

NEWSLETTER OF THE CHARLES RIVER RADIO CONTROLLERS, INC



CRRRC FLIGHT-LOG

<http://www.charlesriverrrc.org/>

AMA CHARTER 339

MARCH 2007

VOLUME 44 NUMBER 3

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GENERAL MEETING

Wednesday

March 21st

7:30 PM

Club Meetings are at Verizon Labs in Waltham. Bring a show and tell, bring a friend or just come alone.

GUEST SPEAKER

Andy Argenio, AMA District 1 Vice President will bring us up to date with the inside workings of the AMA. Andy has been the district VP for the last 2-1/2 years. This will be a great opportunity to listen, ask questions and get involved.

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RAFFLE

First Prize

Berg 7 Receiver



Be the first kid on the block to own this full range super small receiver. It's programmable with your Castle Link too.

Second Prize

A gallon of fuel or cool tool.



WON
a
COOL TOOL
for
Show-n-Tell

President's Letter



I wrote about the WRAM show last month. I read on the RC forums and heard from our own Jon Leehey who attended that it wasn't as big this year. Jon said he was looking for some batteries, which were tough to find at this seemingly smaller show. I have read radio control publications, forums and elsewhere that the Toledo Weak Signals show, www.toledoshow.com, April 13 – 15, is the one to go to in the east. The Toledo Show has at least one big event happening concurrently, the indoor Electric Tournament of Champions. The web site lists nearly 220 exhibitors. It appears to be almost every vendor I know and more that I don't know. I hope the WRAM show gets rejuvenated in coming years. It is a lot easier to get to than Toledo!

The 2.4 GHz Spread Spectrum radio market is starting to heat up. Last month I wrote about the new Spektrum DX-7 radio for any size model



that followed the park flyer DX-6 radio from last year. The DX-7 radio looks exactly like they put the 2.4 GHz Spread Spectrum module in the JR 7202 synthesized radio. Not to be outdone, Futaba has just announced its six-channel spread spectrum model the 6EX, <http://www.towerhobbies.com/rcwnews/070210-futk6900.html>.

Spektrum has also just announced the release of Aircraft Module Systems that will convert JR (347, 388, Unlimited 8, 783, PCM10, PCM10S, PCM10SX, PCM10SXII, 8103, 9303, 10X), Futaba (7U, 8J, 9C, 9Z, FN, 12MZ, 14MZ) and possibly some Hitec radios to 2.4 GHz Spread Spectrum. The online forums wondered if they would have Spektrum Aircraft Module Systems for Airtronics Stylus radios but it doesn't appear to be happening. I would guess that Multiplex and Airtronics better be working on their own 2.4 GHz Spread Spectrum models so that they are not left behind.



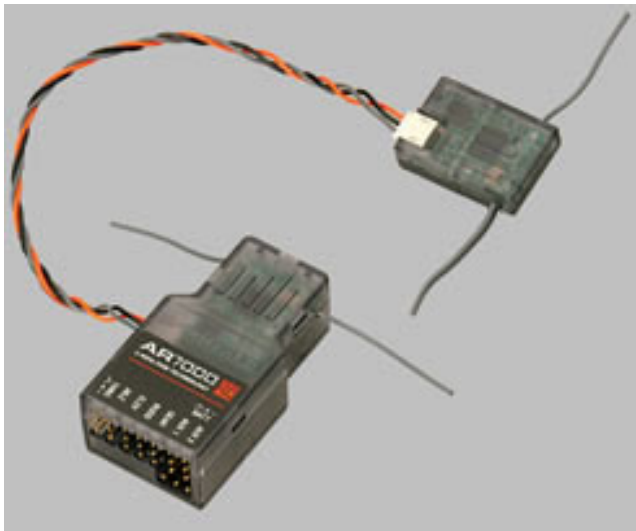
The Futaba implementation of 2.4GHz Spread Spectrum is different from Spektrum's. Spektrum chooses two channels of the 80 available in Spread Spectrum. It sticks with them in what is called Direct Sequence Spread Spectrum. Futaba is only using one channel and changes channels every 2 milli-seconds. Futaba calls this Continuous Channel Shifting or as it is commonly called "Frequency Hopping". This hopping is supposed to be done randomly so as not to affect other Frequency Hopping or Direct Sequence systems adversely. The FCC also mandated that transmitters using Spread Spectrum must have the ability to check for, and find an open frequency on the 2.4 band before transmitting any signal.



Futaba claims that the Frequency Hopping method is better than those using Direct Sequence (Spektrum), since they are not subject to conflicts and interference.

