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# PowerFLARM Tips



Paul Remde

[www.cumulus-soaring.com](http://www.cumulus-soaring.com)

[paul@remde.us](mailto:paul@remde.us)

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## Safety Equipment Requires Care and Maintenance

- Install and configure according to product-specific instructions. Configure your assigned aircraft address, type, and privacy needs.
- Verify the effectiveness of the installation and configuration after flight using the online range analyzer, then improve if required. Repeat this annually.
- Update the unit's firmware and obstacle database (obstacle database not applicable in the USA) at least once every year to avoid firmware and/or obstacle database expiration.
- FLARM requires good GPS reception to operate. Install the GPS antenna with unobstructed view of the sky in all flight attitudes and at least 30 cm away from any other antenna.
- Radio range is key for early traffic warnings and depends on a good installation of radio antennas and cables. Radio signals require unobstructed line of sight; thus avoid conducting materials (metal, carbon) in any direction you want FLARM to be effective. Nearby antennas, conducting material, or cables may cause interference and/or reduce effectiveness. Keep your antennas at least 30 cm away from any other antenna, and **without direct contact to your canopy**. Do not use splitters for FLARM radio antennas.
- Do not shorten antenna cables, and do not bend them below specified minimal radius. Replace defective cables and antennas.
- Ensure that your FLARM display communicates correctly with the FLARM device.
- Familiarize yourself prior to the flight with your device and the technology in detail, to operate in a safe and efficient manner and know the limitations.

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## Configuration

The PowerFLARM **must** be configured before use! An incorrect setting may lead to false alarms, not only to you, but also to surrounding aircraft.

### Configuring LXNAV PowerMouse Units

LXNAV PowerMouse units can be configured using the flarm.com PowerFLARM Online Configuration Tool (as described in detail below) or using the LXNAV PowerFLARMConfig software program on a PC. It is available here: <https://gliding.lxnav.com/lxdownloads/software/>

### Configuring PowerFLARM Fusion Units

PowerFLARM Fusion units can be configured using the procedure below – the same as done with Core and Portable units. Fusion units can be configured (and updated) using a Wi-Fi or Bluetooth connection to most any smart phone using a web browser. The Fusion manual refers to this method as using the “FLARM Hub”. I

imagine that using the FLARM Hub is the easiest way for technically astute pilots. Using a USB flash drive with a configuration file (described below) may be easier for less technically savvy pilots. Using the FLARM Hub is described in the PowerFLARM Fusion User and Maintenance Manual (links below).

### Configuring PowerFLARM Core and PowerFLARM Portable Units

The best way to create a configuration file is to use the online configuration tools available here:

#### PowerFLARM Online Configuration Tool:

<https://flarm.com/support/tools-software/flarm-configuration-tool/>

or

<http://www.flarm.com> - Then click on “Support”, “Tools & Software”, “FLARM Configuration Tool”

#### Video

I have created a video which shows the process below in detail. It is available here:

[https://www.patreon.com/cumulussoaring/posts?filters\[tag\]=FLARM](https://www.patreon.com/cumulussoaring/posts?filters[tag]=FLARM)

I recommend the following settings:

- Select the “New device” button
- Select the Manufacturer from the drop-down list (PowerFLARM Core and Portable units are made by “FLARM Technology”)
- Select the Device (“PowerFLARM Core” for most customers)
- Select “Yes” under, “Does the device have an integrated 1090 (ADS-B and/or SSR) receiver?”
- Click the blue “START CONFIGURATION” button and scroll down.
- Check the “Show advanced settings” checkbox.
  - If you don’t see a “Show advanced settings” checkbox, try using a different browser – such as Google Chrome”
- ICAO 24-bit aircraft address, hexadecimal – This is the **six** character Mode-S address available from FAA or other national web site (see links below). It should look something like “A5F327”.  
**IMPORTANT NOTE: If you have a Mode S transponder installed, it is extremely important that you verify that the same Mode S ID is entered correctly into the transponder.** If this is not done, your FLARM system will beep often – warning you about your own transponder. Please refer to the transponder’s installation manual for instructions on how to enter the Mode S ID.
- Aircraft type: Select “Glider/motor glider”
- Data sentences on the RJ45 port: Select “Navigation and FLARM (Default)”
- Protocol version for the RJ45 port: Select the highest numbered version (currently 9)
- Baud rate of the RJ45 port: Select “19200 (Default)”
- Data sentences on the D-sub port: Select “GPS and FLARM (Default)”
- Protocol version for the D-sub port: Select the highest numbered version (currently 9)
- Baud rate of the D-sub port: Select “19200 (Default)”
- FLARM horizontal range: Select “Unlimited (Default)”  
It is important to set this to the maximum value so the connected FLARM display will display **all** traffic. That way you will be able to see gliders thermalling in the distance.
- FLARM vertical range: Select “6500 ft”  
It is important to set this to the maximum value so the connected FLARM display will display **all** traffic. That way you will be able to see gliders thermalling in the distance (along with their current climb rate) – even when they are well above and below you.

