Cod. 90010604

UniPower Spark

Power supply unit

MANUALE D'USO V1.0

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Dear customer,
thank you for choosing an Alewings product.

UniPower series supplying units are a great innovation developed by Alewings and represent a new concept of on board supplying.

Medium or big airplanes, both jet and acro, in most cases have many batteries on board: typically 2 for receiver and servos, 1 for engine or turbine and others smaller for smokes, landing gears and electric brakes, lights ecc.. So you have from a minimum of 3 to a maximum of 6 battery packs on your model and redundancy only for receiver and servos.

This doesn't happen anymore with UniPower Spark: with only 2 batteries it generates independent outputs for supplying all on board devices. And, what is more, it extends the safety of 2 batteries system to all utilities on board, included engine supplying.
Thanks to 2 batteries and double electronic circuits, if one branch of power supplying doesn't work anymore, all outputs will continue to work normally.

The user can choose among 3 operating modes:
- **Kill Switch function activated with fail safe on**: in case of absence or error of the signal from the receiver, the THR output will be disabled. The indicating light LED3 will emit 3 rapid flashes to indicate anomaly .
- **Kill Switch function activated with fail safe off**: in case of absence or error of the signal from the receiver, the THR output will keep the last status. The indicating light LED3 will emit 3 rapid flashes to indicate anomaly .
- **Kill Switch function deactivated**: when you turn UniPower Spark on, THR output is automatically enabled; if you want to disable it you must turn the device off.

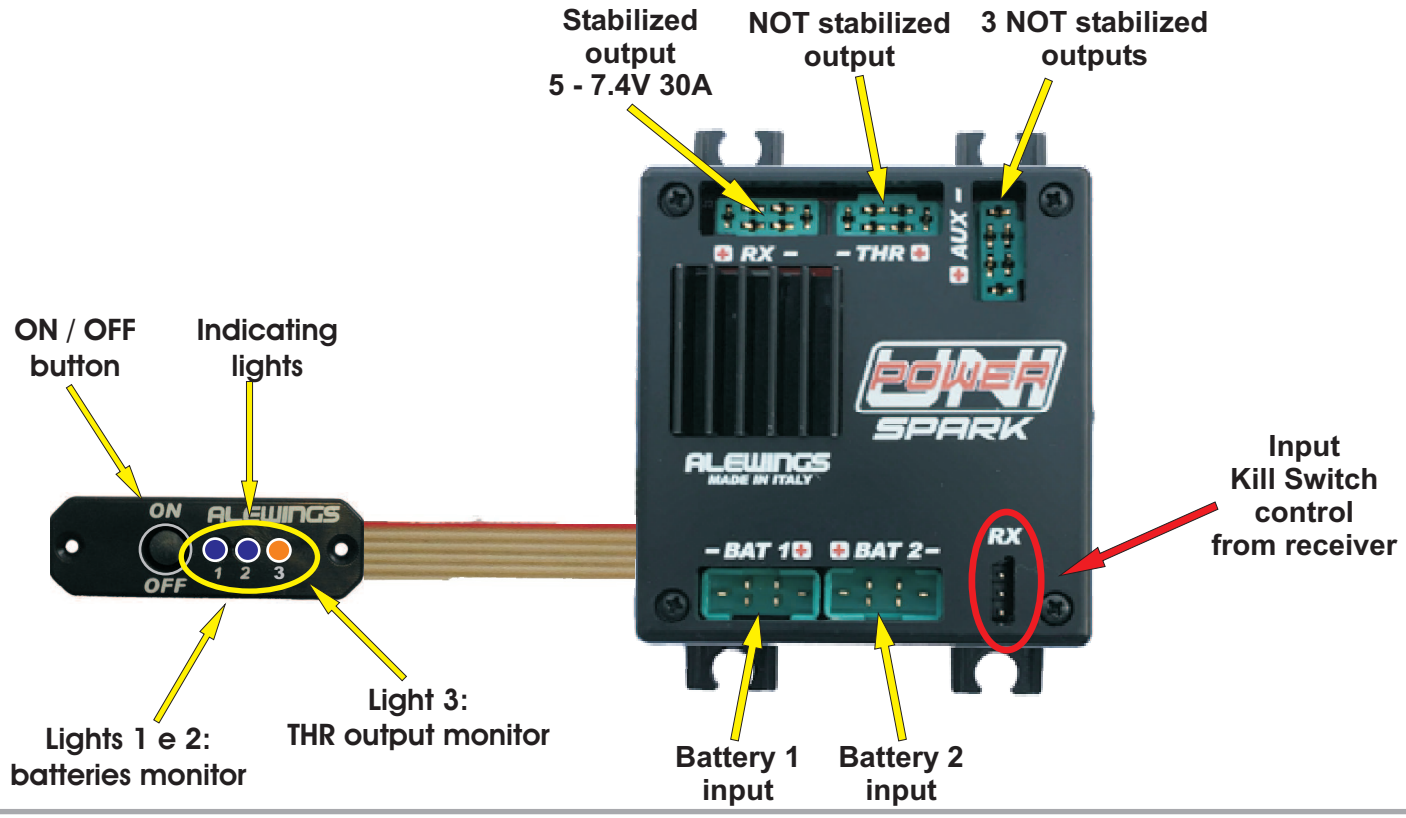
UniPower Spark requires 2 batteries for being supplied and **generates 3 independent outputs**:

- the first one for supplying receiver and servos. You can choose the output voltage from 5V to 7,4V by rotating the potentiometer on the device with a small screwdriver ;

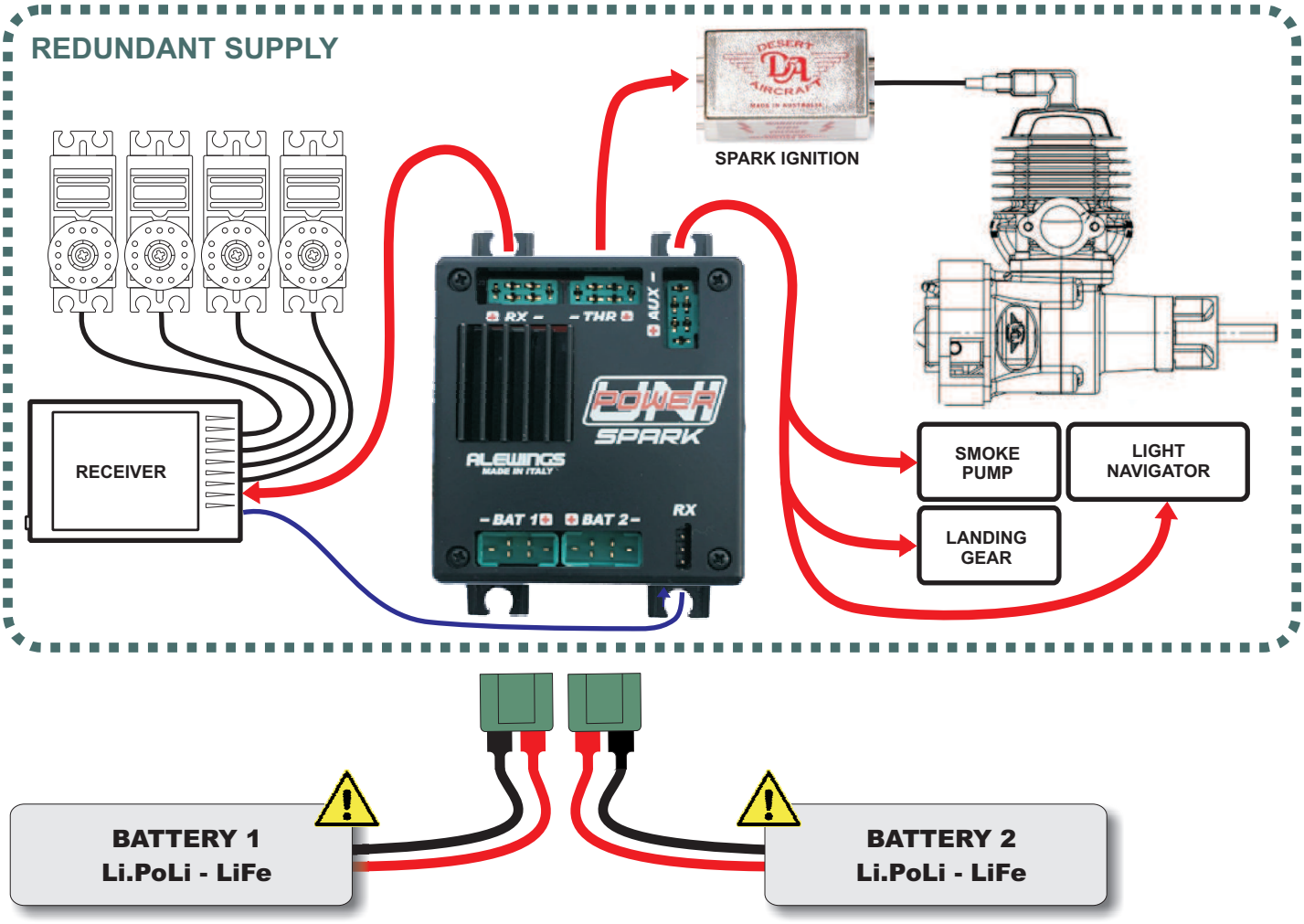
- the second one, not stabilized, **exclusively dedicated to the engine supplying, can be activated and deactivated by your transmitter (Kill Switch function)** ;

