

THE CARRIER WAVE



PHANTOM FLYERS R/C CLUB



AMA #393 SAINT CHARLES, MO

December 2024

Newsletter of the Phantom Flyers R/C Club

<http://phantomflyersrc.com>

CLUB OFFICERS

Contact Number

President - Ed White	(636) 219-2255
Vice President - Don Grzina	(636) 233-0193
Secretary - William Reape	(314) 568-0555
Treasure - Jose' Espinosa	(636) 947-6067
Safety Officer - Larry Anderson	Email
Field Manager - Don Grzina	(636) 233-0193
Chief Flight Instructor - Ed White	(636) 219-2255
Event Coordinator - Dan Abel	(314) 707-0138

Send Membership Renewals to:

William Reape
234 Kildare Court
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Board of Directors:

Work

Home

Ed White	Retired	(636) 219-2255
Dan Sundman	(314) 749-4029	(314) 749-4029
Mitch Galatioto	Retired	(636) 734-6322
Dave Evans	Retired	(636) 448-4800

Phantom Flyers R/C Club Meeting Minutes – 18, November 2024

Attendees: 8 club members were in attendance, Meeting called to order at 7:00 pm. Members were, Ed White, Bill Reape, Harold Weaver. Dan Abel, Don Grzina, Mitch Galatioto, Bill McMenemy, Bill Ahrens.

New Members: None

Technical Session: None

Secretary's Report: The minutes were sent out for the September meeting. There was a motion by Mitch G and seconded by Don G. The minutes were approved.

Treasurer's report: None

Safety Report. No reported incidents.

Field Managers report: Don reported the mower from the Saints Club is large and in good working order. It was approx. \$2200.00 new 3 years ago. There is not enough room in the container for 3 mowers.

Don reported there was a few hours of repairs needed to the extra mower, pulleys, belts, spindles, etc. He has it in good working order to be used however the club decides. It was discussed that the generous gifts from the Saints Club it was mentioned to Pay It Forward and donate the mower that we can't properly store to the Wright City Club. Bill Reape made the motion and Don G seconded to gift the mower to the Wright City Airplane Club, Motion passed. Thank you to Don G. Jack and Ed for all of the work on equipment that need constant maintenance.

Activities Report: Dan reported the Christmas Dinner is coming up December 7, and the Annual Frozen Fingers on the first of January. So far, the 2025 schedule is the same events as this year.

GSLMA Report: Harold reported he will be setting up a zoom meeting so that communication can begin. The Parks Department did clean up the area after the flood waters this fall.

Old Business: none

New Business: Nomination are Ed White for President, Jan Jansen for Vice President, Bill Reape for Secretary, Jose Espinosa for Treasurer, Jan Jansen and Don Grzina for Board of Directors. Activities Dan Abel, Safety Officer Larry Anderson. Fiel Manager Don Grzina. GLSMA representative is Harold Weaver. Jim Alberico as the Web Master. Mitch Galatioto. and seconded by Bill Ahrens closed Nominations. Unopposed all officers are accepted to their positions.

Meeting adjourned at 7:35 pm

Respectfully submitted, Bill Reape

https://www.faa.gov/uas/recreational_fliers/knowledge_test_updates/

<https://dronetrust.com/faa-trust/>

In Spektrum what the heck are “Fades”, “Frame Losses” and “Holds”?

By Ed White

People have asked me this before. My go to answer has been, “Can’t help you. I fly FrSky not Spektrum.” Well, I just stumbled across many, though not all of the answers. I am not claiming to be an expert but thought it was worth telling you what I learned recently and through the years. The very short answer is: Fades, Frame Losses, Holds are all simple counters that get incremented by 1 every time some specific conditions are met. When you turn your transmitter off, the counters all get reset to zero. Don’t be put off by the jargon in the short answers. Trust me, all will be explained (mostly). The conditions are:

“**Fades**” counter gets incremented by 1 every time ONE of your antennas has suffered a frame loss due to a failure to pass the frame check. If any one of the other antennas pass the frame check, the receiver uses the valid data from that antenna. No harm no foul, but Fades counter gets 1 added to it.

