



PowerBox Systems®

World Leaders in RC
Power Supply Systems



Dear PowerBox pilot,

Many thanks for placing your trust in us, and purchasing our **PowerBox CORE**. You have chosen an extremely unusual radio control system: the **CORE** has great presence and allure, which you cannot fail to appreciate when you pick up the transmitter for the first time. The **CORE** fits perfectly in your hands, and is the perfect tool for controlling your valuable models with precision.

30 months have passed between the initial idea and the start of series production: in this time we have developed everything from the ground up: electronics, mechanical systems, choice of components and suppliers, external appearance, technical design, mould construction, software architecture, basic operating philosophy and endless details.

Development started late, and the system had to be completely re-designed, but over time we realised that this offered one great advantage: compatibility with old systems developed in the past did not have to be considered in any way. This is a very important benefit, since there have been significant technical advances in the field of 2.4 GHz systems since the start of the current era.

A single example will suffice to underline this advantage: the highly developed radio link, offering a range of more than 9 km. This is unique, and provides unrivalled system reserves. Further advances are evident in our new bi-directional **P2BUS** which operates as the telemetry interface, and is capable of transferring data at unprecedented speed. The most important advance as far as the pilot is concerned is the user interface, which is controlled using the transmitter's integral touch-screen: the entire menu system is accessed from here, and the self-explanatory menus are completely logical in their structure. The internal high-performance Linux computer provides unlimited future expansion potential.

We are confident that we can guarantee our customers durability and quality at the very highest level, because we exclusively use components of the highest possible industrial quality, produced by top manufacturers.

The entire production process - starting with circuit board assembly and extending right through to final assembly in our own premises - takes place in Germany. Each **CORE** is hand-made, and represents an example of German craftsmanship at its best! All our staff are united in their shared aim: perfection!

We wish you many hours of pleasure and countless successful flights with your new **PowerBox CORE**!

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1. CONNECTIONS, CONTROLS



Quick-select buttons



Screen unlock



User-defined menu



Servo monitor



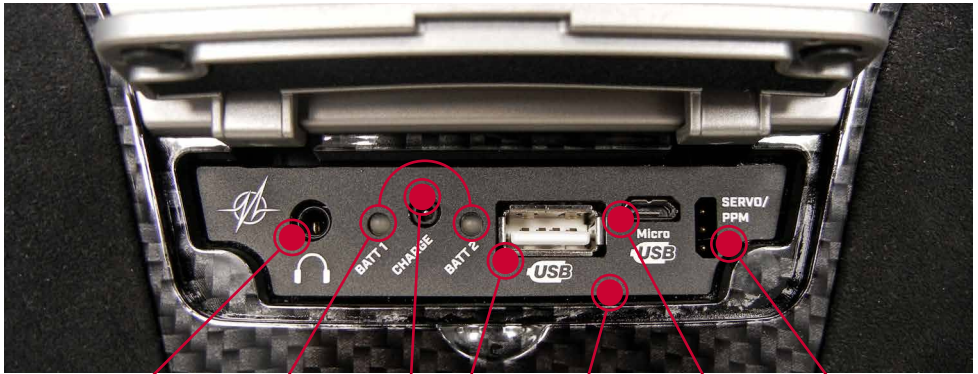
History back



Home screen




History forward



Headphone socket Charge status LED Charge socket (10-16V) USB-A socket Microphone input Micro USB socket Servo tester/ PPM output

2. INITIAL STEPS

a) Switching on

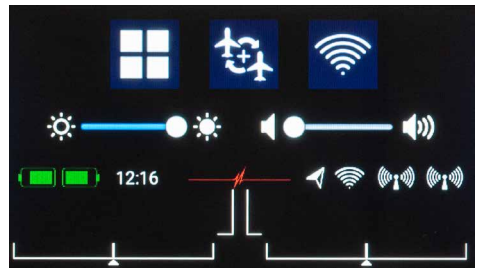
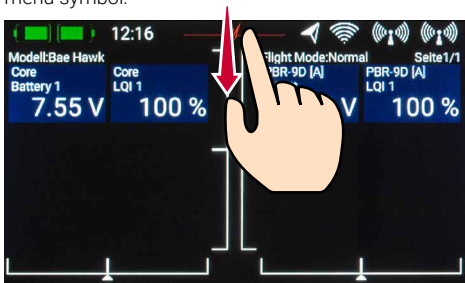
The **CORE** is switched on by holding the -button pressed in until it lights up red. Release the button briefly, then confirm the power-on process by briefly pressing the button a second time. The transmitter is switched off in exactly the same way. The button changes to green when the Linux system has booted; this process takes about 25 seconds.

