

## Integration for indoor flight (Mnav and data modem)

3<sup>rd</sup> Dec 2006 by Paw Yew Chai

The Mnav sensor is integrated onto the Yardstik and the raw sensor data packet from the sensor is transfer through the Maxstream data modem. The instrumented airframe is shown in figure 1. As the serial data output from the Mnav is RS-232 format and the data modem is taking 5 volts TTL signal, a RS-232 to TTL converter is used to interface between them(circuitry diagram attached in the last page). The modified GPS antenna is also mounted onto the airframe to test if we are able to get any GPS signal reception in the indoor flight conducted in the field house.

The settings for the system are as follows:

1. Data Modem

The RF link is set to be 115 Kbps while the serial data interface rate is set to 38.4 Kbps.

2. Mnav

The setting of the Mnav needs to be done with the Microview software before the ground station software can starts to log the data over the wireless communication. The serial data rate is set to 38.4 Kbps with a 50 Hz sampling rate (as we are logging the control inputs as well) and the scale mode for the data is chosen.

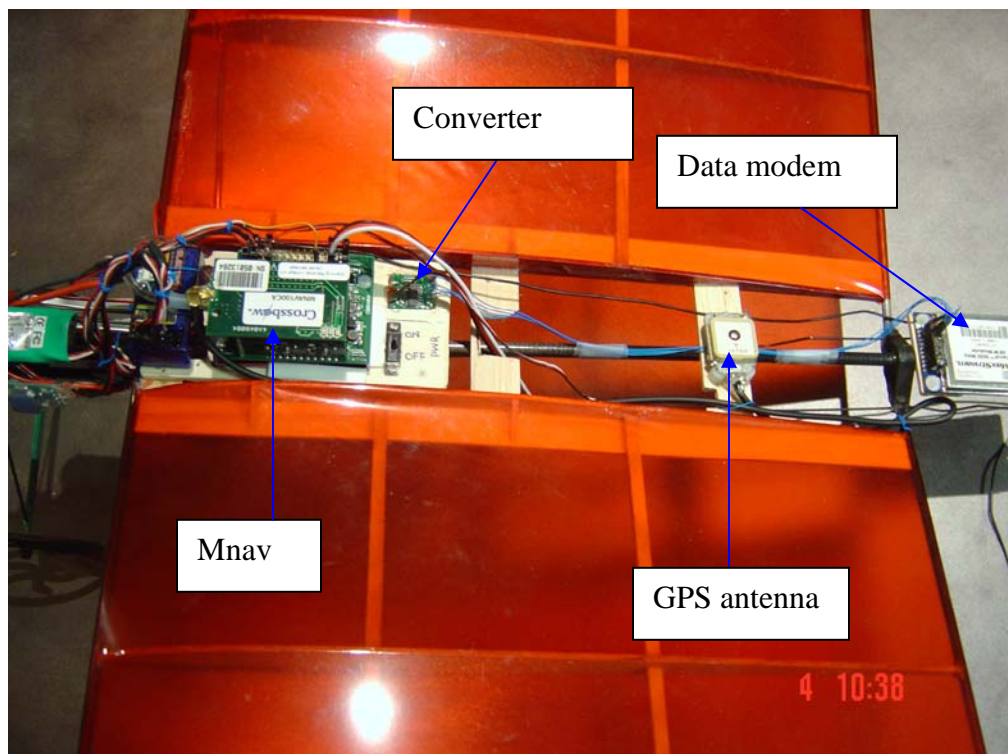
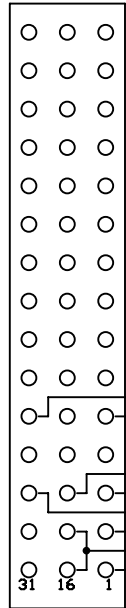


Figure 1 Instrumented Yardstik airframe

Mnav 45 Pins connector



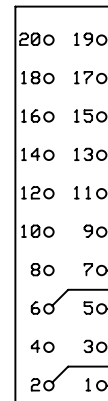
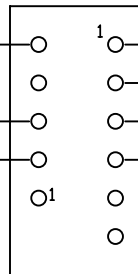
(PPM) To hacked wire of Eleven 6 Rc receiver  
(GND) To GND of Eleven 6 Rc receiver

Rx

+5v

Gnd

Rs232 - TTL converter



9xTend Modem

Pull pin 7 high using 5 volt

+5v

Ground

**University of Minnesota**

RS232 - TTL converter interface

Yew Chai Paw

Rev 1.0

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UAV Group