Control 3 dimmer channels (1 x RGB or 3 single channels) with Arduino UNO™.

**Features**
- For use with Arduino Due™, Arduino Uno™, Arduino Mega™
- RGB indicator leds
- Screw terminals for led strip connection.
- With cascade connectors for other shields
- Selectable power supply: external power or power from Arduino Uno™ board

**Specifications**
- Max. current: 2A/channel
- Max. input voltage: 50VDC
- Dimensions: 68 x 53mm / 2.67 x 2.08”
1. Assembly (Skipping this can lead to troubles!)
Ok, so we have your attention. These hints will help you to make this project successful. Read them carefully.

1.1 Make sure you have the right tools:
• A good quality soldering iron (25-40W) with a small tip.
• Wipe it often on a wet sponge or cloth, to keep it clean; then apply solder to the tip, to give it a wet look. This is called ‘thinning’ and will protect the tip, and enables you to make good connections. When solder rolls off the tip, it needs cleaning.
• Thin raisin-core solder. Do not use any flux or grease.
• A diagonal cutter to trim excess wires. To avoid injury when cutting excess leads, hold the lead so they cannot fly towards the eyes.
• Needle nose pliers, for bending leads, or to hold components in place.
• Small blade and Phillips screwdrivers. A basic range is fine.

◊ For some projects, a basic multi-meter is required, or might be handy

1.2 Assembly Hints:
• Make sure the skill level matches your experience, to avoid disappointments.
• Follow the instructions carefully. Read and understand the entire step before you perform each operation.
• Perform the assembly in the correct order as stated in this manual
• Position all parts on the PCB (Printed Circuit Board) as shown on the drawings.
• Values on the circuit diagram are subject to changes, the values in this assembly guide are correct*
• Use the check-boxes to mark your progress.
• Please read the included information on safety and customer service

* Typographical inaccuracies excluded. Always look for possible last minute manual updates, indicated as ‘NOTE’ on a separate leaflet.

1.3 Soldering Hints:
1. Mount the component against the PCB surface and carefully solder the leads
2. Make sure the solder joints are cone-shaped and shiny
3. Trim excess leads as close as possible to the solder joint
DO NOT BLINDLY FOLLOW THE ORDER OF THE COMPONENTS ONTO THE TAPE. ALWAYS CHECK THEIR VALUE ON THE PARTS LIST!
1 Jumper

Select power source

- Vin: power from Arduino®
- OR
- PWR: Power from external supply

2 Resistors

- R1: 1K (1 - 0 - 2 - B)
- R2: 68 (6 - 8 - 0 - B)
- R3: 180 (1 - 8 - 1 - B)
- R4: 330 (3 - 3 - 1 - B)
- R5: 330 (3 - 3 - 1 - B)
- R6: 330 (3 - 3 - 1 - B)

3 Transistors

- T1: BUK9535-55
- T2: BUK9535-55
- T3: BUK9535-55

4 Female header

- 2 x 6p
- 2 x 8p

- Do not cut the connector pins!

5 LED’s

- LD1: blue (water-clear!)
- LD2: Green
- LD3: Red

- Watch the polarity!

6 Diode

- D1: 6A6

7 Terminal blocks

- SK4: 2p (power)
- SK5: 2p (Red)
- SK6: 2p (Green)
- SK7: 2p (Blue)
II CONNECTION DIAGRAM

1 EXTERNAL POWER SUPPLY INPUT
Max. 50VDC/6A

2 SELECT POWER SOURCE
- **Vin**: Power from Arduino (max. 2A)
- **PWR**: Power from external supply (max. 50VDC/6A)

3 RGB OUTPUTS

DOWNLOAD SAMPLE CODE FROM KA01 PAGE ON WWW.VELLEMAN.BE
Schematic diagram
How to Calculate the series resistor:
Example: operate a red led (1.7V) on a 9Vdc source. Required led current for full brightness: 5mA (this can be found in the datasheet of the led)

<table>
<thead>
<tr>
<th>Supply voltage (V) - led voltage (V)</th>
<th>required current (A)</th>
<th>= series resistance (ohms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9V - 1.7V</td>
<td>0.005A</td>
<td>1460 ohm</td>
</tr>
</tbody>
</table>

Required resistor power handling = voltage over resistor x current passed through resistor

(9V - 1.7V) x 0.005A = 0.036W

LEDs in series:
Example: 3 x red led (1.7V) on 9V battery
Required led current for full brightness: 5mA (this can be found in the datasheet of the led)

<table>
<thead>
<tr>
<th>Supply voltage (V) - (number of leds x led voltage (V))</th>
<th>required current (A)</th>
<th>= series resistance (ohms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9V - (3 x 1.7V)</td>
<td>0.005A</td>
<td>780 ohm</td>
</tr>
</tbody>
</table>

Use an 820 ohm resistor

An open collector output can be compared to a switch which switches to ground when operated

Example: How to switch an LED by means of an open collector output

Never connect leds in parallel

Leds feature a specific voltage drop, depending on type and colour. Check the datasheet for exact voltage drop and rated current!
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