- the third one, not stabilized, presents 3 independent lines which can supply 3 devices such as smoke pump, lights, gears, brakes; each line is protected by a 10A fuse.

Turning on/off is by a button situated on the external panel; on the external panel are located also the three indicating lights allowing you to check the batteries status of charge, the status of the THR output (engine supplying) and possible anomalies.



CONNECTIONS DIAGRAM



USAGE

Before using UniPower Spark, please choose the device working mode that fits better your needs, referring to "Programming" paragraph. Connect the device as shown into the paragraph "Connections" and set, on the back side of the device, the correct voltage for "RX" output so that it is right for your receiver and servos.

TURNING ON:
Connect batteries to inputs Battery 1 and Battery 2. Push and keep pushed the button on the external panel for at least 2 seconds; when the indicating LEDs light up, release the button.
When turned on the device automatically activates the outputs "RX" and "AUX". The output "THR" is activated by the ON/OFF transmitter control.
Only if you chose the mode "Kill Switch deactivated" also the output "THR" is supplied automatically when you turn the device on.

The indicating LEDs 1 and 2 start to flash at a frequency indicating the battery status; if one of batteries is low or not connected, the corresponding LED will be steady on (see "Battery status" paragraph).
The indicating LED 3, orange, shows the styatus of the "THR" output: if it is off, the "THR" output is disabled; if it is on, the output is activated and so the electronic ignition of the engine is supplied.

TURNING OFF:
With the device turned on, push and keep pushed the button for at least 2 seconds. As soon as you push the button the indicating lights 1 and 2 will light up steady and after 2 seconds they will turn off. Release the button: the device is off. It automatically deactivates the 3 outputs.
Please note: before turning the device off or after a flight session, is always recommended to check the batteries status as the system keeps memory of the minimum value of battery charge recorded during the session. If you turn the device off, this value is reset.

ATTENTION: if you don't use UniPower for more than one week, please disconnect batteries.

DEFAULT SETTING

UniPower comes with the following default setting:
- Operating mode: Kill Switch activated with fail safe ON
- Type of batteries: : 7,4V 2S Li.Poly

Before starting use you are always suggested to check settings; please proceed as follows:
with the device not powered (both batteries must be disconnected), push and keep pushed ON/OFF button and at the same time connect one of the two batteries.

