Eggfinder LCD Assembly Release Notes

Board Version RevB5

• Header for Eggtimer Voice Module: An additional 3-pin right angle header has been added to accommodate the Eggtimer Voice Module.

• SMT Passives: The through-hole resistors and capacitors have been replaced with 1206-size surface mount parts. Many of our customers have commented that they are actually easier to assemble on the board than the through-hole parts.

Board Version RevB2

• Header for LCD-GPS Module.   An additional 3-pin right angle header has been added to accommodate the LCD-GPS Module.

• Capacitors.   One 0.1 uf capacitor has been removed from the board, as it was deemed to be unnecessary. Note that the assembly PICTURES have not been updated… they still show two of them, just ignore the "missing" one.

Board Version RevA1

• Hole Spacing Fixed.   One of the mounting holes was off by .025", in most cases any slop in drilling the holes in the case would cover it, but it wasn't right so we fixed it.

• Legends. We added legends for the serial connector, Reset, and Button to the bottom of the board, since it's likely that if you mount switches externally you will want to solder the wires to the bottom rather than the top.

Board Version RevA

• Initial Release of Eggfinder LCD

• Due to supply issues, we are using a different voltage regulator for the 5v supply other than the NCP1116ST50 that is specified in the documentation. As chip manufacturers are apt to do, the markings inscrutably have nothing to do with the model of the IC. Therefore, you can tell the 5V voltage regulator from the 3.3V voltage regulator because the markings DO NOT end in "33".

Software Release Notes for Eggfinder LCD

Release Notes Build 2.03Q

Bug Fixes

GPS Altitude Improvements

The GPS ASL altitude display on the Coordinate screen was not always refreshing, or it would refresh so late that it would be of little use. This issue turned out to be a problem with unit conversion in the library.   We made internal changes to properly display whatever GPS ASL altitude was received and perform unit conversion as necessary. Note that GPS ASL altitude is unlikely to be accurate during the ascent phase of your flight… it takes time to settle down after launch, so it's more likely to be useable after apogee on the way down.

Feet/Meters Voice Call-Out

Apogee voice call-out was not being converted to Meters, it now will be called out in Meters if you select Meters as the units in the Receiver Configuration screens.

Repeating "Feet" Voice Call-Out

Under some circumstances, the Voice Module was calling out the word "Feet" repeatedly. This was due to the receipt of bad altitude data, filtering has been added to ignore altitude data that is incomplete.

Enhancements

Device Enhancements/Changes

The Eggtimer Quasar has been added as a separate Device in the Receiver Configuration, and the Eggtimer TRS has been removed from the "default" devices (which are now the Eggfinder TX/Mini).   If you are using a Quasar or a TRS, be sure to select that device in the configuration screen in order to get the proper data displayed on the LCD screen.

Quasar AUX Channel Display

The Eggtimer Quasar's AUX channel status will now be displayed on the Coordinate screen after the Drogue/Main channel statuses.   Consistent with the Drogue and Main statuses, the AUX status is displayed as "A" if enabled, "a" if fired, and blank if the AUX channel is not enabled.

Release Notes Build 2.03G

Internal Changes

Architecture Changes

A number of internal changes have been made to decrease the size of the program flash memory and improve performance.

Release Notes Build 2.02R

Bug Fixes

Altitude Display

The Altitude display for the TX/Mini would sometimes be blank, this issue has been resolved.   Note that TX/Mini altitudes are GPS ASL altitudes, NOT the altitude of your rocket.

Release Notes Build 2.02Q

Enhancements

Eggtimer Voice Module Support

The Eggfinder LCD receiver now can be used with either the Eggtimer Telemetry or the GPS screens to speak out real-time data, dependent on which altimeter or GPS device you are using.   Details are in the Eggtimer Voice Module Assembly and User's Guide.

Release Notes Build 2.01c

Enhancements

Eggtimer Telemetry Module Support

The Eggfinder LCD receiver now can be used to display altimeter telemetry from an Eggtimer Quark, Quantum, or Proton altimeter connected to an Eggtimer Telemetry Module transmitter.   Note that this is an either-or… you can display GPS data OR telemetry data, but not both simultaneously.   Details are in the Eggtimer Telemetry Module Assembly and User's Guide.

Device Selection Configuration

An addition configuration option, for "Device" has been added.   This tells the LCD receiver which kind of data to listen for (GPS or Telemetry).   You can also set the Device to "TX/Mini" so it will not look for an Eggtimer TRS pairing signal; that saves a lot of time on power-up.

Release Notes Build 1.13a

Enhancements

Improved LCD-GPS Module Support

The timing for GPS feeds from the LCD-GPS module has been improved so that active data from the rocket's transmitter is always given priority.   Also, the LCD-GPS feed is now turned off during the GPS coordinate display on the Eggfinder LCD receiver, which prevents the "dropouts" that were previously seen due to the transmitter's coordinate feed being interrupted by the LCD-GPS's feed. When switching to the navigation display from the coordinate display, the location from the LCD-GPS is automatically updated so you don't "lose" your location.

Release Notes Build 1.12a

New Features

Support for 70cm Ham Version

Support for the 70 Ham version has been added, the frequencies can be selected from 420.050 MHz – 449.950 MHz by 100 KHz. See the separate Ham version addendum for further information.

