

# Evo1 Series

## GPS+Glonass Data Logger

Firmware revision 2.5b and higher.

### ***Description:***

The Evo1 data logger is a simple-to-use product that records position/time track and event data from an integrated GPS+Glonass receiver.

The Evo1 is based on our proven GPS Data Logger, with a high quality GPS+Glonass receiver added.

Simply install the battery, switch ON, and record data.

Then, download the track and event to your PC for use with Ozi Explorer or similar software.

### ***Features:***

Simple operation: ON-OFF switch.

Five event buttons on front panel.

Non-volatile memory preserves data for up to 10 years.

Economical 9V Alkaline battery

Lightweight - suitable for handheld use

Sample rate programmable.

Memory saving Automatic Log function.

Programmable 4-character Identification/serial.

Downloads data to your PC in ASCII format.

Easy to use Windows based download software.

- Ozi Explorer Track File support

- Ozi Explorer Event File Support

- Ozi Explorer Waypoint File Support

- GPS Exchange (GPX) file support

### ***Evo1 is Simple to use:***

**Switch ON to record data**

**Switch OFF to save power and/or download data**

### ***Download Software:***

The Download software is a windows-based utility. It is easy to use and allows you to follow a step-by-step process for downloading and converting your data files.

### ***Installation:***

To install the download software, place the mini-cd into your cd-rom drive, making sure it is correctly located in the 8-cm recess of the drawer. Select "Install DataLogger Software" from the menu. If the menu does not appear automatically, go to start/run and type D:\setup.exe where D: is your cd-rom drive.

Ensure that no other applications are running while you install this software. Shared files may not install correctly if other applications are running during the Install process.

Installing under Windows 7-10, ensure you are in Admin mode, and make the installation available to 'all users'. If the installer asks about compatibility mode, select 'XP compatibility'

Several options can be selected using the 'file-properties' menu prior to downloading from the logger. Your chosen options will be recalled next time you use Datalogger Download.

If errors occur during download, try reducing the download speed in the 'file-properties' menu.

## ***Evo1 Quick Start Guide:***

### **To get up and running fast:**

- 1) Install the 9V battery and close the battery compartment.
- 2) Go outdoors with a clear view of the sky.
- 3) Click the On-Off switch to the ON position.
- 4) Observe the red LED indicator flashing.  
Long flash at first while the GPS searches for satellites.  
Short flash once the GPS has a position fix.

Once the GPS has a position fix, pressing any of the 5 event buttons will save an event (waypoint)

### **Downloading your data:**

- 1) Switch the On-Off switch OFF to save power.
- 2) Data Download will work ok with the switch OFF, but you still need a good 9V battery installed.
- 3) Connect the logger to a PC serial port and start the Datalogger Download software.
- 4) Once the software is connected to the logger, click the Download button on the software to begin data transfer.

## ***Evo1 is Simple to use:***

**Switch ON to record data**

**Switch OFF to save power and/or download data**

## ***Battery Installation:***

Use a 9 volt alkaline battery, type MN1604, PC1604, 522, 6LR61 or equivalent.

Open the battery compartment by gently pressing and sliding the battery cover towards the edge of the case.

Attach the battery clip to the battery.

Place the battery in the battery compartment. Ensure that the battery clip wires are clear of the DIP switches and push buttons.

Stored data will not be lost if battery is disconnected. Data is retained in non-volatile memory

## ***External Power:***

External power between 10V and 30V dc can be applied to pin 9 of the data connector.

The 9V battery may be safely left in place when external power is applied.

The 9V battery will not be discharged when external power is applied.

## ***On-Off Switch:***

The On-Off switch is used to enable the internal GPS+Glonass receiver.

Switch ON: Receiver is enabled. Data will be received and stored in logger memory.

Switch OFF: Receiver is disabled. Data can be downloaded to your computer with the switch OFF.

## ***LED Indicator:***

The LED indicator flashes when data is received. The number of flashes gives you information about logger status:

ONE flash:	Data has been received.
TWO flashes:	Data has been received and saved.
THREE flashes:	Data has been received and battery is low.
FOUR flashes:	Data has been received and memory is more than 88% full.
FIVE flashes:	Data has been received and memory is full. New data will not be saved; existing data will be protected.
ONE LONG Flash:	Invalid GPS data received. Most likely the GPS has not locked-on to satellites. This is normal during start-up time.
ON constant:	Download in progress.