The two indicating lights will start to flash cyclically indicating the current setting; see the following table for correspondence between flashes and setting:

	LED 1	LED 2		
Operating mode				
	1 flash	1 flash	Kill Switch activated with FS ON	**DEFAULT**
	1 flash	2 flashes	Kill Switch activated with FS OFF	
	1 flash	3 flashes	Kill Switch deactivated	
Type of batteries				
	2 flashes	1 flash	2s Li.Poli	**DEFAULT**
	2 flashes	2 flashes	2s Li.Fe	

If setting is right for your needs, disconnect battery for turning the device off and connect again; UniPower is ready to be used. Otherwise, if you want to change settings, see "Programming" paragraph.

PROGRAMMING

After checking the saved settings as shown into "Default setting" paragraph, enter the programming menu to change them.
Programming menu is structured in a sequential way: any time you enter the menu, you have to repeat all steps for saving new data properly.
With the device not powered (i.e. with both batteries disconnected), push and keep pushed ON/OFF button and simultaneously connect one of the two batteries.
The two indicating lights will start to flash cyclically indicating the current setting ; after the first cycle of flashes you can enter the programming menu by pushing ON/OFF button.
The menu is structured in two steps: for each you have to make your choice before proceeding to the following one.
The first LED indicates the parameter you are going to set, the second the possible choices for that parameter. The second LED repeats twice each sequence of flashes so that you are able to see the number of flashes and then to confirm your choice while the same number of flashes is repeated. The device starts a sequence of flashes which refers to step one (see table below); to confirm your choice push the button when LED are flashing according to the desired setting.

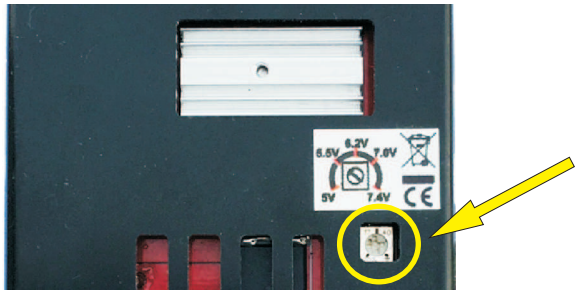
	LED 1	LED 2		
Operating mode				
	1 flash	1 flash	Kill Switch activated with FS ON	**DEFAULT**
	1 flash	2 flashes	Kill Switch activated with FS OFF	
	1 flash	3 flashes	Kill Switch deactivated	
Type of batteries				
	2 flashes	1 flash	2s Li.Poli	**DEFAULT**
	2 flashes	2 flashes	2s Li.Fe	

After you made your choice relatively to the second step, the device saves data and automatically enters the working mode; UniPower is ready for use.

SETTING RX VOLTAGE

"Rx" output supplies receiver and servos; verify which is the correct voltage for your own receiver and servos.

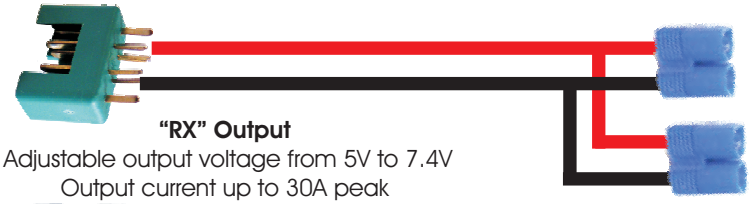
Rotate, with the aid of a little screwdriver, the potentiometer and choose the position corresponding to the desired voltage. If you want to set a voltage lying between values indicated or with a precision to one tenth of a volt, you are suggested to use a voltmeter in order to see the output voltage while setting.
Position the voltmeter tips on positive and negative poles of "RX" output connector and rotate the potentiometer: you will be able to set the voltage with maximum precision. **ATTENTION: IF YOU CAUSE A SHORT CITCUIT BETWEEN THE TWO POLES, THE DEVICE GETS DAMAGED.**



ATTENTION: YOU MUST SET THE RIGHT OUTPUT VOLTAGE BEFORE CONNECTING UNIPOWER TO ANY DEVICE YOU WANT TO SUPPLY.

