LED Lighting Control

In this tutorial we will describe how to integrate **DOMIQ/Base** and **DOMIQ/Serial-4DX** with **DAGON SPL-1** LED dimmer to control LED lighting using **DMX512** protocol.

DOMIQ/Serial-4DX can handle up to 256 DMX512 slots. This makes possible to control up to up to 85 circuits of the RGB LEDs or 256 single-color LEDs circuits.

Number of LEDs in the circuits is limited by the maximum load of the LED driver. In case of **Dagon SPL-1** it is 4A per channel.

1. Devices and wiring

In order to control LED lighting following devices are required:

1. **DOMIQ/Base**

2. **DOMIQ/Serial-4DX**

3. **DAGON SPL-1** - LED controller

4. 12-24V DC power supply with power adequate to the quantity of used LEDs.
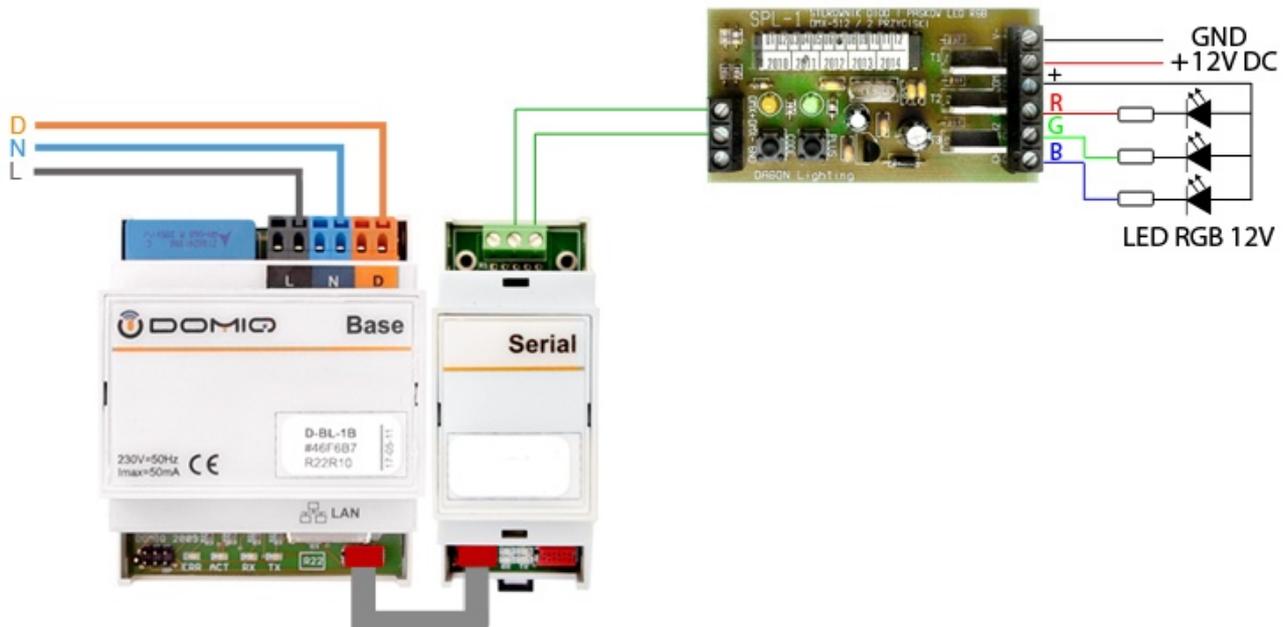
To connect **Serial-4DX** to **DAGON SPL-1** use a shielded twisted pair with a 100Ω termination resistor at the end of the cable furthest from the controller, to limit signal reflections. A DMX512 controller transmits asynchronous serial data at speed of 250kbit/s. Maximum DMX512 network wire lenght at this transmission speed is 400m.

