mini MAC
Electronic power supply

USAGE MANUAL   V1.4

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Dear Customer,

Thank you for your choice of Alewings products.

The miniMac is a power supply system able to manage two batteries; it accepts 6 channels incoming from the receiver and controls up to 9 servos coming out.
It is equipped with a voltage regulator programmable at any voltage included between 5 and 7,4V up to 30A (peak). It includes circuits for signal amplification and filtering.
Moreover the miniMAC includes double electronic switches, double battery voltage indicators and a protection against short circuit for each servo. (See the note about fuses)

⚠️ **WARNING** ⚠️

CAREFULLY READ BEFORE USE

- **Use only Li.Poli 7,4V batteries**

- **Don't invert batteries polarity**

- **Pay attention to polarity of the connecting leads both on receiver and on box side**

- **To invert polarity of leads to the receiver may damage the receiver and/or the device itself.**

- **To invert polarity at servos outputs may damage servos and/or the device itself.**

- **Before connecting servos to the device, make sure you set the voltage output of miniMac at a value lower than or same as the maximum voltage allowed for your servos**

NOTE: Each servo output is protected against short circuits and overcurrent by a not self-resetting fuse.

- **If too much current is flowing (for example because of the total blocking of a servo) or a short circuit occurs, tha fuse of the output burns.**

- **If the box is unused for more than one week, disconnect both batteries.**

⚠️ **NOT SELF - RESETTINGFUSES** ⚠️

EACH SERVO OUTPUT IS PROTECTED BY A NOT SELF-RESETTING FUSE

Nature of fuses is to act as protection; in the case of a short circuit and/or overcurrent:
- **the self-resetting fuse opens (it temporarily cuts the supplying to the servo) and, when cooled, closes again.**
- **the not self-resetting fuse burns (it cuts permanently the supplying to the servo).**

ATTENTION: A FUSES BURNS ONLY IF SHORT CIRCUIT OR OVERCURRENT OCCUR.

A system protected by not self-resetting fuses has the advantage that, if the fuses burns, this unequivocally means that a particularly high current flow occured.
This is a clear evidence that there is something anomalous, such as:
- **a defective servo**
- **a servo warking too hard because of a wrong positioning of the servo harm or a wrong setting of the control rod**
- **an extension cable with not well insulated leads**
- **a connector with not well insulated contacts**

The self-resetting fuse, after a short time, closes again, thus restoring a critical situation

The not self-resetting fuse permanently escludes the critical situation, allowing a precise and immediate detection of the problem

NOTE: each fuse is tested by a continuous current flow widely higher than the normal absorbtion of a servo

Connection miniMAC - Receiver

Mini Mac manages 6 channels from receiver; connect the channels you want to put into the box to the inputs on miniMac referred to as "RX INPUT". Use the 6 exetension leads provided, paying maximum attention to polarity both on the receiver side and on the box side.
Note: it is absolutely not necessary that channel number 1 on the receiver corresponds to channel 1 on the box and so on...

Connection miniMAC - Servos

MiniMac manages in output up to 9 servos, distributed over 6 channels . After assigning the function corresponding to each channel in input, connect their respective servos to outputs referred to as "SERVO OUTPUT".
Pay maximum attention to connectors polarity (see figure 1)
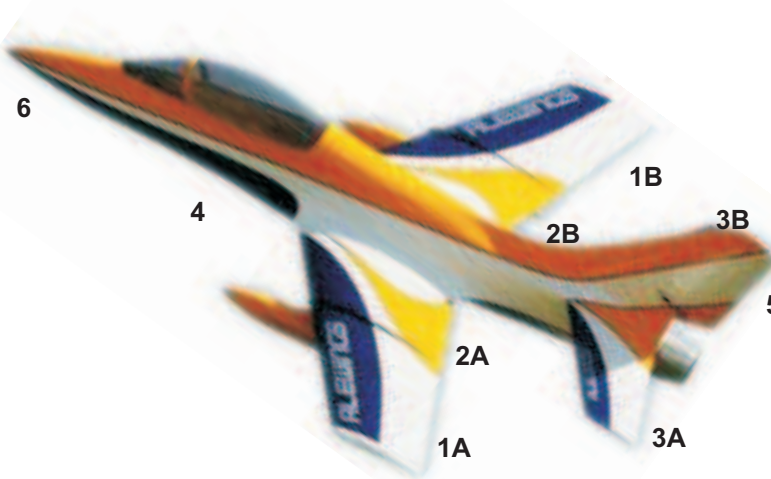Below som example of assignment of channels:

Assignment of miniMac channels on maxi aerobatic plane:
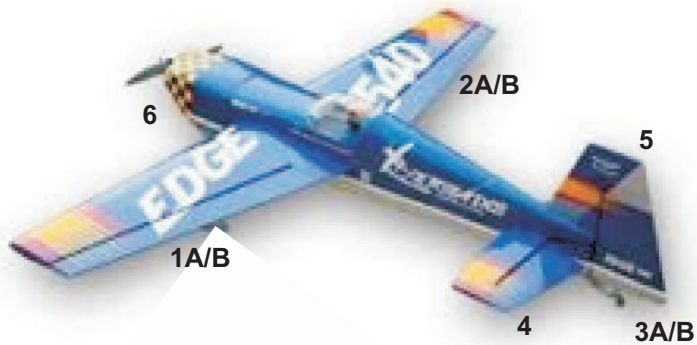
Channel Function

1A/B	AIL left with two servos
2A/B	AIL right with two servos
3A/B	RUD with two servos
4	ELE left with one servo
5	ELE right with one servo
6	THR with one servo

Assignment of miniMac channels on turbine jet:

Channel Function

1A	AIL left
1B	AIL right
2A	FLP left
2B	FLP right
3A	ELE left
3B	ELE right
4	GEAR
5	RUDDER
6	Gear RUDDER

Connect directly into receiver the turbine throttle and other possible channels.

Assignment of miniMac channels on glider:
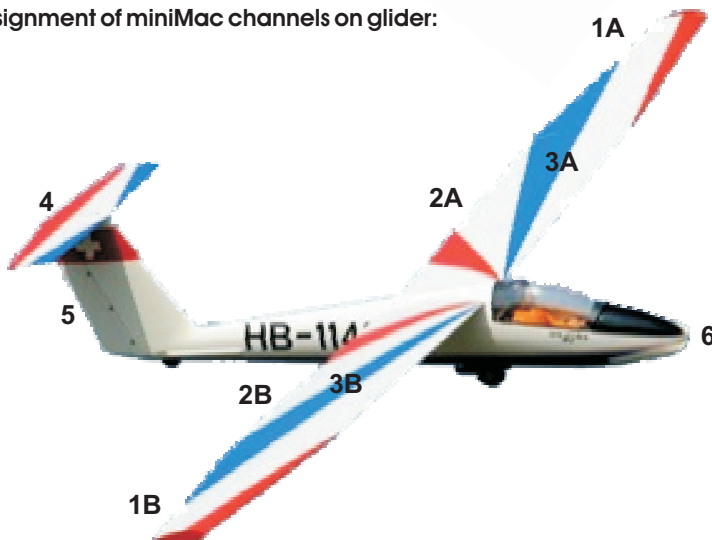
| Channel	Function
1A	AIL SX
1B	AIL DX
2A	FLP SX
2B	FLP DX
3A	AIR BRAKE SX
3B	AIR BRAKE DX
4	ELE
5	RUDDER
6	SGANCIO

Connect directly into receiver the throttle and other secondary functions.

NOTE:examples showed here are non-binding and don't cover all possible installations.

1A/B 2A/B 3A/B 4 5 6

Connection between miniMAC and servos:
Please connect the servos to the outputs called "Servo output".
Make sure to respect the right polarity.
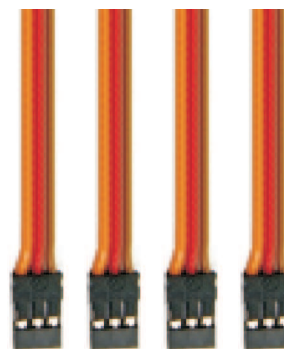
Connection between miniMAC and receiver:
Use the 6 leads provided and connect the receiver channels to the miniMAC.

PLEASE NOTE: it is not necessary that the channel 1 on the receiver corresponds to the channel 1 on the miniMAC. Pay attention to the lead polarity both on the receiver side and on the box side.

Batteries connection:
Connect batteries with sockets MPX to inputs called "BAT1" and "BAT2" on the miniMAC.