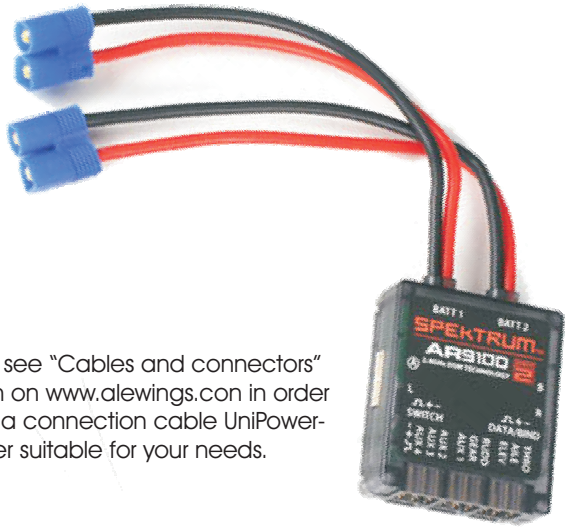
CONNECTION OF THE RX OUTPUT

You can use UniPower for direct supplying of the receiver; it is possible to use also receivers with double battery input. You need a black/red cable of adequate section (min 1,5 sqmm) with male MPX connector for connecting to UniPower "RX" outputs and, on the other side, a suitable connector for connecting to your receiver.

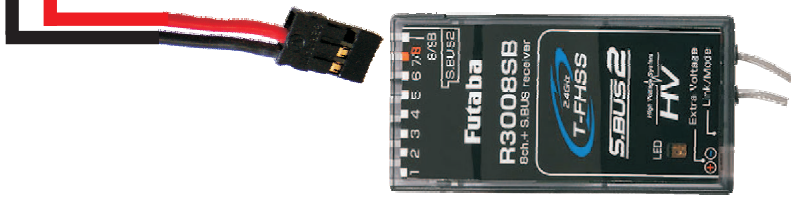


"RX" Output
Adjustable output voltage from 5V to 7.4V
Output current up to 30A peak

OR



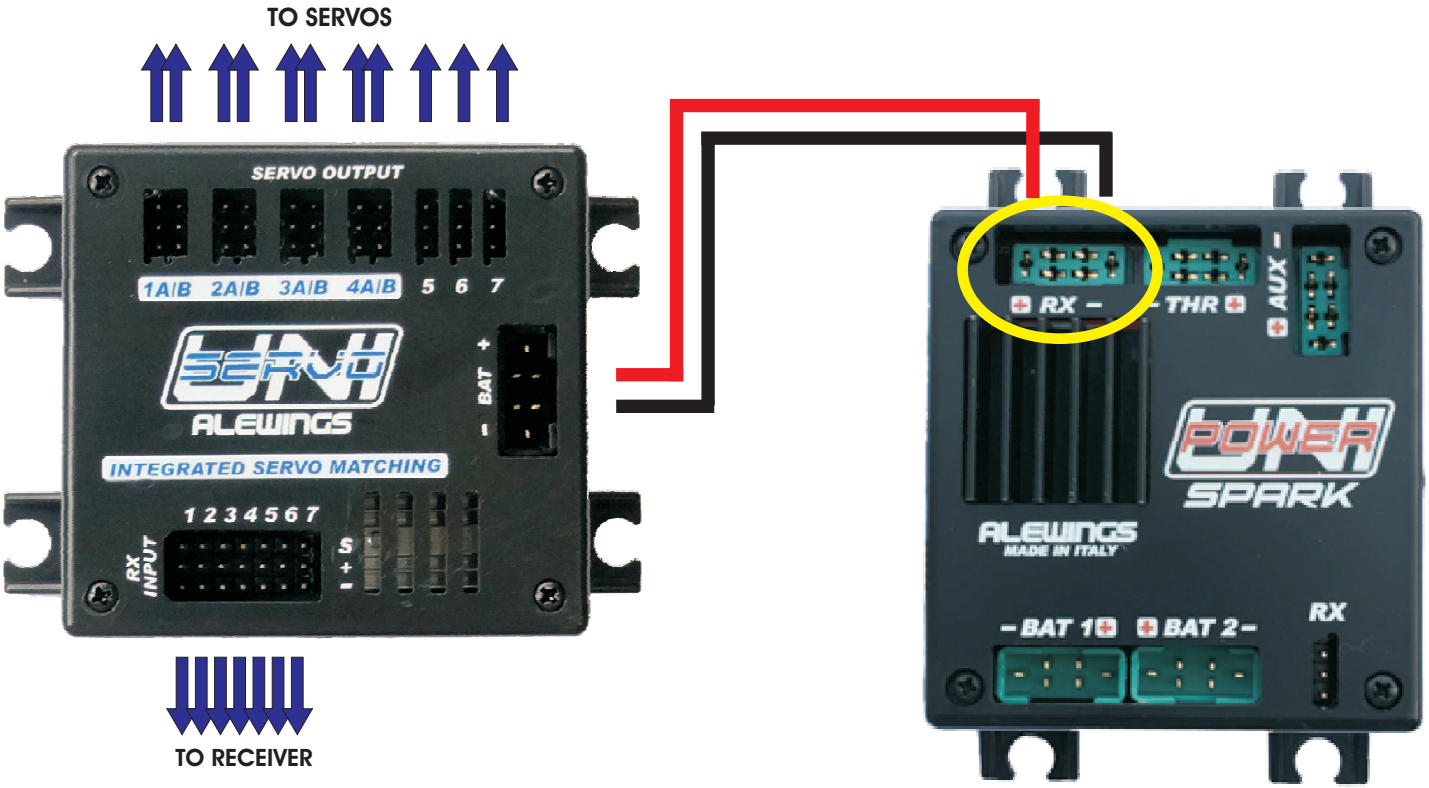
Please see "Cables and connectors" section on www.alewings.con in order to find a connection cable UniPower-receiver suitable for your needs.