Release Notes Build 1.11b

Bug Fixes

LCD-GPS Losing Packets Due to Processing

Previously, there were some issues with the receiver losing packets due to excessive processing time between some packet receptions.   Several internal software changes have been made, the packet loss due to processing has been eliminated.

New Features

Navigation Screen for Saved Coordinates

Previously, when you recalled the saved coordinates (by holding the button on the "Waiting for Fix" display), only the coordinate display screen was available. In this version, a navigation screen has been added if you have the LCD-GPS module. You can access the navigation screen by holding the button down for over one second during the saved coordinate display, then flip back and forth the between them by pressing the button (the same as during a "live" tracking session). With the LCD-GPS, your ground location will be updated in real time, so if you lose power during your tracking session you will still be able to navigate to the last received location.

Release Notes Build 1.10r

LCD-GPS Module Support

The LCD software now supports an optional GPS module, which adds the capability of showing you how far away the rocket is from you, what compass position it is from you, and once you start moving you get an arrow and degrees left/right to get to your rocket. This makes getting to your rocket REALLY easy… no additional devices require.

The GPS module is automatically detected, and the initial coordinates are acquired during the startup sequence. Internal GPS coordinates are updated once every 10 seconds, since you're not going to be moving very quickly compared to your rocket.

The navigation screen is accessed by holding the button down for one second during the coordinate display, after that you can use a short press of the button to switch back and forth in real-time between the coordinate and navigation screens.

Release Notes Build 1.09e

Coordinate Save Function

A save function for the last displayed coordinate has been added. Every 10th valid fix is saved automatically. If the fix is lost for at least 10 seconds, the last good fix is saved automatically as well.

If the LCD receiver is reset, you can display the last received fix by holding the button down for at least 3 seconds at the "Waiting for Fix" display. If a valid fix is subsequently received, it will be displayed instead.

AUS/NZ Changes

Code changes and compilation flags have been added to support valid Australia and New Zealand frequencies, which are a subset of the North American frequencies. Prior to the TRS support it didn't matter that the receiver was able to receive frequencies outside those ranges, but since the TRS support involves actually sending data (albeit one byte at a time) it was necessary to provide this frequency limiting to maintain regulatory compliance in those regions.   Eggfinder LCD units (as well as Eggtimer TRS units) shipped to those regions default to 921 MHz rather than 915 MHz.

Release Notes Build 1.09d

Eggtimer TRS Support

The major functionality in this release is to provide remote terminal support for the Eggtimer TRS Flight Computer. When "paired" with an Eggtimer TRS, the Eggfinder LCD receiver can be used to program the TRS, save settings and/or start the flight sequence, perform deployment testing, and display saved flight milestones. Details are in the Eggtimer TRS User's Guide.

Note then there is an additional screen before the main display screen, "Waiting for Sync", which appears before the "Waiting for Fix" screen for approx. 45 seconds. If you are using an Eggfinder TX, this screen will simply disappear; if you have an Eggtimer TRS on the same frequency and ID Code as your Eggfinder LCD receiver, it will "pair" with it and go into the programming/review screens.

Additional Channel Selection via ID Codes

When used with an Eggtimer TRS Flight Computer, one of eight ID Codes can be selected in addition to the base frequency, so a total of 72 LCD/TRS units may be operated simultaneously.

Note that all Eggfinder TX transmitters use ID Code 0 (zero), so this does not apply to them. If you are using an Eggfinder TX, you should leave the ID Code at zero.

Release Notes Build 1.06

Changes to Frequency Programming Routine

Fixed Bug in Frequency Change

Due to a bug in the IDE used to build the firmware, the serial port sometimes did not send out the command to change frequency to the HM-TRP RF module. (Thanks to Saleae for making such a great logic analyzer… we would have never figured this out otherwise.) When this happens, the Eggfinder LCD will not show the "OK" status, but the internal memory will be erroneously updated with the new frequency. The workaround was to cycle through the programming screens using the same frequency; usually it works the second time around.

The fix was to have it poll for the completion code, and if it does not receive it in a reasonable amount of time the programming process is repeated until the code is received. We have seen this take as many as 4 cycles, but most of the time it programs correctly the first try.

Changes to Support EU/UK Version

Changes were made in the code to handle the frequency range 869.400-869.650, for EU compliance per ETSI Class 1i. Specifically, the TX transmit frequencies are 869.425, 869.525, and 869.625 MHz with a bandwidth of 25 KHz. This is a compiler build option, so the Eggfinder LCD cannot select EU frequencies unless the EU version of the firmware is flashed.

DO NOT flash a 915 MHz Eggfinder LCD with the EU software, it will not work properly because the Hope RF HM-TRP module has hardware filters for the specific band as shipped. Conversely, DO NOT flash a 868 MHz EU Eggfinder LCD with the standard 915 MHz software, it will also work poorly.

Text Changes

The text for Degrees/Minutes/Seconds was changed in the Status screen to display as "D", "D:M", or "D:M:S" instead of showing the units of least significance (i.e. "D", "M", or "S"). It's more intuitive.