***Note: The LED will only flash if data is received. This is because the logger goes into power-save mode if there is no data, in order to improve battery life and protect stored data.***

## ***Event Buttons: (5 on outside of case)***

There are 5 event buttons, each of which will save a separately identified 'waypoint' or 'event' when pressed.

Pressing an Event button will save position and time data regardless of the DIP switch settings.

The Download Software can save Event Button presses in separate Ozi Explorer Event and Waypoint files if required.

During data download, pressing event button #1 will cancel the download. This may be useful in the event of computer malfunction. Data stored in the logger will not be lost.

## ***Pushbuttons: (inside battery compartment)***

Press BOTH buttons at once to reset the logger and clear all memory.

Press EITHER button to store timecode data in 'Normal' (no timestamp) logging mode. This is the same as pressing the Event #1 button.

## ***DIP Switches: (inside battery compartment)***

Use these switches to enable memory saving and data logging options.

DIP switches may be changed 'on the fly' while the datalogger is operating.

Helpful Tip: You can use a corner of the battery compartment lid to operate the DIP switches.

### **DIP switch 1: Speed Check**

Switch ON to activate Speed Check. In this mode, the logger will not save at speeds below 3 knots (5.5Km/h). This reduces 'rats-nest' (due to position drift) when the GPS is stationary. Results in significantly cleaner track-logs and saves memory. Good for vehicle-based use.  
Switch OFF to log at any speed including zero knots. Good for walkers.

### **DIP Switch 2: Automatic Save**

Switch ON to activate Automatic Memory Save. This intelligent feature greatly reduces memory usage with minimal loss of track detail. You may want to experiment with this feature to find out if it suits your requirements.  
DIP switch 1 has higher priority than this switch. Therefore if DIP switch 1 is ON, speed must be higher than 3 knots before data will be saved.

### **DIP Switch 3: Timed Save**

Switch ON to log pre-set intervals. (Default 10 seconds) Saves memory.  
Switch OFF to log every valid RMC sentence.  
DIP switches 1 & 2 have higher priority than this switch. If either or both are ON, conditions for those switches must be met before timed save will occur. If conditions are met during the pre-set time, data will be saved at the end of the pre-set time.

### **DIP Switch 4: Normal/Date Save**

Switch ON to save position PLUS time and date. (Uses more memory)  
Switch OFF to save position data only. (Normal mode saves memory)  
Also see the Event buttons.

## ***DIP Switch Settings:***

Here are some recommended DIP switch settings for various activities:

	Switch 1 Speed	Switch 2 Auto	Switch 3 Timer	Switch 4 Timestamp	
Vehicle	ON	ON	OFF	OFF	
Walking	OFF	ON	ON	OFF	
Row Boat	OFF	ON	ON	OFF	
Boat >4 knots	ON	ON	OFF	OFF	
Mapping	OFF	OFF	OFF	ON	Best track detail
Long Trip	ON	ON	ON	OFF	Best Memory Life
<b>As Supplied</b>	<b>OFF</b>	<b>OFF</b>	<b>OFF</b>	<b>ON</b>	<b>Best track detail</b>

***Logger to PC Cable:***

The logger to PC cable is used to download data from the logger to your PC, and is basically a serial lap-link (null-modem) cable. Connect one end to the logger and the other end PC serial port or USB-serial adaptor.

***Map Datums NOTE:***

The NMEA position data used by the internal GPS+Glonass receiver is WGS84 datum. **WGS84 is recommended.**

## **Specifications:**

### ***Storage Modes/capacities:***

**DGPS-xx, SRVY-xx** Uses NMEA RMC sentence

NORMAL:	Store Latitude and Longitude only,	
	DGPS-XM4	540,000-point capacity
	SRVY-XM4	480,400-point capacity
TIMESTAMP:	Store Latitude, Longitude, Time (UTC), Date	
	DGPS-XM4	393,000-point capacity
	SRVY-XM4	360,300-point capacity

When memory is FULL, new data will not be stored: existing data will be protected.

### ***Indicator:***

High efficiency LED flashes when data is received.

### ***Electrical:***

External Voltage:	10-32V DC.
Supply Current:	GPS Active 25mA Avg Standby 50uA Avg
Main Battery:	9V Alkaline type MN1604, PC1604, 522, 6LR61 or equivalent. Some li-ion '9V' types are also suitable.
Battery Life:	Approx. 20 hours GPS operation
Memory Backup:	Nonvolatile Memory, 10-years with no power.