Connection miniMAC - External panel:
Connect the flat cable to the corresponding connector on the external panel.
Later you will have to disconnect again in order to fix the panel on the external side of the fuselage or on the receiver board.
PAY ATTENTION TO POLARITY, THE CONNECTOR SHAPE ALLOWS CONNECTION WITHOUT EFFORT.

IMPORTANT:
Before connecting batteries, make sure you have selected, at least approximatively, the right miniMac output voltage for your receiver and servos.
SEE THE FOLLOWING PARAGRAPH.

PROGRAMMING THE OUTPUT VOLTAGE
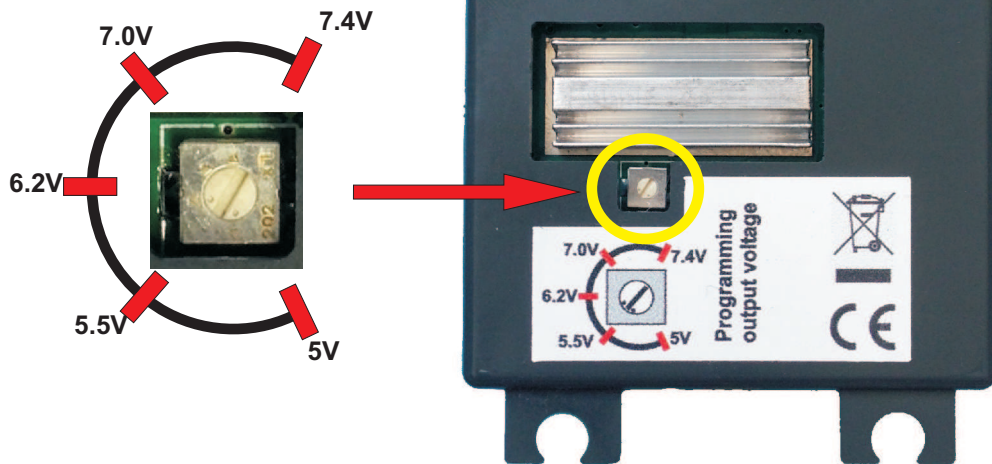
With a little screwdriver move the trimmer on the back side of the device to the position corresponding to the desired voltage.

If you want to set a voltage between two of the values indicated or approximated to a thenth of Volt, the use of a voltmeter is recommended. Position the tips of the voltmeter on the positive and negative poles of the servo output (you can use an extension lead for an easier operation): moving the trimmer you can program the voltage with maximum precision.

ATTENTION: YOU MUST PROGRAM THE CORRECT OUTPUT VOLTAGE BEFORE CONNECTING THE POWER UNIT TO ANY OTHER DEVICE

STARTING FOR THE FIRST TIME

Before using the MiniMAC please be sure you have correctly connected the box as shown into the paragraph "Connection" and you have chosen the right output voltage for your servos and receiver.

IMPORTANT:
- **When you connect the first battery, the device turns automatically on**
- **Make sure that servos are disconnected from corresponding moving part; the servo blocking at end point may damage the box, the servo and the moving part.**
- **Make sure to connect the batteries respecting polarity and to use only LiPo 7,4V batteries.**

When you connect a battery, the device automatically turns on and the LEDs light up solid blue.

NOTE: the device detects power supply interruptions; for this reason it goes automatically in alarm status when turned on (as if a power failure occured) wit LEDS steady on. See the paragraph " Batteries status" for description of flashes sequences.
So, after connecting both batteries, you have to turn the device off and on again (as shown below) to reset the alarm.

TURNING OFF AND ON:
When the device is on, press the button and keep it pressed for at least 2 seconds to turning it off. The LEDs on the external panel will turn into solid blue and after 2 seconds they will turn off. When you release the button the device is off.

When the device is off, press the button and keep it pressed for at least 2 seconds to turning it on. The LEDs emit 2 sequences of 3 rapid flashes: now the device is ready to use. The LEDs will start flashing at different frequency depending on the state of the two batteries (see the "Batteries state" paragraph).

Two seconds after you turn it on, the device starts to check the status of the two connected batteries.
The LEDs emit different sequences of flashes indicating the voltage of the batteries.
More the flashes are rapid and less the batteries have residual power.

