

**DL1 WP** - Powerful, expandable, sealed: Maximum protection with maximum features

**IP67 sealed (waterproof) rugged aluminium enclosure, suitable for harsh environments and boat applications.**

**Up to 12 analogue and 4 frequency inputs to connect sensors such as: Wheel speeds, steering angle, damper pots, brake pressure, engine sensors etc.**



**DL1 WP - Waterproof (IP67), rugged data logger for use in harsh environments. Fully customisable to your application with a range of enhancement options, and powerful live data processing.**

The DL1 WP - Waterproof data logger is a highly configurable and powerful logging instrument. Whether you want a high quality driver and vehicle performance analysis system using GPS, CAN, ECU, accelerometer, frequency, or analogue data - or you want a rugged professional scrutineering system for monitoring professional race series. The DL1 WP features an IP67 sealed rugged aluminium enclosure for full protection against water and dust even under temporary submersion. This greater degree of protection means the DL1 WP is suitable for harsh environments and the exposure associated with racing boats and off-road vehicles.

The DL1 WP does not feature a start stop button on the unit (a remote button can be installed if required), instead the automatic start/stop functions can be used to collect the required data without having to remember to press the button.

For data storage an internal 8GB memory is used, offering data download via the USB connection available through the main connectors. Connectors are supplied with pre-soldered fly leads and connectors ready for installation.

## Why choose a DL1 WP 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.

- Powerful onboard processing - perform calculations live. The results can be viewed live (on a display or recorded to video using a VIDEO4), not just in post analysis:
- Timeslip can be calculated live and displayed directly to the driver, showing exactly how much faster or slower you are continuously - not just at lap and sector markers.
- Sensor data is processed directly by the unit rather than having to be processed in the dashboard, VIDEO4 unit and Analysis software separately.
- User defined channels used to perform maths functions on the live data, e.g. combine 4 wheel speed sensors to show if the average speed of the front wheels is higher than the rear wheels, showing spin and braking lockup. This can be displayed live to the driver, overlaid onto a video, or logged for analysis.
- 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.
- Lap and sector timing, in the software, or live with a DASH2, DASH3, or DASH4 PRO display.
- Unrivalled accuracy with our 20Hz GPS option (5Hz standard).
- Measure your drift angle with the gyro option.
- Extensive automatic logging control, making sure exactly the required data is logged.
- Get the most out of your engine by logging information from your ECU or vehicle's CAN data stream.
- Optional GoPro control + video licence, for synchronised HD video and DL1 data.

## DL1 WP - What's in the box?

A complete DL1 WP data logging system, ready to use. Includes:

- DL1 WP unit
- 8GB internal memory
- Magnetic mounting GPS antenna (3m cable)
- 4 velcro strips
- Connectors with pre-soldered leads and relevant connections
- Comprehensive software CD
- Carrying case (with cut foam interior)

Data will be downloaded from the internal memory to the PC via a USB cable. A USB extension lead is recommended to reach the from the DL1 WP USB connector (once it is installed in a vehicle) to the PC - to download and analyse data.

### Recommended Compatible Products:



## DL1 WP - Enhancement options:

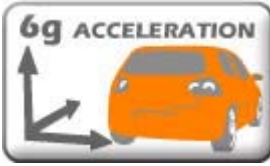


### 20Hz GPS

Increased speed and position accuracy, with higher GPS resolution. Download corrections from the internet with advanced PPP mode.

The 20Hz GPS option for the DL1 is quite simply the best and most accurate available of any competitor data logging system. The GPS makes a unique calculation of position and speed 20 times a second with no interpolation or other "tricks".

The unique GPS technology has been developed in house by our engineers and tested in the most challenging racing environments - the accuracy is nothing short of a break though at this price point and in this respect there really isn't any competition.



### 6g Accelerometers

6g accelerometers are recommended for applications that use large aerodynamic aids.



### Gyro Option

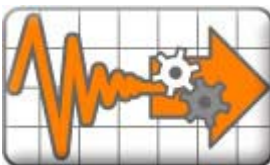
The drift option uses a built in gyro for measuring vehicle drift (yaw).



