

## Wireless Full-Spectrum-Color-Control

The RGB Mastercontroller RC is an excellent value full colour control and was designed for use with modern High-Power RGB LEDs. The The RGB Mastercontroller RC is able to synthesise up to 16 millions of different colours. Hence it is the ideal control for all kind of sophisticated effect illuminations, deco and wellness lighting.

The RGB Mastercontroller RC is a further development of earlier series. The acronym RC stands for "Radio Controlled". That is why either a handheld Radio Remote Control or the The RGB Mastercontroller USB Dongle (for PC) is required additionally to this The RGB Mastercontroller RC module.

The The RGB Mastercontroller RC was designed for easy use. It comes with many built in effects (from calming colour change up to show effects). However the user can change and store many own settings. Up to 8 different wireless networks can be operated simultaneously. The colour changes and static colours of the modules within a network are synchronised automatically (but random effects of course not). The range of the radio transmission is depending on the environment, but can be up to 300 meters in open air. Indoors normally a reliable operation within 20-50 meters is no problem.

## Usage

The modules were designed for in-house use in dry places, but the LEDs (if suited) might also be used in wet environments or outdoor.

Important: The modules must be operated with a power supply, that is matched to the used LEDs! Other loads than LEDs (especially inductive loads like motors, coils) might destroy the module.

The RGB Mastercontroller RC operates on a frequency of 868.3 Mhz (license free in EC, Switzerland, Norway and Iceland).

## Safety Instructions

The modules might produce some heat. Care must be taken for sufficient air ventilation.

Although the modules are equipped with a limited reverse polarity protection, connecting the power in reverse polarity (even for a short time) can destroy the module.

Do not modify the electronics. Regard the official regulations for electrical devices (like DIN, VDE, EN), especially if the LEDs are used in wet areas!

This product is not a toy, keep away from children!

We decline any liability, loss or damage caused by improperly used modules! Also guarantee is lost in such cases.

Also LEDs can get quite hot. We strongly recommend to take care, that the maximum operating temperature is not exceeded, because this might reduce the expected life time of the LEDs significantly.

WARNING # 1: LED light can have very high intensity, even if dimmed. Some modern LEDs even fall under the lasers marking obligation. Particularly in connection with optics also weak LEDs can become very dangerous. Staring into LEDs can cause irreparable damage to the eye's retina. Hence: NEVER STARE INTO THE BEAM. Use diffusers to spread the intensity!

WARNING# 2: Please be aware that LED light may cause side effects, because this light can change intensity very fast! Changing light can affect the perception. Light pulses can release complaints or seizures to humans with inclination to epilepsy.

## Contents

Each The RGB MastercontrollerRC is shipped with this manual, a connector for power supply and a connector for the LEDs.

The handheld Radio Remote Control and the USB Dongle (for PC) are optional accessories.

## Connecting the LEDs / Power Supply

Important: The module must be operated with a power supply, that is matched to the used LEDs!

Important: Matched LED lamps, including power supplies are available from us. Also we supply complete kits, including plug-n-play connectors.

Important: Improper power supplies can cause malfunctions, (unwanted) flickering effects, damage of LEDs or electronics parts or – as worst case – overheating. We strongly recommend to use high-quality (stabilised) switching power supplies!

Of course, one single power supply can be used for several The RGB MastercontrollerRC modules in parallel (if the maximum output power of the supply is regarded).

The minimum voltage for correct operation is 7.5 Volts, maximum voltage is 26 Volts (+ 5%).

