



FLARM DESCRIPTION AND USE

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FLARM (“**FL**ight+**a**l**ARM**”) is a device used to alert pilots to potential collisions between aircraft. FLARM obtains its position and altitude from an internal GPS and a barometric sensor and at the same time receives signals from other FLARM devices within range (usually no more than 3km). Flight track prediction algorithms define potential conflicts for up to 50 other aircraft and alert the pilot using visual (LED lights) and aural (sound) warnings.

The **See and Avoid** principles, involving the development and continuous use of **LOOKOUT and SCANNING** techniques by glider pilots is the primary means of COLLISION AVOIDANCE. The development of sound **Situational Awareness** by a pilot is another good aid to collision avoidance. **Situational Awareness** is built using all available information sources, including LOOKOUT, the radio and (where fitted), FLARM.

FLARM should not be relied upon as a primary means of COLLISION AVOIDANCE due to the fact that,

- a) Not all gliders are fitted with FLARM.
- b) Few powered aircraft are fitted with FLARM.
- c) FLARM may suffer interference, i.e., from Mobile Phones.
- d) FLARM units may fail (flat batteries, fault, not turned "ON", etc)

There is no substitute for a good LOOKOUT and SCANNING technique.

1. OPERATING THE FLARM.

It is important to understand the lights (LED's) in the FLARM display. When turned "ON", the unit proceeds through a start-up sequence,

- Every LED flashes **Green**
- The "Alarm" sounds briefly
- Every LED flashes **Red**

After this test sequence, the **Power** LED will continue to flash green, to indicate power is ON. Should this LED change to a flashing Red, it indicates the supply voltage is outside normal limits (high or low voltage).

The **GPS** LED will remain a steady **Red** until a GPS signal is received, when the LED will turn OFF. (If this LED remains illuminated, a GPS signal is not being received and position information cannot be transmitted).

The **Tx/Rx** LED will remain a steady **Red** until the FLARM unit begins transmitting its position data at which point it turns **Green**. Should this LED be steady **Green**, it indicates it is not receiving any other FLARM unit but is ready for operation.

There are two (2) other "sets" of LED's,

- a) A circle of 9 LEDs (including one in the centre). These indicate the approximate position of "conflicting" aircraft – left or right, in front or behind. The LED in the centre indicates conflict directly above or below.
- b) A vertical row of lights which indicate
 - above, > 200 metres.
 - same level, +/- 200 metres
 - below, > 200 metres.

2. INTERPRETING FLARM INDICATIONS

It is now obvious that the FLARM units LEDs are able to change colour (Red or Green).

The LED's will operate together with an audible alarm depending upon the forecast **time to impact** (TTI).

TTI (seconds)	Alarm Level	LED	Audible warning
More than 20	None	None	No
18-20	1	Steady Red	No
13-15	2	Steady Red	Yes
8-10	3	Flashing Red	Yes

The alarm level will persist as long as the alarm level is appropriate.

It is also possible to silence the audible alarm for a few minutes, i.e., when in a gaggle with other gliders, by operating the "Mode" switch on the FLARM unit face panel.

ALWAYS REMEMBER FLARM WILL NOT PROVIDE AN ALERT TO ALL OTHER AIRCRAFT – ONLY *LOOKOUT* CAN ACHIEVE THIS.

When SCANNING the field of view, include the FLARM unit in the scan - the earlier you are aware of another glider / aircraft, the earlier avoiding action may be initiated.

FLARM operation may be adversely impacted by other electronic apparatus, including mobile phones, consequently, pilots are advised to turn these OFF while flying.