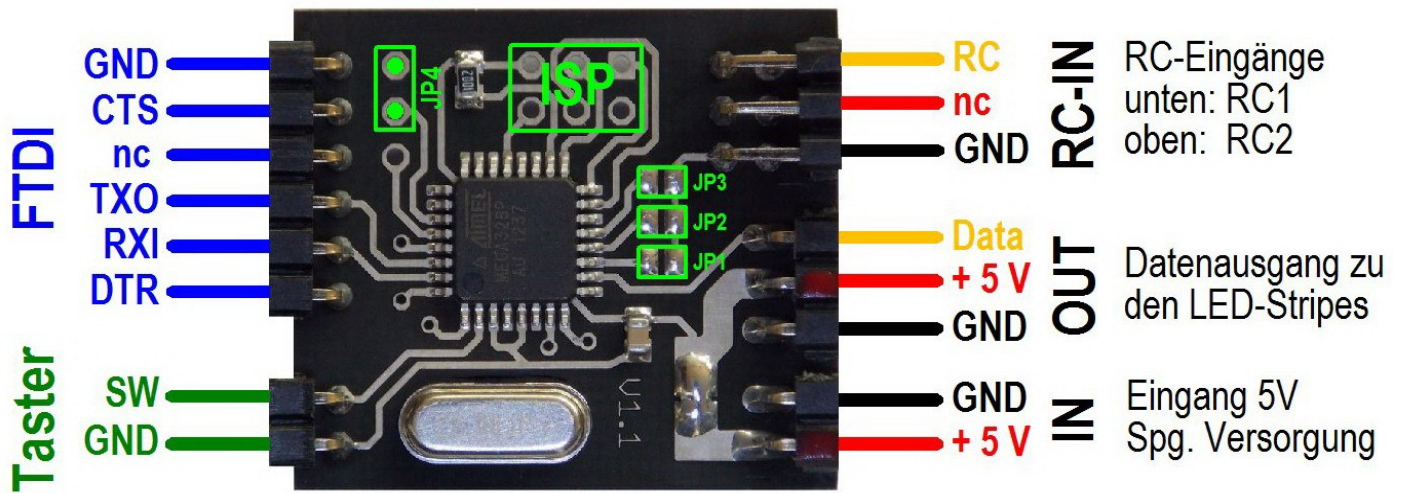# Quick Guide

1. Connectors

IN: 3.8 … **5.0 Volt !** (avoid voltage above 5.0 V !)
OUT: Output for WS2812 LED-stripes (6 or 9 LEDs / outrigger)
RC1:   RC-Ch. / AUX1 -> Selects pattern by transimitter
RC2:   RC-Ch. /AUX.2 -> Selects brightness by transmitter
ISP: for bootloader install only – not needed
FTDI: serial FTDI connector for software update

Taster: connect tact-switch to select brightness
    (when using only 1 Rx-Ch.)
JP1:   „Solder-Jumper" 1 : 6-Outriggers / Hexacopter
JP2:   „Solder-Jumper" 2 : 8-Outriggers / Oktocopter
JP3:   „Solder-Jumper" 3 : operate with 1 Rx Ch.
JP4:   Jumper 4 : open = 6 LEDs /   closed 9 LEDs per outrigger
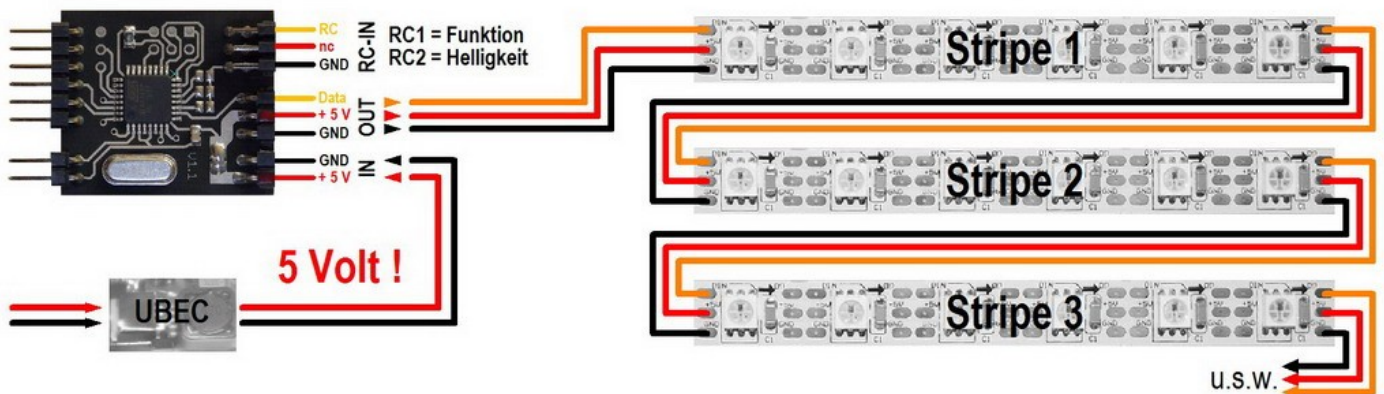
2. Installation

