

WinFrog Device Group:	GPS
Device Name/Model:	INTUICOM SLAVE
Device Manufacturer:	Intuicom, Inc. 1880 South Flatiron Ct., Suite R BOULDER CO 80301 USA Tel. 303-449-4330 ext223 Fax. 303-449-4346 Email: tfoley@intuicom.com
Device Data String(s) Output to WinFrog:	A GGA message prefixed with a code and heading. The code is used to identify the source of the message.
WinFrog Data String(s) Output to Device:	\$--HDT
WinFrog Data Item(s) and their RAW record:	POSITION 303 HEADING 408, 409, 410 DATA OUTPUT

DEVICE DESCRIPTION:

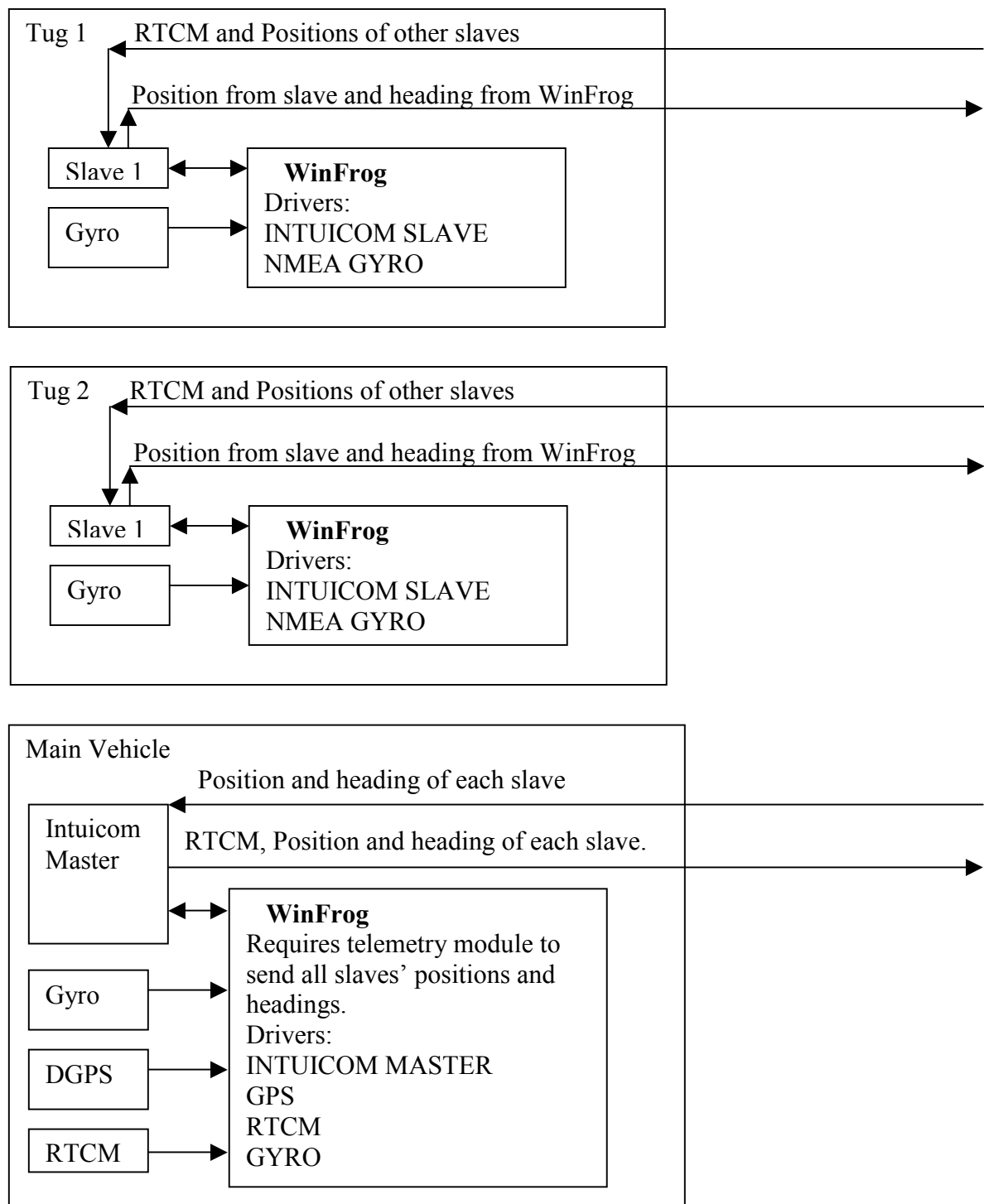
CAUTION: WinFrog was tested with a system that had built in GPS cards at the slaves. These cards were model Allstar manufactured by BAE. Although a different internal card should behave the same and thus be compatible with this device driver, the use of different GPS receivers in the slaves require testing and may require special configuration or a driver modification.

This device is to be used at the slave or remote end of the Intuicom telemetry system. Use this device to display your own position, as well as the position of other slaves and the master. This device will only handle up to ten vehicles (all the slaves and the master). The heading of this vehicle can also be sent to the master for distribution to other slaves. Normally you cannot obtain the coordinates of this slave directly from the slave unit. This slaves coordinates are automatically sent to the master. WinFrog then broadcasts all the slave's positions and headings for all the slave units.

See the device descriptions: INTUICOM MASTER.

