

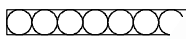
Im obigen Beispiel wurden 3 LEDs verwendet. Mit Ader als Rücklauf benötigt wird.

Modell „STRIPE“

Dieses Modell verfügt über keine Strombr üblicherweise LED Streifen sind) weiter Netzteils ein.

Hinweis: In der Praxis sind LED Länge, sehr hohe Ströme benö der Summe bis zu 12 Ampere

Rot, LED-Streifer



Grün, LED-S



Blau, LF



lex RC STRIPE"

R -
G -
B -
Gemeinsamer +
Versorgung +
Versorgung - (GND)

Antenne

Arbtabellen

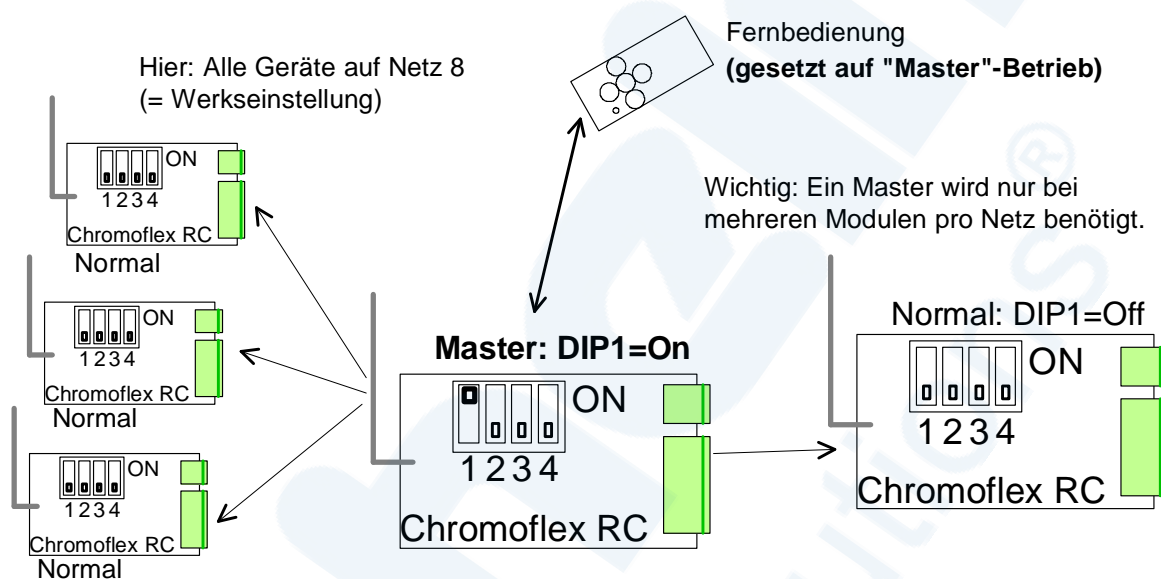
odule 12 Effekte: 3 Farbwechsel, 3 Benutzerprogramme, 5 Zufalls-Effekte, 1 änderbare estfarben. Mehr Details dazu finden sich in der Anleitung zur Fernbedienung und in der n USB Dongle (für PC).

Vernetzung und Funkfernsteuerung

Die für die Funkübertragung verwendete Frequenz (868,3MHz) wird auch von anderen Geräten (Funksteckdosen, Fernbedienungen, ...) verwendet, ein störungsfreier Betrieb aller Geräte ist aber trotzdem gewährleistet (die geltenden Vorschriften regeln dies exakt). Für eine zuverlässige Datenübertragung wird daher beim Chromoflex RC ein bidirektionales System verwendet, d.h. die Fernbedienung oder der USB-Dongle erwarten vom Chromoflex RC eine Antwort!

Im einfachsten Fall wird nur ein einzelnes Modul betrieben: die Fernbedienung oder USB-Dongle (für PC) muss daher nur mit einem einzigen Modul kommunizieren: Hier muss lediglich der auf beiden Seiten das gleiche Netz (1-8) eingestellt werden. Dieser Modus (Einzel-, bzw. Normalbetrieb) auf Netz 8 ist voreingestellt (Werkseinstellung).

