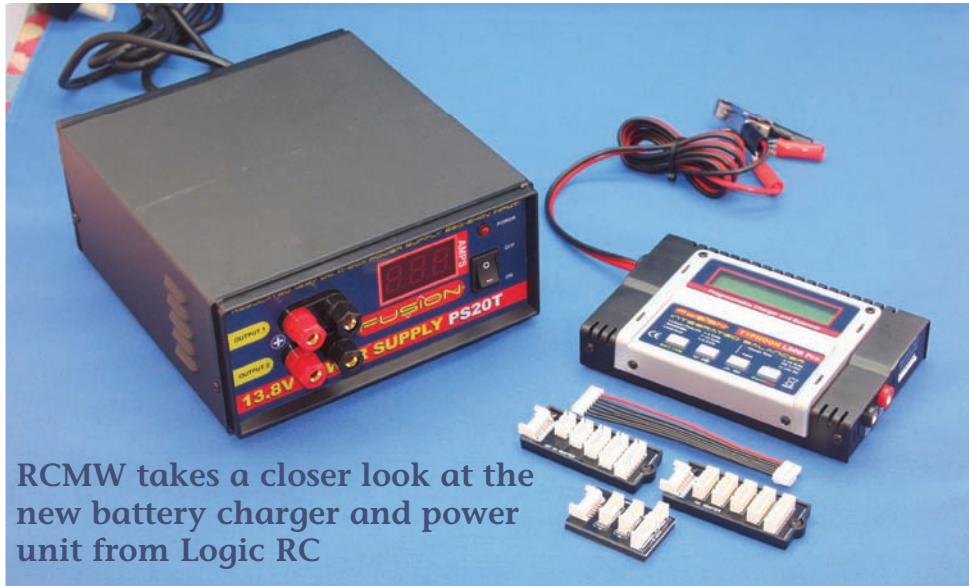


FUSION TYPHOON L50B PRO AND PS20T



RCMW takes a closer look at the new battery charger and power unit from Logic RC

With the evident swing towards electric flying with more and more model pilots either adding this as an option to I/C or changing over completely to electric power for a source of powering their models, it is not unnoticeable that there are increasing choices for batteries, and especially chargers, becoming available. The larger 12s LiPos require some sophisticated charging, while common-

place 2s and 3s used regularly by most electric-powered models can be recharged using inexpensive chargers, usually powered by 230 V AC mains or 12 V battery source, and there is a wide choice of chargers (with or without LiPo balancers) now becoming available.

Logic RC has recognised the need for mains powered devices with retro plug-in chargers and have thoughtfully introduced a series of 'Integrated Balancer' chargers to suit all pockets and needs. Adding to this is a range of 230 V mains powered units to supply the DC voltage to power the charger, and both of these (and other similar products in the Fusion range) are now available in all good model shops.

Fusion PS20T

This is a lightweight mains power supply can be connected to 220 – 240 V AC 50 Hz (typical UK mains voltage) and has twin 13.8 V DC regulated outputs enabling more than one charger to be

operated at any one time. It comes ready to use with a 13 Amp plug for use in the UK. (Euro version is available).

This rectangular black box is basic to look at. The rear panel houses a direct input mains lead and 20 mm mains input fuse. A cooling fan is vented also from the rear with venting also at both sides.

'two 13.8 V outputs'

The brightly-coloured front panel features two 13.8 V outputs via 4 mm sockets for 4 mm banana plugs, and these can also be unscrewed to allow Fork connectors to be used. A double-pole on-off rocker switch controls the power while a red LED indicates the unit is turned ON. A small window enables the operator to see the actual current being supplied via a 3-digit LED panel. The high maximum current available is 0 to 20 Amps, which is more than enough for two chargers, and the PS20T can be used also for charging your car battery overnight.

The regulated output is via 'Switched Mode' power supply (SMPS), which is an electronic power supply unit (PSU) that incorporates a switching regulator. The difference is that while a linear regulator will maintain the desired output voltage by dissipating excess power, the SMPS will rapidly switch a power output device between saturation (full on) and cut-off (completely off) with a variable duty cycle whose resulting average is the desired output voltage. The resulting rectangular waveform is low-pass filtered with an inductor and capacitor. The main advantage of this method is a much greater efficiency because the switching device dissipates very little power in both the saturated state and the off state.

Dimensions

Width 170 mm

Depth 190 mm

Height 85 mm

Price UK: £44.99 (order code FS-PS20TWIN) (Euro version - FS-PS20TE)

Fusion Typhoon L50B 'Integrated Balancer/Charger'

This is a multi-purpose Programmable charger with an integrated LiPo cell balancer.

Input is via a hardwired cable with crocodile clips attached at the



The Fusion PS20T power unit



Rear of power unit showing replaceable fuse and cooling fan



A colourful panel with twin 13.8 V outputs and LED window, with rocker ON/OFF switch and red LED panel indicator



The slimline Fusion L50B Pro balanced charger

ends for connecting to any 11 to 15 V DC battery terminals or any other similar input source. For use with the PS20T (or similar) these clips will have to be replaced with 4 mm Banana plugs (or similar).

