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MANUAL FOR ULTRA GUARD 430-LED OPTION Applies to devices fitted with mini USB port only. INTELLENT BACK-UP TECHNOLOGY FROM OPTIPOWER Rev 9 Feb 2015

The ULTRA Guard 430 is a light weight versatile model emergency back-up solution to allow the use of a standby lithium cell to drop in and power the receiver (RX) or flybarless controller (FBL) as required. This allows the pilot to effect a safe landing whether fixed wing or rotary.

The ULTRA Guard 430 is light and intelligent with an all up weight of less than 39 grams including the 430mAh 2S lithium pack. The device is intelligent in that it can sense the model system voltage and set itself to that voltage so it is fully capable of running at low voltage (LV) and high voltage (HV) systems. The ULTRA Guard 430 will also charge whilst in flight and balance the lithium pack so you can be assured of a fully charged back-up device at all times (charges to 80% capacity only). **DO NOT** use as main power supply. Read the **BEWARE** statement at the end of this manual.

Component parts are available as separate parts.

PARTS LIST	DESCRIPTION
OPRUS2S	Complete ULTRA GUARD 430 System
OPRUS2S-L	Complete ULTRA GUARD 430 System with optional high intensity LED
B4302S	Replacement lithium cell
OPRHV	ULTRA Guard unit only
OPRLED	Optional high intensity LED

POWER UP Process

Plug the Ultra Guard 430 (LV/HV capable) into free port on RX/FBL unit checking the correct polarity. Energising the models power supply the device will sense & set itself to the system voltage. If Ultra Guard 430 lithium pack is not fully charged it will charge & balance during flight (it is designed to charge to 80% capacity only to protect lithium pack). The LED will likely flash once during the boot up process this is normal.

Red & Green LED's indicate the following:

Powering Up

Switch on model.

Green flashes for 5 seconds, voltage will stabilize LED goes solid green indicating system OK

Red flashing = charging

Solid red = running on buffer pack

If optional high intensity LED fitted this flashes when buffer pack is in use i.e. BEC or RX pack has failed.

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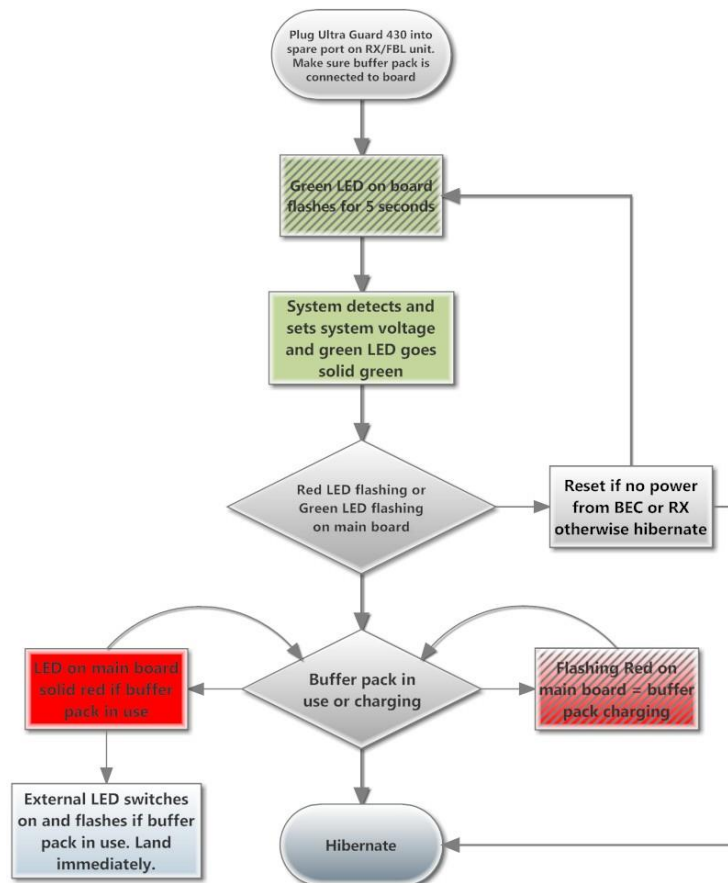


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Flow

Power up Ultra Guard 430 Flow Chart

chart Power Up



POWER DOWN Process

Switch off model

Solid red = on buffer pack & high intensity LED flashing if fitted.