UniPOWER & UniSERVO

You can use UniPower also together with servos managing unit UniSERVO7ADJ. See the connection scheme below.

For connecting UniPower to UniServo please use a black/red cable of adequate section (min 1,5 sqmm) with male and female MPX connectors.



CONNECTION OF THE KILL SWITCH CONTROL

Using the extension socket-socket provided, connect the UniPower Spark to the receiver channel that you want to use for controlling activation of the THR output (power supply to the electronic ignition of the gasoline engine).

Make sure that the channel settings are: ATV 100% and D/R deactivated. Assign a two position switch for controlling the channel and check, by means of a servo, that moving the switch from one position to the other, the receiver output changes from +100% to -100% and vice versa.
When starting the device if mode 1 or 2 are selected (i.e. Kill Switch activated, fail safe on or Kill Switch activated, fail safe off), the signal of the Kill Switch control coming from receiver will be checked, in order to verify that it is present and correct.

If, when you turn the UniPower Spark on, the signal is not valid (Kill Switch already activated) or is not present, the device starts but enters the alarm status and the indicating light 3 continues to emit sigle flashes; for exit the alarm status you must bring the Kill Switch control back to deactivating position (= move the switch on your transmitter) or restore the connection between the receiver and the UniPower Spark.

Indicating light 3:
status of the output THR

NOTE: the red wire is not connected inside the UniPower. Power supply for the receiver is taken from the output RX (see the previous paragraph).

Meaning of the indications of light 3:

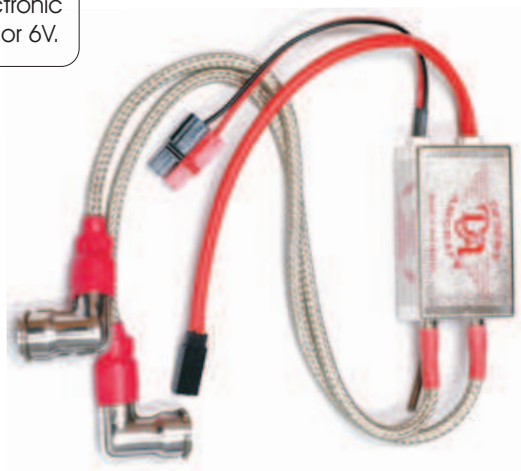
- **Steady on:** the output THR is activated (electronic ignition of the engine supplied)
- **Off:** the output THR is deactivated (electronic ignition of the engine not supplied)
- **Single flash:** error at turning on, signal from receiver is not present or is activated
- **Sequencies of 3 rapid flashes:** error when device is on, signal from receiver is not present or incorrect.