SPL-1 drivers should be mounted as close as possible to the controlled LED circuits. This helps to minimize the risk of distortion of the PWM signal. Therefore, if LED circuits are installed in several rooms in a building, it is required to install separate **SPL-1** driver in each room. You can use the same driver if the rooms are next to each other.

2. SPL-1 Driver Configuration

SPL-1 driver configuration consists of entering 3-digit codes using **CODE** and **PLUS** buttons. Each code has an assigned function, which is activated/deactivated after entering particular code. Codes are stored in non-volatile EEPROM memory. Basic and most often used codes are presented in the table below:

CODE	FUNCTION
0 - 512	DMX address of the SPL-1 driver
555	DMX512 mode
612	PWM 16-bit 244Hz - LED brightness control, linear for the human eye
620	Disable DIMMER function
630	Disable STROBO function
661	After the loss of DMX signal - a demonstration program - a smooth RGB color changes

2.1. Entering codes to the SPL-1 driver

In order to enter codes to the SPL-1 driver, please follow the procedure presented below:

1. Press the **CODE** button, green LED turns off, yellow lights up.

The first digit of the code

2. Shortly press **PLUS** button as many times as is the first digit of the code - from 1 to 9. Each press of the **PLUS** button is indicated by green LED blink. To enter 0 skip to step 3.

3. Press the **CODE** button again. The yellow LED turns off for a moment and lights up again. Now you can enter the next digit of the code.

4. For the remaining digits of the code repeat step 2 and 3.

After entering the third digit of the code and confirmed by pressing **CODE** button, the yellow LED turns off, green LED lights up indicating that the code was entered correctly. For the remaining codes repeat whole procedure.

Incorrect code entry is indicated by three blinks of the yellow LED. The same code can be entered into the controller memory repeatedly, which has no negative impact on controller's operation.

2.2. DMX512 addresses

As we mentioned in the introduction of this tutorial, **Serial-4DX** module can handle up to 256 DMX512 slots. So during **SPL-1** dimmer configuration enter DMX512 addresses in the range from 1 to 256. By default **SPL-1** dimmer uses five DMX512 slots to control RGB LEDs. Each slot determines the value of the color components **R** (red), **G** (green), **B** (blue), global dimmer and blinking, each in the range from 0 to 255. In our case it is recommended to disable global dimmer and blinking slots by entering configuration codes 620 and 630.

Example: Code *001* (DMX512 address No.1) was entered to a **SPL-1** driver. The R component is controlled by DMX slot No.1, the G component by DMX slot No.2 and the B component by DMX slot No.3. It is necessary to follow this order to ensure proper operation.

In case of single-color LEDs control, slots should be considered independently. Each slot can control a separate circuit of LEDs. If the same DMX512 address will be assigned to several SPL-1 drivers, the devices will work as a group. It allows to control a large number of LED circuits simultaneously.

3. DOMIQ/Base module Configuration

3.1. RGB LED lighting control

DOMIQ/Base module allows to control RGB LED lighting using **DOMIQ/Remote** application (version 1.7.0 or newer) on iPhone/iPad/iPod Touch. To do that **RGB Light** control is used. Definition of this control consist of:

• Label

• **Red Channel** - DMX512 slot address for the red component.

• **Green Channel** - DMX512 slot address for the green component.

