1 Introduction

The Infinity FF-1 / Velocity FF-3 and Flight-2 has the ability to be connected to a NMEA enabled RS232 GPS receiver to allow the use of actual ground speed in determining the fuel range (See the relevant instrument manual for more information).

The NMEA enabled RS232 GPS receiver must be able to output a GPRMC message (The Recommended Minimum sentence defined by NMEA for GPS/Transit system data). This message is defined as:

$GPRMC,hhmmss,status,latitude,N,longitude,E,spd,cog,ddmmyy,mv,mvE,mode*cs<CR><LF>

<table>
<thead>
<tr>
<th>Name</th>
<th>ASCII String Format</th>
<th>Example</th>
<th>Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$GPRMC</td>
<td>string</td>
<td>$GPRMC</td>
<td></td>
<td>Message ID</td>
</tr>
<tr>
<td>hhmmss</td>
<td>hhmmss,sss</td>
<td>083559.00</td>
<td>UTC Time</td>
<td>Time of position fix</td>
</tr>
<tr>
<td>status</td>
<td>character</td>
<td>A</td>
<td>Status</td>
<td>Status</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>V = Navigation receiver warning</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A = Data valid.</td>
<td></td>
</tr>
<tr>
<td>latitude</td>
<td>ddmmyy</td>
<td>4717.11437</td>
<td>Latitude</td>
<td>User datum latitude degrees, minutes, decimal minutes format</td>
</tr>
<tr>
<td>N</td>
<td>character</td>
<td>N</td>
<td>N/S Indicator</td>
<td>N=north or S=south</td>
</tr>
<tr>
<td>longitude</td>
<td>ddmmyy</td>
<td>00833.91522</td>
<td>Longitude</td>
<td>User datum latitude degrees, minutes, decimal minutes format</td>
</tr>
<tr>
<td>E</td>
<td>character</td>
<td>E</td>
<td>E/W Indicator</td>
<td>E=east or W=west</td>
</tr>
<tr>
<td>spd</td>
<td>numeric</td>
<td>0.004</td>
<td>knots</td>
<td>Speed</td>
</tr>
<tr>
<td>cog</td>
<td>numeric</td>
<td>77.52</td>
<td>degrees</td>
<td>COG</td>
</tr>
<tr>
<td>ddmmyy</td>
<td>ddmmyy</td>
<td>091202</td>
<td>Date</td>
<td>Current Date in Day, Month Year format</td>
</tr>
<tr>
<td>mv</td>
<td>numeric</td>
<td></td>
<td>degrees</td>
<td>Magnetic variation value</td>
</tr>
<tr>
<td>mvE</td>
<td>character</td>
<td></td>
<td>Degrees</td>
<td>Magnetic variation value value</td>
</tr>
<tr>
<td>mode</td>
<td>character</td>
<td></td>
<td></td>
<td>Mode Indicator</td>
</tr>
<tr>
<td>cs</td>
<td>hexadecimal</td>
<td>*53</td>
<td>Checksum</td>
<td>Checksum</td>
</tr>
</tbody>
</table>

Example: $GPRMC,083559.00,A,4717.11437,N,00833.91522,E,0.004,77.52,091202,,,A*57
2 Installation

2.1 Connection Diagram

Connection is shown for the Infinity FF-1 instrument, Connection to the Velocity FF-3 and Flight-2 is very similar.

2.2 Cable connections

<table>
<thead>
<tr>
<th>DB 9 Pin</th>
<th>Color</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Purple</td>
<td>RS232 Receive (Input)</td>
</tr>
<tr>
<td>5</td>
<td>Black</td>
<td>Ground</td>
</tr>
</tbody>
</table>
3 Circuit Diagram

4 Warranty

This product carries a warranty for a period of one year from date of purchase against faulty workmanship or defective materials, provided there is no evidence that the unit has been mishandled or misused. Warranty is limited to the replacement of faulty components and includes the cost of labour. Shipping costs are for the account of the purchaser.

Note: Product warranty excludes damages caused by unprotected, unsuitable or incorrectly wired electrical supplies and or sensors, and damage caused by inductive loads.

5 Disclaimer

Operation of this instrument is the sole responsibility of the purchaser of the unit. The user must make themselves familiar with the operation of this instrument and the effect of any possible failure or malfunction.

This instrument is not certified by the FAA. Fitting of this instrument to certified aircraft is subject to the rules and conditions pertaining to such in your country. Please check with your local aviation authorities if in doubt. This instrument is intended for ultralight, microlight, homebuilt and experimental aircraft. Operation of this instrument is the sole responsibility of the pilot in command (PIC) of the aircraft. This person must be proficient and carry a valid and relevant pilot's license. This person has to make themselves familiar with the operation of this instrument and the effect of any possible failure or malfunction. Under no circumstances does the manufacturer condone usage of this instrument for IFR flights.

The manufacturer reserves the right to alter any specification without notice.
Instruments in the \textit{Stratomaster Infinity} series

\begin{itemize}
  \item ALT-1 \quad Precision encoding altimeter and vertical speed indicator
  \item ALT-2 \quad Precision encoding altimeter and vertical speed indicator with a serial RS232 transponder output
  \item ASI-1 \quad Airspeed indicator (ASI) with automatic flight log
  \item ASX-1 \quad Encoding aviation altimeter with serial output and airspeed indicator (ASI)
  \item AV-1 \quad Artificial horizon and magnetic compass indicator
  \item BAT-1 \quad Battery voltage and current monitor
  \item E-3 \quad Universal engine monitor
  \item FF-1 \quad Fuel computer (single or dual fuel tanks)
  \item GF-1 \quad $\pm 10G$ tilt compensated dual range G-force meter
  \item MAP-1 \quad Universal pressure indicator
  \item RV-1 \quad Universal engine RPM and rotor RPM Indicator
  \item RV-2 \quad Universal turbine RPM / RPM factor display
  \item RTC-2 \quad Aviation real time clock (RTC) and outside air temperature (OAT) display
  \item TC-1 \quad 4-Channel thermocouple indicator
  \item TP-1 \quad Universal temperature and pressure gauge
\end{itemize}

Instruments in the \textit{Stratomaster Velocity} series

\begin{itemize}
  \item ALT-3 \quad Precision aviation altimeter and Vertical speed indicator (VSI)
  \item ALT-4 \quad Encoding aviation altimeter with a transponder compatible Serial RS232 & Parallel Gillham code output
  \item ASI-3 \quad Airspeed indicator (ASI) with automatic flight log
  \item ASX-2 \quad Encoding aviation altimeter and Airspeed indicator (ASI)
  \item AV-2 \quad Artificial horizon and magnetic compass indicator
  \item E-1 \quad Universal engine monitor
  \item FLIGHT-2 \quad Primary Flight instrument
  \item FF-3 \quad Fuel Computer (single or dual fuel tanks)
  \item GF-2 \quad $\pm 10G$ tilt compensated dual range G-force meter
  \item MAP-2 \quad Universal pressure indicator
  \item Rotor-1 \quad Dual Rotor / Engine tachometer
  \item RTC-1 \quad Aviation real time clock (RTC) and outside air temperature (OAT) display
  \item RV-3 \quad Universal engine / Rotor RPM Indicator
  \item TC-2 \quad 4-Channel thermocouple (EGT/CHT) indicator
  \item TC-3 \quad 12-Channel thermocouple (EGT/CHT) indicator
  \item TP-2 \quad Universal temperature and pressure gauge
\end{itemize}