Normal wiring is leading signal thru each stripe (daisy chained). Voltage supply can be connected to each segment separate, no need to lead-thru. See end of this guide for alternate wirings . Important : care for proper mount of stripes, accurate soldering and avoid from short-circuits ! **Voltage mustn't override 5.0 V DC any time ! Otherwise damage will happen to controller or/and stripes !** You can eather connect segments in parallel, Data-wire has to be split to each „D-In" of both segment – leave "D-Out" of second segment opened ! Only master wire is to be chained to next segment ! Asure proper wiring by control with digital multimeter after wiring is completed before power-up unit .

3. Settings

Mode (Solder-Jumper JP1 + JP2):

-   no jumper   >   Quadcopter Mode (4-Arms / Outriggers)
-   JP 1 closed   >   Hexacopter Mode (6- Arms / Outriggers)
-   JP 2 closed   >   Oktocopter Mode (8- Arms / Outriggers)

Number of RC-AUX Channels used (Solder-Jumper JP 3):

-   JP 3 closed   >   One-Channel-Mode (only pattern selected by transmitter, brightness by tact-switch)
-   JP 3 open   >   Two-Channel-Mode (Select pattern and brightness thru transmitter)

If JP3 is closed, a tact-switch is needed at the „Taster"-connector to select brightness. Brightness can be chosen in 4 steps (25 / 50 / 75 / 100 %) . Brightness will be pre-setted to 50% on startup.

Number of LED per Arm/Outrigger (Jumper JP 4):

-   JP 4 closed   >   9 LED´s on each segment will be controlled
-   JP 4 open   >   6 LED´s on each segment will be controlled
-

4. Entering Setup-Mode :

-   Connect a tact-switch to the „Taster"-connector
-   Press and hold tact-switch during boot-up, then release
-   When first segment / outrigger lights up, base color can be set by RX-Channel 1(RC1)
     (Brightness can´t be selected)
-   Switch to next segement ny pressing tact-switch short term
-   Repeat setting up base color, switch to next segment
-   After setting up last segemnts base color, press and hold tact-switch as long as all LEDs will light up in selected pattern. Setting are saved now .

5. Power supply

This module and WS2812 RGB-stripes are designed to work from 3.80 V DC up to 5.0 V DC. Avoid from higher voltages, even 5.1 V can cause serious damage to controller and LEDs !

Calculating power-consumption :
One segment of 6 LED´s draws 360mA of current (r.a. 1.8 W)
One segment of 9 LED´s draws 540mA of current (r.a. 2.7 W)

Example: a Hexacopter w/ 9 LED´s on each segment draws 6 x 0,54 A = 3,24 A overall current at 100% Brightness, white light active

It´s important to asure that your BEC can provide the needed overall current to avoid damage to BEC

Release date : April 13th 2013

6. Updating Software :

For software update, only power-supply and FTDI-connector have to be connected to MWC-RGB controller – all LED-segments need to be disconnected !