## THE RGB Master Controller "STRIPE"

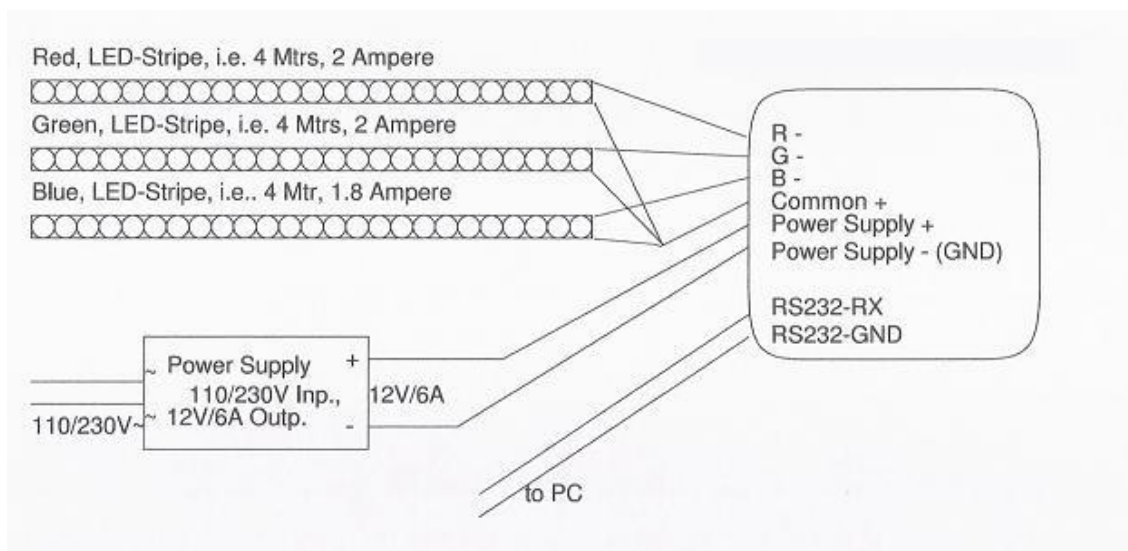
This model does not have any internal current regulator. So the supply voltage is passed through and the voltage of the power supply must match the voltage of the LED stripe.

Regarding any possible voltage drop, please see the previous paragraph. Cable lengths up to 5 meter are allowed.

Note: We found LED stripes of 10 Volts, 12 Volts and 24 Volts on the market.

Note: We also deliver (flexible) LED stripes (on wheels) with a length of up to 5 meters. Each colour will draw up to 2 Amperes at 12 Volts.

The model "STRIPE" is designed for currents up to 5 Ampere per channel (15 Ampere in total).





## Fire Test

By using the enclosed connectors installation of the cables is very easy.

As first test the module will perform a standard colour change (this is the factory default). This effect consists of 8 colours, each hold for 5 seconds, colour transition time is 2.5 seconds.

Diagnostic LED: The modules are equipped with a small LED. For regular operation this led will change all seconds and it will flicker if data is received.

## Factory Setup / Colour Tables

By default the module is shipped with 12 effects: 3 colour changes, 3 user effects, 5 random effects, 1 user colour table with 8 colours and 20 fixed colours. More details about this can be found in the manual of the handheld Radio Remote Control and in the manual of the The RGB Mastercontroller USB Dongle (for PC).

## Networking and wireless operation

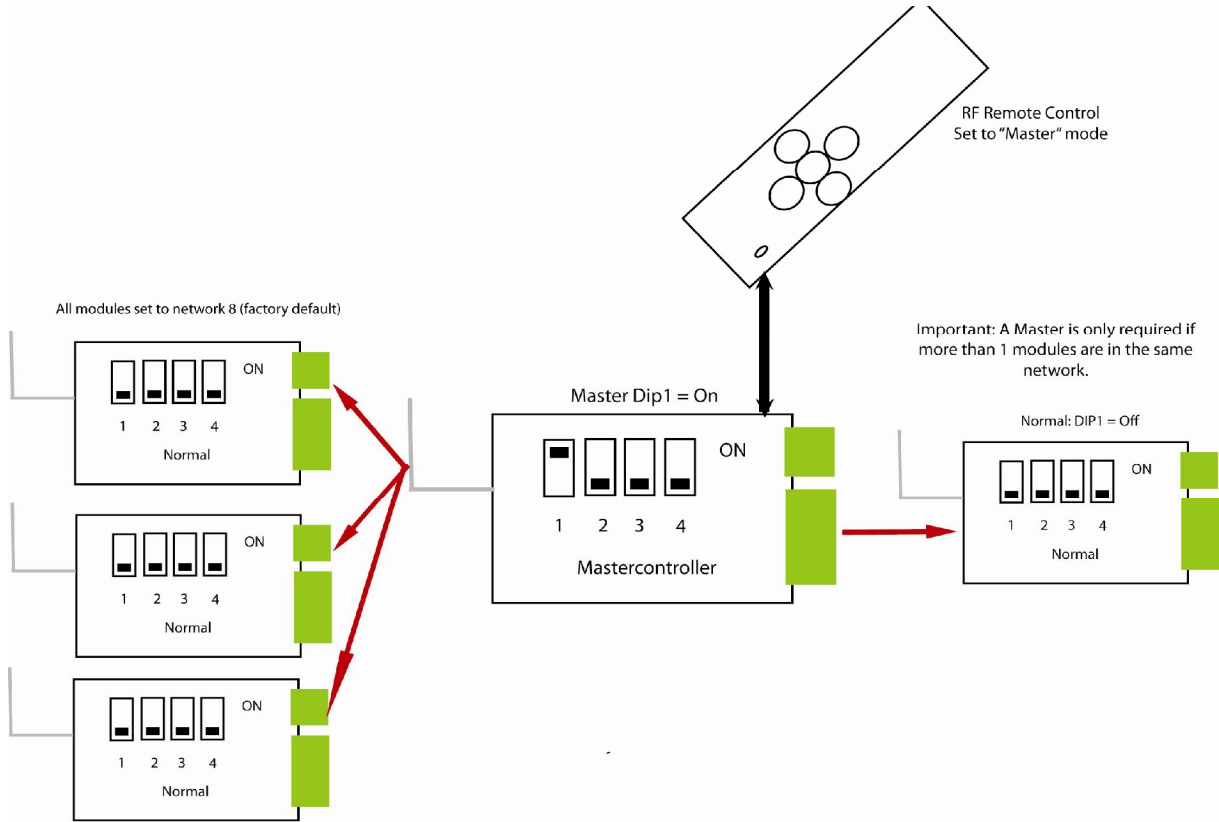
The The RGB MastercontrollerRC is working on a radio frequency of 868.3 MHz. This frequency is also often used for other radio controls and wireless sensors (but the very strictly valid regulation ensures, that interference free operation is possible).

