



World Leaders in RC
Power Supply Systems

Instruction Manual

PowerBox GEMINI II



Dear customer,

We are delighted that you have decided to purchase the **PowerBox Gemini II** power supply from our range.

We hope you have many hours of pleasure and great success with your **PowerBox Gemini II**.

Product description

The **Gemini II** is the logical development of the **PowerBox Gemini**, which we have produced unchanged since 2005. The revised design incorporates ideas gleaned from customer requests and our own experience. The **Gemini II** has a considerably higher performance than the earlier model, since the case now consists of a high-quality machined aluminium heat-sink. Numerous supplementary features have also been added. For example, the pilot now has two options for activating the system: either by push-button using the **SensorSwitch**, or using a magnet. This also allows the implementation of a concealed installation; in this case an integral buzzer indicates the **ON** and **OFF** state. Like all power supply systems from **PowerBox Systems**, the **Gemini II** boasts consistent redundant construction: two regulators, two controllers and two integral Hall sensors ensure a totally reliable power supply. The external **SensorSwitch** activates both electronic switches simultaneously. The tri-colour LEDs in the **SensorSwitch** indicate the battery status in four stages. The battery inputs take the form of MPX high-current connectors.

The output voltage is double-regulated, and can be set either to 5.9 V or 7.4 V.

Features:

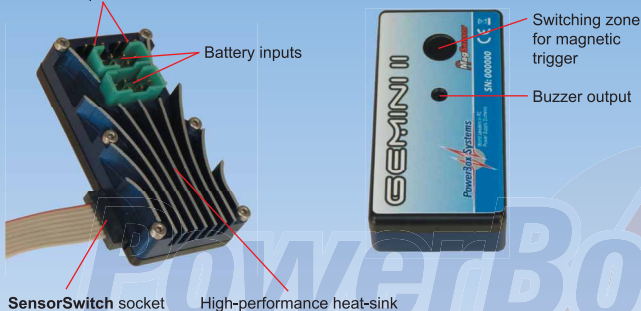
- Double-regulated output voltage
- Electronic On / Off switch, using either a magnetic trigger or the **SensorSwitch**
- On and Off switching signalled by visual and audible indicators
- Regulated output voltage of 5.9 V or 7.4 V
- LED voltage indicator for each battery separately
- Supports three battery types: LiPo, NiMH / NiCd, LiFePo
- Suppression of any servo feedback currents which might occur
- MPX battery inputs
- Large-area anodised aluminium case for high regulator capacity
- Integral regulator monitor

Contents:

1. Lay-out and connections
2. Connecting the batteries and the **SensorSwitch**
3. Switching On and Off
 - a) Using the **SensorSwitch**
 - b) Using the **magnetic trigger**
4. Setting the battery indicator
5. Setting the output voltage
6. Specification
7. Dimensions
8. Set contents
9. Servicing
10. Guarantee conditions
11. Liability exclusion

1. Layout and connections

Sockets for patch-leads to receiver



2. Connecting the batteries and the SensorSwitch

Connect your batteries to the MPX high-current inputs, taking care to maintain correct polarity.

CAUTION: connecting the batteries with reversed polarity will instantly destroy the two regulators in the **Gemini II**. If this should happen, the regulator monitor causes the two LEDs to flash alternately red and green to indicate the fault.

Connect the **SensorSwitch** to the socket on the side of the case; the connector cannot be inserted the wrong way round.

3. Switching On and Off

a) Using the SensorSwitch

The unit is switched on by holding the button on the **SensorSwitch** pressed in until the LEDs light up orange. Release the button for a moment, then press it briefly a second time. This action confirms the switching process.

The method of switching off is identical: hold the button pressed in until the LEDs light up orange, then release the button and press it again briefly to confirm the action.

The unit emits a double-beep to confirm that it is switched on or off; the audible signal which accompanies the power-on procedure differs in pitch from the power-off signal.

b) Using the magnetic trigger

Hold the magnetic trigger close to the switching zone (depression) in the case - see illustration above - and wait a moment until you hear a signal from the integral buzzer. A pair of internal Hall sensors pass on the signal to the two micro-processors. These are only switched on or off if the signal strength and signal duration are as specified.

If you install the unit in a concealed location, make certain that you hear the double-beep which indicates that both switching circuits have been switched on or off. The audible signal which accompanies the power-on procedure differs in pitch from the power-off signal.

4. Setting the battery indicator

If you intend to use a 5S NiCd or NiMH battery, or a 2S LiFePo battery, you must set the voltage monitor correctly, otherwise the LED will constantly flash red. However, this setting has no influence at all on the actual switching process or the stabilising circuits.

This setting can only be changed using the **SensorSwitch**. This is the procedure for setting the various battery types:

- Connect both batteries, and switch on the **Gemini II**.
- Hold the Set button pressed in, and observe the LEDs.
- The LEDs first light up orange, then go out again after a few moments.
- Pause: keep the button pressed in.
- The LEDs flash green once, and the unit emits a single beep. If you release the button now, the battery type "2S LiPo" is selected.
- Pause, keep the button pressed in.
- The LEDs flash green twice, and the unit emits a double beep. If you release the button now, the battery type "5S NiMH" is selected.
- Pause: keep the button pressed in.
- The LEDs flash green three times, and the unit emits a triple beep. If you release the button now, the battery type "2S LiFePo" is selected.

This procedure does take a few seconds, but it is designed to eliminate the risk of changing the setting accidentally. In any case, it only has to be carried out if you switch to a different battery type. The setting is stored permanently in the two micro-controllers.

5. Setting the output voltage

It is possible to set your **PowerBox Gemini II** to either of two different output voltages. The default stabilised voltage (as delivered) is 5.9 Volt.