Bootloader-Tool can be downloaded here :

http://www.mcselec.com/index.php?option=com_docman&task=doc_download&gid=153&Itemid=54

(this tool doesnt support Auto-resert-function, this needs to be done thru handling manually – see below)

Proceeding :

1. Install Bootloader Tool
2. select COM-Port of FTDI adaptor
3. set baudrate to 19200
4. connect FTDI cable (care for polarity !)
5. Select File
6. Start „upload"
7. Power-up your power supply. Reset of controller will follow and upload starts.
8. Progress will be shown during upload process
9. After completion, error-code „0" should be reported (success)
10. Discomnect FTDI first, then power-down your supply

7. Technical Data :

MWCLightRGB is a microcontroller based LIM-controller (LIM : Lights in motion) for useage with digital RGB-stripes w/ built-in WS2811 controller only. No other LED-stripes are supported. Operating voltage I 3.80 …. 5.0 V DC only .

RC-Input: Standart RC Channels, pulse-lenght 900 to 2100 µs
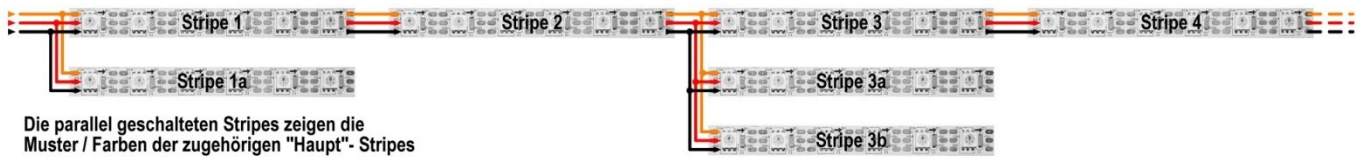LED-Bus: Data-bus for WS2811 based RGB-LEDs, daisy-chained

Lightpatterns (Software Version 1.20): *(can vary on future versions)*

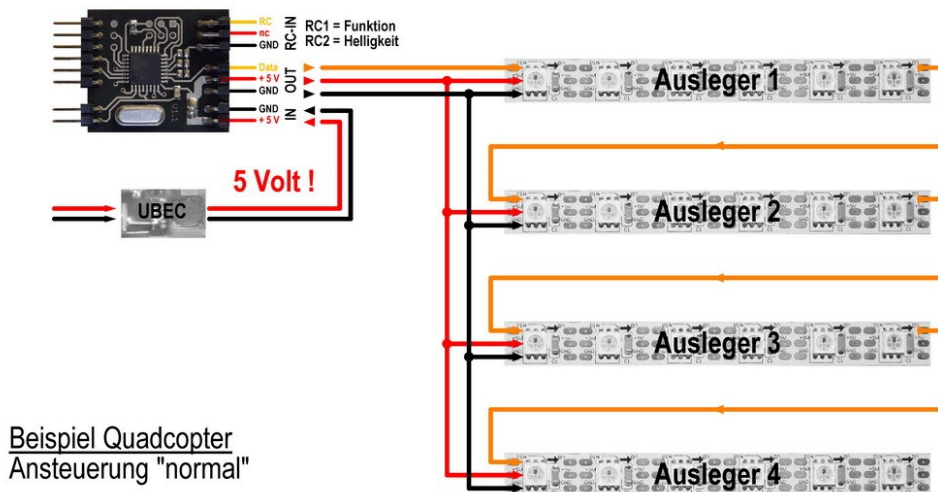The following patterns can be selected thru RC1 at the described threshold levels :

1. (<1200µs)   OFF
2. (1200 µs)   Landing lights (all LED´s white)
3. (1300 µs)   Flightmode 1 (all LED´s light in set-up basecolor)
4. (1400 µs)   Flightmode 2 („Kermis"running lights")
5. (1500 µs)   Flightmode 3 („Double-run" – fw/rw)
6. (1600 µs)   Flightmode 4 („Triple", passing thru)
7. (1700 µs)   Flightmode 5 („Fill up and empty")
8. (1800 µs)   Rainbow glow
9. (1900 µs)   color-circle (segment-by-segment)
10. (2000 µs)   color-circle (passing thru, all segments)