“**Frame Losses**” counter gets incremented by 1 every time the frame check fails for ALL antennas for a single frame. That data frame is truly lost.

“**Holds**” counter gets incremented by 1 every time there have been 45 consecutive Frame Losses. This means about 1 full second of no valid data received by any of the antennas. When the receiver detects a Hold, it goes into fail safe mode. The user can and should consciously program what fail safe mode does. The receiver stays in fail safe until it finally gets a valid frame from at least one antenna or discovers the meaning of zero feet AGL (Above Ground Level)

Explanation of terms: All modern RC radios send servo positions as a digital signal to the receiver:

Channel 1 digital position, Channel 2 digital position, ... Last Channel digital position, check

All of the transmitted channels plus the check strung together is a “**Frame**”. Then the frame gets repeated by the transmitter, updated with the latest commanded channel positions. Frames get repeated as fast as the system is capable of. Usually this repeats at least about 50 times per second. For some systems it can be faster. If you think you can “feel the difference”, sorry - get your checkbook out you’ve just bought into marketing hype.

The last item in the frame I have generically labeled “check”. There are many ways of doing this checking and it’s not important exactly how it does this. What is important is that the receiver can look at this check and use it to verify that all the channel data are valid. It does this on an individual basis for each antenna and each check is an all or nothing pass/fail for the complete frame. For the first antenna that passes the frame check indicating that all the data is valid, the receiver sends the individual position signals to the individual servos. If the frame check fails, the receiver cannot tell if the invalid data is in the channels, it cares about or a channel it doesn’t care about. A failed check means the receiver must assume that ALL data in the frame is invalid.

The receiver **MUST** send a servo position signal to every servo at least about 50 times per second. This is not optional so it always has to get valid servo signals from somewhere.

Most RC receivers, but not all have two antennas. Some have one. If you have satellite receivers you have more antennas, maybe 4, maybe more.

So, what should I do with “Fades”, “Frame Losses” and “Holds”?

If you have even a single Hold, which very likely you will feel, the answer is: **DON’T FLY AGAIN UNTIL YOU’VE FIXED THIS**. You don’t have an airplane; you have a crash looking for a place to happen.

If during a flight you have dozens of Frame Losses, probably you should just keep an eye on this for a bit. Frame losses will happen during a flight on any RC system for a lot of reasons, some of which are out of your control. You just don’t want to see this number suddenly jump from dozens to hundreds.

If during a flight you have several hundreds of Frame Losses, probably you should look into this (“look into” is defined below).

Unfortunately Frame Losses are just a counter. A 10-minute flight will have at least 30,000+ frames transmitted. What you really want to know is the maximum number of *consecutive* frame losses. That is, how close was it to a Hold? I’ve read, but can’t confirm, that this information is available on a Spektrum system but you need to download the flight log to a PC and analyze it to figure out the maximum number of *consecutive* frame losses. Perhaps some of you know or have done this?

Here are some suggestions to “look into”. Check the antenna cables, both receiver and transmitter. Have they been tugged on or bent sharply or otherwise folded, spindled or mutilated? Especially check at the antenna connectors which are ludicrously small things that if not installed correctly can be very fragile and break only partially greatly degrading performance. Are any of the antennas near or next to any of the ESC power or motor leads? These leads produce heavy electrical interference. Are any of the antennas where they will be frequently in the shadow of metal, batteries or carbon fiber. Do a range check, even if you previously did one and “didn’t change anything” (that you know of). Move one or more antennas and repeat the range check. Check batteries and wiggle battery connections. Was it rainy when you flew? 2.4 GHz cannot transmit well through water, even rain or clouds reduce range and turn a marginal range situation into not enough range. If you can, fly the same transmitter on a different airplane and check the Fades, Frame Losses and Holds. Fly a different receiver in the same plane.

Receiver antenna placement is important and this is where Fades can be very useful. A Fade is a loss of a frame on **any one antenna**. Buried in the Spektrum telemetry is not just total Fades, but Fades on each separate antenna for at least 4 antennas. These are labelled A, B, R and L. If you can get to this data and it shows that most of the Fades are on one particular antenna but it shows no evidence of damage, you should try to reposition that antenna to a new location/direction to see if you can reduce Fades on that antenna. If you can reduce Fades, this should reduce the number of frame losses (a fade on all antennas) and get you further from the dreaded Hold.

