ROCONTROL Programming card

Dear customer, we are pleased that you have chosen the programming card from our product range. With this device you have a powerful tool to easily program your ROCONTROL controller.

Despite the relatively simple operation of the programming card, its use requires some knowledge from you. These instructions will enable you to quickly familiarize yourself with the possibilities of the programming card. To achieve this goal safely and quickly, you should read the operating instructions carefully before starting up the device.

SAFETY INSTRUCTIONS

General Hazard Information

Please note for all our deliveries: Please read these safety and hazard notes first, and then read through all operating and assembly instructions completely and carefully before commissioning for the first time. Remote-controlled models are not a toy and must be used by children under the age of 14 years only under the constant supervision of adults who are familiar with construction, operation, materials and potential hazards. The construction, commissioning and operation of remote-controlled models are dangerous and are the operator's responsibility. We expressly point out these dangers and assume no liability. Careful, well-considered handling during operation protects against personal injury and damage to property. Carry out maintenance and inspection of your models and electrical equipment at short, regular intervals. Regularly check the secure fit of all fasteners.

Applies to all remote-controlled models:

- Make sure that nobody else in the environment uses your transmission frequency.
- switch on: Switch on the transmitter first and then switch on the receiver.
- turn off: Turn off the receiver first, then turn off the transmitter.
- Make sure that the transmitter and receiver are fully charged before starting.

In addition, please observe the following instructions:

- Do not use different types of batteries or rechargeable batteries or new and used batteries together. Remove dead batteries from the equipment, especially if they are not used for a long time.
- Never expose electrical equipment to dirt, dust, moisture, cold or heat. Cable damage can lead to short circuit, fire and destruction of the devices!
- Avoid injury through caution in all activities with your models.
- Check with your insurance company whether the risks arising from your models are covered by liability insurance or whether you have to insure them additionally.
- Adhesives and varnishes contain solvents that can be harmful to health. Follow the manufacturer's instructions and warnings.

Hazard warnings Flight models

Please contact experienced model pilots, clubs or flight schools for information on reducing hazards and avoiding damage. Ask all spectators to observe a safety distance of at least 5 m. Never direct your model airplane towards people, animals or high-voltage lines. Avoid public roads, pathways, squares and places where people may be present. Be considerate about the aircraft noise you're condemning.

Hazard information Controller

Make sure that you do not reverse polarity of the battery, that you avoid short-circuits of the cables, that the drive motor is effectively suppressed and that the air can circulate well. Use polarity reversal protected plug systems. All cables and connections should be well insulated. The regulator must not come into contact with grease or oil. The regulators are only intended for use in battery operated, remote controlled models. No other operation is permitted. Always perform a range test. Only use the connectors, original parts and accessories recommended by us. Do not make any changes to the controller unless stated in the description. Important: Before plugging in the controller, make sure with the other operators that if you are not using a 2.4 GHz system, your transmitter is the only one that operates on this frequency. Before switching on the transmitter, always set the throttle lever to "Stop".

Hazard notes Motor

Motors are not suitable for persons under 14 years of age. Commissioning may only be carried out under the constant supervision of an adult who is familiar with the hazards. Before every operation, check the seat of the motor and the propeller. Never let a motor start up in the hand. Protect the motor from dirt and moisture. Do not allow foreign bodies to enter the motor. Always keep a safety distance from the rotating propeller (air screws can separate fingers!!!!!). Always maintain the maximum permissible engine and propeller speed.

Disposal of electrical appliances

Please remove all batteries and dispose of them separately. Hand in old electrically operated equipment free of charge at the collection points of the municipalities for electronic scrap. The remaining parts belong to the household waste. Thank you for your cooperation!

Safety information for LiPo cells and batteries

Exact data on load capacity and dimensions can be found on our homepage and in the catalogue. Information on the permanent load-bearing capacity of the cells only applies to optimum cooling. Lithium-polymer batteries (short: LiPo batteries) require particularly careful treatment. This applies to loading and unloading as well as storage and other handling. WICHTIG! Be sure to follow the following special instructions:

- Malpractice can lead to explosion, fire, smoke and poisoning. Failure to observe the instructions and warnings will result in loss of performance and possible further defects. Only with proper storage and charging with an optimal charger can you maximize the service life of your vehicle.

and at 300 - 600 charging cycles, they have to reckon with a drop in performance of only approx. 20%.