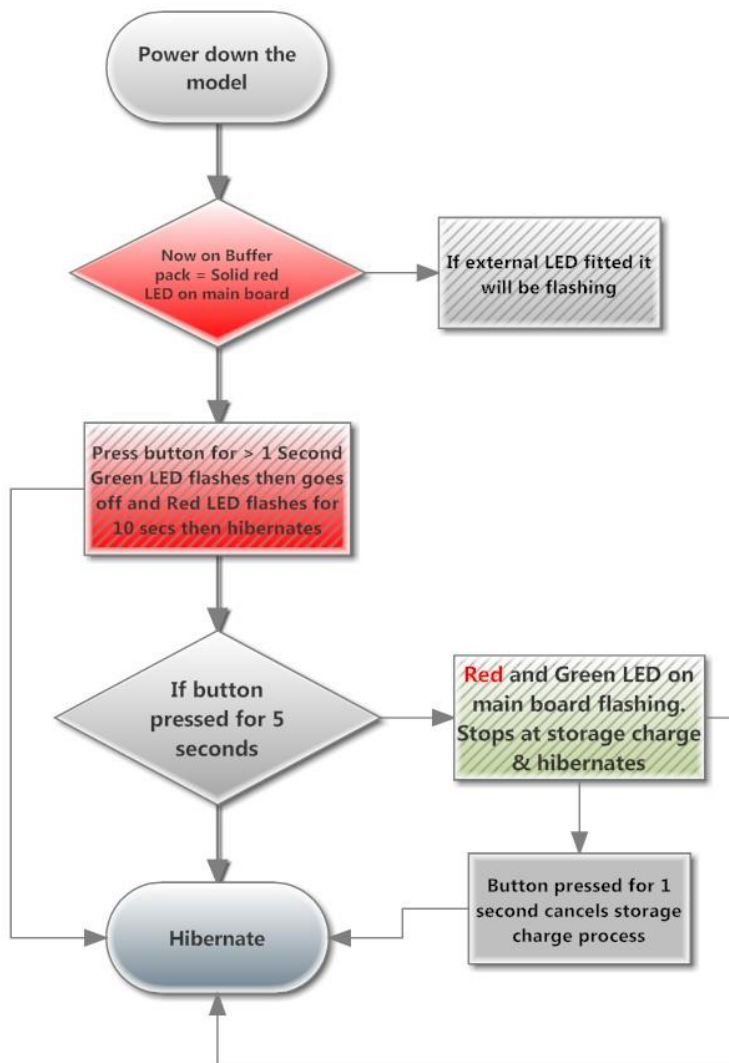
Press button for >1 second & Green LED flashes the buffer powers down and after 1 second red flashes for around 10 seconds (waiting time to allow large capacitors to discharge) then switches off.

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Power Down Ultra Guard 430 Flow Chart



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STORAGE:

If not used for more than 2 months or if ULTRA GUARD 430 is disconnected unplug the buffer pack from the device.

