

Thank you for purchasing the SafetyMaster from RGP Rc Solution. The SafetyMaster is designed to help you monitor power to your onboard R/C system. Batteries and BEC circuits are two of the critical areas inside your model and when things go wrong these two are often found to be implicated. Thanks to SafetyMaster you can see how safe your system actually is by measuring the current draw of your servos/receiver and by monitoring the performance of your battery or BEC under load.

Technical Specifications:

Voltage range: 4.0-8.4V
 Current range: 0.1-10.0A
 Keyboard: 3 keys
 Connectors: UNI
 Dimensions: 42x52x5mm
 Weight: 13.6g

Overview and connections:

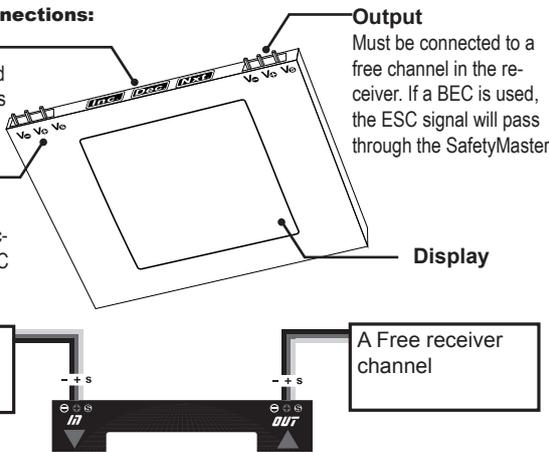
Keyboard

The three keys are used to navigate the functions and to set warnings

Input

Connect the Rx battery or the ESC UNI connector if you're using a BEC system.

RX Battery or a ESC with BEC



Output
 Must be connected to a free channel in the receiver. If a BEC is used, the ESC signal will pass through the SafetyMaster

Display

A Free receiver channel

The SafetyMaster should be connected between the Rx battery (or the ESC) and the receiver using a spare channel to analyse voltage and current. Use the female-to-female UNI extension provided for the connection to the receiver. Once connected, the SafetyMaster is on and fully operational.

Using the SafetyMaster

Prepare your model for flight with all servos connected and plug the SafetyMaster between power source and receiver. Once connected the SafetyMaster will show the main screen listing voltage, current and so on. In order to navigate through the different SafetyMaster screens press the "Next" button.

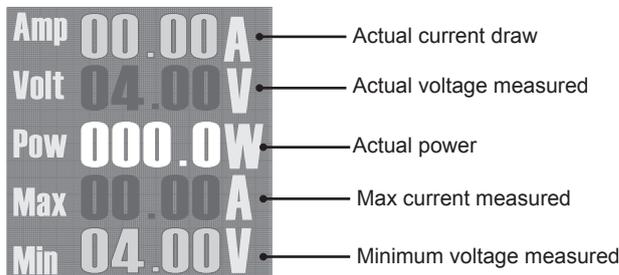
"Inc +" and "Dec -" buttons are for setting the thresholds in the warning screens. By pressing "Next" you get: Main screen > Graph screen > Warning settings and back. Screen navigation is looped so you just have to press "Next" until you get to the desired screen. Before starting to check your R/C system it is necessary to correctly set all the warnings - in order to use your SafetyMaster to its full potential.

Measuring:

- Turn on your transmitter.
- Plug the SafetyMaster output into the receiver and to your Rx battery or ESC.
- Check the screen of the SafetyMaster to make sure everything is OK.
- Move all the controls of your model together in order to get the maximum load.
 NOTE: if you're using an electric motor remove the propeller or disconnect the motor in order to avoid accidents.
- Carefully check the screen of the SafetyMaster for problems.

Main Screen

The main screen gives all the necessary information about what's going on inside your model: battery voltage, current draw, wattage, max current draw recorded and minimum voltage detected. If the maximum current or the minimum voltage threshold is exceeded, a warning message appears on the screen, indicating which value is exceeded.

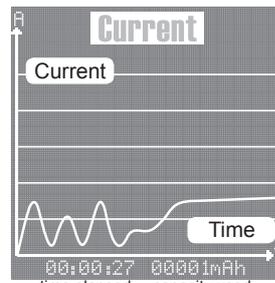


EU regulations

J Perkins Distribution Ltd declares that this product is in compliance with the essential requirements and other relevant provisions of Directive 2204/108 EC on Electromagnetic Compatibility. A copy of the declaration(s) of conformity can be obtained from J Perkins Distribution Ltd, Ashford rd, Lenham, Kent. UK ME17 2DL. This system complies with the EU directive on Waste Electrical and Electronic Equipment. Do not dispose of this product in household waste. At the end of the products' life, dispose of it at a designated collection point for the recycling of waste electrical and electronic equipment. Please contact your supplier for any advice required on disposal.