- With a non-optimal charger, the capacity is significantly reduced with every charge/discharge and thus also the service life. Storage at too high or too low temperatures may cause a gradual reduction in capacity.

General warnings - Avoid dangers!

Do not burn batteries. Never immerse the cells in liquids. Keep batteries / cells out of the reach of children. Never disassemble LiPo batteries. Disassembling a battery may cause internal short circuits. Gas generation, fire and explosion or other problems can be the result. The electrolytes and electrolyte vapours contained in the LiPo batteries are harmful to health. Avoid in any case direct contact with electrolytes. If electrolytes come into contact with skin, eyes or other parts of the body, rinse immediately with plenty of fresh water and seek medical advice.

Remove all batteries not required in the model. Always charge batteries in time. Store batteries on a non-flammable, heat-resistant and non-conductive base! Fully discharged Li-Po batteries are defective and must not be used again! If the battery is out of service, disconnect it from all loads such as speed controllers, as they always consume a little power even if they are switched off. Otherwise the battery could be destroyed by deep discharge.

Special instructions for charging LiPo batteries

Since we cannot monitor the correct charging and discharging of the cells, any warranty is excluded due to faulty charging or discharging. Only approved chargers with balancer may be used for charging Li-Po batteries. The maximum charging capacity must be limited to 1.05-times the battery capacity. Example: 700 mAh battery = 735 mAh max. charging capacity. Make sure that the number of cells and the discharge end voltage are set correctly. Observe the operating instructions of your charger/discharger. The battery to be charged must be placed on a non-flammable, heat-resistant and non-conductive base during the charging process! When charging, keep all combustible or highly flammable objects away. Batteries may only be charged and discharged under supervision. In principle, LiPo batteries connected in series may only be charged together in the pack if the voltage of the individual cells does not differ by more than 0.1 V from each other. If the deviation in the voltage of the individual cells is greater than 0.1 V, the cell voltage must be adjusted as precisely as possible by individual cell charging or discharge. Under these conditions, LiPo batteries with max. 1 C charging current may be charged. The indication 1 C charge current in mA corresponds to the capacity in mAh; i. e. 200 mA for a 200 mAh battery. Avoid a voltage of more than 4.2 V per cell in any case, as this will permanently damage the cell and may cause fire. In order to avoid overcharging of individual cells in the pack, the cut-off voltage should be set to values between 3.1 V - 3.15 V per cell for a longer service life. You can also charge batteries with a lower voltage for safety and longer service life. After each charging process, check that one of the cells in the pack has a voltage of more than 4.2V. All cells must have the same voltage. If the voltage of the individual cells deviates from each other by more than 0.1 V, the cell voltage must be equalized by individual cell loading or single cell discharge. In order to avoid overloading the cells after prolonged use in packs, they should be charged individually on a regular basis. Never charge the battery cells with incorrect polarity. If the batteries are charged with reversed polarity, there are abnormal chemical reactions and the battery becomes unusable. This can cause fractures, smoke and flames.

Special instructions for discharging LiPo batteries

A continuous current of approx. 15 C is no major problem for the LiPo batteries. For larger currents, please refer to the information in the respective product data sheets. A discharge to below 2.5 V per cell permanently damages the cells. Avoid this deep discharge unconditionally! It is essential to switch off the motor before you notice any loss of power. Then LiPo batteries would already be damaged. Therefore, leave a remaining capacity of approx. 20 % in the battery for safety reasons. If individual cells were to be fully charged differently, the regulator's low-voltage cut-off might be too late, so that individual cells could be deeply discharged. Avoid short circuits. A short circuit causes a very high current to flow which heats up the cells. This leads to electrolyte loss, gas leakage or even explosions. Due to the danger of a short circuit, avoid the proximity of conductive surfaces or contact with LiPo batteries. Permanent short-circuits lead to destruction of the battery, high temperatures and possible spontaneous ignition can be the result. The batteries must never reach temperatures above 70° C during discharge. Provide cooling or lower discharge. You can easily check the temperature with an infrared thermometer.

Stability of the battery housing foil

The foil of the aluminium housing can easily be damaged by sharp objects such as needles, knives, nails, motor connections, soldering or similar. Damage to the foil will render the battery unusable. The battery must therefore be installed in the model in such a way that the battery cannot be deformed even in the event of a crash. If the battery is short-circuited, it could burn. Temperatures above 70° C can also cause leakage of the housing. The battery becomes unusable due to electrolyte loss. Add defective cells individually packed in poly bags or foil to the hazardous waste.