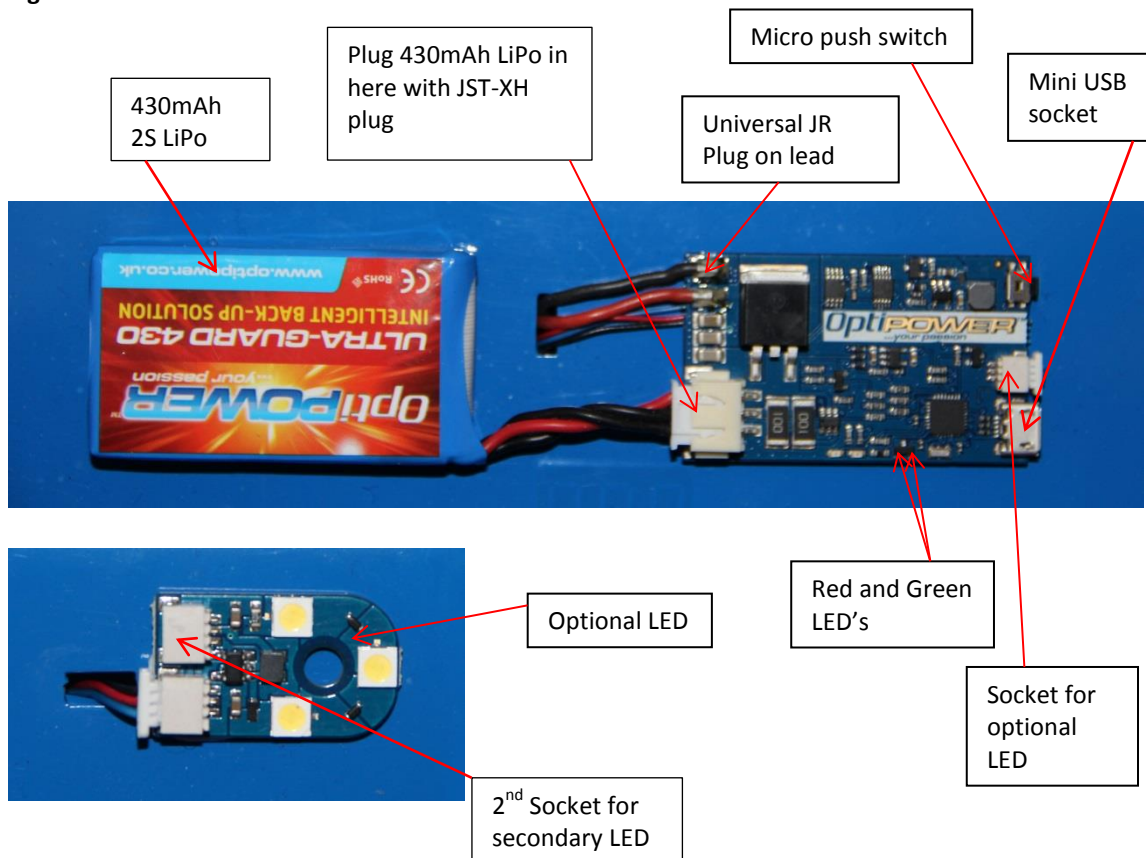
SPECIFICATION:

Voltage range 5V to 8.2V, maximum continuous current 7A peaking at 10A. Voltage drop when on buffer pack is 0.5V, set telemetry alarm appropriately if available.

POLARITY:

Do not plug the device in with the polarity reversed this will damage the OPRHV unit.

Fig 1.

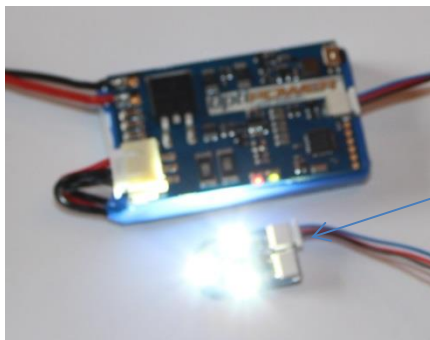


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If high intensity LED fitted then board looks like this



Optional high intensity LED indicates the buffer pack is in use.

High intensity LED indicates that the buffer pack is in use and you should land immediately as BEC or RX pack has failed.

Telemetry

If you use telemetry system on your RX/TX then set low voltage to 0.5V lower than nominal system voltage. The Ultra Guard 430 sets itself to the nominal system voltage less 0.5 volts during switch on and arm phase. The unit works on all voltages between 4.8V and 8.4V.