Befinden sich mehrere Chromoflex RC im selben Netz, so sollen alle festen Farben und Verläufe miteinander synchron laufen. Daher kann per DIP-Schalter für ein einziges Modul in diesem Netz der „Master“-Modus aktiviert werden: Ein „Master“ gibt periodisch (alle paar Sekunden) seine Einstellungen an andere Module desselben Netzes weiter:



In der Zeichnung sind ein einziges Modul und die Fernbedienung auf „Master“ gesetzt. Somit kann nur der Master auf die Fernbedienung reagieren. Der Master sendet seine Einstellungen periodisch an alle anderen Module.

Daher spielt es auch keine Rolle, wenn ein Modul nachträglich eingeschaltet wird: Spätestens nach ein paar Sekunden erhält es vom Master dessen Einstellungen und dessen Zeitbasis.

Die Fernsteuerung erwartet vom Master eine Antwort, der Master selbst erwartet aber von den anderen Chromoflex RC im Netz keine Antwort, da dieses Signal alle paar Sekunden wiederholt wird. Sollte ein Modul ein Signal (wegen Störungen oder anderen Geräten) einmal nicht bekommen, so spielt dies keine Rolle.

Es bietet sich an, als Master ein Modul in der Mitte des Netzes zu wählen. Sollte eines der anderen Module zu weit entfernt sein, merkt man das dann ja sehr schnell, wenn es auf die Fernbedienung (über den Master) nur unzuverlässig oder gar nicht reagiert. Mehrere Master pro Netz sind nicht sinnvoll.

Anmerkung zur Reichweite: Die Fernbedienung verwendet eine (schwächere) interne Antenne als die Chromoflex RC Module oder der USB-Dongle. Die Reichweite der Fernbedienung ist daher geringer als z.B. die des Masters zu den anderen Modulen. Beim Einbau der Chromoflex RC Module sollte bei Bedarf darauf geachtet werden, dass die Antennen der Chromoflex RC Module möglichst am besten „in die Luft“ schauen. Abschirmungen in unmittelbarer Nähe zur Antenne (Metall, Stein, Beton) können Funksignale stark schwächen. Bei schlechten Funksignalen kann es oft schon helfen, die Lage des Moduls ein paar cm zu verändern.

DIP-Schalter

Das verwendete Netz und der Master-Modus können per DIP-Schalter geändert werden. Dazu befindet sich im Inneren des Moduls ein 4-poliger DIP-Schalter. Nach dem Öffnen des Moduls ist dieser sichtbar (Übersicht siehe Anhang).

Wichtig: Bitte keine der Elektronik-Bauteile berühren, da durch Elektrostatik diese Schaden nehmen könnten. Es ist ratsam, zum Umlegen der DIP-Schalter etwas Spitzes, nicht elektrisch Leitendes zu verwenden.

Wichtig: Sämtliche Änderungen an den DIP-Schaltern werden erst nach einem Neustart (Anlegen der Versorgungsspannung) wirksam!



Technische Daten

Betriebsspannung: 7 - 26 Volt (+ 5%), stabilisiert. Wichtig: Die Stromversorgung muss über entsprechende Puls-Belastbarkeit verfügen. Unstabilisierte oder zu schwache Netzteile können Flackern bei Farbübergängen hervorrufen.

Eigenstromverbrauch (ohne Leuchtmittel): ca. 10 - 20mA

Umgebungstemperatur: 0 °C - max. + 50°C (empfohlen <= 30°C) (Betrieb nur in trockenen Innenräumen mit ausreichender Luftzirkulation zur Wärmeabfuhr)

Funkfrequenz: 868,3MHz (lizenzfrei in der EU, Schweiz, Norwegen und Island).

Modulations-System: Die Chromoflex-Module verwenden die Vektor-Fraktal-Modulation („VFM“) zum Erzeugen der Lichtmischung. Die VFM ist ein digitales Modulationsverfahren, das u.a. Stromversorgungen deutlich weniger belastet als traditionelle Systeme. Die Modulationsfrequenz liegt im Bereich von etwa 120 - max. 240Hz. Zum Patent angemeldet.

Modell „Chromoflex RC i350“

Gepulster Konstantstrom ca. 350mA pro Kanal (3 Kanäle). Verwendung von Schaltreglern mit hohem Wirkungsgrad.

