Eggtimer Quasar Release Notes

Version 1.02T (Dec. 2025)

Internal Changes

Power-On Output Glitch Mediation

Previously, the “high” side of the outputs had a very short glitch, about 260 us, about 250 ms after power-on. Since the “low” side of the outputs was off during this short period, there is no chance of triggering an accidental ematch firing, and the 260 us pulse was orders of magnitude less than the “all-fire” recommended pulse width (500 ms) for ematches from vendors such as MGJ.

However, we found that it is possible for this behavior to result in a ground firing under two conditions. First, the FET has to be “blown” shorted. This is an abnormal and unlikely condition since it’s rated for pulses up to 70A, but we have seen it happen with short circuits on the output. Second, the output load needs to be a low-current ematch, such as an MJG FireWire ematch, which can fire at pulse widths much less than the 500 ms specification.

While doing some investigation, we found that the 260 us pulse occurred during the initialization phase of the PCA9536 I/O chip. When the ports were initialized as outputs, the outputs went “high” because that was the manufacturer’s power-on default, they went “low” after the outputs were written with zeroes but that created a short “high” pulse. To fix this issue, we changed the initialization routine to write zeroes to the output data register **before** initializing the port as outputs, so that the outputs remain at zero after initialization, remediating the glitch.

With this version, even if the FET is blown there is no chance of a ground firing.

Version 1.02S (Feb. 2024)

Internal Changes

Validation Code Change

Previously, the Validation Code that is used to verify submission of the Arming, Disarming, and Deployment Test pages was generated with a psudo-random algorithm, the numbers were generally random but they repeated after power-on. Because of this, there was the possibility of a "replay" of submitted browser pages, if the user "swiped" the page instead of closing them. For this to happen, the Validation Code imbedded in the swiped page would have to match the active Validation Code. In particular, if the user performed a deployment test immediately after power-on, swiped the test-submission page, powered off the Quasar, refreshed the test-submission page to resubmit the request (with the Quasar off), powered on the Quasar, connected to the Quasar's SSID, then put the swiped page into the foreground it would repeat the deployment test. Yes, that's a lot of things to happen to make the deployment test repeat, but we've had two reports of people actually doing this out in the field, basically because they performed a deployment test on their worktable and swiped the page instead of closing it, then restored the swiped page on the pad.

So, to prevent this from happening, we have changed the Validation Code routine to be based on the number of milliseconds since power-on, rather than being a pseudo-random sequence. It is extremely unlikely that any swiped or cached pages would have the same Validation Code imbedded it in as the active code, so this change essentially prevents swiped/cached pages from causing a "replay". The Validation Code will no longer repeat after power-on.

Note that the best practice is still to CLOSE THE BROWSER PAGE AFTER ARMING, DISARMING, OR PERFORMING A DEPLOYMENT TEST. We have updated the documentation to "remind" the user of this.

Version 1.02R (Oct. 2023)

Bug Fixes

GPS Data Improvements

GPS data was sometimes being discarded during flight, due to timing issues. Improvements have been made to ensure that all received GPS data will be transmitted to the ground receiver.

Enhancements

GPS Data Changes

The Quectel GPS module in the Quasar sends out additional NMEA sentences beyond what the Eggfinder LCD Receiver needs, this was causing some non-coordinate data display delays on the receiver's display because the receiver had to wait to process the extra data (which was being discarded anyway.) The firmware now sends a command to limit the GPS module's output sentence types so that only those required by the LCD receiver are used.

Telemetry Reporting Changes

The reporting period for telemetry data has been changed to every two seconds, to match the reporting period of the other altimeters for Eggtimer Telemetry data. Previously it was once per second, which often was missed by the LCD Receiver.

Additional Telemetry Data

Additional telemetry data has been added to the Quasar's data reporting, essentially it is now the same data as the Eggtimer Quantum (with the addition of the AUX channel reporting.) Real-time and Maximum velocity are now being reported. However, the LCD Receiver does not have a way to display this data AND the GPS data as of LCD Receiver firmware version 2.03Q; if you want to see it you will have to decode it manually.

Version 1.02f (June 2023)

Bug Fixes

Auto-Arming Issue

If one of the channels was set to servo deployment, auto-arming would always fail. This was because it was not ignoring the continuity check if the channel was set to servo deployment; this has been fixed.

Changes

Change in Altimeter Telemetry

Altimeter telemetry (ASL altitude, deployment events, apogee) has been changed so that it is sent every two seconds instead of every second. This brings the Quasar in line with the other Eggtimer altimeters, and helps make it a little less chatty when using the Eggtimer Voice Module in the LCD Receiver.

Version 1.02d (Mar. 2023)

Bug Fixes

Frequency/ID Display Issue

On the North American version of the Quasar firmware (909-925 MHz, ID 0-7) there were two pages that displayed the frequency/ID incorrectly. This was due to a bug introduced in 1.02b. The actual frequency/ID as programmed was correct; it was just a display issue. Those two pages have been corrected.

Changes

Removal of Low-Velocity Check Event

The low-velocity check event was a legacy remnant of the original Eggtimer Quantum code from which the Quasar's code is derived, and was never actually "the" precursor to apogee/nose-over detection. Since it's basically not a useful event marker, we have removed it from both the Summary and the Detail (.CSV) display functions.

Continuity Display Changes

Since PWM servos are output-only and there is no way to check if one is connected or not, accordingly when an output channel is set to Servo mode the continuity status is no longer displayed. Instead, you will see SERVO in reverse-gray on the Status Page, to let you know that the channel was set to servo mode and its status does not affect the ability to arm for flight.

On output channels that are turned OFF, the continuity status is no longer displayed, since it is irrelevant to arming.

Flight Status Display Change

If a flight was never completed (i.e. the Quasar never detected landing, or the flight recording was interrupted during flight such as might happen if the battery became disconnected in flight) the Flight Summary page will now show the Flight Status in reverse-red to indicate that the flight was not completed.

Version 1.02b (Feb 2023)

Bug Fixes

AUX Channel Not Firing in Main Mode

The AUX Channel, when set to Main Mode, was not always firing. The underlying issue has been fixed.

AUX Time-to-Firing Not Calculated in Drogue/Main Modes

The AUX Time-to-Fire was displaying as 0.00 when the AUX channel was set to Drogue or Main mode. The issue has been fixed.

Main Altitude Settings Not Being Saved

Main altitude settings over 2000' were not being saved properly, therefore they were being recalculated as 500' (the default value). This has been fixed.

Enhancements

Region Version Now Displayed in Serial Info at Boot-Up

The Region for the data transmission is now displayed in the diagnostics information that streams over the serial port at boot-up.

Version 1.02a (Initial Release- Nov. 2022)