Mechanical shock

The LiPo batteries are not as mechanically stable as batteries in metal cases. Avoid mechanical shocks by dropping, hitting, bending, etc. Therefore, you must never cut, tear, deform or drill the laminate film. Never bend or twist LiPo batteries. Do not apply pressure to the battery or terminals.

Handling of the connections

The LiPo connectors are not as robust as other batteries. The aluminium (+) connection in particular can easily break off. Never use damaged cells: Never use damaged cells. You can identify damaged cells by one of the following methods: Damaged housing packaging, deformation of the battery cells, smell of electrolytes, leaking electrolytes. In these cases, further use of the batteries is no longer permitted. Dispose of them.

INSTRUCTIONS FOR USE

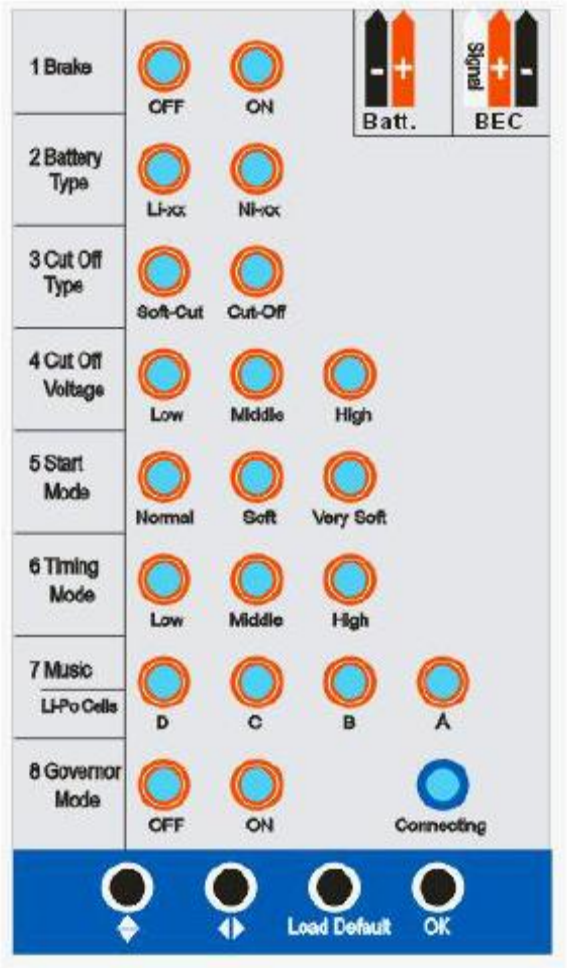
Before commissioning the programming card, read the operating instructions carefully and follow the instructions exactly. In addition, please observe the following rules when operating the unit:

- Use the programming card only within the limits of the technical specifications, otherwise the card could be destroyed.
- missions that do not comply with the requirements of this manual can cause problems in operation, destroy the programming card and cause injuries. There are considerable dangers, damage to property and personal injury can occur.
- Protect the programming card from vibrations, dust, moisture and mechanical stress!
- Do not expose them to extreme heat or cold!
- Check the device at regular intervals for damage!

Technical specifications

measurements:	92 x 52 x 6 mm
weight:	26 g

Control Panel



1. use the "up / down" button to select the pro-programming parameters. Use the "left / right" button in order to switch on the display during the activated parameter to set the desired value.
2. brake adjustment: When "Brake" is engaged-the engine stops immediately when the accelerator is switched off.lever is moved to the lowest position.
3. Undervoltage protection: If "soft-cut" off is selected, the controller gradually reduces the Output power. When "Cut-Off" is selected, switches off the controller immediately.
4. Fourth cut-off voltage: Please read the operating instructions.The controller's operating instructions to obtain precise information for this parameter.
5. Music / LiPo cells: The four LEDs have undifferent meanings, depending on whether the the regulator with normal voltage (2S - 6S), or as a HV controller with more than 6S.
   - Regulators with normal operating voltage such as the ROCONTROL 60 A, or the ROCONTROL 60 A. The four LEDs represent 16 possible states, which can also be used as 16 music rhythms. Can be given back again. The controller outputs this melody at the time of the (see Table 1).
   - For controllers with HV operating voltage, as the ROCONTROL PRO 130 A, HV OPTO, the four LEDs indicate the number of cells of the connected LiPo batteries (see Table 2).