CONNECTION OF THE THR OUTPUT

GASOLINE ENGINE

Please connect UniPower "THR" output to battery input on your spark ignition unit. You are suggested to use a black/red cable of adequate section (min 1 sqmm).
ATTENTION: the output THR is not stabilized. The output voltage coming out from the THR port is the same as the batteries.
If the electronic ignition unit of your engine requires a maximum operating voltage lower than the batteries voltage, you must use a voltage regulator.

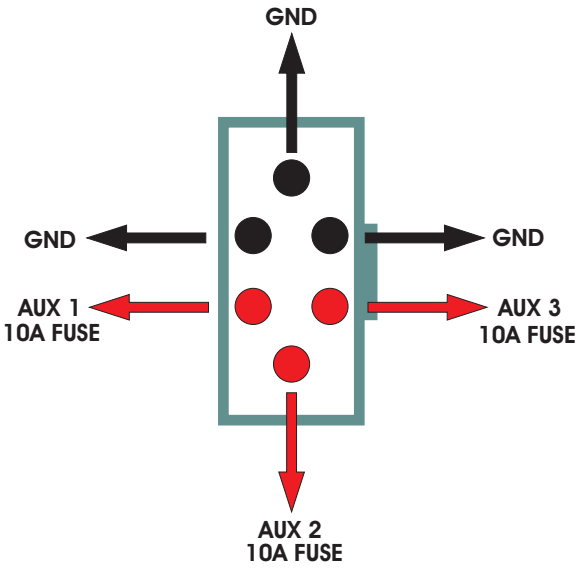
VOLTAGE REGULATOR:
to be used only if the maximum supply voltage of the electronic ignition of the engine is 5 or 6V.

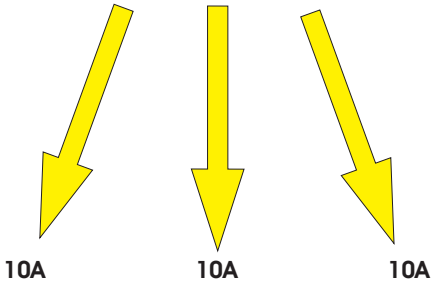


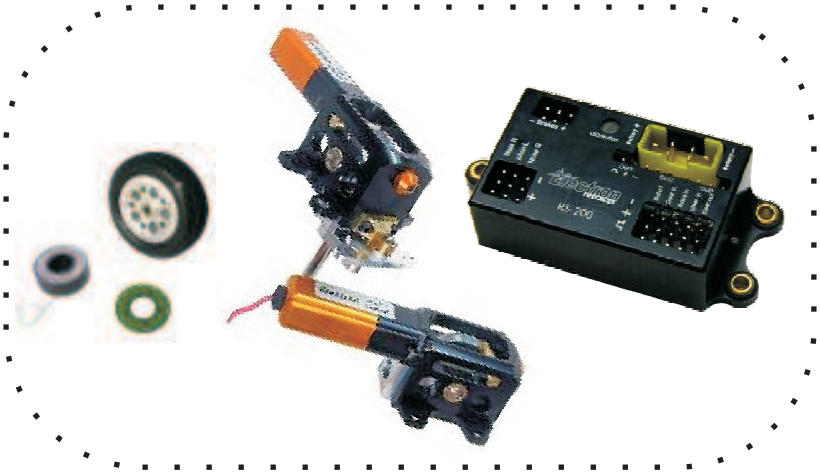
CONNECTION OF THE OUTPUTS AUX

Connect all other auxiliary devices you want to supply to the 3 "AUX" outputs: lights, smoke pump, retract landing gears, electronic brakes, starters for smokes.
Use the cable provided and pay maximum attention before connecting since outputs are protected by 10A fuses.

