



# EW microRecorder Instructions

Hardware V5 Firmware V6.74

Unit comprises-  
microRecorder  
Antenna  
USB download/charging lead  
EW microConnector

## **Introduction**

The EW microRecorder logs gps track and pressure trace in a secure .IGC file. These files can be downloaded over USB using Windows Explorer. The file contains an encoded digital signature. This means that any subsequent change made to the file can be detected. Hence files produced by the microRecorder can be checked to ensure that file is unchanged. The software to carry out this task is in the public domain and can be downloaded from our website [www.ewavionics.com](http://www.ewavionics.com)  
The re-chargeable batteries provide up to 100 hours of use. (Dependant on update rate). Charging is by USB, or via a separate charger.

## **Installation**

The microRecorder should be installed away from direct sunlight to prevent high temperatures inside the microRecorder. If the temperature exceeds 85 deg C the microRecorder will stop functioning until the temperature has fallen to 70 deg C, and the microRecorder may not switch off until the temperature has fallen further. Velcro tape is ideal for the purpose of mounting.

The antenna should be placed in clear view of the sky, on top of the coaming in front of the instrument panel is ideal. If the signal is attenuated the microRecorder will not go into power saving and the battery life will be greatly reduced. . It is important to use an EW antenna, fitted with a ferrite filter close to the microRecorder to prevent the glider radio from interfering with the microRecorder operation. Great care should be used in attaching the antenna. If this is expected to be carried out regularly, we would recommend the use of the BNC adaptor and a BNC plug on the antenna lead. (See [www.ewavionics.com](http://www.ewavionics.com))

On external power the microRecorder will supply 5 volts to drive a PDA.

The microRecorder comes with a RJ45 plug with a length of 8 core cable to enable the user to connect to the various functions a ferrite filter must always be used close to the microRecorder.

The RJ45 lead has the following pin designations-

Pin 1 External power in 9-15 Volts (White/Orange).

Pin 2 5 volts out max 1 amp, if externally powered, this can be used to drive a PDA (Orange)

Pin 5 Pilot Event, momentary earthing gives update rate of 1 sec,  
for 30 sec. (White/Blue)

Pin 6 NMEA messages are- GPGSA, GPRMC, GPVTG, PGRMZ at a default rate of 9600 baud  
see EW-User.txt. (Green),

Pin 7 Reset pin, connecting momentarily to earth will switch the microRecorder off.  
(White/Brown)

Pin 8 Earth (Brown).

### **Battery Operation**

This is not recommended for update rates of less than 5 secs as the battery life will be considerably reduced.

To start, press the switch until the red power LED lights

The microRecorder is turned off by pressing the switch twice within 1 second, or waiting for the auto off criteria to be met. (See **Settings- Auto off criteria**). If running on the internal battery it is suggested that you either disable the Auto Off or have a time longer than the glider might be stationary on the launch point. Otherwise there is a danger of the microRecorder switching off before takeoff

### **External power Operation**

The microRecorder can be used with an external power supply, 9-15 volts. When the external power is connected the microRecorder will switch on automatically, and will remain on whilst external power is maintained. To switch off; disconnect the external power and press switch twice, or disconnect power and wait for the Auto off criteria to be met. (see **Settings Auto off criteria**). This is the recommended mode of operation, as there is no possibility of forgetting to switch the microRecorder on.

## Status LEDs

On battery operation; for 30 secs after STARTUP, the red LED shows battery status-

4 or continuous Flashes indicate	80-100 % charge.
3 Flashes indicate	50-80 % charge
2 Flashes indicate	25-50 % charge.
1 Flash indicates	0-25 % charge.

The status can be repeated at any time by pressing the switch.

The green LED is constant whilst searching for satellites. A flashing green LED indicates a GPS fix. After a few minutes of operation the flashing period should drop from 1 second to the update rate. If this does not happen it indicates that the GPS reception is weak and the microRecorder has not entered power saving.

