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:

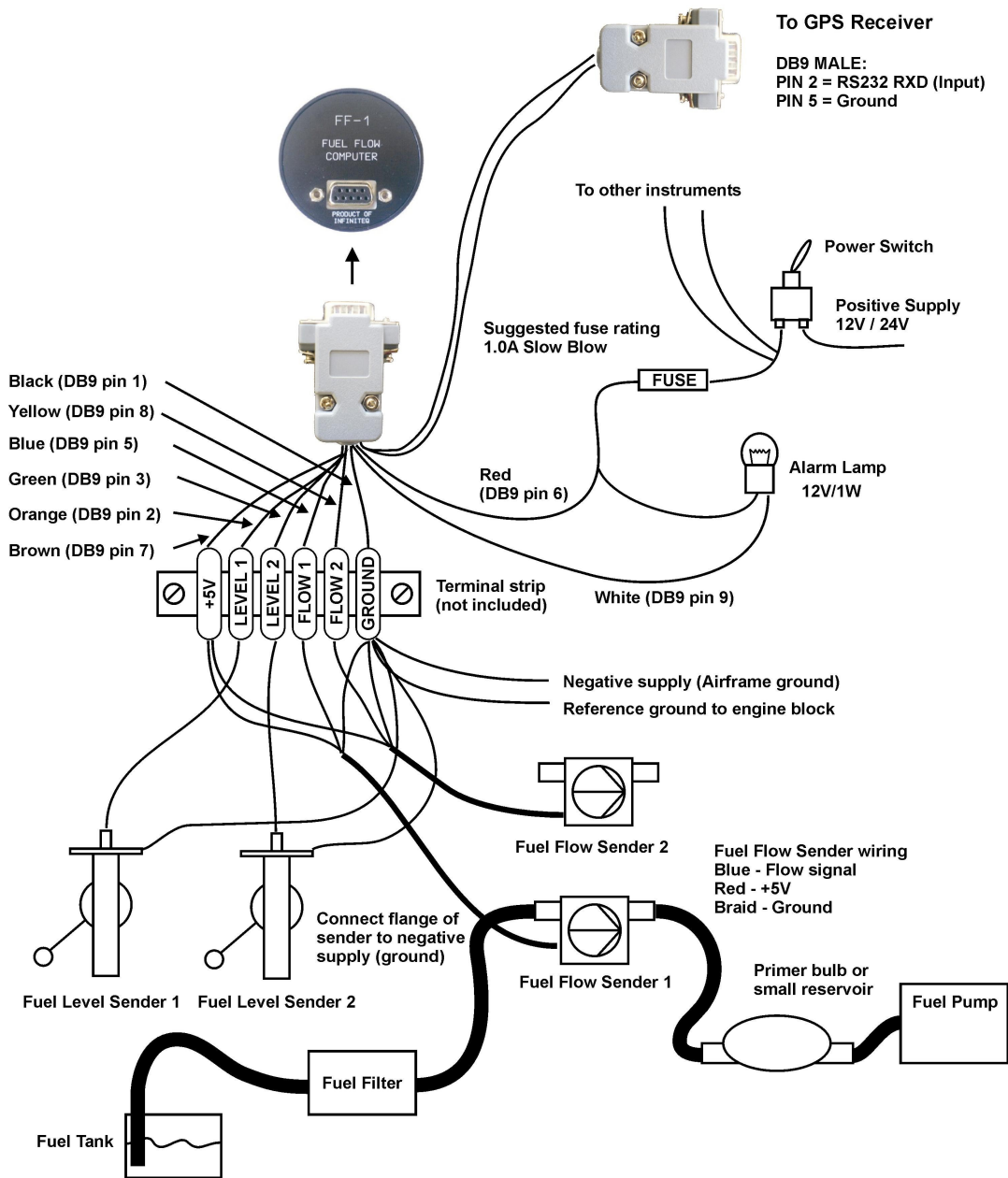$GPRMC,hhmmss,status,latitude,N,longitude,E,spd,cog,ddmmyy,mv,mvE,mode*cs<CR><LF>

Name	ASCII String Format	Example	Units	Description	
$GPRMC	string	$GPRMC		Message ID	RMC protocol header
hhmmss	hhmmss.sss	083559.00		UTC Time	Time of position fix
status	character	A		Status	Status V = Navigation receiver warning A = Data valid.
latitude	ddmm.mmmm	4717.11437		Latitude	User datum latitude degrees, minutes, decimal minutes format
N	character	N		N/S Indicator	N=north or S=south
longitude	ddmm.mmmm	00833.91522		Longitude	User datum latitude degrees, minutes, decimal minutes format
E	character	E		E/W indicator	E=east or W=west
spd	numeric	0.004	knots	Speed	Speed Over Ground
cog	numeric	77.52	degrees	COG	Course Over Ground
ddmmyy	ddmmyy	091202		Date	Current Date in Day, Month Year format
mv	numeric		degrees	Magnetic variation value	Not being output by receiver
mvE	character			Magnetic variation E/W indicator	Not being output by receiver
mode				Mode Indicator	
cs	hexadecimal	*53		Checksum	
<CR><LF>					End of message