- Transponder type: Select from the list – Set it to match the current glider setup, not a future setup. If you have a Mode S transponder with ADS-B OUT, select Mode S.
- Use barometric altitude from Mode-S transponder?
  - Select “Yes (Default) **only** if you have a Mode-S transponder installed.
  - Select “No” if you have no transponder or a Mode-C transponder installed.
- ADS-B horizontal range:
  - Initial Setup/Testing: “Unlimited (Default)”, I set new units to “Unlimited” so customers can see just how well it works. I previously set new units to 3 nm and customers complained that the range was poor.
  - After initial testing: 3 nm (This is how I set mine.)
- ADS-B vertical range:
  - Initial Setup/Testing: “Unlimited (Default)” - to verify it is working well
  - After initial testing: 1500 ft (This is how I set mine.)
- ADS-B collision warnings: Select “On (Default)”
- Transponder horizontal range:
  - Initial Setup/Testing: “5 nm” (maximum), I set new units to the maximum range so customers can see just how well it works. I previously set new units to 3 nm and customers complained that the range was poor.
  - After initial testing: 3 nm (This is how I set mine.)
- Transponder vertical range:
  - Initial Setup/Testing: “Unlimited” - to verify it is working well
  - After initial testing: “1500 ft” (This is how I set mine.)
- Mode-C target processing: “On” (There are a lot of aircraft in the USA with Mode-C or Mode-S transponders without ADS-B Out.)
- Mode-C filtering method: “Aggressive (Default)”
- 1090 antenna calibration value: 30
- Beep on transponder warnings: “On (Default)”
- Transponder targets as PFLAU on RJ45: “Off” (not necessary with current popular products)
- Transponder targets as PFLAU on D-sub: “Off (Default)” (not necessary with current popular products)
- Rebroadcasting Services (US Only)
  - If you have a Fusion or Core or Portable with the ADS-R option enabled (standard on Fusion): “ADS-R and TIS-B (default)”
  - If you have a Core or Portable without the optional ADS-R functionality enabled, or an LXNAV PowerMouse: “None”
- Audio out (Note: Nothing is checked by default on the web site. If you don’t check something, you’ll get an error when you try to use the blue “CREATE CONFIG FILE” at the bottom of the page.)
  - “**Off**” for 99.99% of all PowerFLARM users.
  - “On” – Note: This is only for customers who purchased and enabled the optional “Audio Out” functionality – which makes it possible to have beeps in an aviation headset. **This option is no longer available.**
- Audio volume (%): Set to “100” – Note: This option does not matter for 99.99% of all PowerFLARM users. It is only for customers who purchased and enabled the optional “Audio Out” functionality – which makes it possible to have beeps in an aviation headset. **This option is no longer available.**
- Logging interval (seconds): 1
- Remove all IGC files?:
  - “No (Default) “- Recommended for most users
  - “Yes” – If you want to erase all the IGC files stored in the PowerFLARM Core. You may want to do this every winter.