• **Blue Channel** - DMX512 slot address for the blue component.
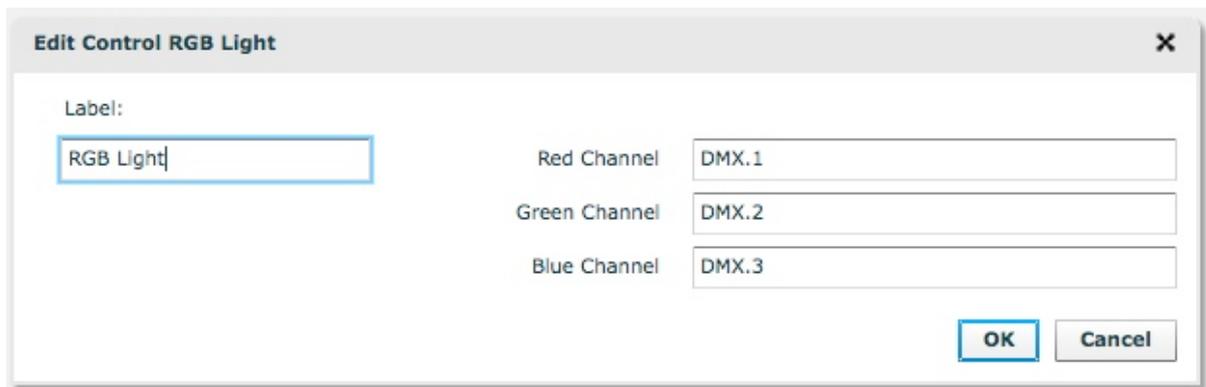
RGB Light control on iPhone:

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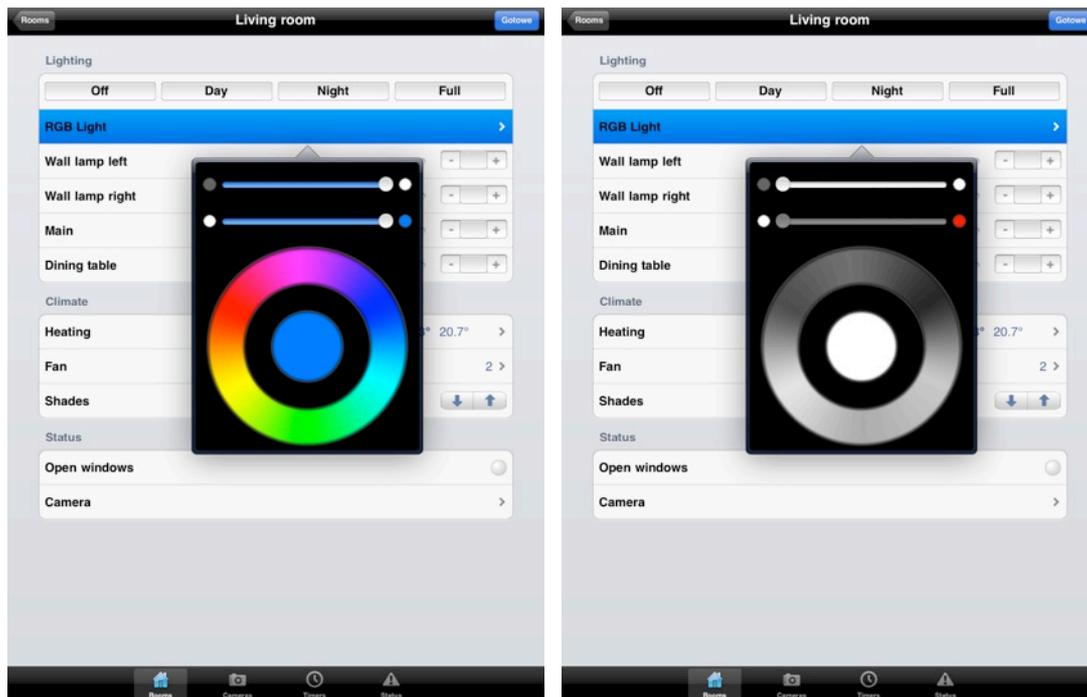
The **RGB Light** control consist of:

1. **Brightness slider** - using this slider you can adjust the LED's brightness. To turn the LED lighting off, move the slider to the leftmost position. When the lighting is off **Color selection ring** is inactive.

2. **Saturation slider** - using this slider you can adjust the LED's saturation.

3. **Color selection ring** - using this ring you can select any RGB color. The color selection ring is inactive, when brightness is set to 0.

4. **Circle of the actual color** - this circle shows the current color including brightness and saturation.