PLANE TALK NEWS

Des Moines Modelaires

Upcoming Events

Club Meeting

April 1st

7:30PM

West Field

Toledo RC Show

April 4th, 5th, & 6th

Toledo, Ohio

Club Meeting

May 6th

7:30PM

EPJ Field

What does the hobby mean to you? More and more I am starting to realize this hobby is more about the people than the flying. This past week Noah and I made an aviation trip, including the AMA museum, Dayton Air Force museum, and ending the week with NEF (North East Ohio Electric Flight Festival). Also on this trip, we were able to meet up with the Flite Test crew and check out their headquarters.
The AMA museum was a great stop. We spent about two hours going through all of the history of the hobby. If you are ever in the area the AMA museum and flight field is a must stop.
Our next stop was the Air Force museum in Dayton Ohio. We spent over 5 hours here and still did not see everything. This place was huge and truly amazing. We are going to have to make a trip back just to see it all.
NEF was the largest indoor fly we have attended. The event was well laid out and had a great turn out. It was great to hang out with the West Michigan Parkflyers team that Noah is a part of.
At this event it was all about the people and being able to share our great love of the hobby. Everyone was so nice and the event went off with out a hitch.
With the weather improving, we are looking forward to getting out and seeing everyone at the field. The ground is still very soft so please be cautious and drive only on the driveways. Also, remember all of the gate and building codes have been changed. If you are unaware of the new codes please contact Jim Lewis.

See you at the field, Duane

Why is my charger so slow?

The industry offers plenty of chargers, but not all of them do the same thing the same way.
Article and photos by Greg Gimlick.
Featured in the Fall 2011 issue of Park Pilot.
Questions about chargers and charging make up the majority of the email I get, so I knew it was time to answer the most frequently asked questions for you right here. The biggies are:

1. Why does charging at the normal 1C rate take longer than one hour?
2. Why doesn't my 3C rate charger get my packs charged in 20 minutes?
3. What is parallel charging?
4. My high rate charger isn't charging at its full capacity, even though I set the values correctly.
5. I have two chargers of the same brand, but one takes longer to charge than the other.

For those of you who may not know, "C" represents the capacity of a battery. If you have a 3000mAh LiPo pack and it's rated at 20C, it means it can be discharged at 20 times the capacity of the pack: 60 amps (3000mAh = 3 amps, so 20 X 3 = 60 amps).

Since LiPo packs have gone beyond the standard 1C rating, many now come with charge ratings. Look for both charge and discharge ratings before you purchase or use a pack.

The first two questions share the same answer. Theoretically, a 1C rate should take one hour and a 3C rate should do it in one-third of the time, or 20 minutes. The problem comes when theory runs into reality, and when that happens, performance is all up to the programmer/designer of the charger.

Most LiPo chargers are of the CC-CV (Constant Current-Constant Voltage) type. When charging, they limit the current to some preset until the battery voltage reaches a preset voltage. Then the current is reduced to keep the voltage from going over that preset.

The charge is considered complete when the current has been reduced to a threshold. In the case of a 3S pack the voltage will most likely be close to 12.6 volts. The current is limited by what you tell the charger to do.
The charge termination current threshold is the unknown, and is set by the engineer who designed the charger. The variables are the actual charge current, the actual constant voltage setting, and the threshold current.

It is fairly easy to measure these values with an accurate DVM. With a depleted pack, measure the charge current. This current is where the charger will spend roughly 80 percent of the charge cycle if the pack was completely discharged. At approximately 80-90-percent state of charge, the pack voltage will reach 4.2 volts per cell and the current will taper off to prevent an over-voltage condition that will damage the pack. You can measure this point by watching the pack voltage with a DVM, and when the voltage stops rising during the charge is what the charger thinks is that preset voltage.

Threshold current is the most difficult to measure because you would have to be looking at the meter just before it signals charge complete. An instrument that logs would be beneficial for this.

All other things being equal, the constant-current charge value will control how long it takes to get to approximately 80-90-percent state of charge value. If you have a 2Ah cell and you charge it at 2 amps, you will reach that 80-percent charged value in 48 minutes. If your cells can accept a 2C charge rate, it will take 24 minutes. A 3C rate would take 16 minutes.

The last 20 percent of the charge will take the same amount of time on any constant-voltage charger because the current is reduced according to what will prevent the battery from self-destructing. It doesn't matter what you set the current limit to once the voltage reaches 4.2 volts per cell.

The big variable once you reach the constant-voltage portion of the charge is the low-current, end-of-charge point. A charger with a lower cutoff threshold will take longer to decide the pack is charged. It will put a little more charge in the pack than one with a higher threshold, and this could be minutes to hours of difference. Say you set the threshold to zero amps; you will never get an end-of-charge indication. The closer you get to fully charged, the lower the current, and with an infinite amount of time you will get there, barely. It's all up to the charger's designer to determine how good is good enough.

You can charge really fast if you only charge to 80 or 90 percent, but most pilots won't give up 20 percent of their flight time. Once a charger nears the end of the charge, it slows things down. Even if it isn't balance charging, the charger tapers off at the cycle's end.

Parallel charging is a method of charging multiple LiPo packs on one charger at the same time. The cell count must be the same, but capacity can differ. My TME Xtrema will charge and balance up to four packs, and my Triton2 EQ will do up to six if I use the Progressive RC board.

The answer to the fourth question is often just asking too much of the charger or power supply. Some chargers automatically adjust the charge rate if they sense that the power supply is lagging. If your high-rate charger is set for 3C and charging at a lower rate, it's most likely simply adapting.

Question five? One unit might be earlier-version firmware than the other. Many are upgradable online, so check to see if you can update the earlier version of firmware.

It's always helpful to separate charging, engineering and marketing voodoo.

Club Officers

President	Duane Vierling dwvierling@gmail.com	515-238-0924
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Treasure	Jim Lewis clone2tb@gmail.com	515-289-1144
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	Ed Niles	
	Bruse Parmelle	
	Bill Garrett	
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Club Trainers

Jerry Proudfit	987-1937	Airplane
Joe Pitts	360-4471	Airplane
Jim Lewis	289-1144	Airplane
Darwin Chapman	964-8872	Airplane
Duane Vierling	239-0924	Airplane/Helicopter
Tim Nissen	964-9307	Airplane
Doug Griffith	480-1585	Airplane
Kelly Brown	494-4884	Helicopter

MODELAIRES MEMBERSHIP 2014 APPLICATION

NAME _____ PHONE _____
STREET ADDRESS_____
CITY _____STATE_____ ZIP_____ AMA NO._____

IF YOU GO SOMEWHERE ELSE FOR PART OF THE YEAR, GIVE OTHER ADDRESS ON THE BACK AND MONTHS YOU WISH THE NEWSLETTER MAILED TO THAT ADDRESS.

DO YOU HAVE AN EMAIL ADDRESS? PLEASE PROVIDE TO GET YOUR NEWSLETTER AND CLUB ANNOUNCEMENTS _____
IF YOU DO NOT HAVE EMAIL, WE WILL SEND YOUR NEWSLETTER LAND MAIL
MAY WE SHARE YOUR CONTACT INFORMATION WITH THE MEMBERSHIP? YES ____ NO ____

YOUR AGE_____ YOUR BIRTH DATE, PLEASE MO._____DAY_____ YEAR_____

1. **FLYING MEMBERS:** NEED AN AMA MEMBERSHIP AND MODELAIRE MEMBERSHIP. CAN FLY AT OUR FIELDS, VOTE AND BE AN OFFICER, TAKE PART IN ALL OUR ACTIVITIES, RECEIVE OUR NEWSLETTER.

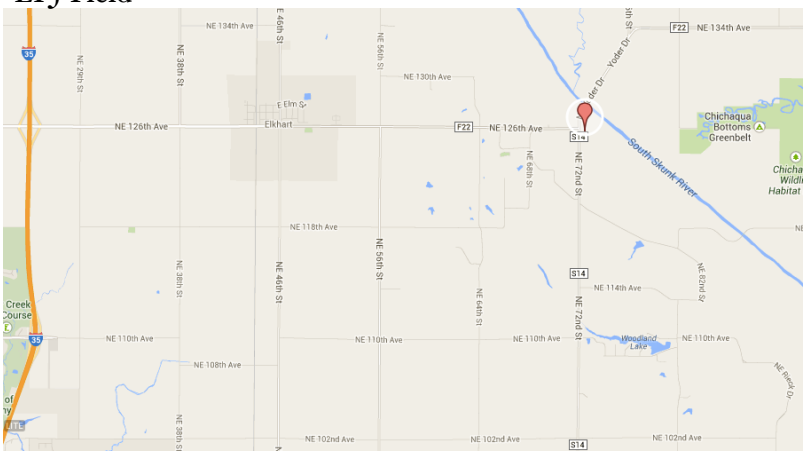
2. **SUPPORTING MEMBERSHIP:** (NON-FLYING, CAN VOTE, CANNOT BE AN OFFICER) NO AMA REQUIRED, NEED ONLY MODELAIRE MEMBERSHIP. MAY TAKE PART IN ALL OTHER ACTIVITIES, RECEIVE OUR NEWSLETTER.

DUES: ADULT (19 & OVER) **$75**, SPOUSE $20. YOUTH (18 & UNDER) $5. ADULT PARK FLYER $30. ADULT FAMILY $100. AFTER JULY 31, DUES ARE $40 FOR THE REMAINDER OF THE YEAR. DUES COVER JANUARY 1, 2014 TO DECEMBER 31, 2014.

SEND TO: Jim Lewis 1479 NW 71st Pl. Ankeny, Iowa 50023. EMAIL: **CLONE2TB@GMAIL.COM** PHONE: 515-314-7904

MAKE CHECKS TO: DES MOINES MODELAIRES ****INCLUDE A PHOTOCOPY OF YOUR 2014 AMA CARD or AMA RECEIPT****

EPJ Field



West Field

Des Moines Modelaires

- We fly radio controlled model airplanes at two private flying fields.
- Our meetings are the first Tuesday of each month and there is a program of flying interest plus show and tell at each meeting.
- Members are mailed a monthly newsletter.
- We have a club Christmas and Awards dinner.
- The club sponsors Fun Flys and Summer Club Family Picnic Flys.
- We help run the SIG Fun Fly at Montezuma Iowa.
- The Modelaires will demonstrate R/C flying anywhere that we have room to safely fly.
- Members present model building and flying programs to groups in this area.
- We hold a spring swap meet and a large fall R/C auction.
- We have a pilot training program with booklet and award a solo certificate to members that we train (FREE) to fly. There are instructors to help you learn to fly Radio Control!
- We are one of the top clubs in America. You must join AMA before you can join the Modelaires.

DES MOINES MODELAIRES
AMA CHARTERED CLUB #740 ESTABLISHED 1936

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