Connection of the programming card

A. For a controller with integrated BEC

1. Remove the drive battery from the controller.
2. For controllers with integrated BEC, please disconnect the receiver cable of the controller from the receiver and then connect it to the program card at the upper right corner, the connection is marked with "**BEC**".
3. Connect the drive battery to the controller.
4. The LEDs on the program card light up, indicating the current programmed values of the controller.

Notice 1: The sequence of steps 2 and 3 cannot be reversed, otherwise the program card will not work correctly.

B. For controllers without BEC device

If the controller is marked with "OPTO", like the ROCONTROL PRO 130 A HV OPTO, this means that this controller does not have an integrated BEC, then an additional battery (4.8 - 6.0 V) must be used to operate the programming card. A receiver battery is generally well suited for this purpose. Most of the HV controllers work with up to 10S or 12S LiPo batteries and without integrated BEC.

1. Remove the drive battery from the controller.
2. Disconnect the receiver cable of the controller from the receiver and then connect it to the program card at the upper right corner, the connection is marked with "**BEC**".
3. For a HV controller with a separate short three-wire programming cable, please disconnect the receiver cable of the controller from the receiver and connect it to the program card at the upper right corner, the connection is marked with "**BEC**".
4. Connect a receiver battery (4.8 - 6.0 V) to the programming card. The connection is located in the upper right corner and is marked with "**Batt**".
5. Connect the drive battery to the controller.
6. The LEDs on the program card light up, indicating the current programmed values of the controller.

Notice 2: The sequence of steps 2,3 and 4 cannot be reversed, otherwise the program card will not work correctly.

Notice 3: Never use a battery to supply the programming card with more than 6.0 V.

Programming procedure

Use the "up / down" button to select the parameter to be programmed, the corresponding LED flashes. Then press the "left / right" button to select the correct values of this parameter. The flashing LED indicates the value you have selected. Finally, press the "OK" key, the blue LED flashes, which means that the new settings are transferred to the controller. When data transfer is complete, the blue LED stops flashing, indicating that the new settings have been accepted and stored in the controller.

Nr.	LED				Melodie
	D	C	B	A	
1	○	○	○	○	**music function deactivated**
2	○	○	○	●	*Susanna (USA)*
3	○	○	●	○	*To Alice (Deutschland)*
4	○	○	●	●	*Ode of Joy (Deutschland)*
5	○	●	○	○	*Take off your hood (China)*
6	○	●	○	●	*Jasmine (China)*
7	○	●	●	○	*Red River Valley (Kanada)*
8	○	●	●	●	*Auld Lang Syne (Schottland)*
9	●	○	○	○	*Jingle Bells (USA)*
10	●	○	○	●	*Song of Matador (Spanien)*
11	●	○	●	○	*The End of the World (USA)*
12	●	○	●	●	*Rhythm of Triumph (Deutschland)*
13	●	●	○	○	*Love is blue (USA)*
14	●	●	○	●	*Beautiful Spanish Lady (Italien)*
15	●	●	●	○	*Post Carriage (Japan)*
16	●	●	●	●	*Love Bird (China)*

table 1:

List of characteristic music rhythms

Nr.	LED				Anzahl der LiPo Zellen
	D	C	B	A	
1	○	○	○	○	**automatic detection**
2	○	○	○	●	**automatic detection**
3	○	○	●	○	**automatic detection**
4	○	○	●	●	**automatic detection**
5	○	●	○	○	*5S (18,5 V)*
6	○	●	○	●	*6S (22,2 V)*
7	○	●	●	○	*7S (25,9 V)*
8	○	●	●	●	*8S (29,6 V)*
9	●	○	○	○	*9S (33,3 V)*
10	●	○	○	●	*10S (37,0 V)*
11	●	○	●	○	*11S (40,7 V)*
12	●	○	●	●	*12S (44,4 V)*
13	●	●	○	○	**automatic detection**
14	●	●	○	●	**automatic detection**
15	●	●	●	○	**automatic detection**
16	●	●	●	●	**automatic detection**

table 2:

List of connected LiPo cells

● LED glows

WARRANTY

This product comes with a 24 month warranty. Our invoice serves as proof of the commencement and expiry of this warranty. Any repairs will not extend the warranty period. The statutory warranty conditions apply. For example, you may only use the product properly, but not open it. In case of warranty repair, send the product to us with a detailed description of the fault, freight forward. The addresses for an unfree shipment will be enclosed with the shipping package. For countries where freight forward is not possible we will reimburse you the postage costs.

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