
Free Disk:	OK

-
5. Verify that communication has been established by referencing the **SAFire Status** box. If SAFViewXP is correctly receiving SAFire data, the **Bytes/Sec:** display will show 1300 bytes and the **Packets:** display will increment by 5 packets each second.



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- If a GPS is used, verify that communication with the GPS has been established using the **GPS Status** box. If SAFViewXP is correctly processing GPS data, the current latitude and longitude will be displayed, and depending on the NMEA-0183 data format being used, the current GPS date and time will also be displayed.



5. Viewing and Storing Data

For debugging purposes, use the controls on the Data Input tab to display the raw SAFire or GPS data as it is being read by SAFViewXP.

Display Safire Data

By pressing the Display SAFire Data, any data being received on the selected SAFire COM port will be displayed in the Safire Data box in the middle of the Data Input tab. SAFire data is binary and is not human readable, but if the SAFire is connected to the correct port, the user will see bursts of graphical characters at 200 ms intervals.

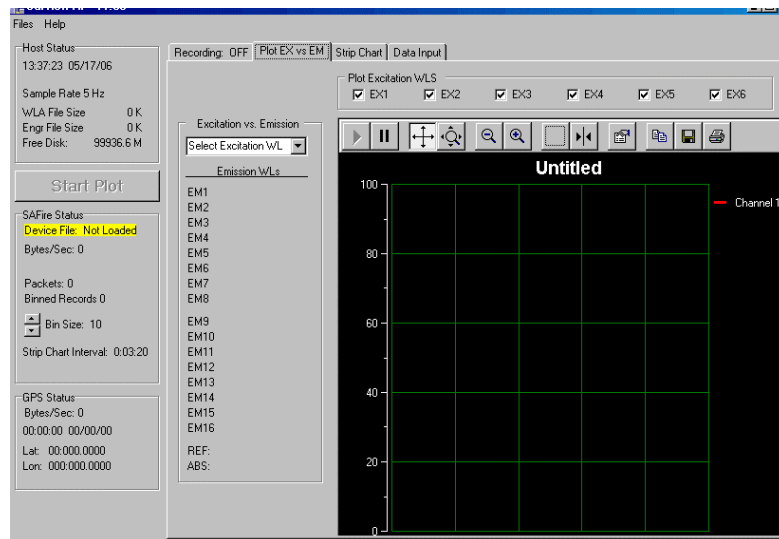
By pressing the Display GPS Data, any data being received on the selected GPS COM port will be displayed in the GPS Data box at the bottom of the Data Input tab. GPS data is human-readable ASCII data and it will be obvious to the user whether the correct baud rate and COM port has been selected.

Display GPS Data

Please note: most GPS receivers will output ASCII data even if the receiver does not have a position lock. If GPS data is being received but the latitude and longitude are not being updated in the GPS Status box, the GPS receiver may not have had sufficient time to obtain a position or the GPS antenna may not have a clear view of the sky.













5.1 Plot Data

The emission data from the SAFire is plotted by selecting one or more of the excitation wavelengths in the Plot Excitation WLS box on the Plot Data tab. For each excitation wavelength selected, a 16-point emission line will be plotted. To plot all data from the SAFire, select all of the excitation wavelengths in Plot Excitation WLS box. Note that the device file must be loaded or you will be unable to select Start Plot to begin plotting.



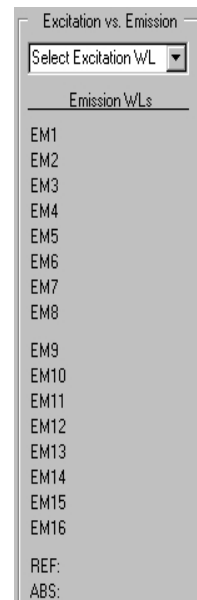
Plot Data tab

The top of the plot area has a toolbar with twelve buttons, allowing a variety of changes to the way data is plotted. Note that changes to the plot will not affect the data recording.