Where did I find this out? As I said, I fly FrSky not Spektrum. I recently stumbled across a YouTube video for the latest version of FrSky which can (with an aftermarket module) now work with a Spektrum receiver and get Spektrum telemetry. The video explained both how to do this and what Fades, Frame Losses and Holds means, including monitoring of Fades on an individual antenna basis (at least on an FrSky transmitter).

<https://www.youtube.com/watch?v=FXJai9YVj9g>.

Ed

Members Projects

Club member Bill Ott shared pictures of his projects. Leprechaun and the Eflite 70mm F-16.



Lightweight HV ESC

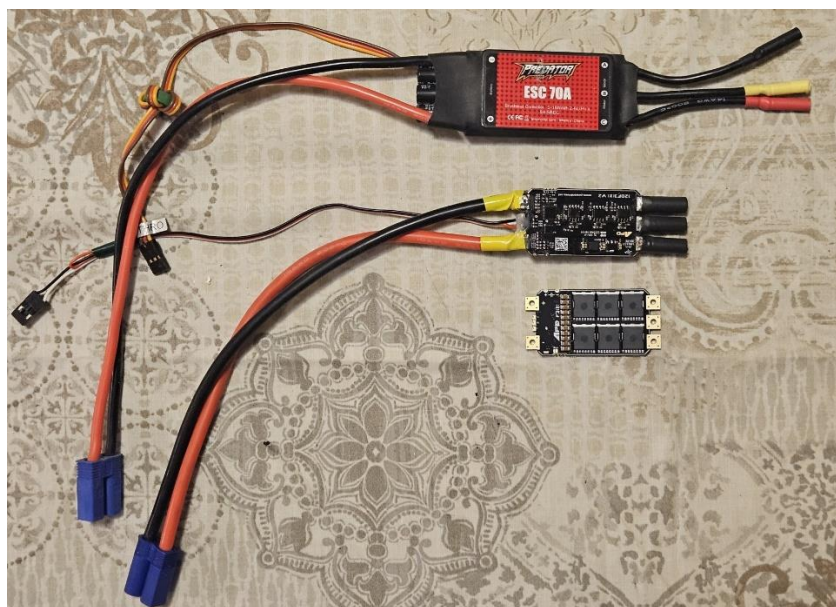
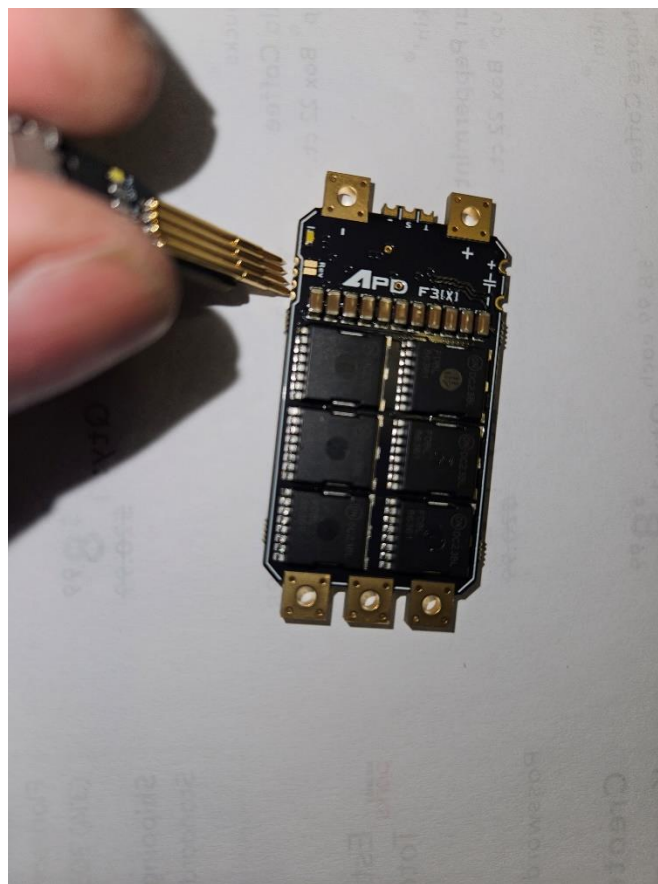
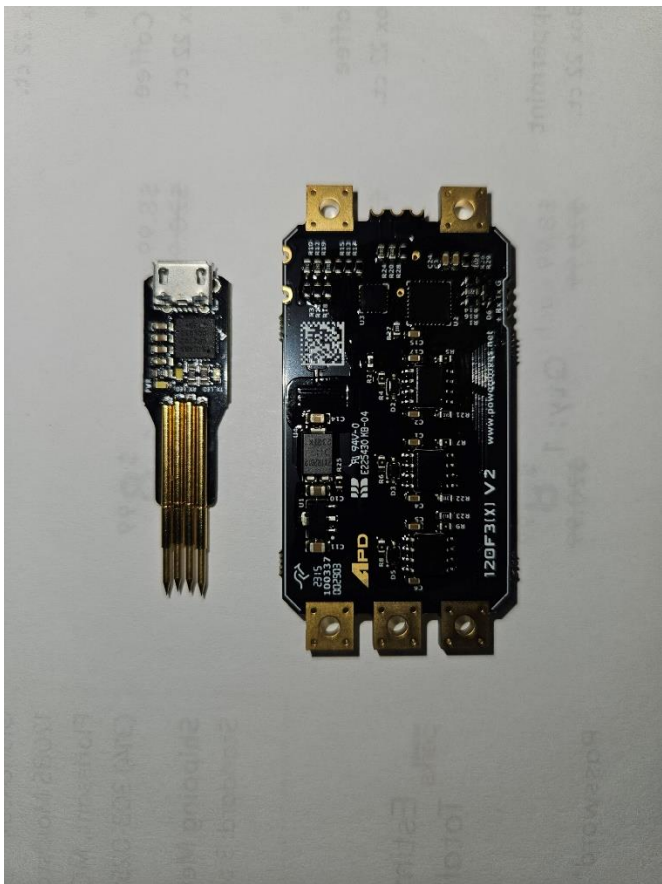
(PowerDrives.net)