The charger is a small thin unit with a silky black anodised aluminium case. The left side panel houses the DC input lead and a 3-pin socket for an optional computer link. The right hand panel sees the battery connectors via two colour-coded 4 mm sockets and a 7-pin JST-EH type connector Balance Port that will connect directly into either of the three included battery plug adaptor boards. The three boards supplied will suit PolyQuest, FlightPower, and Thunder Power and JST-XH LiPos of up to 5-cells. Optional adaptors for JST-XH types are available.

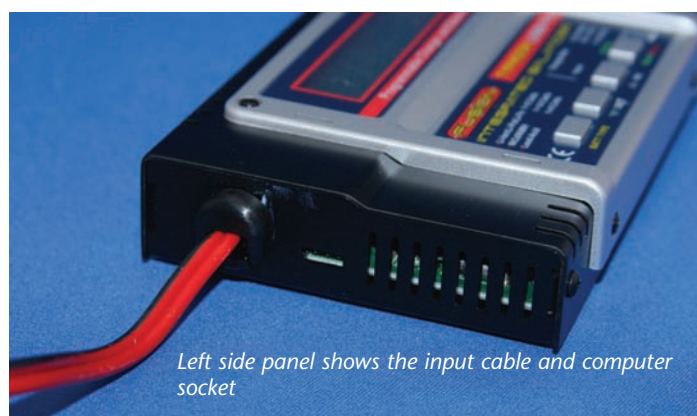
The front panel has a raised aluminium brushed panel featuring 2-line, 16-character with a blue backlit LCD display that makes the screen extremely clear to read at most lighting conditions.

The control panel features four push buttons for BATT TYPE, DECREASE, INCREASE, and ENTER, START/STOP functions. The panel reminds you of battery types and cells to be connected, and also the charge rate and input voltage.

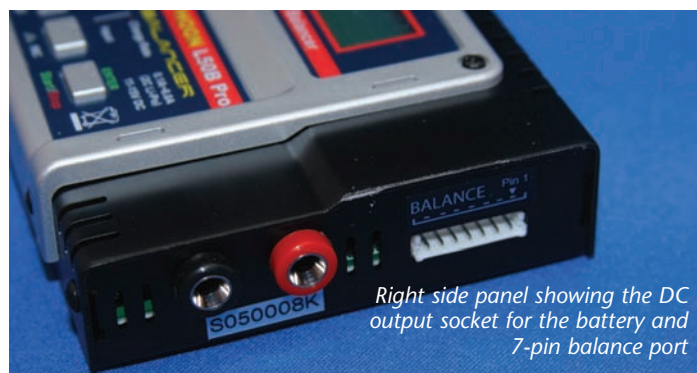
As with all chargers it is advisable to read through the instructions and understand them clearly before operating the unit, otherwise damage may be caused to the batteries if operated incorrectly.

With a battery connected and trying to operate without a supply connected to the input will result in the error message 'NO BATTERY' being shown in the display. Alternatively trying to set the functions with the supply connected but no battery to the output will result in the 'OPEN CIRCUIT' error message being shown. This message will also appear if the output battery becomes disconnected during a charge. For a balanced charge it is important that the user must correctly connect both the battery charge leads and the Balance Connector lead.

The Typhoon L50B Pro programmable charger has a built-in



Left side panel shows the input cable and computer socket



Right side panel showing the DC output socket for the battery and 7-pin balance port

Right: Adaptor boards and balance lead will fit most common LiPo battery types



intelligent balancing circuit that is designed to individually balance each cell of a connected LiPo pack to a maximum current of 280 mA within the tolerance of 5 mV during charge or discharge.

The instructions clearly point out that as a safety feature the charger is designed to automatically deliver 1C charge rate to the batteries (Li-Ion, LiPo or Li-Fe) based on the user selected battery capacity unless over-riden (only for batteries designed to accept 2C charging) and wisely, examples are shown so as not to confuse the user.

The maximum voltage permitted for Li-Ion is 4.1 V per cell while 4.2 V is maximum permitted for LiPo and 3.7 V for Li-Fe batteries, and therefore it is extremely important to make sure the user selects the correct Lithium battery type to be charged. Serious



Four easy-to-operate push buttons are clearly marked



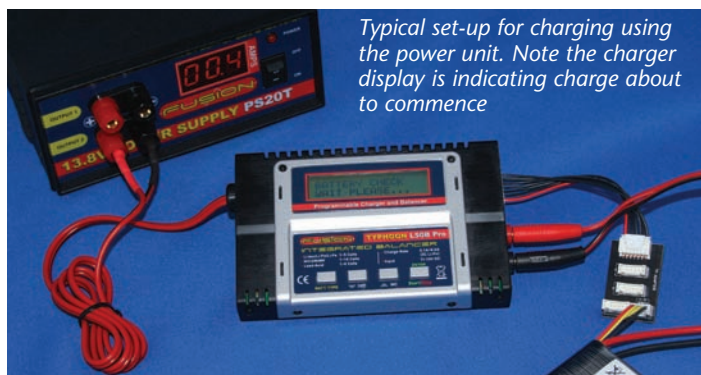
Replace the charger input lead croc clips with 4 mm gold plugs for the connection to the power supply output