	Resume	Resume tracking. If the triangle is green, this button may need to be pressed to resume tracking.
	Pause	Pause tracking. This stops the scrolling of the X-axis.
	Axes Scroll	Drag either axis up or down, right or left.
	Axes Zoom	Zoom the axis up or down, right or left. Allows user to scale the axes for coarser or finer plotting.
	Zoom Out	Decrease the zoom by 2x.
	Zoom In	Increase the zoom by 2x.
	Zoom Box	Draw a box on the plotting area and zoom all axes around selected area.
	Cursor	Slide the resulting bar to a specific data point.
	Copy	Send a copy of the current plot to the host PC's clipboard.
	Properties	Allows selection of a variety of plotting view properties.
	Save	Not functional.
	Print	Send a snapshot of the data plot to a printer.

5.1.1 Numeric Data

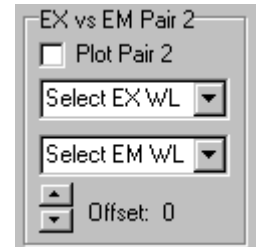
Numeric data from a single excitation wavelength may be displayed by selecting a wavelength in the **Excitation vs. Emission** box. All the numeric emission values for a given excitation wavelength will be shown immediately below the **Excitation Wavelength** pull-down menu.



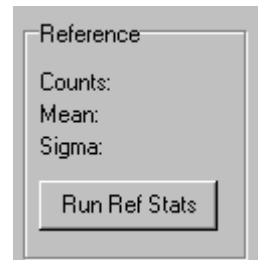
5.2 Charting Data

You can select up to four plots of interest using the selection options at the top of the Strip Chart window. Note that the instrument's device file must be loaded or the Start Plot button will remain inactive.

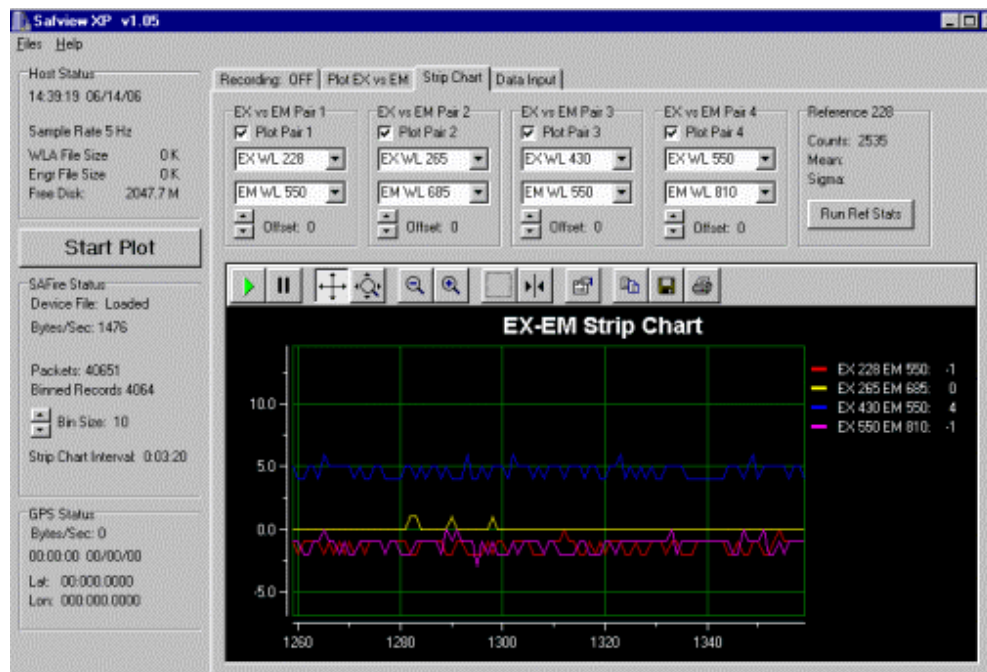
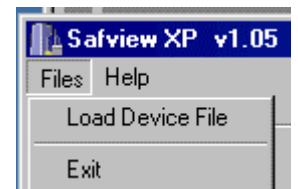
Checking the box for Plot Pair 2 adds a channel of data for plotting. Use the **Select EX WL** and **Select EM WL** boxes to select which excitation and emission wavelengths the added plot will be. Use the **Offset:** to zero out base line values, so only higher or more interesting values will be noticed.



The **Reference** box can be used to gauge how well the flash lamp is performing and aging. Pressing the **Run Ref Stats** button when first powering up the meter will allow you to track changes in the SAFire's output over time.