***Check that the microRecorder has a fix before each flight.*** If for some reason the microRecorder does not have a fix, it will still act as a barograph and record the pressure.

The microRecorder will not record whilst connected to the USB.

## Downloading Files

On connecting the microRecorder to the USB, it will automatically be recognised as a removable drive named 'EW\_IGC LOGS', (On Windows2000 or later). Files can be opened or copied from the microRecorder to your computer. Files can only be deleted using the EW-User.txt.

The oldest file will automatically be deleted by the microRecorder when the memory is full. At a 10 second update 300 hours of flying may be recorded. It is not possible to delete individual files, but all files, (except the EW-User.txt) can be deleted see EW-User.txt.

Memory is maintained independently from the batteries.

## Re-charging batteries-

The microRecorder may be charged either using an EW microCharger or by connecting to the USB on your computer.

In either case the microRecorder should be switched off and not connected to an antenna. The computer must be running and not be in a sleep mode. Ensure that the red LED remains on, indicating charging. It can take up to 12 hours to fully charge the batteries. After even a brief charge, the battery status LED will indicate an '*optimistic*' charge state until the unit has run for a considerable time.

Batteries should not be re-charged if the unit is below 0 deg C.

The batteries do self discharge over a period of time and should be re-charged every 3 months, if this is not carried out the life of the internal lithium battery which maintains the security keys, will be reduced.

To minimise the drain on the glider battery, charging with the antenna connected will only partly re-charge the microRecorder battery

## SD Card Version

For units fitted with a SD card socket, ensure the card is fitted before the unit is started. If there is an EWUSER.txt on the SD card, it will be used when the microRecorder is started, otherwise the version stored in the unit will be used. A serial upload to the microRecorder will put a copy of the EWUSER.txt on the SD card

When the unit is switched off either all the .igc files, or the last file is copied from the microRecorder memory to the flash card, depending on the option set in EWUSER.txt.

## FAI Approval-

The microRecorder is ratified for all flights including World records.

Any attempt to open the microRecorder will invalidate the file security and delete the security algorithms. The EW-User.txt will show the unit is in a compromised state.

## Settings

The memory contains a file called EW-user.txt. This may be opened in a standard text editor such as notepad. Only changes made to SETTINGS, USER DETAILS and DECLARATIONS are accepted. To save your changes, save the file back to the microRecorder.

The following parameters ranges are accepted: -

*Update rate:* 1-10-secs.

*Valid Baud rates:* 4800, 9600(default), and only if on 1 sec update (19200, 38400)

*Auto off Time:* 5 - 180 mins

*Auto off Speed:* 5 – 50 kph

*Auto off Height:* 0 - 500m

**Auto Off Criteria-** If during the *Auto off* time period neither the speed nor height change exceeds the *Auto off Speed* or *Auto off Height* values then the microRecorder will switch off automatically, (providing it is not connected to external power). To disable *Auto Off*, set the *Auto height* value to zero.

### Start Speed and Height

*Start Speed:* 0-50 kph

*Start Height change:* 0-50 m

Recording will start when either criteria is met, (with a buffer of the previous 30 readings). Setting either parameter to zero will start recording immediately, (not advisable if using EW microCharger as this will result in a large blank file). Once started, recording will continue until the microRecorder is switched off.

**microRecorder SD.** If the SD Flash unit is fitted, the option of synchronising just the last file, (type 'last') or all files (type 'All') is may be used

**Engine Noise;** To enable replace 'N' with the EW authorisation code, obtainable from graham@ewavionics.com FAI rules stop ENL measurements from being disabled, once enabled.

**Delete Files-**Typing 'Y' will delete all .IGC files. Both lights will flash simultaneously during this process.

**Pilot and glider** Any 32 alpha numerical characters including spaces.

**Declarations** Use the format shown. Default declarations will not appear in the IGC file.

It is important that only alpha numeric characters are included in the declaration, as other characters such as a comma will prevent the resultant .IGC file from being validated.