Contact Details

Logic RC
 www.LogicRC.com
 01992 558226



Right: Top line left side shows the digits changing from CHG to BAL with 29-minutes time lapsed and currently at 0.55 A charge rate with full 12.651 V now applied



Typical set-up for charging using the power unit. Note the charger display is indicating charge about to commence

damage may be caused to the batteries otherwise. When connecting to a power source the charger will indicate the battery mode that was last used. It is important NOT to push START until the user has set the charger for the type being used. When connecting the Balancer lead the display will indicate 'BAL' As well as charging LiPos, this intelligent charger is capable of charging NiCad cells and NiMH cells. Accessing the cell types/modes is achieved by selecting from the menu button marked BATT TYPE by pushing until the correct type is selected and pushing ENTER. Selecting the correct charge rate is achieved next by depressing DEC or INC to select the correct charge and pushing ENTER. By depressing the START button a message BATTERY CHECK WAIT PLEASE... will appear in the display and then the current settings will be shown. This operation applies to all battery types. For NiCad cells the Delta Peak Sensitivity from 5 mV to 25 mV (or 3 mV – 25 mV for NiMH) per cell can be set with the INC and DEC buttons and press ENTER button to conform the required setting. As well as charging Li*** battery types the Typhoon L50B Pro can also be used to charge other battery cell types including 1-14 NiCad and NiMH cells and Lead Acid of 1 to 6 cells (2-12 V). A battery capacity of 100 mAh to 6000 mAh is adjustable only for Li*** type cells, and the charge rate is adjustable in steps of 100 mA (Max 50 W). The Typhoon L50B Pro will also Trickle Charge from 0 - 200 mA. An audible warning will be heard when the charge is completed and the word 'END' will be shown in the display.

Dimensions

- Width 140 mm
- Depth 90 mm
- Height 33 mm
- Price UK: £54.99 (order code FS-L50BP)

Test

Having changed the croc clips to 4 mm plug-ins as supplied, a quick test of the charger was inevitable. With the PS20T mains unit plugged in, the Typhoon L50B Pro charger was connected to the mains unit. A 3s 2500 mAh LiPo was connected to the DC output and the balance lead connected using one of the supplied adaptor boards. Switching on the power unit showed the displays to read zero on the power unit, and then the battery charger required setting for the correct battery type. A 3s 2500 mAh LiPo was used for the test, and so the battery type was first programmed to LP followed by ENTER. The next stage automatically starts flashing and the current rating of the battery was set to 2500 in stages of 50 mA by depressing the INC button for the correct setting. After depressing ENTER the battery voltage has to be set, again by depressing the INC (or DEC) button to the required 11.1 V for this 3s LiPo battery pack. The charger was now set showing all the required correct

values necessary. The START button was depressed and held and the screen showed 'BATTERY CHECK WAIT PLEASE...' followed by the charging screen. As described, the digits in the top left corner flashed between CHG and BAL, thus indicating that the battery cells were being balanced and it was charging.

'battery cells were being balanced and it was charging'

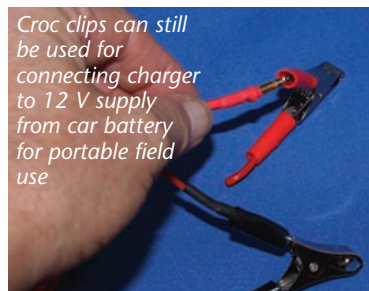


END of charge and display indicates 35.03 minutes duration and now trickle charging at 8 mA

The charge period took a little over 35 minutes and during this period I was able to see that the power unit was supplying 2.4 Amps constantly, until the last few minutes of charge when it dropped dramatically completing the charge. During the charging period on the charger screen a time counter indicates the duration of charge, and the battery voltage is shown rising and stabilising at around 12.65 V (for a 3s pack) along with the battery charge current consumption decreasing as it replenishes its charge to full maximum capacity. The END was displayed on the screen, and with simultaneous 'beeps' for around 5 seconds to indicate this.

The battery was disconnected and felt quite cool, and was now fully charged and ready for its next flight.

We must not forget, and is just as important, is the fact that this charger, like many others, is quite capable of charging your radio and receiver flight packs of NiCad and NiMH types, and also starter batteries and glow plug batteries and sticks if manufacturer's chargers are not at hand.



Croc clips can still be used for connecting charger to 12 V supply from car battery for portable field use

IMPORTANT NOTE: It is always advisable to check with the manufacturers charging and safety instructions before connecting any battery types to retro chargers. **RCMW**