ATTENTION: If the LEDs are solid blue, the device has entered the ALARM status (low or disconnetted batteries). Recharge batteries or check connections.

LEDs FLASHES:
- 1 flash every 3,5 seconds: >7,5V
- 1 flash every second: >7,2V
- 1 flash every 0,5 seconds: >7,0V
- light solid: <7,0V and/or loss of power supply

To reset the alarm please turn the device off and on again.
If the alarm continues, check the connections and the batteries voltage.

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

Button

LEDs

ON
ALEWINGS
1 2
OFF

BATT 1   **BATT 2**
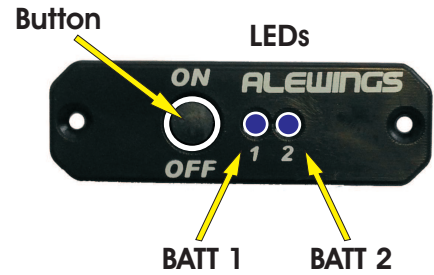
FINE ADJUSTMENT OF OUTPUT VOLTAGE:

If you want to set a voltage between two of the values indicated or approximated to a thenth of Volt, you have to use a voltmeter to read voltage during the setting.
Position the tips of the voltmeter on the positive and negative poles of one servo output.
Pay attention not to cause short circuits:an accidental contacts between poles may burn the fuse.

you can use an extension lead for an easier reading of voltage as shown into the following figure.

<u>Preparing the device for fixing:</u>

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.

1

2

3

OK
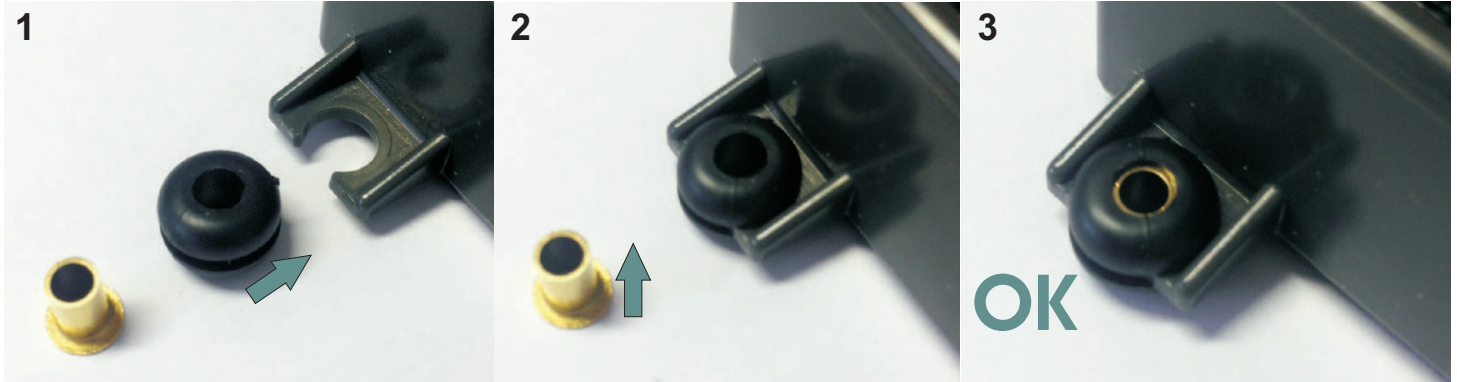
<u>Preparing the mounting surface (hereinafter called rx plate):</u>

-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.

<u>Fixing the external panel:</u>

Using the shape provided as a guide, create the opening and the fixing holes for the external panel into the fuselage or the rx plate.
Fix it using the self-threading screws provided.

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

Dimensions:	80x61x23mm
	45x15mm External panel
Weight:	70gr without cables
Operating Voltage:	from 6,0V to 8,4V
Batteries:	Two 7,4V LiPoli batteries
Output Voltage:	Stabilized Voltage
	Programmable between 5V
	and 7,4V
Maximun current:	20A continuous - 30A peak
Maximum current for each output:	3A continuous with protection
	against short circuits
Maximun current drain:	about 100mA when the leds
	are ON
Current drain when device is OFF:	about 150uA instantaneous
	(100mA after a month unused)
Warking temperature:	-10° up to +60°C

These specifications may be changed without advance notice.

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