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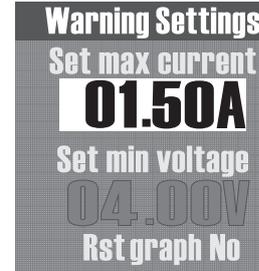
Graph Screen

The SafetyMaster draws a graph of current over time elapsed since turned on and shows total time elapsed plus battery capacity used.

The graph is erased when the power source is disconnected. You can also manually reset the screen by entering "Yes" into the "Rst graph" parameter in the Warning Settings screen. See below:

Warning Settings Screen

In this screen you can adjust warning thresholds according to your needs. Check out the specification of your receiver - or of your ESC if a BEC is used a power source, and your battery, and set warnings as follows:



Set max current: define the maximum current allowed before sending a warning signal. If the current rises above this limit a warning message appears.

Set min current: define the minimum voltage allowed before sending a warning signal. If the drops below that threshold a warning message appears.

Rst graph: reset the graph drawn by the SafetyMaster if "Yes" is selected.

Use the "Inc+" and "Dec-" buttons in order to adjust the value underlined and jump to the other value by pressing the "Next" button.

How to set up Warnings correctly

Using a BEC system: When a BEC provides the power to your R/C system, check it's specifications carefully. Always set the max current threshold slightly under the max current allowed by the BEC. Concerning voltage, you should bear in mind that a BEC should produce a stabilized voltage output. Hence, if the output voltage drops, it means that the BEC is operating beyond its limits and isn't suitable for your current R/C installation. For this type of measurement you can allow a variation of 0.1V, but the more stable the voltage output, the better. Please consider also the type of BEC used; a linear BEC is less efficient than a switching BEC. Adjust your SafetyMaster warnings as follows:

Type	Voltage Warning setting	Current Warning setting
Linear BEC	90-100% of his output voltage	50-70% of max current allowed
Switching	90-100% of its output voltage	80-90% of max current allowed

For example, consider a typical ESC with a linear BEC with 2 Amps max current and 5V output; settings should be: 5.0V and 1.4Amp.

Using a dedicated battery: Choosing a dedicated battery for powering your R/C system is often a better and safer choice instead of a BEC, but please bear in mind the following: a good battery maintains output voltage when a load is applied - or at least doesn't fall below the nominal voltage. Note that with NiXX batteries - as the battery ages, so the voltage drops. Therefore, if you measure a large voltage drop during testing, it means that the load is too great or the battery is old or perhaps some component in the system has failed. Regarding the current limit; you should set max. current to around 95-100% of that specified by the manufacturer. If the load applied is below spec. and a steep voltage drop occurs it is better to change the battery as failure to do so could lead to a potentially catastrophic battery failure.

Type	Voltage Warning setting	Current Warning setting
NiMH - NiCd	1,15-1,20V per cell	95-100% of max current allowed
LiPo	3,7-3,8V per cell	95-100% of max current allowed
LiFe	3,3V per cell	95-100% of max current allowed

Warnings

- Do not operate the SafetyMaster outside its specification. Never exceed 10 Amps max. current as you may damage the unit.
- If the battery is damaged and voltage drops dramatically to under 4.0V the SafetyMaster may not work properly.
- Check and double check every component in your R/C system.
- Use always good quality components for powering your R/C system. Poor quality batteries or cheap ESC's may fail and cause a crash.

Warranty

J. Perkins Distribution Ltd. guarantee this product to be free of manufacturing or assembly defects for a period of one year from time of purchase. This does not affect your statutory rights. This warranty is not valid for any damage or subsequent damage arising as a result of a misuse, modification or for damage or consequential damage arising as a result of failure to observe the procedures outlined in this manual. Operation of this product is carried out entirely at the risk of the operator. Please note that, whilst every effort is made to ensure the accuracy of instructions and material included with this product, mistakes can occur and neither J. Perkins Distribution Ltd nor its distributors will be held liable for any loss or damage arising from the use of this product or for any loss or damage arising from omissions or inaccuracies in the associated instructions or materials included with this product.

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