

WinFrog Device Group:	GPS
Device Name/Model:	TRIMBLE DNAVN
Device Manufacturer:	Trimble Navigation Limited 645 North Mary Avenue Sunnyvale, CA 94086 Tel: 1 –(408) 481-8000 Technical Support Tel: 1-800-767-4822 Email: Trimble_Support@Trimble.com
Device Data String(s) Output to WinFrog:	See Telegram Specification section below
WinFrog Data String(s) Output to Device:	N/A
WinFrog Data Item(s) and their RAW record:	POSITION 303

DEVICE DESCRIPTION:

The Trimble 4000 series GPS receivers can be configured to output a DGPS position in ASCII format (see Trimble documentation for details). This device is similar to the Trimble ASCII device with the exception that the data string contains additional data. The GPS antenna and differential correction device are interfaced directly with the Trimble unit. The unit internally calculates a DPGS position and outputs it, via a serial port, to WinFrog.

DEVICE CONFIGURATION INSTRUCTIONS

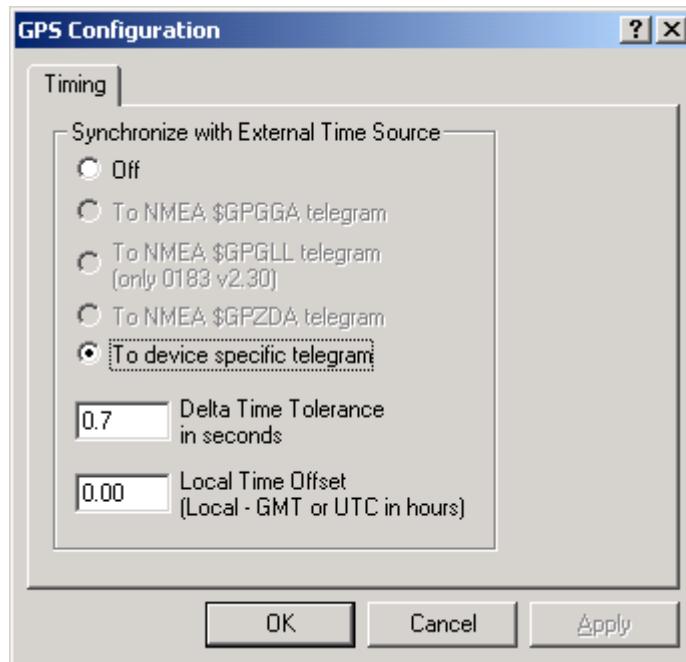
WINFROG I/O DEVICES > EDIT I/O:

Serial

Configurable Parameters

WINFROG I/O DEVICES > CONFIGURE DEVICE:

This device must be configured at the I/O Device window level. In the I/O Devices window, click the device name to select it, then right-click and select Configure Device. The GPS Configuration dialog box appears, as seen below.



The following configuration options are available within this dialog:

Synchronize with External Time Source:

This dialog box allows you to synchronize WinFrog's time with the more accurate GPS time. Two options are available; '**Off**' and '**to device specific telegram**'.

The **Delta Time Tolerance** field allows you to define the tolerance that will be used to determine when WinFrog's time must be reset. If WinFrog's time (a virtual clock set by the computer) goes ahead or falls behind the incoming GPS time, WinFrog's time is reset. The default tolerance value of 0.7 seconds is suitable for most applications.

The **Local Time Offset** (Local-GMT or UTC in hours) value is added to the incoming GPS time to correct it to the local time.

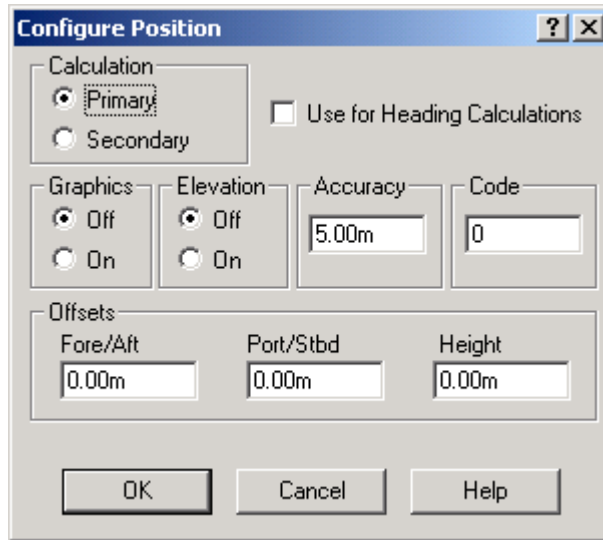
NOTE: The computer's system clock is not reset to the GPS time – only WinFrog's time is affected by enabling the synchronizing option.

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

Adding the Trimble DNAVN device creates the POSITION data item. Once the data item has been added to the vehicle, it must be edited to suit the application.

Data item: GPS, TRIMBLE DNAVN, POSITION

The Position data item must be edited once it is added to a vehicle's device list. Highlight the POSITION 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 position data from the device in the final solution of the vehicles' position.

Note: In the case of Primary device failure, WinFrog will not automatically use the Secondary devices for the vessel's position computation. Instead, the vehicle's positioning will go to dead reckoning (if dead reckoning is turned on). You must manually change a Secondary device to Primary in order for the data to be utilized.

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. The vessel's heading will be derived by the inverse of the GPS antenna coordinates.

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:

This field is used when the GPS data is being received by a remote GPS receiver connected via telemetry link. If this is the case, set the Code to coincide with the code parameters associated with the GPS unit being used. For all other applications, the Code entry must be set to 0.

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.

TELGRAM SPECIFICATION:

FORMAT - string starts with "[" and ends with "]"

Column	Item
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5-6	month
7-8	day
9-10	year
11-12	hour
13-14	min
15-18	second
19-22	Position delay (seconds)
24	latitude direction
25-26	latitude deg
27-28	latitude min
29-33	latitude sec
34	longitude direction
35-37	longitude deg
38-39	longitude min
40-44	longitude sec
45-51	altitude
72-75	HDOP
79	position status
80	differential status
81-82	differential age (min)
83-84	differential age (sec)
85	# of SV's tracked