Once the **CORE** is running, you will see the Home display on the screen: this shows fields containing telemetry values, timers, servo positions or quick-select buttons for menus. These fields are known as widgets.

Note: the **CORE** is fitted with a fully redundant power supply system, which is deliberately kept separate from the Linux computer and the other processors. This means that any malfunctions in the complex Linux system cannot possibly result in the transmitter switching itself off. The two real-time processors also function completely independently of the Linux computer.

b) Entering the menu

The main menu is accessed by swiping a finger downwards from the top edge. You can now touch the left-hand menu symbol:



There is no need to press firmly, as the capacitive touch-screen simply responds to touch, like all modern smartphones.

The symbols in the Main menu are arranged in order of importance.

Note: you can transfer any menu point to your own personal menu. This is accomplished simply by holding your finger on the appropriate menu for a few seconds. When the "Person symbol" appears, the menu point is transferred into your personal menu, which you can access conveniently using the quick-select button at the bottom of the screen. If you wish to remove a menu point again, use the same procedure: keep your finger on the menu symbol in question, and that entry is duly erased.

Menu



Functions

- Function overview
- Create or erase functions



Servos

- Servo overview
- Create or erase functions



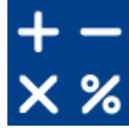
Servo monitor



Flight modes



Virtual switches



Mixers



Timers



Model

- Model overview
- Load, copy or erase models



Receiver

- Receiver overview
- Bind or remove receiver
- Range check

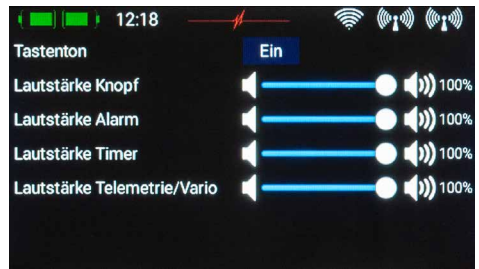


Settings

- System
- Screen
- Audio

c) Settings

This menu point is used to set your personal preferences.



The **System** sub-menu is used to enter your name, set the time display format, select your preferred language, display the software version and update the software when necessary. Another important point is the Calibration menu; this is described in full at a later stage.

In the **Screen** sub-menu you can select the background colour and icon colour. The brightness control should be set to a value which enables you to see the screen content clearly and distinctly.

Note: the ultra-bright TFT screen allows you to see everything clearly even in bright sunshine. However, the screen brightness does have a perceptible effect on battery duration!

The **Dimmer** time setting determines the point at which the screen is automatically darkened. The **automatic screen lock** can be released again using the **Q**-button (quick-select button, bottom left).

d) Creating a model

Select the **Model** button in the Main menu, and you will see an overview of all models stored in the transmitter.



To create a new model, briefly touch the **+** button at the bottom of the screen. Assign a name to your model, and confirm your choice with **OK**. You will now see the Select screen for the model type.

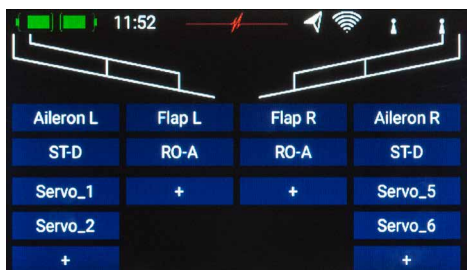
At this point you can select the appropriate model type, with the additional options of delta wing and V-tail.



On the next screen you select one of the ranges on the right-hand side, e.g. Wing. The screen now shows a diagram of a wing corresponding to your chosen type. If your configuration is more specialised, that presents no problems: at a later stage you can very easily program individual functions manually.



Here you will see the name of the function (e.g. Aileron L), a transmitter control and a **+** symbol, which is used to assign the appropriate number of servos. These individual Select points are inter-connected; the method used for this will become self-evident in the course of the set-up procedure.



Now you select a transmitter control which is to control the left aileron; this will be the left or right primary stick, depending on the transmitter mode you prefer.

Note: the software of the **CORE** has no modes – it is only the mechanical settings of the transmitter sticks which determines the stick mode.