Of course, based on the FCC requirement above, that shouldn't happen! Well, at least the conflicts part shouldn't happen. Spektrum claims "Our system, over five years in development, started out using a frequency hopping system. But the limitations of this format in regards to robustness of the link and slow speed sent our designers into the Direct Sequence side. Whereas frequency hopping is 'old technology,' the newer Direct Sequencing offers a much more robust RF link, faster speeds - yet it is exponentially more difficult to program. And it's the programming where all the magic is. Understanding what to do with hardware is the "secret" to DSM Spread Spectrum technology."

Spektrum receivers are really dual receivers since their implementation has two channels in use. Futaba uses a dual antenna, which they call DAD, Dual Antenna Diversity. I am told that these dual antenna and dual receiver implementations were done since the antennas are so short. The antennas are only a few inches long. That is great news to hide the non-scale ugly long antennas of our existing receivers! They claim that the short antenna of the Spread Spectrum receivers could get in the shadow of the engine. That is why they have two antennas and/or receivers that should be separated and in different planes (no, not different airplanes, planes as in the X, Y, and Z axes!).



Both of these spread spectrum implementations bind the receiver to the transmitter via a unique identifier. Your receiver will only listen to your transmitter.

So whose 2.4 GHz Spread Spectrum implementation is better? We will have to see. Hopefully all the marketing is FUD (fear, uncertainty and doubt). I

hope both implementations will be great. We will have competition to drive prices down!



Some people believe that those who stay with the 72 MHz radios might have it pretty good. As more and more convert to spread spectrum, it will theoretically relieve conflicts and congestion for them.

When I started in the hobby 5 years ago, I thought it was unusual with today's technology capabilities that the RC world was still using the current channel system that relied on manual effort to avoid conflicts. Certainly modern technology could offer something for us to use so that we wouldn't have to worry about conflicts? It is great that this technology is finally here. Of course, for those of us fortunate enough to have multiple aircraft, we might not be completely converted for a while. The old system has served us well for a lot of years. You can bet that if one of my aircraft gets knocked down, my order will go out the next day for a 2.4 GHz Spread Spectrum radio!

I hope to see you at the field!

-Tony Davids

References

Futaba and Spektrum detailed description articles were used for reference along with other general reading in radio control publications.

Treasurers Report

TREASURER'S REPORT

Report Date 03/10/07

Starting Balance 02/01/07	
Checking	\$3,896.57
Savings	\$786.33
Cash Box	\$25.00
PayPal Acct	\$194.64
CD Accounts	\$6,258.10
Total Starting	\$11,160.64
Income	
Transfer from PayPal account	\$416.17
Interest - Savings	\$0.18
Interest - CDs	\$17.89
Total Income	\$434.24
Expenses	
Davis spring permits, check #1521	\$480.00
Club chartering & fields, check #1522	\$330.00
Raffle prizes & Bob Fish, check #1523	\$192.41
Stamp & Envelopes, check #1524	\$46.21
Total Expenses	\$1,048.62
Transfer - Savings to new CD	\$0.00
Ending Balances	
Checking	\$3,264.12
Savings	\$786.51
Cash Box	\$25.00
PayPal Acct	\$43.39
CD Accounts	\$6,275.99
Grand Total Ending 02/28/07	\$10,395.01

-Jon Leehey
CRRC Treasurer

UPCOMING EVENTS

Wednesday March 21st – General Meeting

Andy Argenio of Smithfield, Rhode Island has been AMA Vice President of District One for three years.

AMA is a \$25 million membership association.

Andy will bring us up to date on what is going on in the district and nationally including AMA programs to help clubs promote aero-modeling. Programs include a \$250 grant to host an AMA sponsored event open to any current AMA member. This can be a gas power, glider, or electric event.

Andy also wants to bring us the results of a recent general survey of AMA members with approximately 8,000 respondents.

In 1956 I built my first R/C radio. I owned a hobby shop from 1963-1967 while earning a BS Degree in Industrial Engineering. I worked as a computer engineer for RCA until 1972. I have been self-employed in the retail apparel and construction business for the past 30 years. I retired in 1999 and decided in 2002 to open a Hobby R/C Specialty Store.

I am in my tenth year as a Club President. I served as an AVP 1999-2004. I am an AMA Leader Member, IMAA D1 Asst. Director, and IMAA National Sanction Coordinator & Safety Officer. I have a passion for all types of aero modeling. I fly micro electrics to giant scale gas.

Saturday, March 17th and April 21st - Indoor Flying

We will be flying at the Attleborough YMCA. The facility is a double basketball court with high ceilings. The basketball hoops will be raised up while we are using the facility. This is a great place to fly Micro helicopters, Small 3D planes, and Slow Flyers.

