

### **Brain Ache.**

The problem with writing a column like this is often finding a range of content which will be interesting to at least the majority of readers. I often get involved with quite technical areas (as in last month's column) which are fascinating to me but may cause some readers to suffer from the heading. I will try to counteract that this month by avoiding graphs and formulae (well maybe not entirely), and concentrating on text and pictures. If you find this a bit bland then I apologise, but I am sure I will return to numbers and theory in the future.

### **Oddments.**

I will start by covering a few items which have been building up in my "in tray" as it were. I cannot resist the temptation of collecting some of the items I see advertised or displayed by the specialist traders I keep in touch with. These are the "now that's a clever piece of kit" that you always find as you browse a magazine or trade show, and they are often easily put to one side and forgotten for a while. This, then, is my chance to catch up with a few of these items. You never know, one of them may be exactly the gadget you have been looking for the last few weeks.

### **Receivers.**

I do not usually include receivers amongst the items I review, partly because they are not specific to electric flight, but mainly because I do not have the expertise or equipment to assess their performance. The two 35 MHz units I have included here are almost accidental in that they were both part of a "bundle" of assorted items offered to me from two separate sources and I felt they were worth a mention, even though I was more interested in the other items in the parcels. As an aside, they are both produced as stand-alone units rather than the more conventional RC outfit receivers we are used to from the major companies (Futaba, Graupner, JR, etc.), and the security of using such units in a mix and match airborne package (with a standard transmitter) is a question the individual purchaser needs to consider.

They almost certainly originate in the Far East, not that this is necessarily relevant, and they are both very compact. The first is a Corona RS81011 from Giant Cod. This is a single conversion 8 channel receiver which is 45 x 22 x 8 mm and weighs a miserly 7.3 gms. The only downside of these dimensions is that it requires a miniature crystal but if you have used smaller receivers before you may well have some available. The second unit is a Master Micro 4 channel DSP Synthesized from Alan Fry's Importeknik. Even smaller than the Corona, this unit is 42 x 17 x 8 mm and weighs 5 gms. It is only a 4 channel unit (cf the 8 channels of the Corona) but has the advantage of not needing a crystal. The frequency selection process is absolutely simple. Switch on the transmitter (any 35 MHz frequency), hold the button in the centre of the receiver down and switch on the Rx power. The flashing LED indicates the search for the Tx frequency and a steady LED means the Rx is locked on. It couldn't be easier.

As I have already mentioned, I am not really able to assess the performance of these units electronically but I have flown them both in a little park flyer I have and I could not fault them. The range at which the model was flown was not enormous, so I was not able to check them out at thermalling ranges, but these units are probably intended to be used in smaller models at close range, and here they worked without problem.

### **Balancers.**

This is certainly not a new topic and I have recently also been looking at chargers with built-in balancing. I have a personal preference for this type of unit but many readers may well be using chargers without this facility. In this case a stand-alone balancer is a very useful add-on and there are many of these available now. Electronically these components are very similar with the major differences being in terms of the number of cells they can handle and the number of LEDs used to indicate the process. I have covered the difference between active and dormant balancing before but if a stand-alone balancer is to be an active unit it must interface with the charger being used and this usually means that the two units have to be from the same manufacturer having been designed to interface in this way (e.g. the Thunder Power units).

The three items I am covering here all originate with Over-tec and are all branded as Tornado (sometimes over-labelled with an Over-tec logo). The first is the most basic unit and may be no longer available but I have included it to show the range of facilities which can be included in balancers. It is a simple lightweight circuit board which is inserted between the charger and the battery which can be 2 to 4 cells in series. There is no interface between the charger and the balancer so that it is dormant unit which simply controls the cut-off voltage for each cell in the pack, and although not ideal from a battery protection point of view it is certainly better than unbalanced charging.

The second unit is the FB605 Autobalancer which will operate up to five series cells (an FP606 for up to 6 cells is also available). It has a fully automatic cell count detection, defective cell detection, robust metal case construction, replaceable fuse, can handle up to 6 amps charging current (6000 mAh capacity cells at 1C), and it is supplied with a full set of connecting adaptors. This is certainly a step up from the basic unit referred to above, and might be considered to be exactly the right level of stand-alone balancer for the average club flyer.

The third unit is a further variation on the Tornado theme in that it is a FC102/3 Balance Charger. Enclosed in a similar metal case to the FP605 but as a smaller unit, it is intended to provide a combined unit for field operation with indoor/park flyers. The charge current is limited to 0.75 amps (750 mAh cells) and only for 2 or 3 cell packs. These packs are used with many of the little ARTF foamies which are now available and this lightweight unit looks ideal. Even the power supply seems aimed at minimum requirements as the 14 -16 volt input could be provided by a pair of old 7 cell NiMH packs. Anything over 3000 mAh cells would provide 4 full re-charges which would fill an afternoons flying nicely. This is clearly not intended for field recharging a large LiPo powered scale/ sports model, but it does seem ideal for indoor and the park.

