Tech Note 6-3 – Error Check Feature Attention

Advanced Error Check Feature

Error Check

Magic Timers have always had an error checking feature that verifies the integrity of the user's flight program stored in the timer.

This process was changed in 2000 to include more checking. This document refers to timer version 3.0 and greater. If you have a timer older than this refer to the original version of this tech note. When a potential corruption of the flight program is found:

- The LED will go on
- The buzzer will sound continuously
- The timer will not function until the hook has been moved forward or start button pushed. [F1A or F1B/C/Q respectively]
- When the hook or button is move/pushed the buzzer will stop.

The are a number of reasons why this might happen. They include:

- The sportsman interrupting the transfer of the program between the Palm and Timer.
- The sportsman turning off the power to the timer or Palm Pilot during the transfer of the program between the Palm and Timer.
- The timer being physically damaged and this causing the microcontroller to mal function.
- An environmental or installation problem causing the timer to short against the airplane or to generate excessive static electricity
- An error in the timer firmware.
- Programming the timer with an old version of the Magic Palm Program that did not 'understand' the timer properly.
- A brownout condition caused by low battery voltage

All of these reason are extremely unlikely, this is why this is a very rare occurrence.

We believe the most like condition is the last one – a brown out caused by low battery voltage. In most microcontroller applications the "best practice" is to display some form

of alert and reset the microcontroller. In our case this is not a good idea as it may be in the airplane flying at the time. The approach we have take is to continue as if nothing had happened because this is the most likely to give a successful out come to the flight.

The way that you can ensure success as the sportsman is to take good care of the batteries and make sure that are properly charged. Remember that rechargeable batteries do not have unlimited life and it is possible for cells to go bad. Be sure to check the batteries under load. In a F1A airplane the heaviest load is placed on the batteries during the launch or bunt phase of the flight.

What you do about it

By pulling the hook forward [or pushing the start button] the timer will now work but the flight program may not be correct.

The best thing to do is to download another copy of the flight program from the Palm Pilot.

If you do not have a back up version of the program, you can copy the flight program on to the Palm Pilot and visually check it to make sure it is correct. When uploading the program you will probably get a checksum failure. To make this go away you need to force a recalculation of the checksum. This is done by making a change to one of the flight parameters, any change will work such as increasing the d/t timer by 1/100 of a second.

VERY IMPORTANT. If you upload a program that had a checksum failure and caused the timer to buzz and you put it back in that timer or in any other timer without making a correction that timer or any other timer will continue to buzz and have the checksum failure. You MUST change a line in the flight program to cause the checksum to be regenerated. If you do not do this you will not fix the problem.

Be sure to verify that the all parts of the program are correct including those on the Servo, Hook and GenP screens.

If it is imperative that you fly immediately without correcting the program, you may do so but it may not function correctly.

The continuous noise at start up will not go away until you correct the program in the timer.

If the condition persists you test the timer with in an alternate environment with alternate components. The brown out condition is most likely caused by a failing battery but also a bad servo or even friction in a mechanical component on the model could cause high

current drain and a brown out. The timer can be returned to Magic Timers for checking but do not do this until you have checked it thoroughly in your environment.

Final Word

This error condition that we describe is extremely rare and has only been reported by less than half a dozen of the many that use Magic timers. This leads us to believe, following tech advice from the manufacturer of the microcontroller that the most likely cause is the brown out condition.

We do understand that reliability is extremely important, particularly at the top level of FAI Free Flight, which is why we have added this additional save guard, even though most sportsmen will never see it.