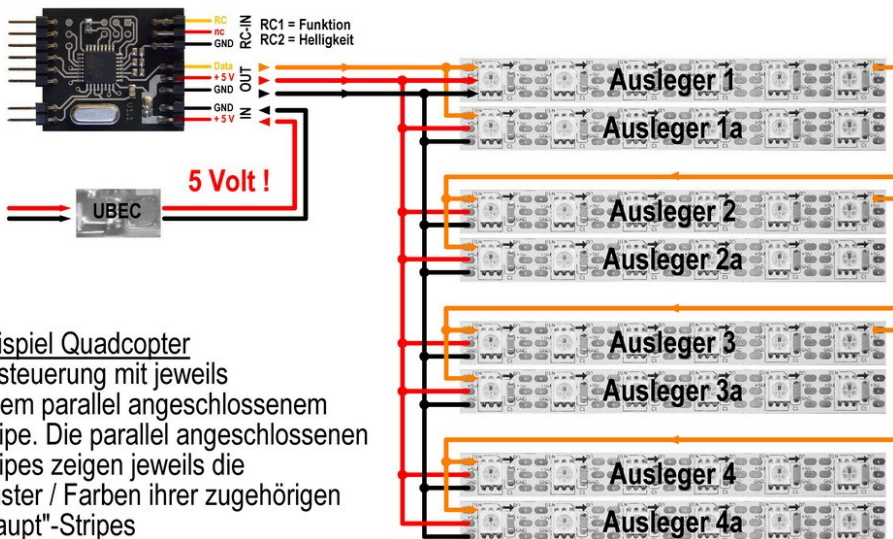## Addendum 1: switching segements in parallel mode to enhance

"Parallelschaltung" von Stripes

Die parallel geschalteten Stripes zeigen die
Muster / Farben der zugehörigen "Haupt"- Stripes

Addendum 2: wiring example - Quadcopter

RC1 = Funktion
RC2 = Helligkeit

5 Volt !

Beispiel Quadcopter
Ansteuerung "normal"