Modell „Chromoflex RC Stripe“

Gepulste Konstantspannung, maximal zulässiger Strom: 4 Ampere pro Kanal (3 Kanäle) - max. 12 Ampere.

Contact / Internet

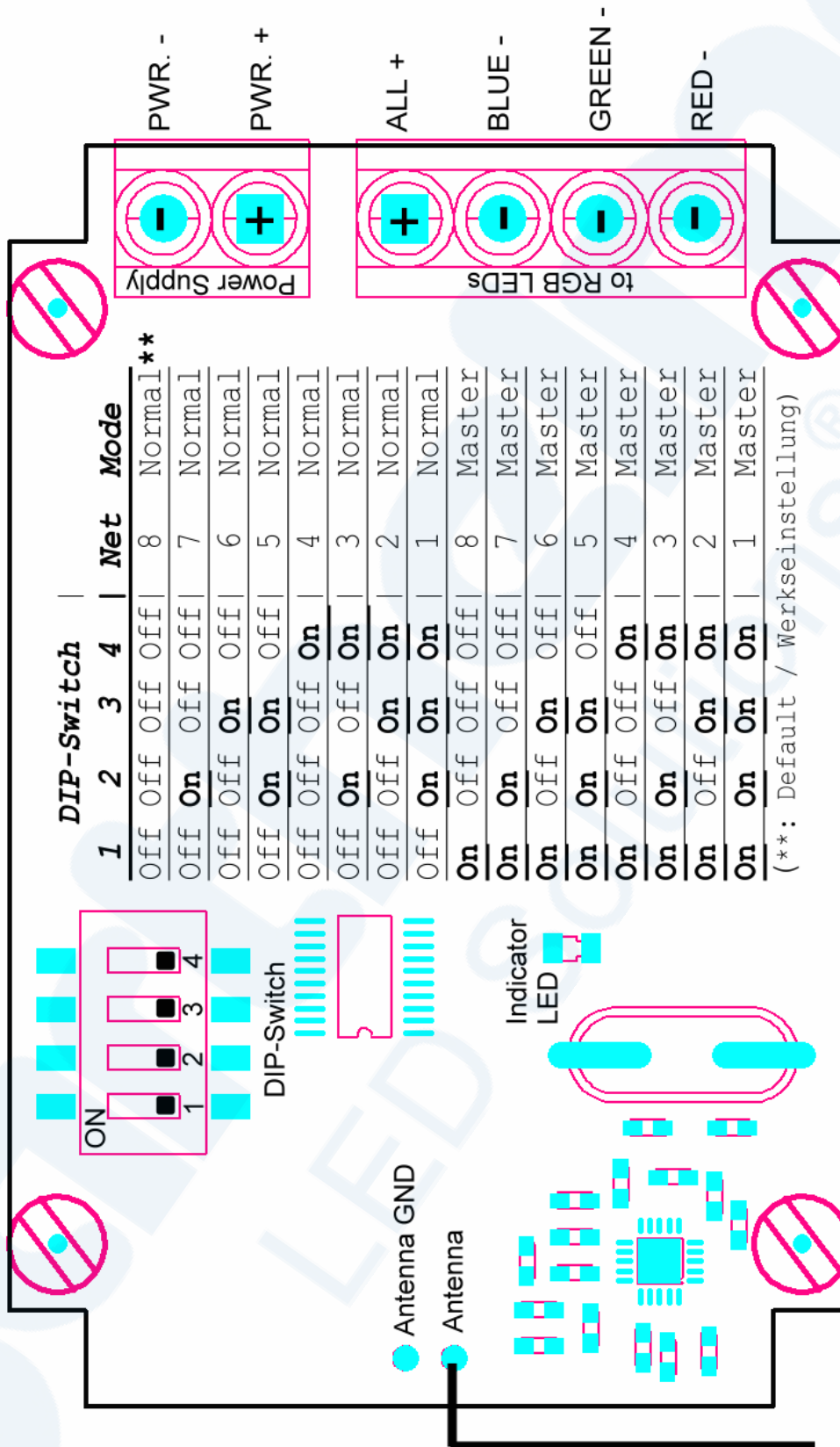
Download der PC-Software, Anleitungen, Datenblätter und technische Anfragen (technische Anfragen bitte nur als E-Mail):

www.chromoflex.com , www.barthelme.de

Herstellung und Distribution:

www.barthelme.de

Anhang - Modulbelegung:



CHROMOFLEX RC**Barthelme**
LED Solutions

Wireless Full-Spectrum-Colour-Control

Chromoflex RC is an excellent value full colour control and was designed for use with modern high-power RGB LEDs. There are currently two Chromoflex RC models available „i350“ for use with constant current LEDs and „STRIPE“ for use with LED stripes. The Chromoflex RC is able to synthesise up to 16 million different colours. Hence, it is the ideal control for all kinds of sophisticated effect illuminations, deco and wellness lighting.

Chromoflex RC is a further development of the Chromoflex I and II series. The acronym RC stands for „Radio Controlled“. That is the reason why either a handheld [Chromoflex Radio Remote Control](#) or the [Chromoflex USB dongle \(for PC\)](#) is required additionally to this Chromoflex RC module.

The Chromoflex 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 a reliable operation within 20-50 meters normally 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.

Chromoflex RC operates on a frequency of 868.3MHz (licence-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 taking care that the maximum operating temperature is not exceeded, because this might reduce the expected lifetime 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 of the fact 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 Chromoflex RC 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.

Important: All Chromoflex manuals are available for download from the addresses at the end of this manual.

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 using high-quality (stabilised) switching power supplies!

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

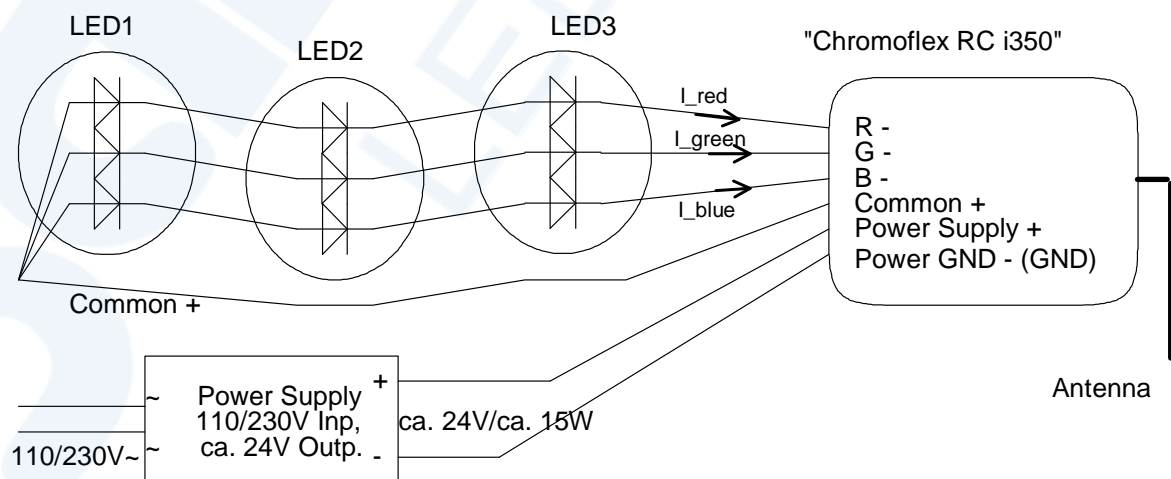
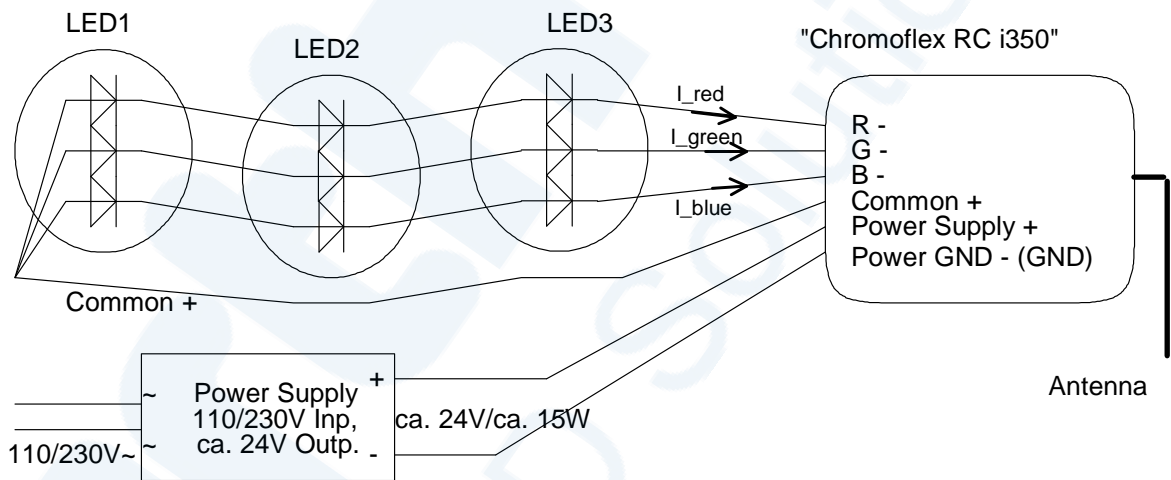
The minimum voltage for correct operation is 7 volts, maximum voltage is 26 volts (+ 5%).