If you now leave the Select screen again, you will see that the same transmitter control has also been assigned automatically to the right aileron.

The next step is to select the servo outputs to which you intend to connect the aileron servos; this is accomplished by pressing **+**. Note that you can assign up to eight servos to a single function.



If your model is an aerobatic aircraft, you would naturally select two or three servos at this point. At a later stage you will be able to set the travel, direction of rotation and centre position for each servo separately.

If these parameters are too coarse for your application, you can set an individual curve with up to 33 points for each servo.

Back in the Assignment screen it is also possible to rename the functions to suit your own preference.

If you decide to assign the wing flaps at this point, you will learn to appreciate one of the truly unique features of

the **CORE**. As with the ailerons, you again assign a transmitter control to the flaps. If each flap is operated by a separate servo, you won't notice anything unusual: you simply assign the flaps to your preferred servo outputs. However, if you also want the ailerons to double as flaps, or want the ailerons to be mixed in to the flaps, you also assign the aileron outputs to the flap function. These functions are now superimposed, i.e. the mixing is accomplished simply by assigning the servos.

At a later stage you can adjust the servos individually, both for the Aileron function and the Flap function. Servo travel, centre and direction can be set separately for both functions!

An even clearer example of this exceptional feature relates to models with a delta wing. If you select a delta using the Assistant, the correct functions are assigned automatically. To clarify this, the manual method would be as follows:

As an example servos 1 and 5 are assigned to Aileron. Servos 1 and 5 are also assigned to Elevator. Since the servos are installed in a mirror-image arrangement, it is logical that the servos always operate as ailerons, regardless of whether the pilot moves the elevator stick or the aileron stick. Now we switch to the Elevator function and reverse the direction of rotation of one servo. The elevator function now works correctly, but the "reversed" elevator function has no effect on the servo direction when an aileron command is applied, i.e. the ailerons still work correctly. That's all there is to setting up a "delta mixer".

Back to our Wing screen: when all the assignments are complete, press the ↩-button amongst the quick-select buttons at the bottom in order to return to the overview.

You can now continue assigning transmitter controls and servos to all the remaining functions. When everything is finished, touch **Continue** at bottom right. The functions and servo assignments are complete.

3. FUNCTION MENU

You now arrive at the most important screen display: the **Function Overview**. In principle, the set-up of the whole model is carried out from this starting point. The display is arranged logically from left to right:

Function → Transmitter control → Trim → Setup → Failsafe → Servo(s)



The individual points in detail:

A. Function

Each function always contains a transmitter control, the associated trim, the settings for the transmitter control - such as Expo and Travel, Failsafe or Hold - and the assigned servos.

Each function can also be renamed just as you wish at this screen: simply touch the Function name.

B. Transmitter control

At this point you can assign a transmitter control or a fixed value to the function. A transmitter control may be a primary stick, a proportional control, a switch or a push-button.



C. Trim

a) Trim control

It is necessary to assign a trim control as the first step here. This can be one of the four trims located adjacent to the primary sticks, or two of the four rubberised push-buttons. If you select the push-buttons, the buttons always work together left and right as the trim.

b) Trim mode

You can choose any of four different trim modes. The standard one is **Centre** mode: in this mode any change to the trim only affects the central range, i.e. not the end-points.

Alternative trim modes are **Left** and **Right**, typically these are intended for idle adjustment in the case of engines and turbines.

The option of **Offset** trim mode also affects the end-points when the trims are adjusted.

c) Min./Max.

This menu point can be used to limit the permissible trim range. The percentage value determines the maximum or minimum travel over which the trim is allowed to move.

d) Steps

Here you can set the number of trim steps or increments; not the size of the step.

Note: if you change the **Min. / Max.** values but leave the number of steps the same, the step size changes accordingly.