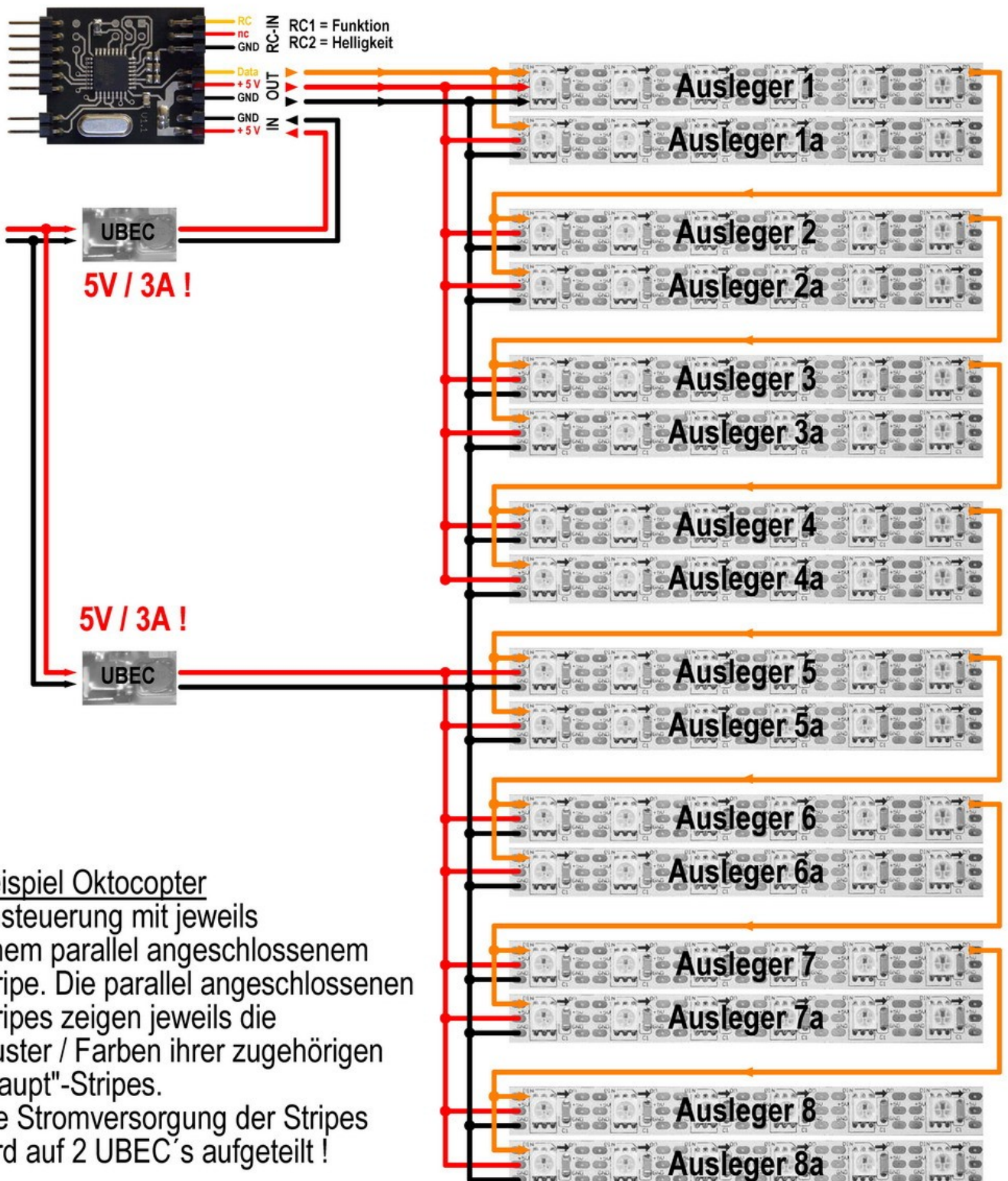RC1 = Funktion
RC2 = Helligkeit

5 Volt !

Beispiel Quadcopter
Ansteuerung mit jeweils
einem parallel angeschlossenem
Stripe. Die parallel angeschlossenen
Stripes zeigen jeweils die
Muster / Farben ihrer zugehörigen
"Haupt"-Stripes

RC1 = Funktion
RC2 = Helligkeit

5 Volt !
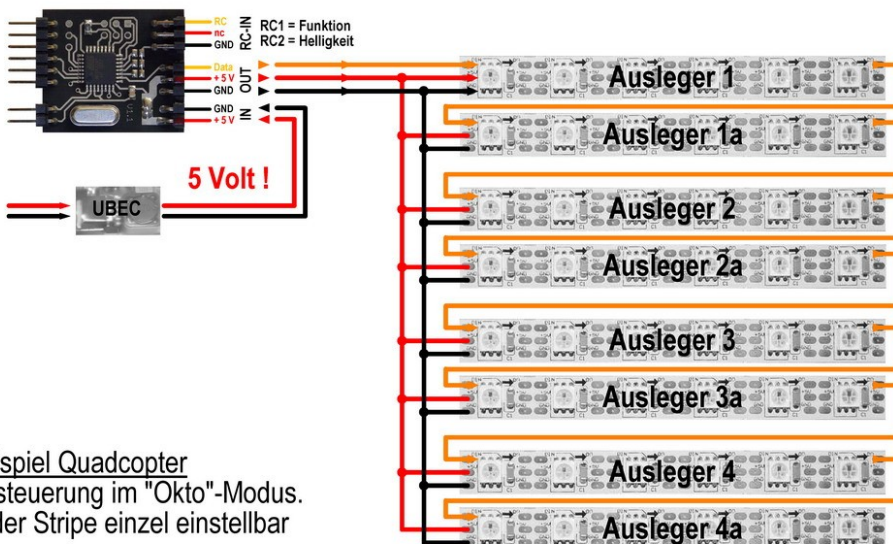
Beispiel Quadcopter
Ansteuerung im "Okto"-Modus.
Jeder Stripe einzel einstellbar

Addendum 3: wiring example - l Oktocopter

Beispiel Oktocopter
Ansteuerung mit jeweils
einem parallel angeschlossenem
Stripe. Die parallel angeschlossenen
Stripes zeigen jeweils die
Muster / Farben ihrer zugehörigen
"Haupt"-Stripes.
Die Stromversorgung der Stripes
wird auf 2 UBEC´s aufgeteilt !