DD2-PRO+ - GPS Lap Timing User Guide

Note : For Rally, Sprint or Hill-climb stage timing using GPS please refer to separate user guide on DigiTools CDROM.

1. Introductory Notes

As well as accurate lap timing and track map generation, the GPS system also enables the following information to be shown on the LCD display: a) Compass Heading and direction; b) Altitude; c) UTC Satellite Date and Time (you can select either the on-board clock or GPS data using DigiTools Software) and d) GPS Speed.

Important Note – under the "General" tab in the DigiTools Configure menu, the speed shown on the Display can either be derived from the hall-effect speed sensor supplied or from the satellite information received by the GPS receiver. If using GPS to indicate vehicle speed on the DigiDash, please note the following:

a) **SPEED SHOWN IS UNADJUSTED AND SHOWS THE ACTUAL TRUE SPEED OF THE VEHICLE** *(the hall-effect sensor speed is configured to read true speed +3% to ensure a margin for error and legal calibration for tests such as the UK SVA).*

b) **SPEED IS ONLY INDICATED WHEN THE RECEIVER HAS A CLEAR VIEW OF THE SKY – PASSING UNDER BRIDGES OR DRIVING THROUGH TUNNELS WILL INHIBIT THE SATELLITE SIGNAL AND INCUR LOSS OF SPEED INDICATION.**

2. Installation Requirements

- GPS sensor connected to Display (via Grey connector on flying lead)
- Manual push-button wired in for Button **D** (Grey wire on Yellow Display connector). This should be a single-pole, single throw push-to-make switch.

3. Using the GPS Lap Timing System

The GPS lap timing system is very simple to use and it will only take a few minutes for you to familiarise yourself with using the system for the first time.

3.1 Hardware Setup

Included in the standard package is the external button / GPS receiver harness for connecting the GPS receiver and wiring up 4 steering wheel mounted buttons. Two of these buttons replicate buttons **A & B** on the display, the other two allow access to additional functions and are specified as buttons **C & D.**

In order to use the GPS lap timing system, you must connect up button **D**, (which is the grey wire on the external button harness) to a single pole, single throw (push to make) switch, preferably mounted within easy reach on the steering wheel itself.

Once connected, this button is used to store the GPS positions of the start line and 3 intermediate splits. (Note that holding down this button for 2 seconds will arm the timer).

3.2 GPS Status Indication

By switching on ignition and powering up the DigiDash, the system will then begin to acquire the nearest satellites in order to obtain its position. The GPS related information screens will indicate the status of the system by showing:

! = GPS receiver not connected
? = GPS connected but receiver not recognised / communication problem
A = GPS receiver connected and acquiring satellite positions

3.3 Setting the Start Line / Intermediate Split Time Co-ordinates

The system requires the user to drive round the circuit, pressing button **D** to store the GPS co-ordinates to memory:

As you cross the start / finish line, press button **D** and the following screen will be displayed.

The co-ordinates of this location will be stored in memory, and the next time this position is passed the system begins timing your first lap.

As you drive round the circuit you can divide the lap into 4 sectors. You simply press the button **D** to set the GPS location to trigger each split timer:

The DD2 will indicate your performance in relation to previously recorded split times as you lap the circuit. First the first lap, +9.99s will be shown as there are no previously recorded split times, but your second lap will indicate whether you as faster or slower than your previous (or best) lap.

3.4 Immediate recall of recorded laps on display

When the session has finished, you can select the LST / BST screen on the LCD to see your best (BST) lap time, and by pressing button **B** on the display, cycle through your recorded laps. These lap times will be stored indefinitely until you hold down button **B** for 2 seconds and reset the timers.

To begin a new session at a different location, simply repeat the above process to commit the new GPS locations to memory. You can also reset the locations using the DigiTools software.