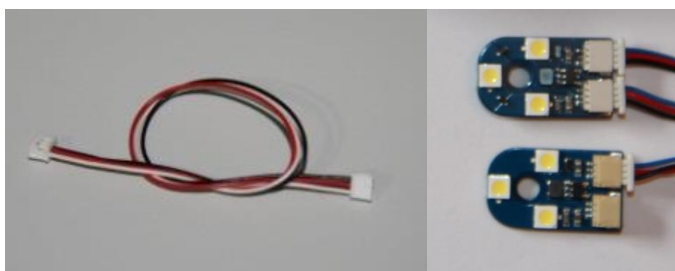
Storage and charging

The Ultra Guard 430 charges whilst in use from the main power pack/BEC and then switched this function off when charged (charges to <8V/80% capacity approx. & balances). If the unit is not going to be used for some time remove cable between the Ultra Guard 430 and model. There is a very small current when not in use so if not going to be used for some time disconnect the buffer pack from board (more than 2-months).

Procedure if LED is purchased as an additional OPTION and not as part of Super Combo.

The LED device can be purchased as an optional add-on to the main board as follows:-

1: The cable that comes with the LED looks like this & can be connected to more than one LED module:-



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Plug one end into LED and the other into the socket on the board. Your LED device is now ready to use. If you intend installing a second LED device to your model the standard cable can plug into the free port on the first LED and the other end into the second LED.

Warranty

The device is suitable for use with all FBL controllers. Device will be damaged if polarity connected incorrectly. If used with third party lithium pack, only use JST-XH connectors and NEVER connect the lithium pack to the RX or FBL controller directly.

Warranty is 12-months from purchase date.

Voltage range over which the system works:

Receiver	Buffer OUT	Charging
3.8	n/a	n/a
4.3	n/a	n/a
4.8	4.3	n/a
5.3	4.8	yes
5.8	5.3	yes
6.3	5.8	yes
6.8	6.3	yes
7.3	6.8	yes
7.8	7.3	yes
8.3	7.8	yes
>=8.7	8.2	yes

Beware:-

- Do not connect UG430 plug into a device with reversed polarity this will damage the UG430 and could result in lithium pack damage.
- Set up your BEC/ESC before you connect the UG430 to your system for the first time. Thereafter the UG430 can be left connected unless you decide to change the BEC voltage. In this case remove the UG430 plug from your system until you have reset your BEC/ESC voltage then reconnect. The UG430 will then re-learn the system voltage.
- Remember this device reacts to "VOLTS", so if you move your servo's this might mean the board comes to life but unless more than 4V is seen for 5-seconds it will not arm.
- Some components on the HV board do get hot in use this is usual. There are two stages of over temperature protection built into the board.
- **DO NOT** install and then test it on a BEC that is not capable of taking a back feed voltage, if your BEC is not secure in this regard use the optional BEC Guard. This is a safety device to drop in and supply voltage in the event your BEC fails or Regulator fails such that you have power to

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land buy having control of the RX/FBL unit and power to servos. If you wish to test on model then power up the system and allow the UG430 to set if using a BEC isolating it such that the UG430 cannot back feed into the BEC (remove lead from BEC so power to system) and the UG will switch in. BEFORE you reconnect the BEC turn off the UG430 so it will not back feed into the BEC and it will relearn the system voltage and then reset.

- If used with HV servos the LED's will flash intermittently due to the high current demand from the lithium pack this is to conserve lithium power as long as possible. The LED's will come on when load is lighter. This means that if you **EVER** see the LED's flash please land as soon as possible.
- It is quite normal on HV set-ups to see the LED light very dimly this will occur above 7.1V; this does no damage and is caused by leakage voltage.
- The latest version of the Ultra Guard board does have a mini USB port this is for future firmware revisions none available at this time.

WARNINGS

- **REMEMBER THIS IS A SAFETY DEVICE TO SUPPLY POWER IN THE EVENT OF A POWER SOURCE FAILURE NOT A FLIGHT POWER SYSTEM.**
- **USE WITH A BEC GUARD FOR COMPLETE PROTECTION.**
- **PLEASE NOTE LITHIUM CELLS ARE POTENTIALLY A FIRE HAZARD AND AS SUCH SHOULD KEPT IN SECURE FIRE PROOF CONTAINMENT WHEN NOT IN USE. THEY SHOULD NEVER BE LEFT UNATTENDED WHILST BEING CHARGED.**