Example Layout

Spread spectrum RF



WINFROG I/O DEVICES > EDIT I/O:

INTUICOM SLAVE is added to WinFrog from the GPS device category. Typically the port B (2) cable will be connected to the WinFrog computer and the baud rate will be 19200.

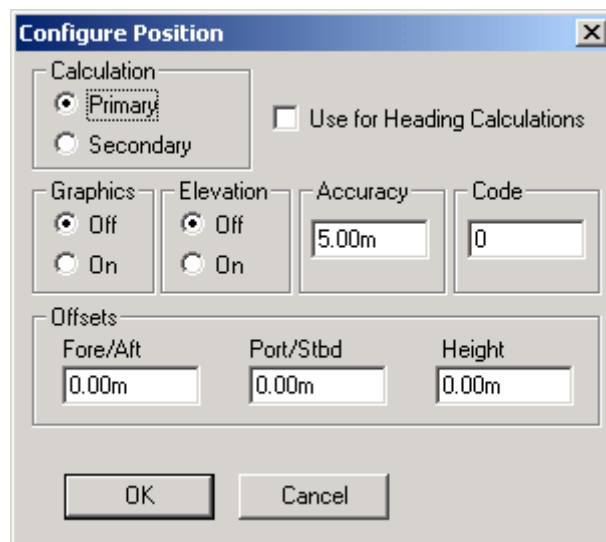
Baud Rate 19200
Data Bits: 8
Stop Bits: 1
Parity: None

WINFROG I/O DEVICES > CONFIG OPTIONS:

There is no configuration for this device.

Data item: GPS, NMEAGPS1, POSITION

The POSITION data item must be edited once it is added to a vehicle's device list. 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 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.

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 found in the GGA message to be used as the elevation of this vehicle. The sounder data recorded in WinFrog's RAW data files will not be affected.

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:

Several messages can be present on this port. The number is determined by the setup of WinFrog at the master using the INTUICOM MASTER device driver. A code is entered into WinFrog to determine which vehicle each message belongs to. (See INTUICOM MASTER device document TX-POSITION.) Enter the code for this slave. It is recommended that each slave's serial number be used as the codes throughout the network. The Intuicom automatically uses the serial number when transmitting its position to the master.

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.

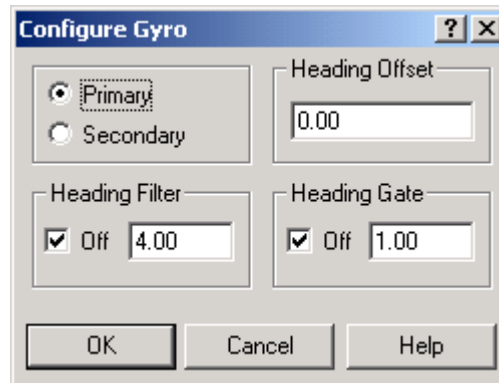
Starboard Offsets are entered as positive values.

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.

Data item: GPS, INTUICOM SLAVE, HEADING

Add the HEADING data item to those vehicles whose positions are in the telegram except this one. This is because this vehicle must be the source for its own heading, but the heading of the other vehicles will come from the messages.



Calculation (Primary/Secondary):

Set the type of calculation to Primary or Secondary by selecting the appropriate radio button. Devices set to Primary are used to provide the vehicle with heading information. However, unlike the Position data items, WinFrog does not calculate a weighted mean solution for multiple Heading data items. If more than one Heading data item is set to primary, the vessels heading, in WinFrog, will jump back and forth between the two. Devices set to Secondary are simply monitored, and are not used in the vehicle's calculations.

In the case of Primary device failure, WinFrog will not automatically use the Secondary device(s). You must manually change a Secondary device to Primary status in order for it to be used in the vehicle's calculations.

Heading Offset:

A correction value (as determined from a gyro calibration) can be input in the Heading Offset box. This value is added to the heading value from the device to provide a corrected heading for the vehicle. Note that positive or negative values can be entered.

Heading Filter/Heading Gate:

The Heading Filter is used to "smooth" heading values used by the vehicle. The value entered in the Heading Filter indicates the number of headings that will be used to predict the next heading value. The larger the value entered, the "heavier" the filter will be – i.e. the slower the vehicle's heading will respond to changes.

The Heading Gate defines a tolerance value to limit the use of anomalies in gyro readings. If the next observed gyro value received falls outside the specified range of predicted values (i.e. plus or minus the entered value), the value will not be used.

Data item: GPS, INTUICOM SLAVE, DATA OUTPUT

Add this data item to your own vehicle only (the vehicle that this slave is actually on). The only item output to the Intuicom is this vehicle's heading. The master will find this value on the TCP/IP port associated with this slave. This information is found in the XML file as described in the Intuicom Master document.

Troubleshooting and Diagnostics

To check if a slave is receiving RTCM corrections, run Hyperterminal connected to cable Port B and set the baud rate to 19200. Attach the provided pickle switch to the third cable and press the button to enter the setup mode. Set the differential (DGPS) to Off or False then escape. This should cause any RTCM corrections being received by the slave to be output on the cable Port A. The RTCM corrections are binary, but still may be viewed in Hyperterminal. To check the RTCM values more thoroughly, connect port A to WinFrog, add an RTCM device and see if the data can be decoded. To determine the baud rate, run the setup again to find the value (see the Intuicom manual). Refer to the Intuicom manual for complete details.

The GGA message from the GPS card can be redirected from the radio modem to port B. Run the setup again and select the appropriate option (see Intuicom manual for details).