We have the court reserved for the third Saturday of March and April, from 7:30 AM to 10:30 AM. The cost will be \$10 per pilot, and we will be required to show our AMA cards at the door.

The address is: Attleborough YMCA
63 N. Main St., Attleboro, MA



Secretary's Report: General Meeting February 21st 2007

The meeting was called to order at 7:40 PM by President, Tony Davids. In order to accommodate the time constraints of our guest speaker, we reversed the normal order of things. The guest speaker presented first, and then the business meeting and raffle. Then we had Show and Tell.

Guest Speaker

Jim McGrew a ten-year air force pilot with experience flying the F-15C and three years experience flying the Predator UAV. Originally from Portland, OR and an MIT graduate. Flying the Predator was an exciting opportunity. At the beginning, the system was more of an engineering concept than finished product. A four-cylinder Rotac engine powers the aircraft. The Predator is similar in size and weight to a Cessna 172. It has a mission duration of 16-24 hours and a range of approximately 500 miles. It is equipped with UHF and VHF radios and a full Transponder. The plane is complete with two data/control links: line of sight and a satellite link. The bird takes off and lands under line of sight control then the mission is flown under satellite control. The satellite link can only be used for landing in an emergency situation due to a two second delay.

The mission cannot be flown in clouds, known icing conditions, or snow. The max crosswind speed for landings is 16 kts. Severe turbulence and high winds aloft have a significant impact on the mission. While primarily a defensive forward observation tool the Predator can be equipped with two Hellfire missiles. This was a great guest speaker. If you missed the meeting you really missed a great guest speaker.

Business Meeting

The business meeting was opened and the Secretary's & Treasurer's reports were approved as written and published in the newsletter.

Field Reports

Davis Field is great. Covered in snow and ice. Fritz reported getting stuck in the parking lot. Ken Antonellis has new keys to Medfield

Membership Report

There are eight new members and eighty-six renewals.

Old Business

None

New Business

Jean-Pierre Riu announced the Bob Fisch annual award for service over and above. It was presented to Ken Antonellis.



Dave Spielman spoke to the assembled membership re: proposed changes to the club by-laws. First to increase the spending limits for the Board of Directors from \$100 to \$200 without a general membership vote. Second to allow email verses US postal (snail mail) notification to the membership.

It was also requested that we add the address of the meeting location to the Web Site for those using GPS to find the meeting.

Members were also reminded of the WRAM show this coming Friday.

Meeting Guests

Shin who was introduced to CRRC by Pete Young has not flown, but has a lot of simulator time.

John Bachman has flown his Bird of Time. He has flown at both CRRC fields.

Chris Stoffer, a new member, is interested in electric flight and down link video.

Raffle Winners

First place was won by Ken Vincent. This was an Easy Glider.

Second place, a gallon of fuel or a cool tool was won by Steve Young. He took the tool.



Show & Tell



Tom Bauer showed a “Red Back” EPP slope soarer, from Australia that he is building for another pilot. “Trying to fit the electronics in was a challenge.” It looks like a great flyer.



Howard Hager brought his Sig Dornier twin. It has two out runners running 35 to 70 watts. Howard fiber glassed the bottom for additional strength.



Dick Williamson brought a gift he received from his daughter. A nutcracker made up as an RC plane. The scene is complete with a tree and a plane.



Tom Stammberger showed his modified Wing Dragon, now with four channels. He showed a video taken with a 5-1 Digital Video Recorder acquired from GorillaBobs.com. The video was very well done.



Rick Pendzick showed his AirHog counter rotating blade micro helicopter. He gave a brief flight demonstration.



New member Ritchie Gammon brought in his scale Smith Mini-Plane. Built from a Sig kit, this .40 size plane is about 14 years old. Ritchie is thinking of going electric with this great looking plane. In doing the research he found a \$60 Speed controller, a \$60 brushless motor and a \$50 battery.



Dan Murphy brought in his Super Scoter slope soarer. He is almost three months into this project.



Ray Harlan showed his EasyGlider. It looks like Fritz's one design contest is well under way. Ray is working on the adjustable tow hook. AWW was 26 oz prior to painting and approximately 27.5 after painting. The meeting was adjourned.

-Lee Arnold

BYLAWS AMENDMENT PROPOSED

The BOD has recommended a complete review of the Bylaws to capture outdated terminology. To do this the present and proposed Bylaws will be posted on the CRRC website for all to review. Look for Brian's announcement on the Yahoo newsgroup.