D. Setup

At this point you can adjust the transmitter control input, Expo, transit time and curves.

a) Transmitter control rate

Here you can select a transmitter control which switches the rate on and off, or sets it to linear. The transmitter control can be any of the primary sticks, proportional controls or switches.

b) Rate

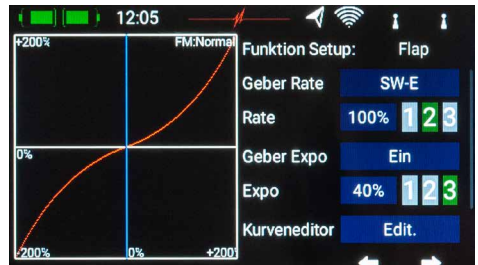
The purpose of the **Rate** button is to adjust the travel of the transmitter control. If you select nothing for **Transmitter control rate**, the value is fixed. If you assign a transmitter control to **Transmitter control rate**, you can set different values on three levels. The level initially selected with the transmitter control you have selected is shown in green. If you select a proportional control as transmitter control, the values are applied in a linear fashion within the three levels.

c) Transmitter control expo

At this point you can select a transmitter control which is used to switch an Expo characteristic, or set it to linear. You can choose any transmitter control from the primary sticks, proportional controls or switches.

d) Expo

The purpose of the **Expo** button is to adjust the exponential factor. If you select nothing for **Transmitter control expo**, the value is fixed. If you assign a transmitter control to **Transmitter control expo**, you can use it to set different values on three levels. The level initially selected using the transmitter control you have selected is shown in green. If you select a proportional control as transmitter control, the values are applied in a linear fashion within the three levels.



e) Curve editor

The curve editor is used to set up special curves.

- The first step is to select the number of points: up to 33 can be specified.
- Use the arrow buttons to select the point which you wish to move; the selected point changes colour to green.
- Adjust the percentage value to shift the point up or down.
- The **Smooth** option can be used to even out the curve, and thereby avoid jerks in the servo's response.
- **Raw** removes the effect of the curve smoothing.
- **Reset** curve resets the curve to linear travel.



f) Transit time

At this point you can set two transit times: one determines the servo transit time to the left, the other to the right. The time in seconds determines how long the servo takes to move from one end-point to the other.

E. Hold /Failsafe

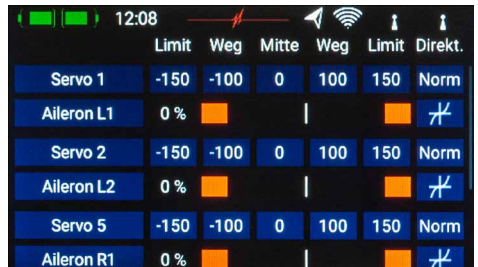
If you want a servo to take up a pre-determined position in case of radio signal loss, you should select Failsafe here. The **Learn** button now appears, enabling you to store the current position in the receiver.

Note: the receiver or receivers do not need to be bound at this point. The Failsafe positions are repeatedly transmitted to the receiving system.



F. Servo

Here you will find the assigned servos again. Up to eight servos can be assigned to each function. As already mentioned in the Assistant, the travel and end-points of each servo can be adjusted separately here. Any adjustments you make to a servo at this point have no influence on the settings of the same servo if it is also assigned to another function. This provides a simple means of mixing in aircraft with multi-flap wings, delta wings and V-tails.



- **Servo number:** indicates the receiver output at which this servo signal is present.
- **Servo name:** the servo name can be changed individually. Hold your finger on it to open up the keypad.
- **Limit:** works like a mechanical stop – the servo does not move beyond the set point.
- **Travel:** adjusts the servo travel.
- **Centre:** offsets the servo centre position. Acts like a “mechanical” centre offset – it also affects the end-points.
- **Direction:** reverses the direction of rotation of the servo.
- **Curve editor:** each servo can be adjusted very precisely to match the model's mechanical arrangement by means of a curve consisting of up to 33 points.

If you wish to adjust a servo's travel or centre position, the first step is to touch the appropriate button; you can now adjust the value. As soon as you move the associated stick, the Select button shifts to the corresponding position. This means that you do not need to select Left, Right and Centre when adjusting the control surface; instead you select each point very conveniently using the transmitter stick, altering the position of the control surface using the arrow buttons at the bottom of the screen. At the same time you can observe the effect of any change directly on the servo.

4. BINDING A RECEIVER

Select the **Receiver** button from the Main menu. As you will now see, up to four receivers can be bound to the **CORE** simultaneously.

It is even possible to use different types of receiver; for example, one **PBR-9D** and one **PBR-5S** can be bound. All four receivers are of "equal value", i.e. there is no Master / Slave assignment, and no restrictions in terms of telemetry. Telemetry sensors can be connected to all four receivers, all of which send data to the **CORE** on an equal footing.



The receivers are identified by the four capital letters **A** to **D**. The same letters appear in the telemetry data sent from the receivers, helping to differentiate between them.

a) Binding

There are two methods of binding receivers:

1. Connect a power supply to the receiver, and it will respond by flashing green at high frequency for ten seconds. Press the **Bind** button on your **CORE** transmitter, and the receiver now binds to it; the LED lights a continuous green. If you do not press the Bind button within the ten-second period, the LED switches to flashing slowly red – at this point the receiver can no longer be bound to the transmitter. You can only re-start the process if you first disconnect the power supply.
2. Press the **Bind** button on your **CORE**, then connect the receiver to a power supply. The LED switches to continuous green once the receiver is bound.

Technical information: during the binding procedure the **PowerBox CORE** generates a random sequence from a total of more than 32 million numbers; this is then used as the basis for calculating the hopping sequence and encoding the signal. The likelihood that two identical codes could be generated is therefore very close to zero.

b) Remove

The **Remove** button has an important function: if you wish to uninstall a receiver from a model, it is essential to remove that receiver from the model memory beforehand using this button. If you simply uninstall the receiver without first removing it at the transmitter, then the other bound receivers will not work when you next switch the system on. This is an important safety feature, as it ensures that all the bound receivers are working when you switch the system on, i.e. before you take off!

c) Range check

The **range check** function reduces the transmitter's output power, thereby simulating a large distance between transmitter and model. This enables you to determine any possible weaknesses in reception in the receivers. In range check mode all the controls should work perfectly at a range of at least 50m. The range check switches itself off automatically after 120 seconds.

5. MIXER

The free servo mixers represent an additional method of mixing functions with each other. Servo mixing by servo assignment has already been described in the Function menu, but this option also enables you to mix functions with each other with a response curve.

You can create a new mixer by selecting the Mixer menu and pressing **+**. You can also immediately rename the **Mixer** to your own choice by touching the **Mixer** button.



Press the Setup button on the right in order to program the mixer. The following display appears:

• From / To

The first step is to select the source function under **From**, and the target function under **To**.

• Transmitter control

At this point you should select a switch, stick or proportional control. You can then use it to activate the mixer, switch the input to the three available levels (1-2-3), or set it to linear response. The default entry here is **On**, which means that a fixed mixer input is set.



• Input

The **Input** button is used to set the magnitude of the mixer. Selecting **On** at **Transmitter control** sets a fixed value. If you assign a switch or proportional control at **Transmitter control**, you can set different values on three levels; the level selected by the transmitter control is shown in green. If you select a proportional control as transmitter control, the values are applied in a linear fashion between the three levels.

• Curve editor

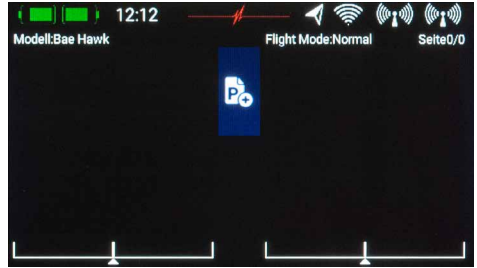
The curve editor enables you to set up special mixing curves.

- The first step is to select the number of points: up to 33 points can be specified.
- Use the arrow buttons to select the point which you wish to move; the selected point changes colour to green.
- Adjust the percentage value to shift the point up or down.
- The **Smooth** option can be used to even out the curve, and thereby avoid jerks in the servo's response.
- **Raw** removes the effect of the curve smoothing.
- **Reset** curve resets the curve to linear travel.



6. TELEMETRY

Once you have created a new model and bound one or more receivers, you can display important information on the main screen using the telemetry widgets. To create a widget, touch an empty area of the main screen, and you will see the following display:



You will now see twelve grey fields, together with a **P+** button and a **P-** button. The **P+** button can be used to create additional pages, so that more telemetry widgets can be displayed. You can move to and fro between the pages by swiping with your finger. The **P-** button is used to erase empty pages.

Touch one of the grey fields, and this screen display appears:

You can select any of four different types of widget:

- Telemetry
- Servo values
- Timer
- Quick-select menu



Telemetry

This can be used to display all the sensors connected to the **P²BUS**, and show the data they generate. This information also includes the receiver and transmitter data. If you select the **Telemetry** widget type, this screen display appears:

The left-hand column shows all the connected sensors, while the right-hand column shows all the values which these sensors supply. The **P²BUS** is an in-house development, and is capable of transmitting up to 255 sensors each with 32 individual values – and at a speed of up to 800 values per second!

It is possible to set up each widget to display multiple sensor values, even from different sensors; these values are then displayed in turn by the widget. This is accomplished by selecting one or more sensor values which you want your widget to display, then confirming your choice with **OK**.

A list of the selected sensor values is displayed. You can use the **+** button to select additional values from another sensor.



At this screen display you can adjust the size of the widget using the Small, Medium and Large buttons. The **Erase widget** function can be found at bottom left.

The **Rescan sensors** button is required if you wish to connect new sensors while the system is operating. Touching the button forces the system to re-collect all sensor information on the **P²BUS**. In principle, all sensor information is collected automatically every time the system is switched on.

Technical information: the **PowerBox CORE** telemetry system and the **P²BUS** are designed in such a way that each sensor supplies its own information, including sensor name, unit, number of sensor values, decimal point, priority and other data. A new sensor designed for use with the **P²BUS** can be connected to the system at any time without updating the transmitter.

The advantage of the system is that all the text information relating to the sensor values is collected only when the system is switched on, i.e. when the system is booting.

Once the system is running, only the pure sensor values are transferred; this permits very fast data transmission with maximum flexibility, and ensures a thoroughly user-friendly system.

Behind the individual sensor values you will find the **Alarm** button. The Alarm menu allows you to set four alarm thresholds: one yellow alarm and one red alarm for each direction. This enables you to select different thresholds coupled to different sounds, text, or vibration modes.

For example, you might set up battery capacity alarms for an electric model: a yellow audible alarm when there is just sufficient energy remaining for one minute of flight; a red audible alarm with vibration for twenty seconds.

Touching the Back button returns you to the Sensor overview. Press **OK** at the bottom when you have completed all the settings.

The widget now appears in the location where you started, but widgets can also be placed in any position. This is accomplished by holding your finger on the screen until the widgets start to flicker; you can now move the widgets around on the screen. To fix the widgets in position again, simply wait a few seconds or press the Home button.

Servo values, Timers, Quick-select menu

Widgets can also be set up for individual servo outputs, timers or menu entries, in exactly the same way as described for telemetry values. The procedure is identical: hold your finger on a vacant space in the main screen, then make your selection as already described.

7. CHARGING THE TRANSMITTER

If you wish to charge the **CORE**, the first step is to open the front cover. Locate the two plugs attached to the mains PSU, and insert either one into the charge socket. If the battery symbol is displayed large and flashing on the screen, this means that you have a reserve for about 20 - 30 minutes. You must charge your **CORE** at this point, if not sooner. For safety reasons the **CORE** does not feature a battery cut-off. Never allow the transmitter to become deep-discharged!

The LEDs light up red when the batteries are on charge, and green when the charge process is complete. The charger can be left connected to the **CORE** after charging without causing damage, as the internal charge control circuits regulate the charge process completely automatically.

The battery charge process takes about 3.5 hours from the fully discharged state.

The **CORE** can also be recharged while it is switched on, e.g. for protracted programming work.

Note: in addition to the bar display at top left on the screen, you can also set up the transmitter to display its own exact battery voltage on the main screen in the form of a telemetry widget, and set a corresponding alarm. The transmitter is fitted with two internal 7.2V Li-Ion batteries of 3400 mAh capacity. Sensible alarm values would be 6.8V for an orange alarm, and 6.6V for a red alarm.

Note: the mains PSU is the same type used for **PowerBox Batteries** and **PowerPaks**, and can also be used to recharge these batteries.

8. CONNECTIONS

Under the front cover you will find additional sockets (see illustration on page 4):

- **Headphone socket:** stereo headphones can be plugged in here for spoken vario or telemetry messages.
- **USB-A socket:** this accepts a USB stick, which can be used to update the radio control system. Data from the **CORE** can also be copied onto the USB stick.
- **Micro USB socket:** for direct exchange of data with a PC.
- **Servo/PPM:** servos plugged into this socket respond directly to the movements of the primary sticks. This can be extremely useful for centring servos accurately before installation, or for subjecting them to a brief function test. This output is protected with a 1A fuse, and is therefore not suitable for load-testing servos!

It is also possible to switch this socket to PPM output for use with flight simulators or Trainer (buddy-box) systems.

Note: In the initial production run these functions are not yet implemented in full!

9. MECHANICAL TRANSMITTER ADJUSTMENTS

a) Removing the handrests

The handrests fitted to the **CORE** can be removed quickly and easily: simply undo the four socket-head screws in the feet, and the handrests can be slid down and off.