- Remove obstacle database?
  - “No (Default) “- Recommended for most users
  - “Yes” – If you want to erase an obstacle database in the PowerFLARM Core. We don’t currently have an obstacle database for the USA – so it should not be necessary to delete one.
- Pilot name: enter the pilot name – This will be logged in the header of the flight log file.
- Co-pilot name: enter the co-pilot name - This will be logged in the header of the flight log file.
- Glider ID: N# in the USA, C# in Canada, etc. - This will be logged in the header of the flight log file.
- Glider Type: Enter the glider model – such as “DG-1000S” - This will be logged in the header of the flight log file.
- Competition class of glider: Enter the class – such as “15m” or “Std” or “Open”, etc. - This will be logged in the header of the flight log file.
- Competition ID: This is the Contest Number on the tail of the glider. This will be logged in the header of the flight log file.
- Stealth mode: “Disable (Default)” – It is my strong opinion that using Stealth mode reduces safety and is not necessary because all pilots have the same advantage of being able to see each other using FLARM.
- No-Track mode: “Disable (Default)” – Please do **not** set this to “Enable”. Doing so would make it more difficult to find you in an emergency.
- Reset CARP: This is used to reset the Continuous Analyzer of Radio Performance data. CARP is a somewhat new process of recording FLARM range data into the flight recording data. This is discussed in detail in the PowerFLARM Core, Portable, and Fusion manuals (links below).
  - “No (Default)”: Recommended for most users - When in doubt – select “No” for this option.
  - “Yes”: Recommended after any hardware change – such as a new FLARM antenna. However, it would not be ideal to enable this feature and reset the CARP every time the USB flash drive with this configuration file is used. The best procedure is to reset CARP once, then change the configuration file to NOT reset CARP again.
- After verifying that you have entered the data above, click on the blue “CREATE CONFIG FILE” button.
- If you have correctly completed the data entry above, a dialog will appear allowing you to select where you want the file to be saved on your computer. The most common reason for errors is neglecting to set “Audio out” to “Off”.
- I recommend saving the “FLARMCFG.TXT file directly to the USB flash drive (PowerFLARM Core or Portable or Fusion or PowerMouse) or microSD card (PowerFLARM Portable) that you will be using to load it into the PowerFLARM.

Please refer to the PowerFLARM Manual for instructions for loading the configuration file into the PowerFLARM unit.

- For PowerFLARM Core and Fusion units – Connect the USB flash drive (with the FLARMCFG.TXT file created above) into the PowerFLARM Core’s USB port and power-up the Core. Wait 2 minutes. It is fine to have both the configuration file and the latest PowerFLARM firmware on the USB flash drive at the same time. Both files will load – one after the other. However, it is important that you have only a single firmware file and a single configuration file on the USB flash drive. Delete all other files.

Note: Some recent FLARM firmware versions seem to require at least 2 update power-ups – so I recommend powering-up with the USB flash drive connected, then waiting 2 minutes, then powering down and up again and waiting 2 more minutes. The FLARM will write diagnostic files to the USB flash drive automatically which can be used to confirm that the configuration was loaded successfully.

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## Manuals

The latest PowerFLARM manuals are available here:

<https://flarm.com/support/manuals-documents/>

or, less directly:

<http://www.flarm.com> - Then click on "Support", "Manuals & Documents"

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## Firmware Upgrades

The latest PowerFLARM Firmware Updates are available here:

<https://flarm.com/support/firmware-updates/>

or, less directly:

<http://www.flarm.com> - Then click on "Support", "Firmware Updates"

Download the **PowerFLARM** firmware file (not the "Classic" FLARM firmware) using a PC. Note that there are different firmware files for the Fusion and Core units.

Do **not** use a Mac to download the PowerFLARM firmware file. The Mac operating system saves some hidden files which seem to interfere with the update process.

To load the PowerFLARM firmware file into a PowerFLARM Core, save the file to a USB flash drive with 16 GB or **smaller** capacity. Then power-down the Core, plug-in the USB flash drive, and power-up the Core. Wait 2 minutes.

It is fine to have a PowerFLARM configuration file on the USB flash drive at the same time, but it is not OK to have other firmware files.

To load the PowerFLARM firmware into a PowerFLARM Portable, save the file to a microUSB memory card (using a PC) and insert the microSD memory card into the Portable. Press the large knob in for a second or 2 to access the menus. Select, "Info", "Update".

After the firmware update, I recommend creating and loading a new configuration file as documented below. It is not absolutely necessary, but features have been added to the PowerFLARM products over time and they won't be set ideally if the configuration file was generated before the features were created.

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## Resources for Finding Your Sailplane's Mode S Address - to be entered in the PowerFLARM

USA: <https://registry.faa.gov/aircraftinquiry/>

Canada: <http://www.wapps.tc.gc.ca/saf-sec-sur/2/ccarcs-riacc/RchSimp.aspx>

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## FLARM Range Analysis Tool

This is a great resource. It allows you to upload a flight log that was recorded with any FLARM unit. The tool creates a top-view range analysis plot showing the maximum distance to FLARM targets in all directions. The flight log contains data location of other FLARM units received during the flight. Flights to be analyzed must

have at least a duration of 30 minutes and contact with 5+ other FLARM equipped aircraft during the flight. Only FLARM traffic data is analyzed. ADS-B and Mode C/S transponder traffic is not analyzed.

