

WinFrog Device Group:	Time Base
Device Name/Model:	Symmetricom XL-GPS or XLi
Device Manufacturer:	<p>Symmetricom, Inc</p> <p>3750 Westwind Blvd. Santa Rosa, CA 95403 U.S.</p> <p>Toll Free: 1-888-FOR-SYMM (1-888-367-7966) Phone: 1-408-428-7907 Fax: (707) 527-6640 Email: support@symmetricom.com</p>
Device Data String(s) Output to WinFrog:	<p>Time Telegrams</p> <p>Automatic Output <SOH>DDD:HH:MM:SSQ</p> <p>Polled <SOH>DDD:HH:MM:SS.mmmQ</p> <p>Where: SOH is 0x01 Q is a quality code.</p> <p>Position Telegram F50 Bn a DDdMM'SS.S" a DDDdMM'SS.S" Hm</p> <p>Where: F50 is the command B means bay number n is the bay number 1 to 10 a is the hemisphere N, S, E, or W D are degrees M are minutes S are seconds H is altitude d, m, ', and " are all characters found in the telegram</p> <p>See Symmetricom manual for details.</p>
WinFrog Data String(s) Output to Device:	<p>CTRL C</p> <p>F2 D24 I24<LF></p> <p>F11 DDD:HH:MM:SSQ<LF></p> <p>F11 DDD:HH:MM:SS.mmm<LF></p> <p>F8<LF></p> <p>F9<LF></p> <p>F50 Bn LLA<LF></p> <p>F50 LLA<LF></p>

WinFrog Data Item(s) and their RAW record:	POSITION Raw record: 303 Raw record: 999
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DEVICE DESCRIPTION:

This device allows you to synchronize WinFrog’s time (and the PC’s time if desired) to the UTC time output by the instrument.

Initialization

When this device driver is first added to WinFrog (or when WinFrog is booted with this device automatically loaded) it issues a CTRL C to stop the instrument from sending data. This continues every two seconds until the instrument responds with the prompt '>'. Then WinFrog sends the F11 format command described above and after receiving the prompt sends the F2 command. After the instrument responds with the prompt WinFrog sends the F8 command to instruct the instrument to send the time continuously.

If WinFrog fails to receive a time telegram for 10 seconds it reinitializes the instrument.

If the instrument was just booted it may not be locked, in which case the quality code will be a '?'. After locking, and the quality indicator indicates good data, WinFrog ignores the first five seconds of time data.

The instrument must be sending UTC.

WinFrog can also obtain the GPS position from the instrument. At time of writing, the only way to obtain the position from the instrument is to poll it. This requires that the continuous output of time (F8 command) be terminated and time must also be polled for. Before entering the poll mode WinFrog sets up the instrument for continuous time output and only after 10 seconds of good time data (quality figure other than '?') does it start polling for position and time. The position output must be WGS84. If communications fails, after 10 seconds a complete initialization of the instrument begins. If the data quality indicator was acceptable (anything other than '?') and then suddenly changes to '?' WinFrog will not use the time, however there is no quality indicator associated with the position and WinFrog will continue to use the position provided the instrument outputs it in response to the poll.

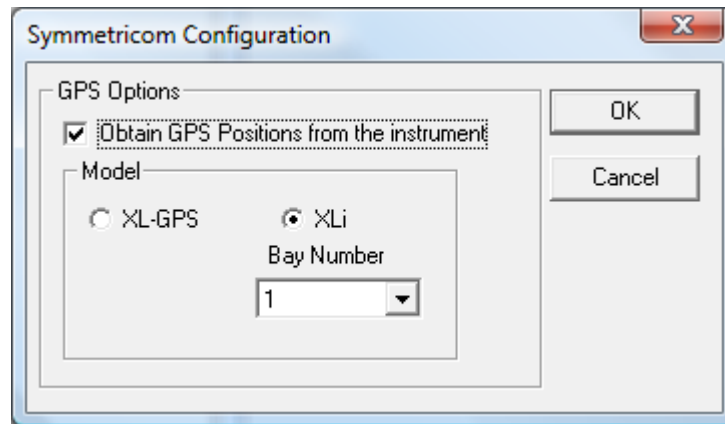
DEVICE CONFIGURATION INSTRUCTIONS

WINFROG I/O DEVICES > EDIT I/O:

- Serial
- Configurable Parameters

WINFROG I/O DEVICES > CONFIGURE DEVICE:

The configuration for this device allows you to obtain GPS positions from the device as well as time. The device defaults to time only. Since this driver supports two models of the Symmetricom, the XLG and the LXi and they have different commands to obtain the GPS position you must select which model is in use. The LXi also requires the bay number as part of the command thus you must also select it. Below is the Symmetricom configuration dialog.