Note: Alcantara is not, as often supposed, natural leather, but a micro-fibre material. Alcantara is incredibly tough and durable, and is very easy to maintain. If your handrests become soiled, simply rinse them clean using warm water and ordinary washing-up liquid.

Caution: if you clean the handrests, it is essential to allow them to dry out completely before re-attaching them to the transmitter, otherwise damp could enter the transmitter and cause corrosion damage!

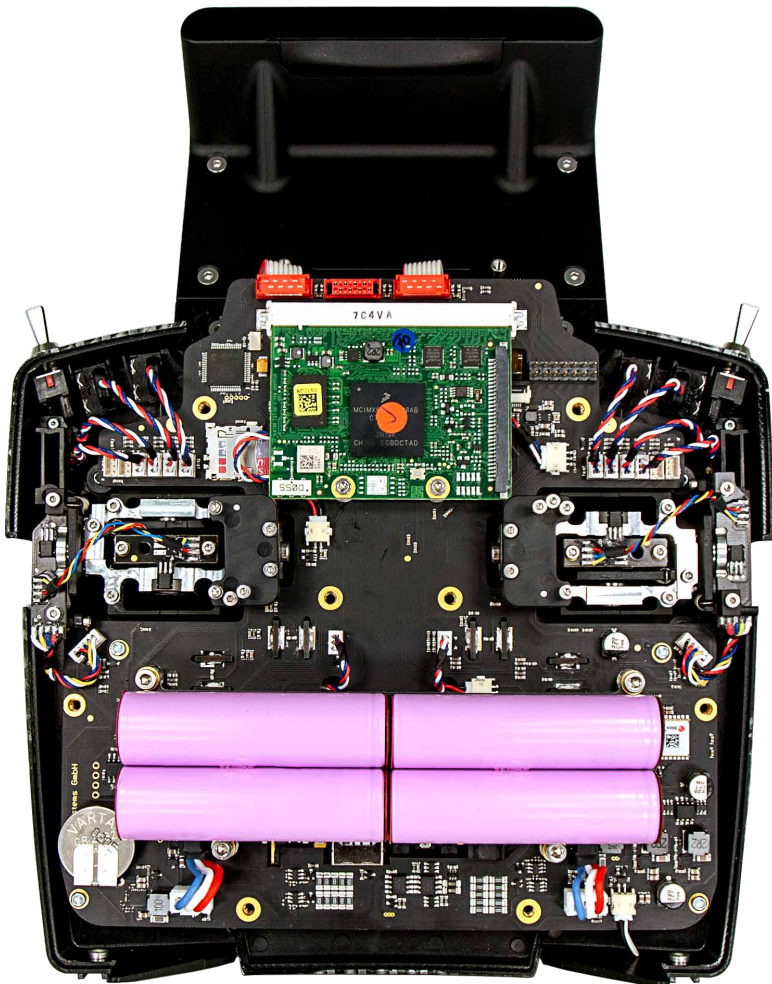
b) Opening the transmitter

As standard the **CORE** is supplied in the correct mode, as specified by the customer, but some users may find that the centring spring tension or the ratchet function needs to be adjusted to meet their personal preferences.

The first step is to remove the handrests. Lay the **CORE** on a soft surface – ideally a thick layer of foam. Now undo and remove all ten socket-head screws holding the back cover. Don't remove the back cover yet, as the cables for the switches and proportional controls in the cover must first be disconnected.

This is the procedure: raise one side of the back cover slightly, and loosen the connectors by moving them to left and right whilst pulling gently, then repeat the process on the other side.

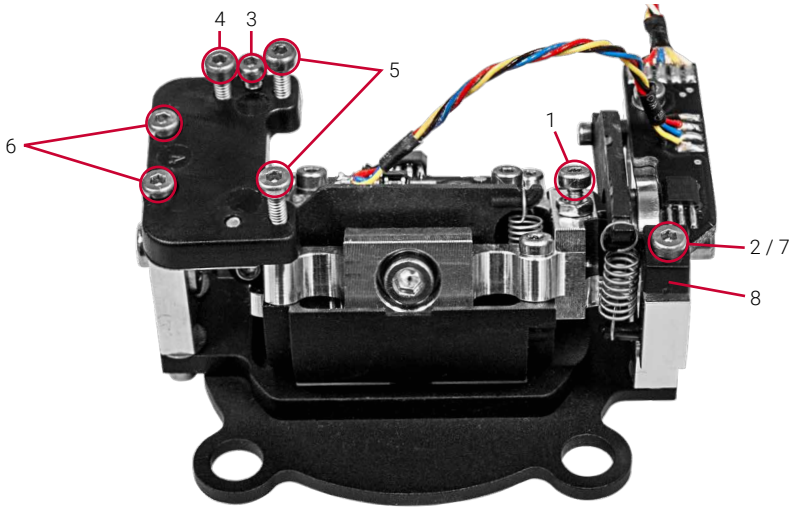
The back cover is now free, and can be lifted off. You will see the transmitter's internal features:



c) Adjusting the tension of the primary stick centring springs

The centring spring tension can be adjusted using screws 1 and 2 after loosening the corresponding locknuts. Tightening the screw further increases the spring tension. If you find it impossible to set your preferred spring tension, we can supply a range of stronger springs.

Note: if you tighten the screw too far, you may find that the lower spring tensioner partially moves out of its guide. You can correct this by moving the stick fully to one side, at the same time pressing the spring tensioner back into its guide using a small screwdriver.



d) Adjusting the throttle ratchet and brake

The hardness of the throttle ratchet can be adjusted using screw 3. Screw 4 adjusts the friction brake.

e) Adjusting the throttle travel

The travel of the throttle stick on the **CORE** is adjustable. This is useful for 3D pilots in particular, as it enables them to set a mechanical limit on throttle travel. Adjustment is carried out by tightening screws 5. The throttle travel can also be set up asymmetrically. Once you have set the travel of the throttle stick to meet your requirements, it is essential to re-calibrate that function.

f) Switching modes

As already mentioned, the software has no modes, but naturally the hardware must correspond to your preferred mode.

If you wish to change the factory default mode, first undo screws 6 from the ratchet plate, then install the ratchet plate on the other primary stick unit, as an exact mirror-image of the original installation. Tighten the retaining screws, pressing the plate towards the centre of the transmitter.

The next step is to re-install the spring blocker (8): remove screw 7. The screw with the locknut can immediately be installed again on the other side.

To re-install the spring blocker, move the stick fully to its end-point, fit the spring blocker pin under the spring lever, then tighten the spring blocker screw.

10. CALIBRATING THE TRANSMITTER CONTROLS

Naturally the **PowerBox CORE** is supplied with all functions correctly calibrated. However, if you wish to swap a switch or replace a broken switch, we recommend that you re-calibrate the new switch. Re-calibration is also necessary if, for example, you limit the throttle stick travel, or change the transmitter mode mechanically.

Move to the Calibration menu by this route: **Settings** → **System** → **Calibration**. Move the transmitter control you wish to calibrate in order to select it. The information relating to this transmitter control is now superimposed on the right.

For example, if you wish to change from a 3-position switch to a 2-position switch, select the appropriate switch type in the **Type** field. Once you have done this, touch **Calibration** at the bottom, then move the control to both end-points. The **Continue** field now appears. If you have installed a proportional control or a 3-position switch, you also need to move the transmitter control to the centre. Touch **Finished** to complete the process.

The **Direct** button can be used to reverse the transmitter control's direction of operation.

Caution: this has the same effect as installing the switch the other way round, i.e. this change affects **all** models!



11. SPECIFICATION

Power supply	Li-Ion
Channels	26
Servo signal resolution	4096 Bit
Screen	TFT - Touch
Weight	1152g
Temperature range	-30°C to +85°C

12. SET CONTENTS

- **PowerBox CORE**
- **1x PBR-9D**
- **2x PBR-8E** (limited Early bird edition only)
- Case
- Transmitter neckstrap

13. 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 time it gives you the opportunity to obtain help quickly - all round the clock and even at weekends. All the answers are provided by the **PowerBox** team, which guarantees 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

14. 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 guarantee the **PowerBox CORE** for a period of 36 months 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, short-circuits, etc. The same applies to defects due to very severe wear. We accept no liability for further claims, e.g. consequential damage. We also deny liability arising from the equipment or the use of the same.

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

15. LIABILITY EXCLUSION

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

For this reason we accept no liability for loss, damage or costs which arise due to the use or operation of the **PowerBox CORE**, 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 **PowerBox CORE**!



Donauwoerth, December 2018

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