<https://flarm.com/support/tools-software/flarm-range-analyzer/>

or, less directly:

<http://www.flarm.com> - Then click on “Support”, “Tools & Software”, “FLARM Range Analyzer”

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## USB Flash Drive Compatibility

I get phone calls very often from customers having a tough time transferring firmware or configuration files from a USB flash drive to a PowerFLARM Core or transferring flight logs from the Core to the USB flash drive.

The PowerFLARM Core manual states that any USB flash drive in version USB 1.0 or USB 2.0 (not USB 3.0) and with up to 32 GB of memory should work fine. They also recommend that the USB flash drive be formatted in the FAT file system.

In my testing, a **Sony Micro Vault Click 4 GB USB 2.0 flash drive (Model #: USM4GL)**, formatted for either FAT or FAT32 works great with all soaring instruments. I like this model because it has a built-in LED which indicates when data transfer is occurring. You may be able to find these at Amazon.com by searching for “USM4GL.”

It is easy to use Windows to format a USB flash. Connect it to a PC and go to Windows Explorer (My Computer) and right-click on the drive and select “Format” from the pop-up menu. Set the File System to “FAT” and the Allocation Unit Size to “Default allocation size” and uncheck the “Quick Format” check box (may not be necessary). Then click the “Start” button.

Note: If you find a USB flash drive that is able to get files off of the PowerFLARM Core, it is very likely that it will also work to transfer files to the PowerFLARM Core.

To transfer data between the USB flash drive and the PowerFLARM Core:

- Turn-off the PowerFLARM Core
- Plug the USB flash drive into the USB port on the PowerFLARM Core or into a USB extension cable that is connected to the Core.
- Power-up the PowerFLARM Core
- Wait 3 minutes. When the LED on the PowerFLARM
- Remove the USB flash drive

Never plug anything into the PowerFLARM Core’s USB port other than a USB flash drive. I have received a few PowerFLARM Core units with damaged USB ports. I sometimes suspect that the customer had a USB extension port mounted in the instrument panel and plugged their phone USB charging cable into it - in an attempt to charge a phone. That would likely draw much more 5V current than the PowerFLARM Core’s USB port could provide.

Another common issue is files downloaded incorrectly which get the wrong file extension. Firmware files should have the “.fw” extension and the filename should look something like this: “powerflarm\_6\_07\_5a5905f.fw”. The part of the filename before the “.fw” isn’t important. The PowerFLARM will see the file even if the part of the filename before “.fw” has been changed. License upgrade files should have the “.lic” file extension. Windows does not display filename extensions by default. To enable the display of file extensions In Windows 10, in Windows File Explorer, select the “View” tab and then **check** the “File

name extensions” checkbox. In older versions of Windows, press and release the Alt key on the keyboard to show the menu, then go to Tools, View Tab, and **uncheck** “Hide extensions for known file types”.

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### **FlarmNet.org**

After you have configured your FLARM, I very highly recommend that you register your FLARM unit and glider at FlarmNet.org, and download and install the latest FlarmNet file into your FLARM traffic displays. FlarmNet is a great resource which makes it easy to identify your friends and competitors in flight. It is a database which connects FLARM unit ID numbers with the glider contest numbers. For example, when flying in a competition or soaring get-together, if you have registered your FLARM unit at FlarmNet.org and your friends and competitors are using the latest FlarmNet file, they will see your contest number on their FLARM displays and flight computers, instead of your FLARM’s internal ID number. Likewise, if you download and install the latest FlarmNet file into your FLARM traffic display units (LXNAV FlarmView, Naviter Oudie, LXNAV LX9000, etc.), and your friends have registered at FlarmNet.org, you will see their contest number rather than their FLARM’s ID number. Note: The FlarmNet file is not loaded into the PowerFLARM Core, it is loaded into the FLARM traffic display.

<http://www.flarmnet.org>

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### **Antennas**

Be very careful to you look at the antenna connectors very closely to ensure that you connect them to the correct ports on the FLARM unit. The longer antenna is the FLARM antenna. It should be connected to the FLARM A port. The shorter antenna is the ADS-B antenna and should be connected to the ADS-B port. **The FLARM and ADS-B antennas must be mounted oriented vertically.**

### **PowerFLARM Application Note RF Antennas**

This is a great resource with tips for getting maximum range with your PowerFLARM antennas.

