

How to Use FLARM® in Gliding Competitions?

FLARM® is an efficient and affordable traffic avoidance system widely used in gliding and General Aviation.

It is designed as a situation awareness device to only *support* the pilot; under no circumstances should a pilot adopt different tactics or deviate from the normal principles of safe airmanship: you remain solely responsible for the safety, thus **look out and check for traffic!** Never rely on FLARM®. FLARM® does not give any guidance on avoiding action.

Prior to flying with FLARM®, we advise the following:

- get familiar by reading the operating manual
- install the latest firmware
- check your installation
- configure the device according to your requirements (use FlarmTool PC software or microSD-card)
- make sure "Power", "GPS", "Receive" and "Transmit" LEDs are lit prior to take-off.

FLARM® has built-in features relevant for glider competitions e.g. how it treats and shares incoming and outgoing data. While these features are covered in the FLARM® manuals, this flyer gives you an overview on what, why and how. These features are similar for all compatible designs from LX Navigation, EDIATec, triadis, RF-Developments and FLARM Technology.

Competition Mode

Traffic alerts are issued based on an algorithmic assessment of potentially dangerous traffic. These algorithms have been greatly improved in version 4 of the firmware. Nevertheless, as a competition pilot, you might want this assessment to result in less alerts, i.e. increase the level of danger above which an alert is issued. Consequently, if you check 'Competition Mode (less Alarms)' in the official FlarmTool PC software, then alert distances and alert times are reduced by approximately 2 seconds; this reduces nuisance alerts in high-density traffic but requires faster action.

Other things to do if FLARM® is too distracting:

- turn volume down / off (don't forget to turn it up again)
- double-click the button (suppresses alarms for 5 minutes, but other aircraft will still get alarms)

Stealth Mode

The data FLARM® receives from other is available at the serial port to external devices like PDA's or graphical displays which can thus display the nearby environment in detail. While this information is useful for you, you might not want your competitors to make use of this information, and others might have the similar asymmetrical preferences. With the stealth mode (named 'Privacy' before) in FLARM®, you can choose the trade-off acceptable for you between two modes:

- 'Stealth Mode' unchecked: you have *full* access to the data you receive from others with Stealth Mode disabled and, and others have *full* access to the data you send about yourself if they have Stealth Mode disabled, or
- 'Stealth Mode' checked: you have *limited* access to the data you receive from others and, and others have *limited* access to the data you send about yourself independent of their Stealth Mode setting.

Limited access to data means:

	Neither ahead nor very close nor alert	Ahead (±45° of your track, less than 2km away, within ±300m relative altitude)	Very close (within 100m range or ±50m relative altitude)	Alert
Identification	Not available	Available		Available
2d Position		Only available with noise		
Relative altitude		Not available		
Climb-rate				
Track				
Speed				
Turn-rate				

Stealth mode inherently reduces some of the benefits of situation awareness for yourself and surrounding aircraft. We do not recommend the use of Stealth mode, but it is better than turning FLARM® off for tactical reasons.

Note that the FLARM® flight log-file stores the information on stealth settings and changes so a competition authority could easily enforce the use (or non-use) if desirable. Changes to stealth mode are effective with a two minute delay, see the manual for details.

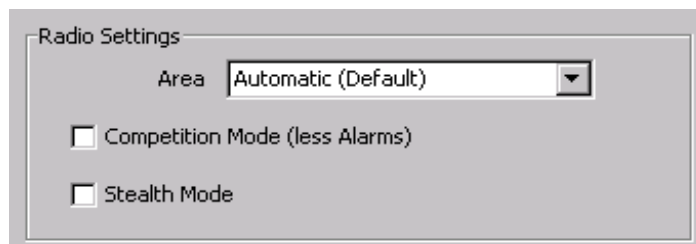
Radio Area (frequency setting)

The traffic avoidance functionality is based on devices permanently exchanging position and flight path data over a digital radio transmission with a typical (installation-dependent) range of over 3 to 7 km. FLARM® is initially configured to automatically choose the proper frequency for the transmission of data. If your FLARM® travelled between continents and you do not receive other aircraft and they cannot receive you, check the proper frequency settings according to the manual.

How to change settings

You can configure the above settings with the official FlarmTool PC software, or with a configuration file stored on the microSD-card (if supported by your hardware) while on the ground. In-flight a variety of 3rd-party PDA applications fully support these features. You cannot change the setting with the button on the FLARM® device itself.

Configuration by FlarmTool



Configuration by microSD-card

(if supported by your hardware)

If FLARM® detects a file named `flarmcfg.txt` on the microSD-card at power-up, it will be processed as configuration command. To configure the features listed in this flyer, it should at least contain the following lines:

- Enable or ... `$PFLAC, S, CFLAGS, 2`
- ...disable competition mode `$PFLAC, S, CFLAGS, 0`
- Enable or ... `$PFLAC, S, PRIV, 1`
- ... disable stealth mode `$PFLAC, S, PRIV, 0`