The Lazy Loopers and CRRC present:



**Winter 2006 -
2007
Indoor Electric
Fun Flys**



Attleboro YMCA
63 N. Main St.
Attleboro, MA

**7:30 AM - 10:30 AM
On the 3rd Saturday of each month
November - April
Last two sessions are 3/17 and 4/21**

\$10 registration fee for pilots
AMA membership card required to fly

R/C electric planes & Helicopters welcome!

Make sure you show up on time as we only have the gym until 10:30!

Because it is a gym with wood floors a TRex or Shogun with WOOD blades are the largest helis that will be allowed to fly. Hornets, Blades, Microns, Maxir, Hummingbirds, Pics, etc welcome with or without wood blades as well. Any electric powered plane that can safely be flown in a double basketball court gym is also welcome.

For more details:

Email: shoo_shoo_mo@yahoo.com

Call: 617-548-1364

Or visit our website at: charlesriverrc.org/indoor/

PRODUCT TEST REPORT

TME XTREMA

LITHIUM BATTERY CHARGER AND WATTMETER

Item Tested	TME Xtrema Lithium Charger-Wattmeter	
Purpose	Charging and analysis of lithium polymer and lithium ion battery packs	
Type	Microprocessor-based “smart” lithium battery charger	
Manufacturer	Tejera Microsystems Engineering, Inc. 11705 Boyette Rd, #418 Riverview, FL 33659	
Website	www.TMEnet.com , www.theXtrema.com	
Distributor	Direct or through participating distributors	
Suggested retail price	\$239.95	
Street price	\$189.95	
Warranty	90 days from date of purchase by original purchaser, warranted free from materials or workmanship defects	
Dimensions	6.25” (length) x 3.25”(width) x 2.25”(thickness)	
Weight (advertised)	22 ounces	
Weight (measured)	21.4 ounces	
Number of cells	1-10 lithium polymer cells	
Input voltage	10.5–14 volts DC @ up to 20 amps	
Input connectors	Heavy-duty alligator clips on 3 foot long cord	
Output connections	14 gauge silicon wire	
Charge rates	50ma – 8000 ma in 50 ma steps (4000 ma max@ 10 cells)	
Volts/cell shutoff	3.6 volts – 4.2 volts, adjustable in .05 volt increments	
Safety shutoff timer	Adjustable from 10-990 minutes (120 minutes default)	
Electric cooling fan	Thermostatically controlled	
Safety temperature cutoff	External thermocouple, 60 –130 deg F adjustable, 104 deg F default	
Alphanumeric display	4 line, 20 character LCD	
Audible alarms	Piezo speaker	

Wattmeter

Input supply voltage	6.5-15VDC, < 40 ma
Voltage measurement	0-60VDC, resolution .01V
Current measurement	1-100 amps peak, 50 amps continuous, resolution .01 amp
Power measurement	0-6000 watts, resolution .01 amp
Horsepower measurement	0-8.0 HP, resolution .01 HP
Temperature measurement	302 degrees F max (150 degrees C)

Cheers: easy-to-use and intuitive controls; free lifetime software upgrades; settable thermocouple cutoff; charge settings adjustable for different lithium battery “chemistries”; battery charge settings stored in memory; built-in wattmeter with storage of maximum and minimum data values

Jeers: integrated cell balancer not yet available (but “work in progress”!)

Product Test Report

The Xtrema™ is a high-tech “intelligent” lithium battery charger developed by Tejera Microsystems with a substantial number of technical features designed to improve the safety and reliability of lithium battery charging. As most modelers are aware by now, lithium-based batteries – of which lithium polymers are the most popular – offer extremely high energy density compared to nickel-cadmium and nickel metal hydride batteries. This high energy density – high power at low battery weights – comes with some significant technical and safety issues, however.

- The operating voltage range of a multi-cell lithium battery pack has to be tightly maintained between a lower-end discharged limit and a higher-end charge limit; for LiPos, these limits are 3.0 volts and 4.2 volts respectively, and new lithium-based batteries with different “chemistries” have different voltage limits. Even as little as 0.1 volts excursion outside these limits can result in immediate and severe battery damage. Gross overcharging can result in a LiPo battery catching fire!

- Only specially-designed chargers designed to charge lithium batteries should be used as lithium batteries don’t have the same “peak voltage rollover” as NiCd or NiMh batteries. If the wrong kind of charger is used, a lithium battery will continue to absorb voltage until irreversible damage, or a fire, results.

- Lithium batteries should *never* be left unattended when charging! Due to a variety of reasons (crash damage, undetected shorting of connective wires, an erroneously set or use of a non-lithium charger, for example), lithium polymer batteries in particular can catch on fire. Once its internal chemicals are heated to kindling temperature, the battery will burn vigorously until all the lithium is depleted. The tip-off that precedes a fire will be rising temperatures in the pack which is why lithium polymer packs should be charged in a flameproof container – such as a metal, porcelain, or glass enclosure.