One of my next projects is set to take flight, I hope, in April 2025. It will be a scaly twin 90mm EDF with 12S-2P Lithium-Ion packs, complete with electric brakes and robust electric retracts.

On paper, it's already overweight and I haven't cut a single piece of wood or foam! So, it is now on a model weight watcher program. The high voltage 120amp on 12cells ESC are usually heavy with their built-in heat sinks. A quick search lead me to a ESC made by APD (Australia) these things are really small and very light. This is due to the components and board design so a heat sink is not required. These were available from a few dealers, APD F-Series 120F3[X] 12S 120A 50V ESC, but rumors of Power Drives shifting its focus prompted some panic sales and I got my 2 units at less than 100.00 each.

I decided to solder bullet connections the motor inputs directly to the ESC, much like some of the Castle Creation offerings. No wire or connectors were provided and you even had to install a servo wire to be used on receiver. It does come with a capacitor that you have to install, but the manual only showed one in use. I have been bench ran with the 90mm EDF on 12S so far so good! This probably saved me about 8oz or more based on the other ESCs I had planned on using.

Now the bad part about this controller. Its parameters have to be set with a special programming tool and a PC. It doesn't have the functionality to change parameters with throttle stick and beeps like most ESC. It is very awkward to use because you have to hold it against the pins on the ESC while programming. The next ESC I will use a plastic clamp to hold the tool in place.



Events

January 1, 2025

Starts at Noon

**Phantom Flyers RC
Annual Snow Fly**





New Jersey Guide to Aircraft Identification



Don't forget to renew your membership!!

<https://www.phantomflyersrc.com/wp-content/uploads/2024/11/2025-membershipform2.pdf>



<http://phantomflyersrc.com/>

<https://www.facebook.com/Phantom-Flyers-RC-Club-139791882811519/>

Check there for the back issues of the Carrier Wave Newsletter, mowing schedule, event calendar and club roster/contact information (handy for mowing).

Articles, pictures and tech notes for publishing in the Carrier Wave are always appreciated. Let us know what you are building, repairing or flying!