## Video.

I mentioned the FlyCamOne unit back in the December Q&EFI and no sooner had I got used to using the original unit than a new version, the FlyCamOne2, became available, and Alan Fry (Importeknik) asked me to look at one. Of a similar size and layout to the first FlyCam (see photo) the new version is a definite upgrade with better resolution and many additional features. The table gives comparative values for both units.

Version	Weight gms	Dimensions mm	Resolution	Battery
FlyCamOne	24	86 x 35 x 12	320 x 240	170 mAh
FlyCamOne2	37	80 x 40 x 14	640 x 480 video 1280 x 1024 stills	220 mAh

The FCO2 has the following additional features. It has a tilting lens, a Spycam/video facility, a mounting baseplate with remote power supply and shutter trigger, still picture sequencing at 4-second interval, and a motion sensor. Many of these features have no obvious application to model flying (unless you use it for security of your model storage), but I found the still sequencing a very useful alternative to video, and the tilting head can easily be connected to a servo to give some tracking facility.

The biggest change in this system is definitely the resolution. Four times better in video and sixteen times in stills is a very noticeable improvement. Using the later unit immediately after the original and on the same model gave me a real feel for the changes. If the Mark III improves by the same amount we will all be replacing our Sony Video Cameras.

## Horses for Courses.

This is too good a topic to be included under the original "Oddments" heading, but I could not resist the opportunity to include it even if the technical analysis will have to wait for next month. Many readers will know that I gave up competitive modelling a couple of years back when the driving got to be just too much (and that was before the cost of fuel became ludicrous). My main involvement to that point was with Eslot, but I gave up before the 200watt/kg league took off and I therefore have no personal experience of the models and power-trains used in this competition. I am sure that the flyers have been searching for the perfect power-train for these models just as we did with the older rules, and it looks as if the search is towards greater efficiency in this area.

I recently got a call from Rod Holmes at West London Models, and he asked me if I was interested in testing a motor which was proving to be popular with this group of flyers. The result was a parcel containing a Hacker A20 6XL 4.4/1 geared outrunner, two suitable Aeronaut Cam props, a Thunder Power 4S 2200 mAh Extreme V2 LiPo pack, a Hacker X-Pro controller, and the X-Pro software and interface package. You will see from the photographs that this is a very well presented motor which the specification states can handle up to 600 watts for 15 second bursts indicating a very potent unit. I have included a brief manufacturer's specification to whet your appetites, but, as I said, I must leave the testing until next month. Hope this is not too long for you to wait.

The Hacker A20-6XL-10 pole outrunner motor has an Io of 3.4 amps @ 8.4 volts, an Rm of 0.020 ohms, and a Kv of 2500 rpm/V. It weighs 78 gms, has a diameter of 28 mm, a length of 40 mm, and a 3.175 mm shaft with a 15 mm o/h (all without gearbox). The gearbox is a 4.4/1 Maxon epicyclic gearbox which increases the weight to 140 gms and the length to 80 mm (incl. shaft). The geared motor will drive a 16 x 8 Aeronaut Camprop at 387 watts (5360 rpm) on a 3S LiPo, and a 13 x 11 Aeronaut Camprop at 620 watts (7235 rpm) on a 4S LiPo.

## Change of Location.

This is not notice of a change to the location of a BEFA flying meeting, but is a change in the address of my web-site. Most readers will know that I back up my articles (in both QEFI and other publications) on this site as it allows me to produce all of the graphs and photos at a meaningful size, and to include additional data where appropriate. A change in recent domestic TV/telephone/broadband supplier from NTL to Sky has meant that I no longer have access to the old site at ntlworld. The site is still available on the net but I can no longer update it. My new site (fully updated) is at <http://www.geocities.com/gbobs7/INDEX.HTM> and you are very welcome to access it if you are interested.

## Contacts.

Giantcod RC, Unit 9A, Great Western Railway Yard, St Agnes, Cornwall, TR5 0PD.  
Telephone: 01273 782495 website [www.giantcod.co.uk](http://www.giantcod.co.uk)

ImporTeknik, Alan Fry, 29 Braiswick, Colchester, Essex, CO4 5AU - Tel 01206 852209

OverTec, Jesmond Dene Trading Estate, Forton, Nr Lancaster, Lancs PR3 0AT – Tel 01524 793328 website [www.overlander.co.uk](http://www.overlander.co.uk)

West London Models, 214 High St, Harlington, Middlesex, UB3 5DS – Tel 020 8897 2326  
Website [www.westlondonmodels.com](http://www.westlondonmodels.com)