<https://flarm.com/wp-content/uploads/man/FTD-041-Application-Note-FLARM-Antenna-Installation.pdf>

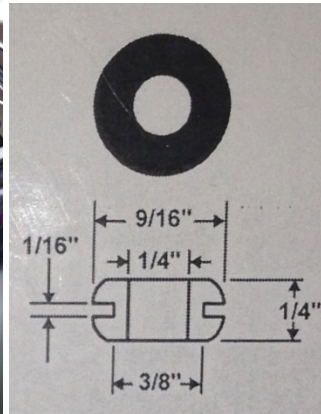
or

<https://www.cumulus-soaring.com/store/flarm> - Then click on the link near the top of the page.

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## FLARM Antenna Grommet Mount Solution

A customer suggested this approach to mounting the PowerFLARM Core ADS-B and FLARM dipole antennas. It is clever, simple and makes for a clean looking installation. 3 or 4 simple rubber grommets are used. I found the grommets at a local hardware store. The grommets have a hole diameter of  $\frac{1}{4}$ " and fit in a  $\frac{3}{8}$ " hole. They seem to hold the antennas quite securely. If I find that they are not tight enough I'll put some shrink tubing on the end of the antenna to make the fit more snug. The installation was very easy. The only slightly tough part was getting the 2 SMA connectors through the center grommet (before it was installed). After the first SMA connector was pushed through the grommet its cable made it more difficult to get the 2<sup>nd</sup> SMA connector through. Another approach would be to use a total of 4 grommets so each cable would go through its own grommet. The PowerFLARM Core's GPS antenna is mounted just under the instrument panel cover – on top of a variometer.



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## PowerFLARM Logger IGC Approval

The PowerFLARM has been **approved by the IGC for badge flights up to and including the three diamond badges**. It is not approved by the IGC for world records or national records. However, in **October, 2015, the SSA approved the use of products like the PowerFLARM for National and State Records** (see below).

### From the FLARM IGC Approval Document

(i-ii) IGC-approval Level. This is for badge flights up to and including the three Diamonds. This type of recorder can also be used in gliding competitions in which the organizers allow this level of IGC-approval. The Levels of IGC-approval are listed in Annex B to the Sporting Code for Gliding, para 1.1.3.3.

(Download full document here:

[http://www.cumulus-soaring.com/flarm/IGC-approval\\_powerFlarm-IGC\\_2013-2-28a.pdf](http://www.cumulus-soaring.com/flarm/IGC-approval_powerFlarm-IGC_2013-2-28a.pdf)

or here:

[https://www.fai.org/sites/default/files/documents/igc-approval\\_powerflarm-igc\\_2013-2-28a.pdf](https://www.fai.org/sites/default/files/documents/igc-approval_powerflarm-igc_2013-2-28a.pdf)

### From the IGC Sporting Code, Section 3, Annex B

1.1.3.3.3 IGC - approval for badge flights up to Diamonds . This approval level applies to Flight Recorders that may be used only for evidence for FAI/IGC Silver, Gold and Diamond badge flights, although for competition flights, see 1.1.3.3.6. This level may be used for recording systems that have significantly lower standards of security and other characteristics compared to those with higher levels of approval. For instance, this level includes systems that use a separate off-the-shelf GNSS unit (for



the design and security of which, IGC has no influence) connected to the Flight Recorder unit by cable. These assessments will be at the discretion of the IGC GFA Committee (GFAC). (AL1)

### US National & State Record Rules - Revised October 1, 2015 - Sections 6.2 and 6.3

[https://www.ssa.org/files/member/USN&StateRulesFinal\\_February%2018,%202019.pdf](https://www.ssa.org/files/member/USN&StateRulesFinal_February%2018,%202019.pdf)

or less directly, here: <http://www.ssa.org/BadgesAndRecords?show=blog&id=938>

(Only relevant parts included here)

**6.2. For National Records:** b. Documentation must be provided by a Flight Recorder IGC-approved at the "All Flights", "All Badges" or "**Up to Diamonds**" level (The PowerFLARM meets the "Up to Diamonds" level.)

**6.3. For State Records:** a. Documentation may be provided by any means acceptable for FAI Silver badge flights. (The PowerFLARM exceeds that level.)