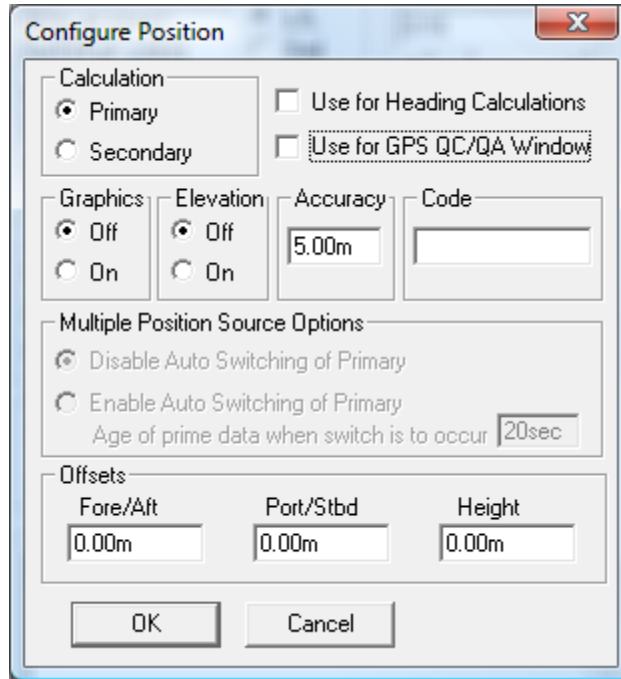
WINFROG VEHICLE > CONFIGURE VEHICLE DEVICES > DEVICE DATA ITEM > EDIT:

Time synchronization of WinFrog using this device is as per the standard synchronization process. There is no data item associated with this process. The respective message type is generic. See the Time Synchronization section in the Operator Display Windows chapter for details.

Adding the device creates one data item: POSITION. Once the data item has been added to the vehicle, it must be configured.

Data item: TIMEBASE,Symmetricom XLGPS XLi, POSITION

Highlight the data item in the vehicle's device list and click the Edit button. The Configure Position dialog box appears as seen below.



Calculation:

Set the Calculation selection to Primary or Secondary. Devices set to Primary calculation are used to provide a vessel position. Note that more than one Primary positioning device can be added to a vehicle's device list; data from these devices will be combined in a weighted mean solution. (See the paragraph on Accuracy below for more on the weighting of Primary calculation device data).

If the Calculation type is set to Secondary, WinFrog will simply monitor the device's data. WinFrog will not use the data from a secondary device in the final solution of the vehicle's position.

If auto switching is enabled (see below) a secondary may automatically become a primary should all the primaries fail.

Use for Heading Calculations:

Select this checkbox if the device is to be used in conjunction with another GPS device for determination of the heading of the vessel.

Use for GPS QC/QA Window:

Since this device provides no quality information about the position this should be left unchecked. Otherwise another device that is providing positional QC/QA data will have its information overwritten.

Graphics:

If On is selected, a labeled square will show the raw (offset but unfiltered) location of the GPS antenna in the Graphics and Bird's Eye windows. This provides a means of comparing raw device and filtered vehicle positions.

Elevation:

Setting the Elevation option to On will result in the elevation determined by GPS to be used as the elevation of the vessel referencing the GPS (WGS84) Ellipsoid. The sounder data recorded in WinFrog's .RAW data files will not be affected. This option is meant only for those applications where there is no fixed vertical reference (i.e. mean sea level), such as on a river. For acceptable results, this option requires the use of high accuracy "RTK" GPS data.

Accuracy:

The Accuracy value entered provides WinFrog with the expected accuracy of the position from this device. This value is used in the weighting of this device compared to other positioning devices that may be added to the vehicle's device list. The smaller the value entered, the more accurate it is considered to be, and hence the more weight that will be applied to the device's data.

The Accuracy parameter can be changed from the suggested values. Changes should be made with caution, however, as they will affect the final filtered position of the vehicle.

Code:

Not applicable; leave Code entry at default, 0.

Multiple Position Source Options:

This group box allows you to enable automatic switching of a secondary to primary should the data from all POSITION and PSEUDORANGE data items set to primary timeout. The **Age** entered is the length of time that the secondary will wait in the absence of data from all primaries, before taking over as primary. This age is only entered for the secondary.

For example, if the POSITION or PSEUDORANGE data items associated with two GPS receivers were set to primary and the POSITION or PSEUDORANGE data item of a third GPS receiver was set to secondary, both primary GPS receivers must time out before the secondary will become the primary. Upon the recovery of either of the original primary data items, the original primary will be reset to primary and the original secondary will be reset to secondary.

Note for the auto switching feature to work, there must be at least one primary and one secondary enabled. For example, given two data items, one set to primary with the auto switching disabled and the other set to secondary with the auto switching enabled, if the primary fails the secondary is not set to primary and the vehicle positioning stops until the primary data item recovers.

Disable Auto Switching of Primary:

If this data item is not to be involved in the auto switching process, check this box. As stated above, this data item is then not involved in the auto switching process in any way.

Enable Auto Switching of Primary:

If this data item is to be involved in the auto switching process, either as a primary or a secondary, check this box. If set to secondary, enter the Age of data the primary data items must reach before this secondary is switched to act as the primary.

In order for this option to be effective you must have at least one primary and one secondary. If there are multiple secondary data items that are enabled for switching, the first one to receive data will become primary.

Note: This option is not enabled unless WinFrog determines that there is more than one POSITION and/or PSEUDORANGE data item associated with the respective vehicle. The exception to this is the case of a WinFrog with the Remote module operating as a Controlled Remote being configured remotely from the Controller. In this case, the option is always enabled even though it may not be applicable. The operator must be aware of what is available on the Remote and configure the data item accordingly.

Note: This option is not available in the WinFrog Remote package.

Note: This option is not available for USBL based POSITION data items.

Offsets:

Offsets are required to associate the GPS antenna position with the vessel's Common Reference Point (CRP). The offsets are applied *from* CRP (of the vehicle) *to* the GPS antenna location.

Forward Offsets are entered as positive values.

Aft Offsets are entered as negative values.

Starboard Offsets are entered as positive values.

Port Offsets are entered as negative values.

Height Offsets are positive upwards. (It is suggested that the vessel's Height origin should be at the water line.)