### ***Interface:***

9 pin male D connector for Data/Power.

- Pin 2: Receive Data (From PC)
- Pin 3: Transmit Data (To PC)
- Pin 5: Common Ground
- Pin 9: External Power Input

RS-232 serial data.

Compatible with typical PC COM ports and USB to RS232 adapters.

### ***Cables:***

12V Power cable, for in-vehicle operation, 1m length.

DB9 to DB9 laplink cable, for connection to PC for downloading data. 1.5m length.

### ***Physical:***

Dimensions:	66 x 140 x 28 millimetres
Weight:	200 grams including battery
Colour:	Black
Case Material:	ABS

## Stored Data:

Data is stored and downloaded in a simple Comma Separated Variable (csv) format. The Datalogger Download software can convert this data into several commonly used formats or the csv data can be loaded directly into a text editor for customising.

Logging mode is controlled by DIP switch 4.

### **Normal: DIP switch 4 OFF**

CR/LF

A(V)(a)(v),ddmm.mmm,N(S),dddmm.mmm,E(W) CR/LF

A(V)(a)(v),ddmm.mmm,N(S),dddmm.mmm,E(W) CR/LF

EOT

header, latitude, longitude

### **Date & Time: DIP switch 4 ON**

CR/LF

A(V)(a)(v),ddmm.mmm,N(S),dddmm.mmm,E(W),hhmmss,ddmmyy,,,,,e1,e2,e3,e4,e5 CR/LF

A(V)(a)(v),ddmm.mmm,N(S),dddmm.mmm,E(W),hhmmss,ddmmyy,,,,,e1,e2,e3,e4,e5 CR/LF

EOT

header, latitude, longitude, time(UTC),date,,,,,event1, event2,event3, event4, event5

This Datalogger supports five separate event buttons on the front panel. Each button has a unique identifier field in the output data as shown above.

'0' field indicates an INACTIVE event button

'1' field indicates an ACTIVE event button

The line header indicates a button press:

Uppercase 'A' or 'V' indicates that no buttons are pressed.

Lowercase 'a' or 'v' indicates that one or more buttons are pressed.

Individual buttons operate on a 'one-shot' algorithm. That is, if a button is pressed and held, a '1' will appear for that button in only the first line of data following the button press. The button must be released and then re-pressed to store another '1'. This is essential for event counting purposes.

In addition to the one-shot function above, a lowercase 'a' will appear in the line headers for the *duration* of a button press. In this way, event *duration* can also be evaluated.

Example below: button #3 pressed and held for four seconds.

A,3000.300,S,15000.300,E,210758,230102,,,,,0,0,0,0,0

a,3000.400,S,15000.400,E,210759,230102,,,,,0,0,1,0,0

a,3000.500,S,15000.500,E,210801,230102,,,,,0,0,0,0,0

a,3000.600,S,15000.600,E,210802,230102,,,,,0,0,0,0,0

a,3000.700,S,15000.700,E,210804,230102,,,,,0,0,0,0,0

A,3000.800,S,15000.800,E,210805,230102,,,,,0,0,0,0,0

A,3000.900,S,15000.900,E,210807,230102,,,,,0,0,0,0,0

The Datalogger incorporates memory saving features such as selectable save interval and speed masking. Pressing any event button will over-ride the memory saving features and save a point instantly.

header, latitude, longitude, time(UTC),date, reserved, reserved, altitude

### **Notes:**

A=Valid data sentence, GPS OK

a=Valid data sentence, GPS OK, Event button pressed.

V=First valid sentence after 1 or more invalid sentences. Indicate track gaps.

v=As Above. Event button pressed.

(m) in brackets = Data output from 'SRVY' models 1/10000 arcminute

Send ESC to cancel download

Press Event button to cancel download

Timecode and Standard data may be sent in the same download.

***Warranty:***

This product is warranted to be free from defects in materials and workmanship for 90 days from the date of purchase. The manufacturer will, at its sole option, repair or replace any components that fail under normal usage during this period. The Customer is, however, responsible for any transportation costs. This warranty does not cover failures due to abuse, misuse, accident, tampering or unauthorised alteration or repairs.

In no event shall the manufacturer be liable for any direct, indirect or consequential damages, whether resulting from the use, misuse, or inability to use this product, or from defects in the product.

***FCC Statement:***

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

***Notes:***

Due to ongoing product development and improvement, this user manual and specification is subject to change without notice.

***Supplied By:***