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### IGC Enable

PowerFLARM units have an optional "IGC Enable" license which determines whether or not that particular PowerFLARM is enabled with IGC Approval for badge flights.

Early PowerFLARM units all had the "IGC Enable" set. Then for a few years the IGC Enable license was an extra cost option. All PowerFLARM units sold after February, 2016 have the IGC Enable License included by default.

If the IGC enable is not set, flight logs from the unit can be used for the Online Contest (OLC), but not for badges. If the IGC Enable is set, then the flight logs can be used for both OLC and IGC badge flights.

Below are some notes on how to determine whether the IGC enable has been set in a particular PowerFLARM.

#### "IGC Enable License" **not** enabled

- Not IGC Approved for badge flights
- OK for OLC (Online Contest) flights
- File still validates OK in the IGC Shell program
- FLARMDEV.CSV diagnostic file shows "LIC=AUD:0;ENL:0;AZN:0;**IGC:0**;RFB:0;TIS:0" (or similar)
- Flight log file header first line: "AXFLxxx" (where xxx is the unit's IGC serial number)
- Flight log file header contains: "HFFTYFRType:**PowerFLARM**"
- Flight log file header contains: "LFLA00103307LIC AUD:0;ENL:0;AZN:0;**IGC:0**;RFB:0;TIS:0" (or similar)

#### "IGC Enable License" enabled

- IGC Approved for badge flights up to and including the three Diamonds
- Not IGC approved for record flights
- Some U.S. National soaring contests require that the IGC Enable be set.
- FLARMDEV.CSV diagnostic file shows "LIC=AUD:0;ENL:0;AZN:0;**IGC:1**;RFB:0;TIS:0" (or similar)
- Flight log file header first line: "AFLAxxx" (where xxx is the unit's IGC serial number)
- Flight log file header contains: "HFFTYFRType:**PowerFLARM-IGC**"
- Flight log file header contains: "LFLA00103307LIC AUD:0;ENL:0;AZN:0;**IGC:1**;RFB:0;TIS:0" (or similar)

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## PowerFLARM Configuration File Deciphering Key