With these preceding comments in mind as background, let’s take a look at the TME Xtrema charger to see how it handles the issues described above. The Xtrema charger is packaged in a compact plastic case with wiring provided for input power (12-13.8 VDC power supply or a 12 volt lead acid battery), wiring for charging outputs to the lithium battery to be charged, and finally, wiring for the Xtrema to be used in a watt-meter mode to test an

electric motor while it’s connected to its motor battery. Unlike other chargers that may have a sometimes perplexing multitude of control buttons, the Xtrema is controlled by a single “joystick button” that can be toggled left, right, up, or down to select desired functions from the LCD display. The single control makes learning the procedures very easy and very intuitive, following the LCD display’s menu choices step-by-step.

An expansion port located on the Xtrema’s front face allows the Xtrema’s software to be updated from the Web if desired. Presently configured for a RS232 serial port connection, a USB connection will soon be offered for greater flexibility and ease of use. More on this feature later.

The Xtrema’s documentation is supplied on a CD and I found the directions and safety guidelines to be unusually complete. The explanations for the various settings are very clear and “need to know” safety guidelines are clearly spelled out. In addition to a more detailed set of technical instructions, TME provides a “quick start” instruction sheet to streamline the charge setup process. All the documentation is available on the Web which allows the documentation to be continuously updated as changes and corrections are incorporated, a very “user friendly” consumer feature that bypasses the “tyranny of outdated paper documentation”. Let’s “step through” a typical charging sequence and see how that goes.



Upon activation and initialization, the Xtrema opens with a Setup Menu that lets you customize the charger’s Volts per Cell setting, Safety Timer settings, a Temperature Cutoff, and several charger default settings. The Volts per Cell setting lets you set the *maximum* volts/cell limit in 0.1 volt increments to match up to different lithium battery chemistries – 4.2 volts/cell for LiPos and 3.6 volts/cell for the new A123 Lithium-Ion batteries. The Xtrema’s default setting, 4.2 v/cell, is suitable for the very common lithium polymer batteries and the capability to set this safety-critical parameter is very useful for the new and different lithium-based batteries that may be coming into the model aviation market in the near future. I’ve seen advertisements and references to lithium-

manganese and lithium-molybdenum cells but don't yet have first-hand information on their charge and discharge characteristics. With the Xtrema, though, I can reconfigure the charger settings so I shouldn't have any problems charging these batteries even if their min and max charge settings are different from what I'm using now for LiPos and Li-Ions.



To handle these emerging new lithium-based batteries, when and if they turn out to be attractive for our use, the Xtrema can be upgraded at no charge over the Web to update any internal settings, using a supplied RS232 serial port connector and wire harness that's available as an optional accessory. This pre-planned built-in expansion of capabilities is unique in the industry and indicates that TME has developed and implemented a forward-looking strategy to accommodate future changes. In the most recent example, I was able to download updates into my Xtrema charger to handle the unique charge requirements for the A123 Systems M1 Lithium-Ion cells that I've been using since early summer. If you'd prefer not to upgrade the settings yourself, you can send the charger back to TME and they can install the upgrades for you.

The Safety Timer is used to shut down the charge process when a pre-set timer value is reached; the default setting is 120 minutes and the Safety Timer can be set from 10 to 900 minutes from the Setup Menu. The Temperature Cutoff provides another safeguard with a temperature-sensitive thermocouple that can be attached to the battery being charged, shutting down the charge if the battery temperature starts to rise abnormally – the default setting is 104 deg F and is adjustable from 60 to 130 deg F. A conservatively safe practice is to set the temperature cutoff 5-10 degrees above the battery pack's ambient temperature – as carefully noted in the documentation, a sharp temperature rise indicates that the battery pack has been previously damaged or that the charge current is too high. The thermocouple is designed to minimize the risk of further battery damage or battery ignition and cannot "save" your battery from the

anomalies that I've listed. Frankly, I think that having a thermocouple shutoff should be a mandatory item for all lithium polymer chargers!

Let's get back to describing the charging sequence of operations. Once past the Setup Menu, you then select the cell count and milliamp capacity of your lithium battery pack. Given a menu of four different cell and capacity choices, you can update any of the menu choices to your particular setup. Updated settings will be stored in memory so future setups with the same or similar packs can be done quickly and easily.