4. Additional GPS Information Screens

4.1 Latitude and Longitude

This shows the vehicles current location in terms of latitude and longitude:

4.2 Speed, Heading and Altitude

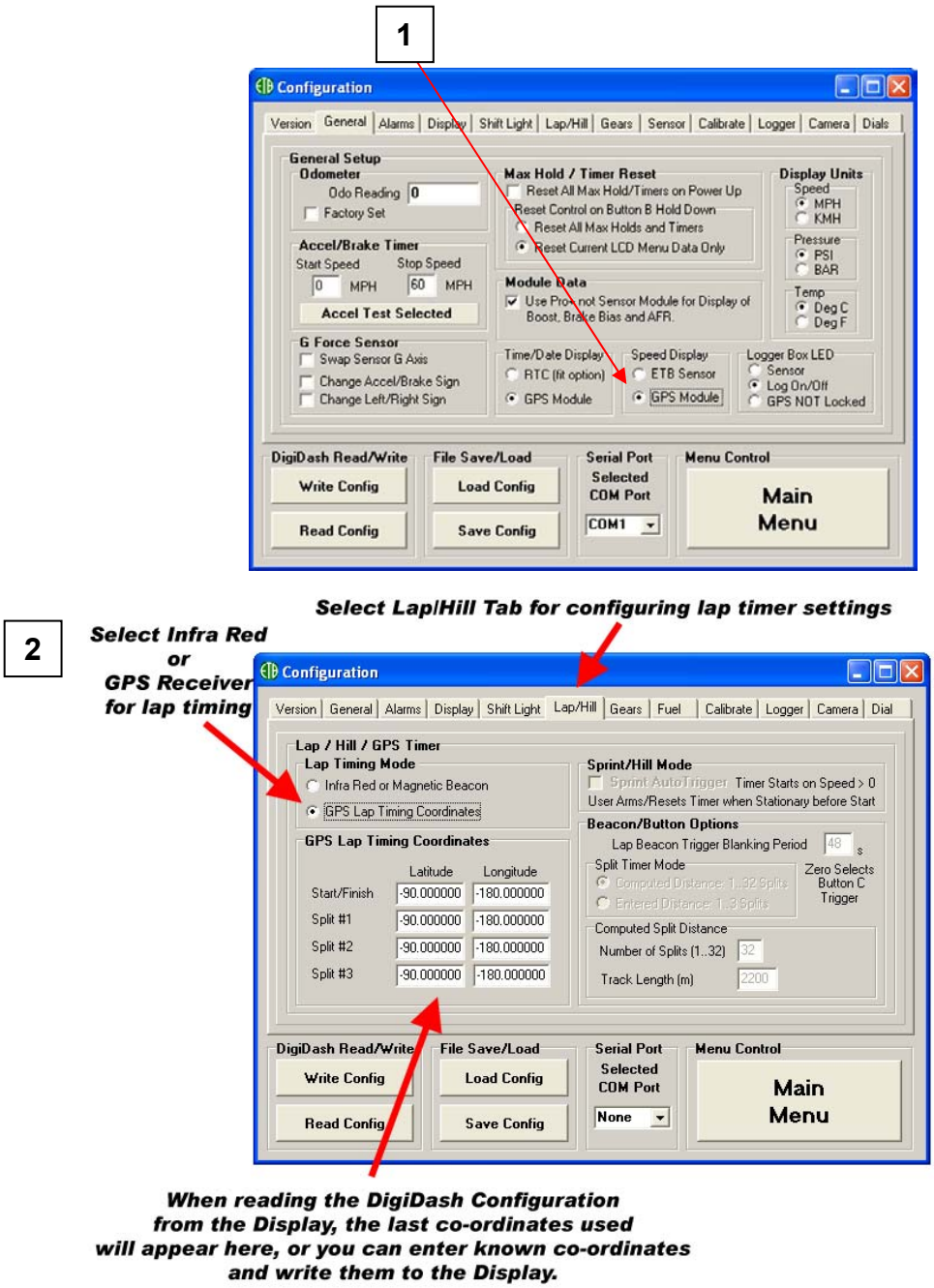
The screen shown below provides your compass bearing, compass direction, speed in miles per hour and altitude in metres above sea level. Please note that the speed indicated is the actual, true speed of the vehicle.

5. Configuring DD2-Lite for GPS Lap Timing using DigiTools Software

Please refer to the images below. In order to use the GPS receiver for lap timing, you must ensure that the DD2 is configured to use it for lap timing purposes, as an alternative to using an infra red system.

The following functions must be selected in the DigiTools Configure Menu in order to use GPS lap timing:-

1. GPS Speed (Configure Menu / General Tab)
2. GPS Lap Timing (Configure Menu / Lap/Hill Tab / Lap timing Mode)



5.1 Manually entering GPS Co-ordinates

If the GPS co-ordinates of the stage finish line are known (these can sometimes be obtained using Google Earth), the Latitude and Longitude values can be entered manually. These co-ordinates can then be saved as a Configuration File (.dcf file). The filename should show the particular stage to which the finish line relates.