"AUX" OUTPUT CONNECTOR TOP VIEW







AUX1 10A
LANDING GEAR AND BRAKE

AUX2 10A
SMOKE PUMP

AUX3 10A
NAVIGATION LIGHTS

STATUS OF THE BATTERIES

Two seconds after turning on, the device starts to check batteries status. Indicating lights flash to indicate batteries residual charge: more the flashes are rapid less is the residual charge of the batteries.
If you want to reset the alarm, you have to turn the device off and on again. If the alarm remains, please check connections and measure batteries charge.

ATTENTION: if indicating lights are steady on, don't use the device.

Batteries Li.Poli 2S 7,4V
1 flash every 2 sec : >7,5V
1 flash every 1sec : >7,2V
1 flash every 0,3sec : >7,1V
Steady on : <7,1V and loss of power supplying

Batteries Li.Fe 2S 6,6V
1 flash every 2 sec : >6,4V
1 flash every 1sec : >5,9V
1 flash every0,3sec : >5,7V
Steady on : <5,7V and loss of power supplying

Status of the batteries indicating lights 1 and 2

ATTENTION: the flashes of the indicator lights don't correspond to the instantaneous voltage of the batteries but to the minimum voltage detected when you turned the device on.

FIXING

Preparing the device for fixing:
Take the small bag containing 4 black rubber dampers, 4 small brass tubes and 4 self-threading screws.
Insert the four rubber dampers provided into apposite seats at the base of the device.
Insert the four brass small tubes into holes in dampers so that they exit just a little both above and below.
Prepare the four self-threading screws provided that you will use for fixing the device.
Preparing the mounting surface (hereinafter called rx plate):
-Case 1: fixing the device directly to rx plate: position the device into desired place and drill for holes for screws. Create into rx plate some openings in correspondence with heat sinks and air intakes of the device, so that air can pass and cool it. With device into mounting position, insert the four screws and tight them until they touch the brass small tubes.

Don't tight too much, don't press dampers.

-Case 2: fixing the device with spacers: position the device into desired place and create four spacers at least 10mm thick in correspondence with fixing holes. Drill four holes for screws; with device into mounting position, insert the four screws and tight them until they touch the brass small tube.

Don't tight too much, don't press dampers.

Fix it using the self-threading screws provided.

WARNING

This is not a toy.
Pay close attention to the following points, as the non observance of them can destroy the product, nullify your warranty and lead to property damages or personal severe injuries!

- Never leave the product unattended while it is switched on, in use or connected with a power supply. If a defect occurs, it could set fire to the product or to the surroundings.
- Avoid incorrect connections or connections with reversed polarity.
- All wires and connections have to be well insulated. Short-circuits might destroy the product.
- Never allow this product or other electronic components to come into contact with water, oil, fuels or other conductor liquids, as these could contain minerals, which are harmful for electronic circuits. If this happens, stop the use of your product immediately and let it dry carefully.
- Always wire up all the parts of the equipment carefully. If any of the connections loosens, due to vibrations, you might damage your device.
- Never cut off or modify the original plugs
- Never change the polarity of the receiver connectors
- Do not open the product and never solder on the PCB

TECHNICAL SPECIFICATIONS

Dimensions:	80x61x23mm
Weight:	76gr external panel included
Input voltage:	6V-8,4V:
Batteries:	2x 2S Li.Poli - 2s Li.Fe
Output voltage for RX output:	stabilized, reglable from 5V to 7,4V - 30A peak
Output voltage for THR output:	not stabilized 7A continous
Output voltage for AUX outputs:	3x not stabilized protected by 10A fuses stato di carica l
Batteries status indicating lights:	LEDs 1 e 2 blue color
ITHR output status indicating light:	LED 3 orange color
Max current drain:	about 30mA with LEDs lighted
Current drain when OFF:	< 100uAh / h
	about 500mA in 6 months of use
Working temperature:	-10 up to +60 °C

Specifications may change without notice.

WASTE DISPOSAL

At the end of its life cycle this product is subject to special waste disposal and it cannot be disposed with urban waste