Model „Chromoflex RC i350“

This model has 3 lines of 350mA each. The power supply must be matched to the number of used LEDs in series: most high-power LEDs for 350mA constant current require around 3 - 3.7 volts (depending on the colour, type and manufacturer, per LED about 1.4 watt power should be regarded). Normally green and blue need the highest voltages. The „i350“ itself need additionally at least about 3-4 volts higher to maintain line regulation. The maximum operating voltage is 26 volts (+ 5%). The model „i350“ uses highly efficient switching regulators to generate the 350mA.

Constant current LEDs must be connected in series. Depending on the number, we recommend as voltage for the power supply (in case of doubt, please check the currents I_{red} , I_{green} , I_{blue} , see picture):

- | | |
|--------------|---|
| 1 RGB-Group | - (min. ca. 7.5 volt) - recommended 12 volt / 5 watt or higher power |
| 2 RGB-Groups | - (min. ca. 9 volt) - recommended 12 or 24 volt / 10 watt or higher power |
| 3 RGB-Groups | - (min. ca. 15 volt) - recommended 24 volt / 15 watt or higher power |
| 4 RGB-Groups | - (min. ca. 19 volt) - recommended 24 volt / 19 watt or higher power |
| 5 RGB-Groups | - (min. ca. 22 volt) - recommended 26 volt / 22 watt or higher power |
| 6 RGB-Groups | - (min. ca. 25 volt) - recommended 26 volt / 25 watt or higher power |



The example above uses 3 LEDs. A 4 wire cable is used, where 1 wire is a simple pass-through for the common +.

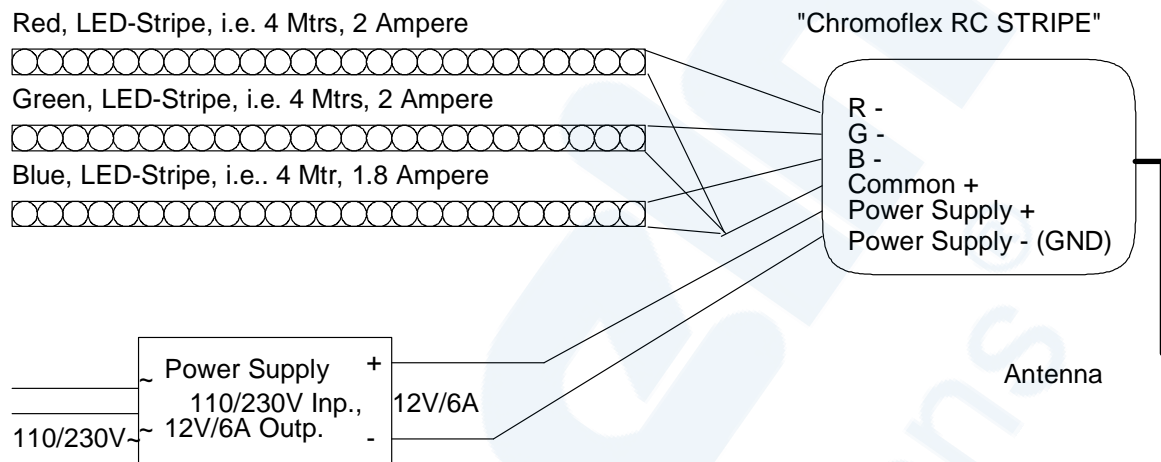
Model „STRIPE“

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 5m are allowed.