Customer sometimes send their PowerFLARM Configuration File to me to “verify it looks OK”. That is a tall order, because the data in the file is somewhat cryptic and decoding the settings requires a lot of page-flipping in the PowerFLARM Configuration Specification document. The edited PowerFLARM configuration file below includes many comment lines which explain each setting and the acceptable values. It is a nice quick-reference for the many settings in the file. I very highly recommend using the online FLARM Configuration Tool at [www.flarm.com](http://www.flarm.com) to create the configuration file for your PowerFLARM, but the data below may be handy for checking the settings in an existing configuration file.

```
#####
# PowerFLARM Configuration Key by Paul Remde of Cumulus Soaring, Inc.
#####
# This configuration file must be text only and reside in the top directory
# of the USB stick, SD card or FLARM Tool.
# This configuration file must be named FLARMCFG.TXT
# If you wish to change the settings, you can revisit the online
# configuration tool at any time: http://www.flarm.com/
#####
#
$PFLAC,S,DEF
# DEF: Reset all settings to factory default
#
$PFLAC,S,ID,A51D93
# ID: ICAO 6 character (base 16 / hex) Mode-S aircraft ID/Code.
# This parameter is very important for all aircraft, but especially for aircraft
# with Mode-S transponders.
# It is also very important to correctly enter your aircraft's Mode-S ID into your
# Mode-S transponder.
# If it is not correct, your FLARM could display your own glider's transponder as
# a traffic target.
# All aircraft have a unique government assigned Mode-S aircraft ID - even aircraft
# without a transponder.
# Find yours here:
#   USA: https://registry.faa.gov/aircraftinquiry/
#   Canada: http://wwwapps.tc.gc.ca/saf-sec-sur/2/ccarcs-riacc/RchSimp.aspx
#
$PFLAC,S,ACFT,1
# ACFT: Aircraft Type, 1=glider/motorglider,2=towplane, 3=helicopter,
# 4=skydiver, 5=skydiver drop plane, 6=hang glider, 7=paraglider,
# 8=aircraft with reciprocating engine(s), 9=aircraft with jet/turboprop engine(s)
#
$PFLAC,S,NMEAOUT2,91
# NMEAOUT2: PowerFLARM Core DB-9 Connector,
# 81 = Version 9 FLARM and GPS data (recommended)
#
$PFLAC,S,BAUD2,2
# BAUD2: PowerFLARM Core DB-9 Connector Baudrate,
# 0=4800, 1=9600, 2=19200 (recommended), 3=28800, 4=38400, 5=57600
#
$PFLAC,S,NMEAOUT1,91
# NMEAOUT2: PowerFLARM Core RJ45 Connector,
# 81 = Version 9 FLARM and GPS data (recommended)
#
$PFLAC,S,BAUD1,2
# BAUD1: PowerFLARM Core RJ45 Connector Baudrate,
# 0=4800, 1=9600, 2=19200 (recommended), 3=28800, 4=38400, 5=57600
#
$PFLAC,S,RANGE,65535
# RANGE: FLARM horizontal range in meters,
```

```

# Acceptable: 2000 to 65535 (unlimited, recommended)
# Traffic outside this range will not be forwarded to the FLARM display.
#
$PFLAC,S,VRANGE,2000
# VRANGE: FLARM vertical range in meters, Acceptable: 500 and 2000 (recommended)
#
$PFLAC,S,XPDR,2
# XPDR: Type of transponder in your aircraft,
# 0=No transponder, 1=Mode-C transponder, 2=Mode-S transponder
# This parameter is very important.
# If it is not correct, your FLARM could display your own glider's
# transponder as a traffic target.
#
$PFLAC,S,MODESALT,1
# MODESALT: If enabled (1), the altitude from the aircraft's Mode-S transponder
# is used as a reference for vertical separation from traffic.
# 0=Disabled (recommended for aircraft with no transponder, or a Mode-C transponder)
# 1=Enabled (recommended for aircraft with a Mode-S transponder)
# This parameter is very important for aircraft with Mode-S transponders.
# If it is not correct, your FLARM could display your own glider's transponder
# as a traffic target.
#
$PFLAC,S,ADSBRANGE,65535
# ADSBRANGE: ADS-B horizontal range in meters, Acceptable: 2000 to 65535 (unlimited)
# 65535 (unlimited) recommended for initial testing, 2000 recommended for contests.
# ADS-B traffic outside this range will not be forwarded to the FLARM display.
#
$PFLAC,S,ADSBVRANGE,65535
# ADSBVRANGE: ADS-B vertical range in meters, Acceptable: 100 to 65535 (unlimited)
# 65535 (unlimited) recommended for initial testing, 1000 recommended for contests.
#
$PFLAC,S,ADSBWARNINGS,1
# Disables/Enables warnings if ADS-B Targets cross certain danger thresholds.
# 0=Disabled, 1=Enabled (recommended)
#
$PFLAC,S,PCASRANGE,9260
# PCASRANGE: PCAS (transponder, non-directional) horizontal range in meters,
# Acceptable: 0 (OFF) to 9260
# 9260 recommended for initial testing, 1000 recommended for contests
#
$PFLAC,S,PCASVRANGE,65535
# PCASVRANGE: PCAS (transponder, non-directional) vertical range in meters,
# Acceptable: 100 to 65535 (unlimited)
# 65535 recommended for initial testing, 500 recommended for contests
#
$PFLAC,S,MODEC,1
# MODEC: Enables or disables processing of Mode-C transponder targets.
# 0=disabled, 1=Enabled
# In the U.S. we have a lot of small aircraft with Mode C transponders.
# I highly recommend enabled.
#
$PFLAC,S,OWNMODEC,0
# OWNMODEC: Selects method for suppressing the Mode-C transponder in your aircraft.
# 0=Aggressive (recommended, May suppress other Mode-C targets at same altitude.),
# 1=Less aggressive (May cause warnings from your own aircraft's Mode-C transponder.)
#
$PFLAC,S,PCASCALIBRATION,30
# PCASCALIBRATION: Sets PCAS antenna calibration value.
# A higher value makes PCAS targets appear closer,
# in other words, it compensates for low antenna gain and/or a long cable.
# Acceptable: 0 to 100, Default (recommended): 30
#
$PFLAC,S,PCASBEEP,1

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# PCASBEEP: Disables/Enables alarms and buzzer if non-directional (Mode-C/S)
# targets cross certain danger thresholds.
# Applies to the PowerFLARM Portable internal buzzer, and the Audio Output on
# PowerFLARM Portable, and PowerFLARM Core
# to aviation headsets.
# This feature only works if the Audio Output Enable (extra cost option) has been set
# and the audio output wires are connected to an aviation headset.
# 0=Disabled, 1=Enabled (recommended)
#
$PFLAC,S,PCASPFLAU1,0
# PCASPFLAU1: Output non-directional transponder traffic warnings as directional
# traffic on the RJ45 port.
# Useful only for old FLARM displays.
# 0=Disabled (recommended),
# 1=Enabled (recommended only for devices like the Aboba.ch Swiss-bat displays.)
#
$PFLAC,S,PCASPFLAU2,0
# PCASPFLAU2: Output non-directional transponder traffic warnings as directional
# traffic on DB-9 port.
# Useful only for old FLARM displays.
# 0=Disabled (recommended),
# 1=Enabled (recommended only for devices like the Aboba.ch Swiss-bat displays.)
#
$PFLAC,S,REBROADCASTSERVICES,255
# Enable/Disable display of rebroadcast ADS-B UAT and TIS-B (transponder) traffic.
# This only applies to PowerFLARM Fusion units and PowerFLARM Core and Portable
# units with the optional "ADS-R Enable" set.
# 0=none
# 1=ADS-R only
# 2=TIS-B only
# 255=ADS-R and TIS-B (default)
#
$PFLAC,S,AUDIOOUT,0
# AUDIOOUT: Enables audio output on pins for beeps in aviation headsets - useful in
# motorgliders.
# 0=Disabled (recommended for most sailplanes), 1=Enable (recommended for motorgliders)
# This feature only works if the Audio Output Enable (extra cost option) has been set
# and the audio output wires are connected to an aviation headset.
#
$PFLAC,S,AUDIOVOLUME,100
# AUDIOVOLUME: Sets the volume percentage (0=quiet,100=loud) for the optional
# Audio Out connection.
# This feature only works if the Audio Output Enable (extra cost option) has been set
# and the audio output wires are connected to an aviation headset.
# This features only works if the AUDIOOUT has been set to 1.
#
$PFLAC,S,LOGINT,1
# LOGINT: Logging interval in seconds for built-in GPS flight recorder,
# Acceptable: 1 (recommended) to 8
#
$PFLAC,S,PILOT,Paul Remde
# PILOT: Pilot name, used in the flight log header, maximum of 48 characters
#
$PFLAC,S,GLIDERID,N700PR
# GLIDERID: Glider ID (N# in the USA), used in the flight log header
#
$PFLAC,S,GLIDERTYPE,Binder EB29D
# GLIDERTYPE: Glider Type (make and model), used in the flight log header,
# maximum of 16 characters
#
$PFLAC,S,COMPCLASS,Open
# COMPCLASS: Competition Class, (Open, 15m, 18m, Std, etc.),
# used in the flight log header, maximum of 16 characters

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#
$PFLAC,S,COMPID,PR
# COMPID: Competition ID, "Contest ID" on tail of aircraft,
# used in the flight log header, maximum of 16 characters
#
$PFLAC,S,PRIV,0
# PRIV: Stealth Mode: Reduces safety by reducing provided information,
# See PowerFLARM manual and Configuration Specification
# 0=Normal Mode (highly recommended for safety), 1=Stealth Mode
#
$PFLAC,S,NOTRACK,0
# NOTRACK, Instructs third party receiving stations that (regardless of stealth mode
# setting) the received ID and position data must neither be stored nor made accessible
# in any time dimension (real-time, delayed, or archived) for any purpose.
# It is recommended NOT to enable this option!
# If enabled, it will impair logging service functionality and make Search and
# Rescue (SAR) impossible.
# 0=Option is Disabled (recommended, tracking is OK),
# 1=Option is enabled (tracking is not OK)
#
$PFLAN,S,RESET
# Reset CARP, This is used to reset the Continuous Analyzer of Radio Performance data.
# CARP is a somewhat new process of recording FLARM range data into the flight
# recording data. This is discussed in detail in the PowerFLARM Core, Portable,
# and Fusion manuals (links below).
# If this line is not present, the CARP will not be reset. Recommended for most users -
# When in doubt - select "No" for this option.
# If it is set to "RESET", then the CARP will be reset.
# Recommended after any hardware change - such as a new FLARM antenna.
# However, it would not be ideal to enable this feature and reset the CARP every
# time the USB flash drive with this configuration file is used.
# The best procedure is to reset CARP once, then change the configuration file
# (by deleting this line) to NOT reset CARP again.
```