## **Photographs.**

- QEFI78-1**      **The Corona RS81011 8 Channel 35 MHz receiver.**
- QEFI78-2**      **The Master Micro 4 channel DSP Synthesized receiver.**
- QEFI78-3**      **The Overtec/Tornado 2/4 cell basic balancer.**
- QEFI78-4**      **The Overtec/Tornado FB605 Autobalancer for 2/5 cells.**
- QEFI78-5**      **The adaptor leads for the FB605 Autobalancer.**
- QEFI78-6**      **The Overtec/Tornado FC102/3 Balance Charger.**
- QEFI78-7**      **The FlyCamOne2 unit.**
- QEFI78-8**      **Controls for the FCO2 on the left side of the unit.**
- QEFI78-9**      **The FCO2 movement sensor and LCD screen.**
- QEFI78-10**     **The right side of the FCO2 with memory card and USB port.**
- QEFI78-11**     **The geared Hacker A20-6XL with prop.**
- QEFI78-12**     **A closer view of the motor/gearbox assembly.**
- QEFI78-13**     **The two suggested propellers, large for 3S LiPo and small for 4S.**
- QEFI78-14**     **The HackerX55-SB Pro controller.**
- QEFI78-15**     **The interface components and software disk for the X55.**



**RS810II**

**CORONA FM**  
LONG RANGE - SMALL & LIGHT - DSP  
2CH REC'IVER  
SINGLE CONVERSION



**MASTER**

MICRO 4 DSP

35MHz

SCAN

SYNTHESIZED LED

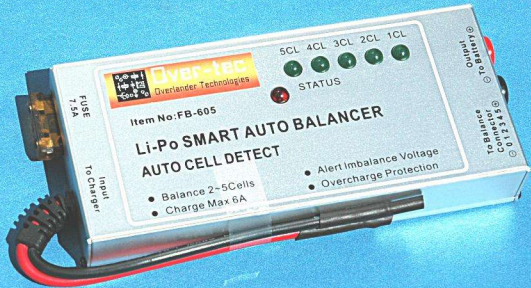
www.pichler.de

CH3

CH2

CH1





Item No: FB-605

# Li-Po SMART AUTO BALANCER

## AUTO CELL DETECT

- Balance 2-5 Cells
- Charge Max 6A

- Alert Imbalance Voltage
- Overcharge Protection

5CL 4CL 3CL 2CL 1CL

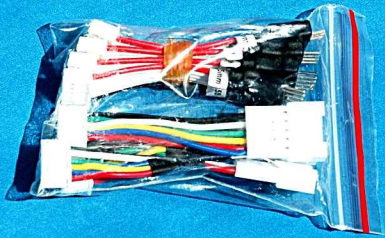
STATUS

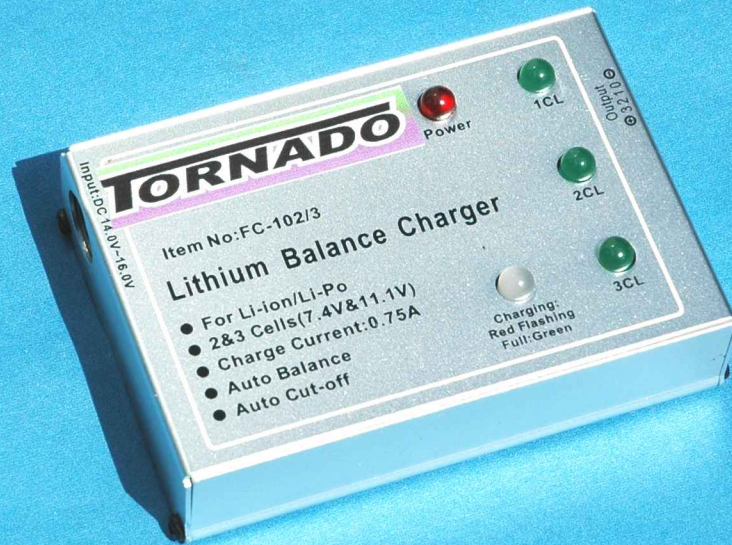
FUSE  
7.5A

Input  
To Charger

Output  
To Battery

To Balance  
Connector  
0 1 2 3 4 5





**TORNADO**

Item No:FC-102/3

### Lithium Balance Charger

- For Li-ion/Li-Po
- 2&3 Cells(7.4V&11.1V)
- Charge Current:0.75A
- Auto Balance
- Auto Cut-off

Power

1CL

2CL

3CL

Charging:  
Red Flashing  
Full:Green

Input:DC 14.0V-16.0V

Output:0.75A















aero-haut CAMcarbon  
Das Sieger-Luftdruckrad entwickelt von R. Freudenthaler

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