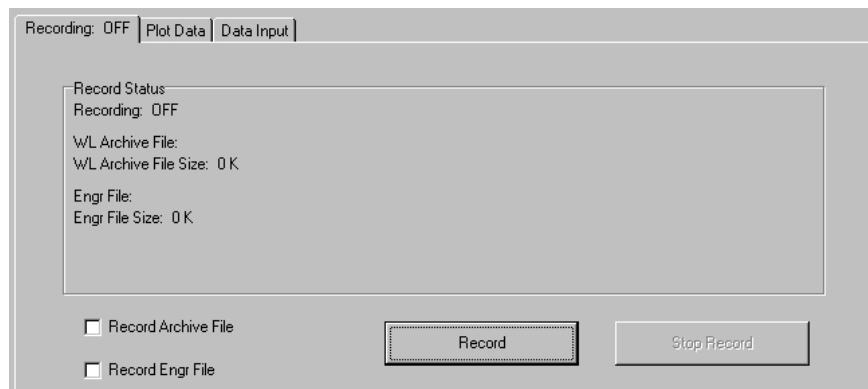


Selecting **Files > Load Device File** will allow you to select the meter-specific device file SAFViewXP uses to determine available wavelengths for plotting.



5.3 Recording Data

All the controls and file status for recording Safire and GPS data are found on the Record Data tab. Data from the SAFire and GPS can be saved to the host PC as either or both raw data files and engineering unit data files.



5.3.1 Recording Raw Data

To record raw data, select the Record Archive File checkbox prior to pressing the Record button. If the Record Archive File checkbox is selected when the Record button is pressed, SAFViewXP will query the user for a file name and directory.

When data is recorded as raw data, it is stored in a WET Labs Archive file format and will need to be post-processed using WET Labs' WAP program. Therefore, the user should select a file name that ends with a file extension that runs from .000 to .999. For example, Dayone.001 would be acceptable while Dayone.1 is not recommended.

If you are going to be saving raw/archive data files, please become familiar with the use and operation of WAP before embarking on a cruise. Please contact WET Labs if you need assistance in this matter.

5.3.2 Recording Processed Data

To record processed/engineering units data, select the Record Engr File checkbox prior to pressing the Record button. If the Record Engr File checkbox is selected when the Record button is pressed, SAFViewXP will query the user for a file name and directory. While there are no limitations on engineering unit file extensions, *.DAT is recommended.

When data is recorded as engineering units, the data is stored as a tab-delimited ASCII file. All the calibration coefficients from the SAFire device file will have been applied to this data.

5.3.3 Recording both Raw and Processed Data

Select both check boxes to record raw and processed data concurrently before pressing the Record button.

5.3.4 Recording Status

The Record Status box on the Recording: tab shows the file types being recorded (raw and/or engineering units) and their associated file names and file sizes as the data is being logged to the PC.



```
Record Status
Recording: OFF
WL Archive File:
WL Archive File Size: 0 K
Engr File:
Engr File Size: 0 K
```

5.3.5 Data Binning

To reduce the amount of data stored by SAFViewXP, or to reduce the noise in the SAFire data, multiple records may be binned. The binning performed is an arithmetic addition of each emission wavelength followed by a division as each bin count is reached.

Binning will reduce the engineering unit file size, but does not effect the archive/raw file size.

5.3.6 Data Persistence in a PC Power Loss

Any data files that are open and actively being recorded to when a PC loses power, locks up, or glitches, will be lost to the user. Since shipboard power is notoriously unreliable, it is recommended that the user close data files and start new ones on a fairly frequent basis.

5.3.7 GPS Data

Raw data from a GPS receiver will be archived in its entirety in a raw/archive file.

In engineering units data files, the GPS receiver's latitude and longitude positions will be appended to the end of each processed SAFire record. GPS data will not be recorded if the SAFire is not active and being correctly processed. If a GPS receiver is selected but it does not have a current GPS position, zeros will be displayed for the latitude and longitude.

Revision History

Revision	Date	Revision Description	Originator
A	5/7/04	New document (DCR 385)	D. Romanko
B	6/15/06	Update to reflect software changes (DCR 497)	D. Romanko, H. Van Zee