The performance of your **PowerBox Gemini II** is around 30% higher when operating at 7.4 Volt due to the reduced dissipated power.

The advantage of a stabilised, regulated 7.4 V supply compared with a direct, unregulated 8.4 V output is the constant voltage. This means that the servos always operate at the same speed and generate the same torque - regardless of the state of charge of the batteries. If the servos are operated on the unregulated voltage of a LiPo pack, their initial torque and speed will vary considerably from the values when the battery is half-discharged. A further major advantage of a regulated 7.4 V voltage is the elimination of voltage peaks, and this extends the useful life of the servos.

CAUTION: before you set the unit to 7.4 V it is essential to check that all consumer units connected to the system - all servos, receiver, gyro, etc. - are expressly approved for use with the higher voltage. Information on this matter can be found in the instructions provided by the equipment manufacturers.

The output voltage setting can only be changed using the **SensorSwitch**. This is the procedure for setting the output voltage:

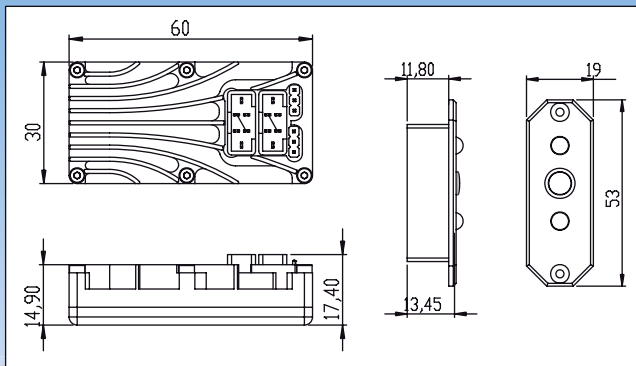
- Switch the **Gemini** on using the **SensorSwitch**; both LEDs must light up green.
- Disconnect both batteries from the unit.
- Hold the SET button on the switch pressed in.
- Connect the batteries in turn while you continue to hold the SET button pressed in.
- The LEDs on the switch now flash red three times if the unit is set to 7.4V, or green three times if set to 5.9 V. Check that both inputs display the same colour when the batteries are plugged in.
- Release the SET button when you are sure that both LEDs have indicated the correct setting.

The setting is a toggle action, i.e. if you wish to change the output voltage back to 5.9 V, simply repeat the procedure.

6. Specification

Operating voltage:	4.0 Volt to 9.0 Volt
Power supply:	2 x 2S LiPo, 2 x 5S NiCd / NiMH, 2 x 2S LiFePo
Current drain:	Operating approx. 58 mA Idle current approx. 16 μ A
Output voltage:	5.9 V or 7.4 V
Current load:	Peak 2 x 6 A
Dropout voltage:	approx. 0.3 V
Dimensions:	60 x 30 x 15 mm
Temperature range:	-30°C to +75°C
Weight:	33 g
SensorSwitch:	11 g
EMV approval:	EN 55014-1:2006
CE approval:	2004/108/EG
WEEE Reg. No.:	DE 639 766 11

7. Dimensions



8. Set contents

- **PowerBox Gemini II**
- **SensorSwitch**
- 2 patch-leads, 210 mm
- Double-sided self-adhesive pad
- Operating instructions in German and English
- **Optional, according to set:** magnetic trigger with **PowerBox** keyring

9. Service note

We are anxious to offer good service to our customers, and to this end we have set up a Support Forum which deals with all queries concerning our products. This relieves us of a great deal of work, as it eliminates the need to answer frequently asked questions time and again. At the same it gives you the opportunity to obtain help quickly all round the clock - even at weekends. All the answers are provided by the **PowerBox Team**, guaranteeing that the information is correct.

Please use the Support Forum before you telephone us.

You can find the forum at the following address:

www.forum.powerbox-systems.com

10. Guarantee conditions

At **PowerBox Systems** we insist on the highest possible quality standards in the development and manufacture of our products. They are guaranteed “**Made in Germany**”!

That is why we are able to grant a **36 month guarantee** on our **PowerBox Gemini II** from the initial date of purchase. The guarantee covers proven material faults, which will be corrected by us at no charge to you. As a precautionary measure, we are obliged to point out that we reserve the right to replace the unit if we deem the repair to be economically unviable.

Repairs which our Service department carries out for you do not extend the original guarantee period.

The guarantee does not cover damage caused by incorrect usage, e.g. reverse polarity, excessive vibration, excessive voltage, damp, fuel, and short-circuits. The same applies to defects due to severe wear.

We accept no liability for transit damage or loss of your shipment. If you wish to make a claim under guarantee, please send the device to the following address, together with proof of purchase and a description of the defect:

Service Address:

**PowerBox-Systems GmbH
Ludwig-Auer-Straße 5
D-86609 Donauwörth
Germany**

11. Liability exclusion

We are not in a position to ensure that you observe our instructions regarding installation of the **PowerBox Gemini II**, fulfil the recommended conditions when using the unit, or maintain the entire radio control system competently.

For this reason we deny liability for loss, damage or costs which arise due to the use or operation of the **PowerBox Gemini II**, or which are connected with such use in any way. Regardless of the legal arguments employed, our obligation to pay compensation is limited to the invoice total of our products which were involved in the event, insofar as this is deemed legally permissible.

We wish you every success with your new **Gemini II**.

Donauwörth, August 2013

A handwritten signature in black ink, appearing to read "E. Altmann", is written over a light blue rectangular background.



PowerBox Systems®

*World Leaders in RC
Power Supply Systems*

PowerBox-Systems GmbH

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