Please note that what I've just described, the Xtrema's entry and verification of a battery's cell count and milliamp capacity, is a deliberate operational procedure that provides an important layer of built-in protection. Some lithium chargers have a feature where the charger computes a cell count based on the voltage being read. The problem here, and it's a big one, is that normal variations in pack voltage can result in an erroneous cell count calculation especially for high cell-count packs. The normal variation of a LiPo cell is between 3.0 (or lower) and 4.2 volts per cell. A 10-cell pack, therefore, could read anywhere between 30 and 42 volts. A big safety issue can arise therefore if a lightly drained 8-cell pack, for example, was charged from a starting point of 4.0 volts per cell, or 32 volts for the pack. This voltage reading could be interpreted by some chargers as the voltage of a well-drained 10-cell pack, and the 8-cell pack could then be charged at a wrong setting with possibly dangerous consequences! The Xtrema neatly avoids this "guessing game" problem by requiring you to enter the cell count and milliamp capacity, thus bypassing this potentially hazardous problem entirely!

On this note, please remember that the *maximum* safe charge rate for a lithium polymer battery is 1C (in amps or milliamp) where C is the battery capacity, usually expressed in milliamperes; for example the 1C rating for a 3-cell 2100 mah pack is 2100 milliamperes (2.1 amps). With the Xtrema's menu flexibility, you can charge at a lower setting simply by decreasing the pack's milliamp value entry. The charge time will go up as the charge rate is lowered so you may need to modify the Safety Timer setting to allow more charging time. For lithium polymer battery packs in particular, be careful to NEVER charge at higher than 1C or you may at the very least damage the pack or in the worst case, cause a fire! And PLEASE put the battery being charged inside a flameproof container!

Let's get back to starting the charge: once past the setup phase, you tab to the screen that gets you started into the charge process. A four-line display comes up

that lists the following important information: the present battery pack voltage, the selected charge rate, the cell count entered, the maximum volts/cell setting, the temperature cutoff setting, and the maximum Safety Timer setting in minutes. The Xtrema asks “Are you sure?” and you should *carefully* check the information displayed before proceeding. If any of the information needs changing, or you don’t want to start the charge for any reasons whatsoever, you can choose “No” and return to the prior menus. The charge process starts when you choose “Yes” to the “Are you sure?” question and the charge then starts. This “last chance” check is a very good way to double-check the charge settings before the charge starts – another “layer of protection”!

During the charge itself, the Xtrema displays cell count, charge status (Constant Current or Constant Voltage), input voltage, battery voltage, thermocouple temperature, charge current in milliamps, time in minutes and seconds, and the charge inserted so far in milliamp-hours. When the charge is done, the Xtrema will start beeping (unless you’ve silenced the beeper in the Setup Menu). The ending values of the charge parameters will remain readable until you exit the charge screen and the battery can be safely disconnected at this point.

The final Xtrema feature I’ll describe is its wattmeter function. In this mode, the Xtrema is first powered up, as usual, with an external power supply (10.5 to 14 VDC). The motor to be tested, along with its ESC, is then connected to the Xtrema and finally, the motor’s battery is hooked up. Control of the motor is by normal means, i.e. either through your radio system or by a servo controller. In wattmeter mode, the Xtrema “in real time” displays watts, horsepower, motor current (in amps), battery voltage, and motor or battery temperature (using the external thermocouple). When the testing is over, the Xtrema has an additional stored display of maximum motor current, minimum battery voltage, maximum temperature, as well as the calculated watts and horsepower.

I tested a fairly large Axi brushless outrunner using the Xtrema in its wattmeter mode and found that the displayed information, as well as the stored maximum and minimum data values, were extremely useful for evaluating different propeller and battery combinations. While I have measured partial throttle settings on some occasions, more often than not I’m

more interested in max power settings and the Xtrema’s “data hold” feature makes recordkeeping much easier than trying to remember multiple data values in your head as you’re testing a motor. This information, along with measurements of motor RPM and installed thrust, is very handy to figure out efficient combinations of propellers’ diameter and pitch to operate your aircraft efficiently and with minimum danger of burning out your motor, speed control, or battery by improper use or equipment selection.

So what’s ahead for the Xtrema? Using their web-downloadable features, TME is working on several advancements that won’t require hardware upgrades. A cell balancing feature is in the works as well as a data logger and plotter interface for both the charging and wattmeter functions. Farther out, there are plans for an integrated tachometer and expanded memory. In response to feedback from beta testers and other Xtrema users, minor upgrades to the screen displays have already been incorporated with software upgrades available on the Xtrema’s homepage. This is terrific “after sale” product support!

So what’s the “bottom line” on the TME Xtrema from my perspective? The Xtrema isn’t the least expensive charger available but on the other hand, offers features that you’d ordinarily have to pay extra for – the built-in wattmeter and temperature shutoff probe. Without any question the Xtrema is the most “user friendly” charger that I’ve used and its user interface has been carefully designed to give the modeler several “layers of safety protection” in a clear and logical manner. Its “no-cost” lifetime downloadable upgrades are a tremendous value and will assure that the Xtrema will never become obsolete, unlike many other battery chargers. I am looking forward to the planned upgrades and expect to use my Xtrema for a long time!

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CRRC BUILDING AND FLIGHT INSTRUCTORS

This is our list of qualified and willing instructors. Power planes are flown only at the Bill Martin Flying Field in Medfield. Sailplanes and Electrics can be flown at the Davis Farm Field on Rte. 117 in Sudbury. See <http://www.charlesriverrc.org> for directions to the flying fields. If you have any questions about the construction of your airplane, or want to have an experienced pilot pre-flight check your airplane before heading to the flying field, then call any of the building instructors.

INSTRUCTOR CONTACTS

Chief Instructor and Safety Officer: Jeremy Harkin
jeremy.harkin@gmail.com
 (781-894-6683)

POWER:

Jeremy Harkin	Waltham	781-894-6683
Bob Scott	Norwell	781-982-0268
Pete Young	Watertown	617 923-4184
Jon Leehey	Wayland	508 358 5721
Ruane Crummett	Wayland	508-655-2234

ELECTRICS:

Bruce Schneider	Hudson	978-562-9900
Fritz Bien	Concord	978-369-1720
Derrick Veliz	Acton	978-266-1739
Pete Young	Watertown	617 923-4184
Lincoln Ross	Waltham	781-891-0332
Dick Williamson	Sudbury	978 443-8549
Tom Bauer	Wellesley	781-235-7344

SOARING:

Dick Williamson	Sudbury	978 443-8549
Dave Walter	Hudson	978-562-5400
Bruce Schneider	Hudson	978-562-9900
Fritz Bien	Concord	978-369-1720
John Nilsson	Clinton	508-368-7136
Pete Young	Watertown	617 923-4184
Lincoln Ross	Waltham	781-891-0332
Ken Antonellis	Natick	508-653-8369
Tom Bauer	Wellesley	781-235-7344

HELICOPTERS:

Tony Davids	Stow	978-568-9598
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BUILDING:

Fritz Bien	Concord	978-369-1720
Joel Foner	Natick	508-653-3560
John Weigel	Natick	508-653-3560
Pete Young	Watertown	617 923-4184
Derrick Veliz	Acton	978-266-1739
Dick Williamson	Sudbury	978-443-8549
Tom Bauer	Wellesley	781-235-7344

TREE CLIMBERS & MEMBERSHIP STATISTICS

TREE CLIMBERS

Tony Morais

A1 Tree Services-Framingham, MA
 508-626-0088 800-657-7788

Kenny Greeno

Office Phone: 617-661-8591
 Cell Phone: 617-201-5300

Paul Harrington

(508) 376-2573 [Medfield Area]

Scott

774-286-1190 [Marlborough]

NEW KEYS ARE READY

2007 season keys are available! To get a Key for Bill Martin Field in Medfield, email Jean-Pierre Riu or Ken Antonellis. They will send out instructions as soon as they hear from you. Ken Antonellis is the keymaster. Try kxa@verizon.net.

Alex of Alex's RC in Belmont also has keys. Show him a club badge to get the key. A \$5 deposit is required the first time you receive a key.

MEMBERSHIP

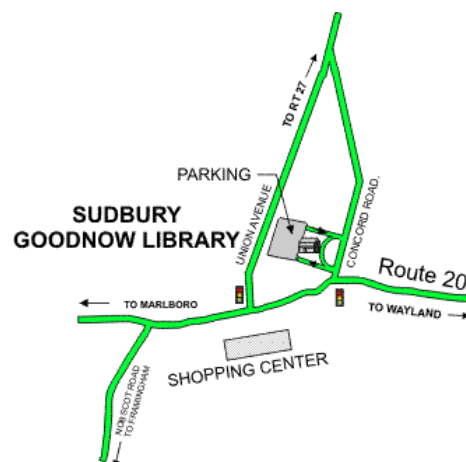
Here are the updated CRRC membership figures for 2007. The table summarizes the membership status from 1999 through current month, 2007.

Year	Renewals	New Members	Peak Totals
1999			135
2000	112	62	174
2001	124	50	174
2002	138	58	196
2003	156	40	196
2004	153	42	195
2005	144	20	164
2006	124	26	150
2007	90	11	101

-John Nilsson

MARCH DIRECTORS MEETING

The next directors meeting will be, Tuesday, March 27th at 7:30 PM, at the Sudbury Goodnow Library. All club members are invited to attend. Please volunteer to attend at the next club meeting.





THE CHARLES RIVER RADIO CONTROLLERS, INC

2007 MEMBERSHIP APPLICATION

AMA Charter 339

Name _____ AMA No. _____

Street _____ Birth Date (AMA req'd) _____

Town _____ State _____ Zip _____ Tel. () _____ - _____

E-mail _____

To receive membership card and field pass, bring this application to a club meeting, or mail to the membership secretary (address below). You can pay by check or use PayPal. (PayPal to membership@charlesriverrc.org)

Make Checks Payable to:
Charles River RC

SAVE \$5 - EARLY BIRD DUES RATES ARE LISTED

MEMBERSHIP CATAGORY	Rates until March 1, 2007	Rates After March 1, 2007
☐ OPEN Member	\$40.00	\$45.00
☐ JUNIOR member, (under 19 before 7-1)	\$1.00	\$1.00
☐ SENIOR member, (if age 60 before 7-1)	\$30.00	\$35.00
☐ SENIOR member, (if age 75 before 7-1)	Free if AMA member	Free if AMA member
☐ Full time STUDENT	\$20.00	\$25.00
☐ Family member additional to OPEN membership	\$20.00	\$25.00

John Nilsson /Secretary CRRC
511B Ridgefield Circle
Clinton, MA 01510
Telephone 978 368-7136
E-mail: photoguy205@comcast.net

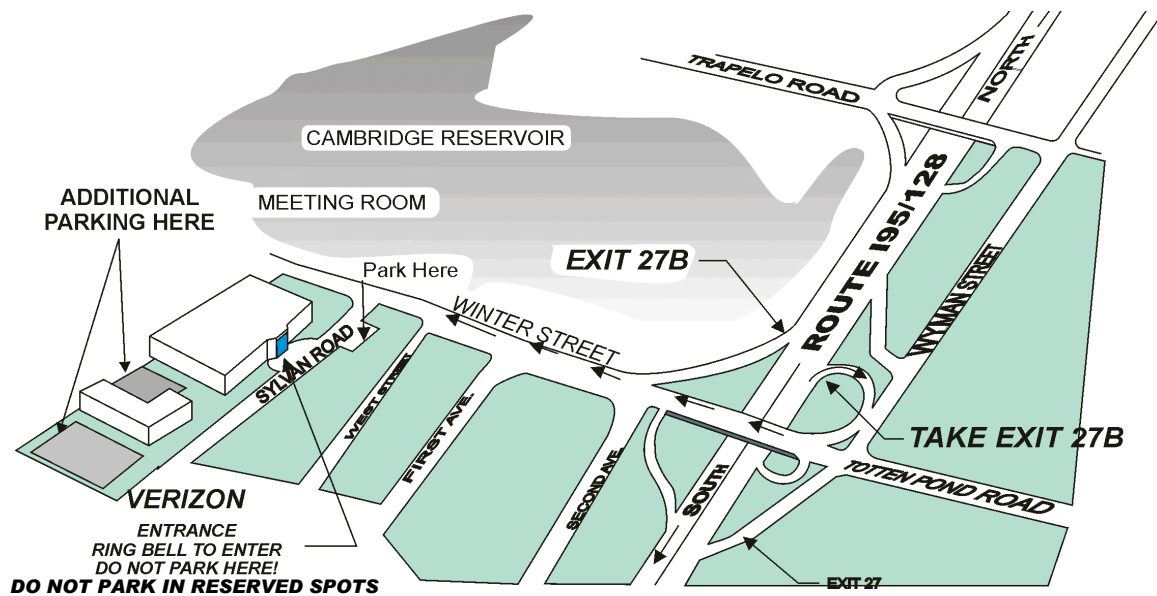
- ☐ I DO NOT want my address to appear
in the club phone book

You must be an AMA member in order to
receive your CRRC membership card.

To receive your newsletter by US mail, please contact John Nilsson, Membership Secretary at the next meeting. See the newsletter cover sheet for additional contact information.

Help reduce operating costs by receiving your newsletter on line. CRRC pays roughly \$10 per year for each mailed newsletter subscription.

DIRECTIONS TO CRRRC MONTHLY MEETING AT VERIZON LABS ON SYLVAN ROAD IN WALTHAM



The Charles River Radio Controllers meets the third Wednesday of each month. Guests are welcome. Check for the Newsletter meeting announcement on the second Wednesday of each month.



Show and tells you didn't see. February's meeting was so busy that several people didn't have a chance to show off their items. Ken Vincent brought in a "LipoSack" that safely holds his batteries.

Fritz Bien semi-scratch built this scale model. Covering is tissue and dope.