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

The model „STRIPE“ is designed for currents up to 4 ampere per channel (12 ampere in total).



First 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 are 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 for the handheld Radio Remote Control and in the manual of the Chromoflex USB dongle (for PC).

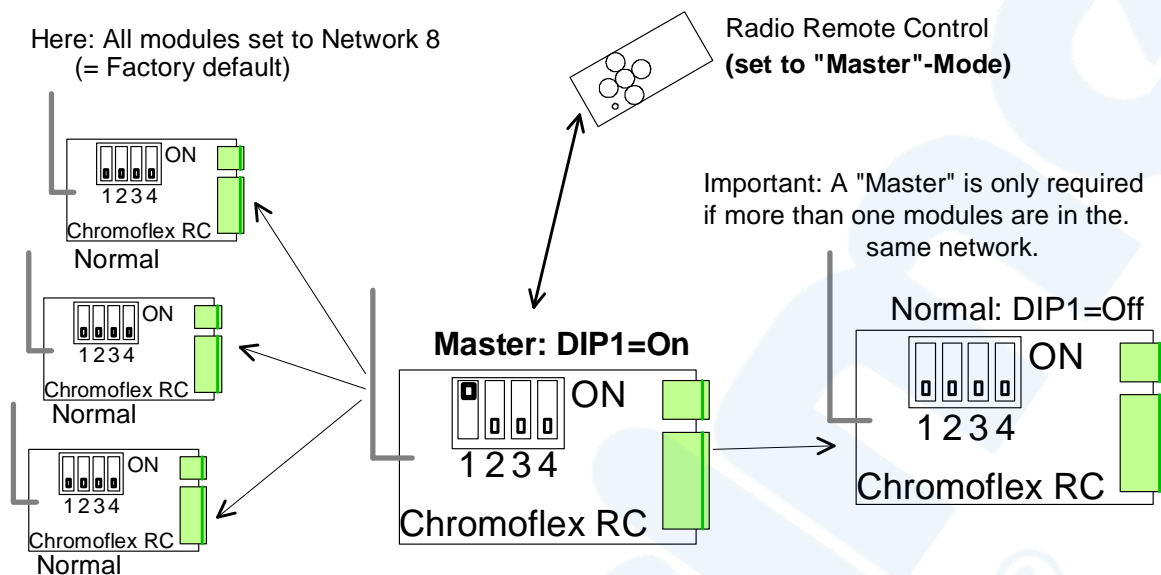
Networking and wireless operation

The Chromoflex RC is working on a radio frequency of 868.3MHz. 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 Chromoflex RC uses a 2-way communication to ensure reliable operation, which means that the handheld Radio Remote Control or the USB dongle require an acknowledge from the Chromoflex RC!

In the simplest case only one Chromoflex 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.



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 there is one of the other modules too far from the master, it will not follow reliable (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 strong antenna (it is inside of the enclosure) than the Chromoflex 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 justifying the antenna of the Chromoflex RC modules 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 centimetres.

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 - 26 volt (+ 5%), regulated. Important: The power supply should have an equivalent pulse load. Unregulated or weak power supplies may cause flickering or malfunctions.

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

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

Radio frequency: 868.3MHz (licence-free in EC, Switzerland, Norway and Iceland)

Modulation system: The Chromoflex 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 120Hz up to (max.) 240Hz. Patent pending.

Model „Chromoflex RC i350“

Pulsed constant current, ca. 350mA per channel (3 channels). Highly efficient switching regulators are used.

Model „Chromoflex RC Stripe“

Pulsed constant voltage, maximum allowed current: 4 ampere per channel (3 channels) - max. 12 ampere.

Contact / Internet

Download of the PC Software, manuals, data sheets and technical requests (technical requests only as e-mail please!):

www.chromoflex.com , www.barthelme.de

Manufacturing and distribution:

www.barthelme.de

Attachment - Module layout:

