

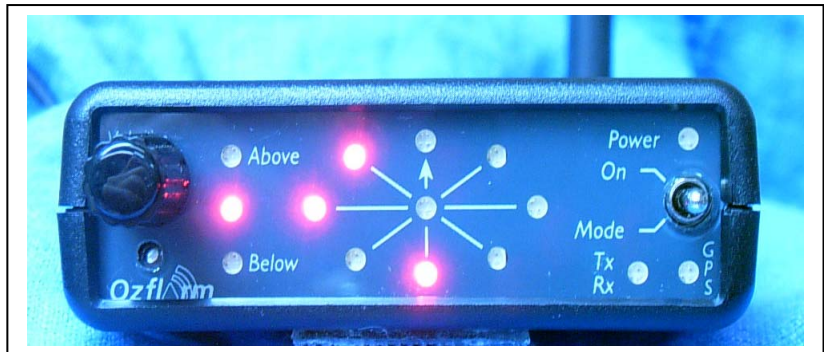


FLARM is an enhancement to the see and avoid principles but is also a real enhancement to pilots' situational awareness.

We must continue to use good lookout techniques and develop effective scanning habits.

FLARM will give pilots indication of aircraft in blind spots and in limited visibility conditions such as haze, smoke, and humid air within a distance of 1-3 kilometres.

It is important to be well aware that not all aircraft will be equipped with FLARM and it should never be used to give the pilot assurance that all aircraft will appear on the instrument. Like all instrumentation, it must be treated as if it will at some time fail, or not work as intended.



The Basics

- The unit works by talking to other gliders fitted with the unit.
- A green light indicates an aircraft in your vicinity between 1 and 3 kilometres.
- A red light indicates an aircraft in your vicinity within 1 kilometre
- A flashing red light and audible warning indicates a collision is imminent within 17 seconds.
- If two adjacent lights are illuminated, it is not necessarily indicating two gliders and is likely to be one aircraft in the relative direction between the two lights.
- The FLARM **will not** give you an indication of what action to take.
- Both DDSC tugs are fitted with FLARMS and they will alarm on tow.
- The FLARMS in DDSC aircraft are hardwired to the master and do not need to be turned on separately.

In flight, if you see a green light, this is the time to really have a good look for the aircraft if you have not already seen it. When the light becomes red, this is the first stage of the alarm phase (see Alarms below).

If you see an aircraft, quickly confirm it on the FLARM. Remember the other aircraft may not be equipped with FLARM.

Start-up Sequence

On turning on the master they go through a start-up sequence:

- Every LED will illuminate GREEN
- The BUZZER will sound and turn off again
- Every LED will illuminate RED
- Delay of about two seconds
- All LED's will turn OFF
- ON LED will flash about once a second
- Power On Sequence Complete

Scanning

Whatever scan pattern you use, include the FLARM in your scan.



You may start your scan in the middle of the field of view and work to the left and then back to the middle, then to the right and back to the middle. If so, when your eyes come back to the middle of your field of view and the instruments, include a quick glance of the FLARM unit.

If your scan pattern is from one side of the aircraft to the other, include a scan of the FLARM as you pass your eyes over the instruments and the middle part of your field of view.

At all times, use the FLARM as a secondary/supplementary tool to your normal lookout.

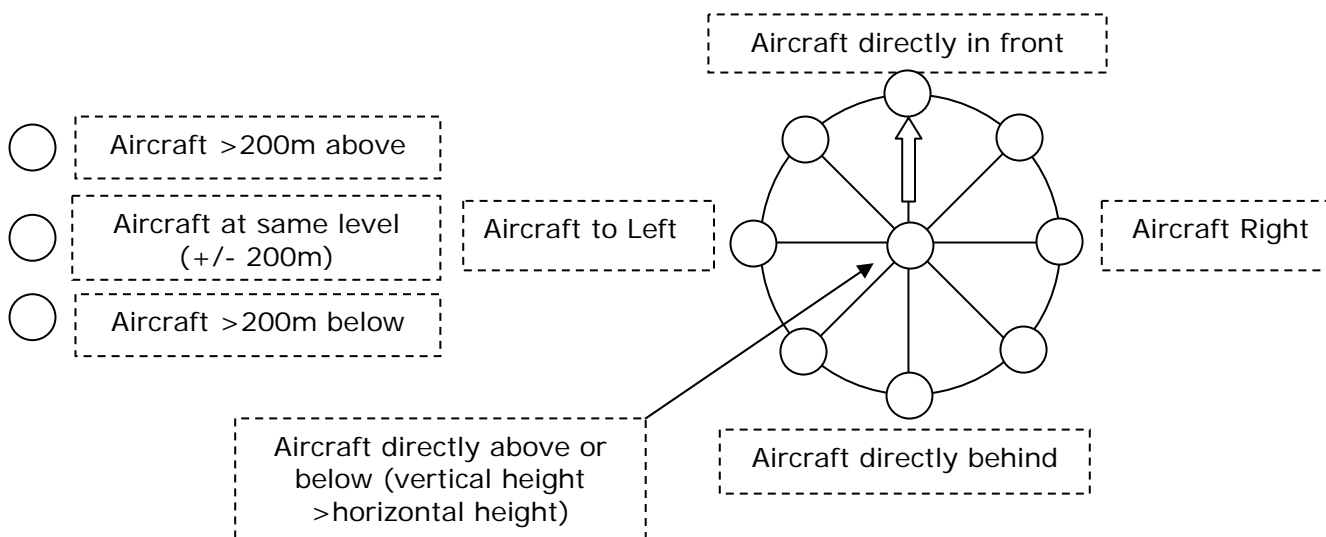
It will be of enormous benefit for identifying aircraft you cannot see because they are in your blindspot. eg behind, below.

FLARM is of limited benefit in a gaggle of gliders and will occasionally alarm as the unit calculates instantaneous risk of collision. Ie if two gliders momentarily get in positions where, if they continued their path, they would collide, the alarm sounds.

The FLARM unit will be red in the gaggle due to the proximity of the gliders. When gagging, you will need to have your head OUT of the glider; only use the FLARM in an occasional quick scan of the cockpit.

The FLARM unit will be of use in a thermal with other gliders and may identify a glider nearby and going to join your thermal.

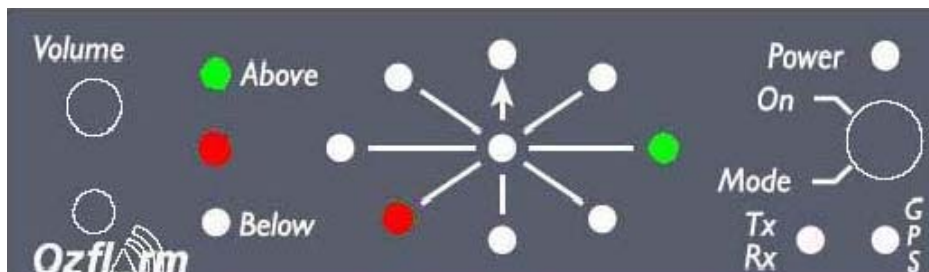
This diagram explains how the three dimensional view is displayed.





Alarms

When ALARM messages are displayed on the Compass Rose, they are ALWAYS RED. A number of Alarm Levels exist.



The Alarm will sound under the following conditions.

- Alarm Level increases
- Relative Heading changes by more than 30 degrees since the last report, even though the Alarm Level has not changed. [This is an indicator that a 2nd plane is in the area, and it is more dangerous at the moment]

Alarms and the three alarm levels are issued depending on the forecasted time to impact, not a geometrical distance. The first alarm level is usually issued 18 to 20 seconds, the second one 13 to 15 seconds and the third one 8 to 10 seconds prior to the predicted impact and last as long as the alarm level is appropriate. Depending on the impact forecast, alarm levels might even go down or disappear.

Time to Projected Impact	Alarm Level	Audible
> 20 Seconds	None	Green steady light
18-20 Seconds	1	Red steady light
13-15 Seconds	2	Audible; steady red light
8-10 Seconds	3	Audible; flashing red light

Alarm Acknowledge

The alarm is acknowledged by pressing the switch to the MODE position momentarily.

If you wish to silence the alarm for about five minutes this can be done by pressing the switch to the MODE position for about two to 3 seconds. All the LEDS will light up green for half a second to confirm activation

Operational Lights

ON/OFF	Flashing GREEN at 1 Hz	Input Voltage is within normal limits
	Flashing RED at 1 Hz	Input Voltage is OUTSIDE normal limits
	Off	The unit is turned OFF
GPS	Steady RED	GPS does not have LOCK (Unit will not transmit)
	OFF	GPS has lock if the unit is powered up
TX/RX	Steady RED	The unit is NOT transmitting its position, usually because it does not have GPS lock
	Steady GREEN	The unit is NOT receiving any other FLARM or OZFLARM units but is ready for use

Note: This document is to be used by DDSC as a training aid. Please refer to OzFLARM COLLISION-WARNING UNIT document by RF Developments for technical and further information.