### GoPro HD Video Synchronisation

Synchronised DL1 data with HD video using the GoPro control option. Included software licence enables HD video by data analysis, and data overlaid video exports from the Analysis software. Control the GoPro using the control cable (compatible with hero, hero 2 and hero 3 white).

\*GoPro camera not included.



### Low Side Drivers and 4 Extra Analogue Channels

Low side output drivers and 4 extra analogue inputs is the option you will require if you want to switch on/off external systems automatically using your DL1. This control can be simple or based on a complicated custom equation between various channel data. This option also enables the 4 additional analogue channels, making a total of 12.



### High Accuracy Export

If you intend to use your data in an external application (not just the analysis software) you will need an export licence to output the 20Hz data at full accuracy. The licence enables increased output resolution on GPS latitude, longitude, raw velocity, position, heading, gradient, speed and distance.



## 2nd Serial Port

A second serial port is ideal for combining multiple input and output modules for complex systems, or driving a low speed telemetry channel on one port and a high speed output for video overlay on the second. A breakout cable is supplied with this option to enable easy connection of the separate serial ports.



## CAN Communication

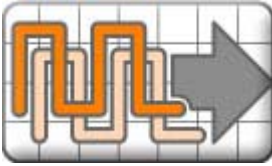
### **CAN reception (15 channel license):**

With this option the unit can decode any CAN data from either the vehicles main CAN stream or CAN based aftermarket ECU. This data can be mapped to any RT channels for saving or sending to serial port. Up to 105 CAN receive channels per unit, in multiples of 15 (one £100 licence gets you 15 channels). Messages loadable using .dbc files. Data rates of up to 1Mbit and 11 or 29 bit addressing.

### **CAN transmission:**

With this option the unit can transmit any of the internal data channels on the CAN bus at a rate determined by the configuration. A .DBC file is provided with the default channel data and decoding information to make use with third party CAN reception systems much easier. Data for transmission on the CAN bus could be from the internal sensors (GPS, accelerometer, gyro, analogue channels, etc.) or from the serial input from an ECU interface or other unit attached to the serial port. The transmission rate for each channel can be individually configured at rates of up to 100Hz. Transmission can use 29bit or 11bit addressing at a number of different baud rates.

CAN transmit and receive can both be specified on the same port. Each port must run at the same baud rate, if separate rates are required we advise using the second CAN port for this.



### RAW CAN reception

Receive and log the vehicle's entire CAN bus data, irrespective of whether it is 11 bit or 29 bit address. Decode it in the Analysis software using DBC files. No need to pre-configure the data logger, just log and decode easily in the software. Perfect for reverse engineering CAN data and using on multiple vehicles. If used with the 1000Hz logging option it can log raw CAN at up to 1000Hz.



### Second CAN port

Add a second CAN port to transmit or receive more CAN data. Receive CAN data from another source, ideal for integrating external equipment with a CAN output and synchronising it with the rest of the data.



### PWM Output Controller + Advanced Frequency Input

The PWM (Pulse Width Modulation) output controller allows the unit to control an external system with a graduated signal. Meaning it can be "on" anywhere between 1 and 100%. This is ideal for water injection systems etc. This option also enables the advanced frequency inputs, enabling: Pulse counting, pulse high time, pulse low time, pulse position, duty cycle and mark space ratio.



### DL1 PRO/WP - 100Hz Live Speed Enhancement

The DL1 PRO and WP models are available with optional output of live speed. This option takes the data from the GPS system and the built in accelerometers and combines them using a kalman filter to provide a real time output of speed with is updated at up to 100Hz and which is resistant to brief GPS outages such as bridges or buildings.



### **DL1 PRO/WP - 1000Hz Data Logging Enhancement**

Measure rapid changes with the 1000Hz sample rate on sensor channels. Essential for accurate suspension analysis, where the high sample rates allow calculation of shock rates as well as measurement of suspension position. If used with the raw CAN option it enables logging of CAN channels at up to 1000Hz.



### **Configuration Lock**

The DL1 CLUB and DL1 PRO are extensively used as scrutineering loggers, monitoring vehicles in race series to prevent any foul play and to enforce the rules of the series. In these applications it is often preferable to lock the configuration on the units to prevent any of the settings and configuration from being read or changed by unauthorised individuals. Locking and unlocking the units is possible but only by the authorised person with the "Keys".