

# DL1 Sport Data Logger



Record up to 64GB of data to removable CF memory card, for fast data transfer - ready for PC analysis

Up to 8 analogue inputs and RPM input. Connect sensors such as: Steering angle, damper pots, brake pressure, engine sensors etc.



Integrated GPS receiver and accelerometers, measuring speed, position, lap and sector times, cornering and braking forces

Start and stop logging automatically, or with the simple start/stop button

Quick and reliable connections with spring loaded terminals

## 1.1 What is the DL1 SPORT?

The DL1 SPORT is a state of the art, highly robust, compact "black box" data logging system. Put in the simplest terms, it stores a wide range of vehicle data for later analysis on a computer - the system does not include an in-vehicle display, Race Technology has a number of dashboard solutions available for the DL1 SPORT.

## 1.2 Who is the DL1 SPORT designed for?

The DL1 SPORT was initially designed for autosport applications including drag racers, single seater racing cars, rally cars or road cars - however it is also ideal for use on power boats, go karts and motorbikes. It is also an ideal platform for use in the auto industry for car testing of all types, from long term monitoring to competitor benchmarking.

## 1.3 What does the DL1 SPORT do?

The DL1 SPORT can store data from a number of sources including its built in high accuracy GPS and accelerometers, engine speeds, temperatures, pressures, lap times, sector times etc. The DL1 SPORT comes packaged with the excellent Race Technology data analysis package for Windows. The software allows super accurate track mapping, user defined channels, powerful graphing and allows direct comparison of up to 10 data sets (races) simultaneously with almost unlimited laps.

## 1.4 Why use GPS?

One of the key features of the DL1 SPORT is its built in high accuracy GPS system - this gives the DL1 SPORT advantages over other data loggers in 2 key areas - greatly improved track maps and far more accurate speed data.

### Track Mapping

Conventional data loggers require a "closed circuit" to enable them to calculate the track map; the shape of the track is estimated from a combination of the lateral acceleration and speed. This works adequately in some situations but it becomes increasingly inaccurate for long tracks and impossible for open circuits, motorbikes or boats. In contrast, the GPS will produce high accuracy track maps in almost any situation.

### Speed Measurement

While speed is probably the most important parameter that anyone wants to measure using the data logging system, it is also the most inaccurate in a "conventional" system. The normal way to measure speed is to simply attach a pickup to a wheel to detect how fast it is rotating - but the rolling circumference of a tyre changes by 4% just with wear and temperature. Even worse, the error increases significantly under race conditions where the tyre is under load - typically the tyre slips by up to 20% under hard braking going into a corner. Measuring speed using GPS is now common practice in high-end systems - under typical conditions speed error is well under 1%!

## 1.5 Introduction to the DL1 SPORT data logger

The DL1 SPORT is an all-new data logging system from Race Technology. Whilst the DL1 SPORT builds on the strengths of our previous highly successful DL1 data loggers, the new DL1 SPORT features new and updated hardware with easy to use configuration software. Some of the most noteworthy features include:

- Built in GPS. The GPS unit inside the DL1 SPORT measures the speed and position at a rate of 5Hz, for fast tracking applications such as vehicle testing it is one of the best available for under \$1000. The measurements from the GPS and accelerometers are combined to calculate very high accuracy positions and speeds at 100 times a second.
- Built in accelerometers. Built in 3-axis accelerometer with 2g full scale (optional 6g full scale).
- Logging to compact flash memory. Compact flash memory is robust, economical and ideal for use in data logging products. The advantages of using compact flash memory include incredibly fast download times (using a suitable card reader) and huge storage capacities (tested with cards up to 64GB).
- 8 analogue inputs. The DL1 SPORT has 8 high accuracy analogue inputs. All the inputs are 12-bit accuracy (4096 different levels) and have an input voltage range suitable for use in 12v vehicles.
- 2 RPM inputs. The DL1 SPORT has 2 RPM inputs, only one of which can be used at any one time. One input is designed to be connected to "high level" sources, such as the ignition coil. The other input is designed for low level signals such as a feed from the ECU.
- Serial data (RS232) input. The serial port can be configured to accept data from an external source - possible examples are data from the engine management unit, OBDii or CAN data (with a suitable adapter).
- Serial data (RS232) output. As well as logging the data to compact flash it is also available from the serial port. This data can be sent to a suitable dashboard such as the DASH2 / 3 / 4PRO .
- Lap trigger input. Used to add lap marker when logging data.
- Small and tough. At just 120mm x 80mm x 35mm (4.8" x 3.25" x 1.5") it can be fitted into the smallest single seater, motorbike or go kart. The DL1 SPORT is housed in an injection moulded plastic enclosure.
- Simple operation. A single button to start or stop logging, it's as simple as that! If the button is inaccessible from the drivers seat then a remote button can be added.
- Power supply requirements. The power supply to the DL1 SPORT data logger can be taken directly from the vehicles 12v supply, or it can be powered from it's own battery if required. The power supply is smoothed and regulated within the DL1 SPORT ensuring its performance is highly robust and stable.
- Testing. Very high reliability is ensured by calibrating, temperature testing and vibration testing each unit on an individual basis. Autosport applications make tremendous demands on electronic systems and we take great care to make sure our products are up to the task. All the connections to the units are vibration proof, high strength, lever terminals to ensure that connections do not fail at the critical time.
- Powerful. The 2 processors in the DL1 SPORT are the very latest generation RISC processor that features both higher speed operation and flash upgradability - so as we add new features to the DL1 SPORT you can upgrade yours to the latest specification.

### Why choose a DL1 SPORT data logger?

What our GPS data loggers do is more than just collect the data, they allow all the data to be referenced to not just time, but a position on the track. This allows you to interpret the data in a meaningful and understandable way, referenced clearly to the real world: Pick a corner and see how you braked, how much grip you used and where, then how you exited. Compare what you did on your fastest time through the sector and learn where you can go faster.

- Review your braking points and grip usage with the built in 2g 3-axis. accelerometer (optional 6g enhancement available for high downforce applications).
- Capable of detecting minute changes with 100Hz update rate on all sensor and accelerometer channels - 8 analogue sensor inputs ready for additional sensors.
- Lap and sector timing, in the software, or live with a DASH2 or DASH4PRO display.

Get the most out of your engine by logging information from your [ECU](#)\*

- Optional GoPro control + video licence for synchronised HD video and data.



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