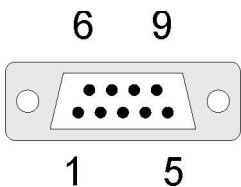Example: $GPRMC,083559.00,A,4717.11437,N,00833.91522,E,0.004,77.52,091202,,,A*57

2 Installation
2.1 Connection Diagram

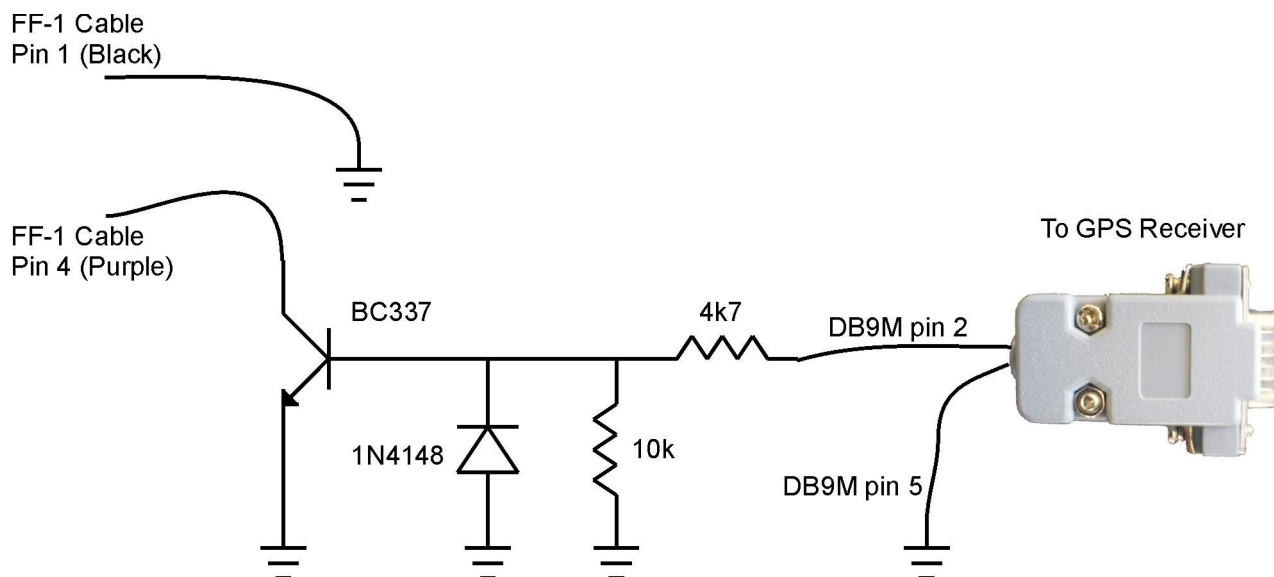Connection is shown for the Infinity FF-1 instrument, Connection to the Velocity FF-3 and Flight-2 is very similar.

To GPS Receiver

DB9 MALE:
PIN 2 = RS232 RXD (Input)
PIN 5 = Ground

To other instruments

Power Switch

Positive Supply
12V / 24V

Suggested fuse rating
1.0A Slow Blow

FUSE

Black (DB9 pin 1)
Yellow (DB9 pin 8)
Blue (DB9 pin 5)
Green (DB9 pin 3)
Orange (DB9 pin 2)
Brown (DB9 pin 7)

Red
(DB9 pin 6)

Alarm Lamp
12V/1W

+5V **LEVEL 1** **LEVEL 2** **FLOW 1** **FLOW 2** **GROUND**

Terminal strip
(not included)

White (DB9 pin 9)

Negative supply (Airframe ground)
Reference ground to engine block

Fuel Flow Sender 2

Fuel Flow Sender wiring
Blue - Flow signal
Red - +5V
Braid - Ground

Connect flange of
sender to negative
supply (ground)

Fuel Flow Sender 1

Primer bulb or
small reservoir

Fuel Pump

Fuel Level Sender 1 **Fuel Level Sender 2**

Fuel Filter

Fuel Tank

2.2 Cable connections

DB 9 Pin	Color	Function
2	Purple	RS232 Receive (Input)
5	Black	Ground

3 Circuit Diagram

FF-1 Cable
Pin 1 (Black)

FF-1 Cable
Pin 4 (Purple)

To GPS Receiver

BC337   4k7   DB9M pin 2

1N4148   10k   DB9M pin 5

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 *Stratomaster Infinity* series

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

Instruments in the *Stratomaster Velocity* series

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