Hence the The RGB MastercontrollerRC uses a 2-way communication to ensure reliable operation, this means the handheld Radio Remote Control or the USB Dongle require an acknowledge from the The RGB Mastercontroller RC!

In the simplest case only one The RGB Mastercontroller RC is used with a handheld Radio Remote Control or an USB Dongle. So this is really an obvious 2-way communication. It is only required that both partners are set to the same network (1-8). This is also the default factory setup mode (default: network 8).

If a group of more than one modules build one network, one module within the network should be set up as a "Master" module. Only the "Master" will communicate with the Handheld Radio Remote Control or the USB Dongle. But it will forward its settings (and its time base) periodically (all few seconds) or on a communication event to all other modules within the network.

# LED FLATLIGHT



Even if other modules (non-"Master") are switched on later, they will receive (at least after a few seconds) the settings from the Master.

The communication of the Radio Remote Control or the PC Dongle with the Master is 2-way. But the master itself sends signals to the other modules only in one direction. However, this is safe, because if any packet goes lost, the next will follow after a few seconds. Even if many packets are lost, the network will still work synchronously.

It is good practice to set a module in the middle of the network as Master. If any of the other modules is too far from the master, it will not follow reliably (or not at all) to the Master's commands (so this can be recognised easily).

A word about the range: The Radio Remote Control has a less powerful antenna (it is inside of the enclosure) than the RGB Mastercontroller RC modules or the USB Dongle. The range of the Radio Remote Control is therefore normally below the range of e.g. Master to other modules. To achieve a good range, we recommend to position the antenna directly "into the air". Dense materials (especially if close to the antenna) like stone, concrete and metal parts may reduce the range significantly. In case of weak signals, sometimes it often already helps, if the module is moved some cm.



## **DIP-Switches**

The selected Network and the Master mode are set with a small 4-DIP switch inside of the module. The top of the cover can be removed easily.

Important: Do not touch the electronic components, electrostatic discharge may cause damage to them. Use something spiky and non-conductive to turn the DIP switches.

Important: All changes of the DIP switches are recognised only after reset or power on!

## **Technical Data**

Power supply: 7.5 – 26 Volt (+ 5%), regulated. Important: The power supply should have a equivalent pulse load. Unregulated or weak power supplies may cause flickering of malfunctions.

Module current (without LED lamps): ca. 10 – 20 mA.

Operating temperature: 0° C – max. + 50° C (recommended: <= 30° C) (Use only in dry places with sufficient air ventilation).

Radio frequency: 868.3 Mhz (license free in EC, Switzerland, Norway and Iceland).

Modulation system: The The RGB Mastercontroller modules are based on a digital system, named "Vector-Fractal-Modulation" or "VFM". This modulation system was optimised for minimising load on power supplies and has considerable advantages compared to traditional systems. The modulation frequency is in the range from 120 Hz up to (max.) 240 Hz.

## **Model "The RGB MastercontrollerRC Stripe"**

Pulsed constant voltage, maximum allowed current: 5 Ampere per channel (3 channels).

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## Attachment – Module layout:

