School of Engineering

ETP2 “MOODLIGHT”

User manual

Project report fourth semester electrical engineer, user manual

Explanations handling the Moodlight and his features.

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1 Table of Content

2 Supported devices

Android devices like smartphone or tablet.

3 Technical specifications

Input: 24VDC/830mA

Power: 17.28W

Din 8 pole output: 24V/720mA

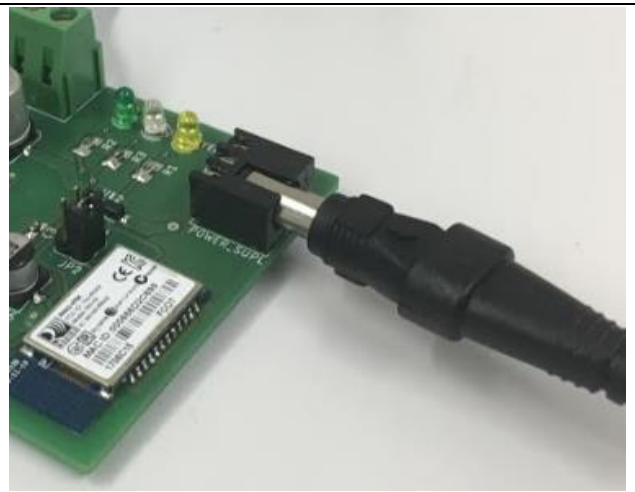
Lampshade Material: PLA

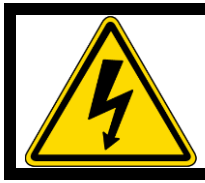
Lampshade Dimensions (L x W x H): 11cm x 11cm x 16cm

Lampshade Weight: 275g

Warm White: 6000K

4 Hardware Setup

4.1 Connect LED driver circuit with the connecting cable to the lamp shade	4.2 Connect the adapter with the LED driver circuit	4.3 Connect the adapter to an electrical outlet
		
Connect the lamp with the microcontroller via the grey connecting cable.	Connect the microcontroller with the power supply.	Plug in the adapter. There are three LEDs on the microcontroller. You did everything right, if the yellow one is glowing and the green one is blinking periodically.

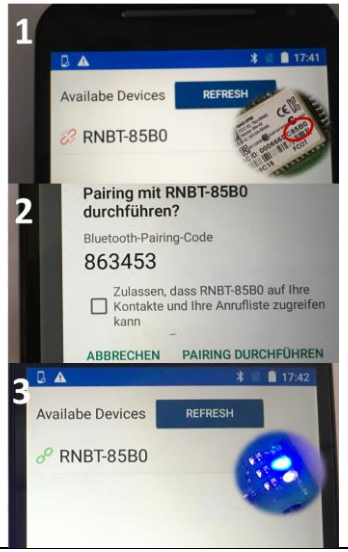
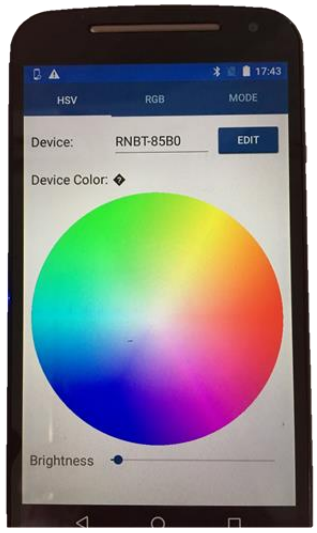


Warning! Do not touch any exposed wires, because of possible electric shock.
Assemble in a dry environment and avoid contact of electrical components with liquids.

!DO NOT LOOK DIRECTLY INTO THE LED'S WHILE THE MOODLIGHT IS ACTIVE, BECAUSE OF PERMANENT EYE DAMAGE!

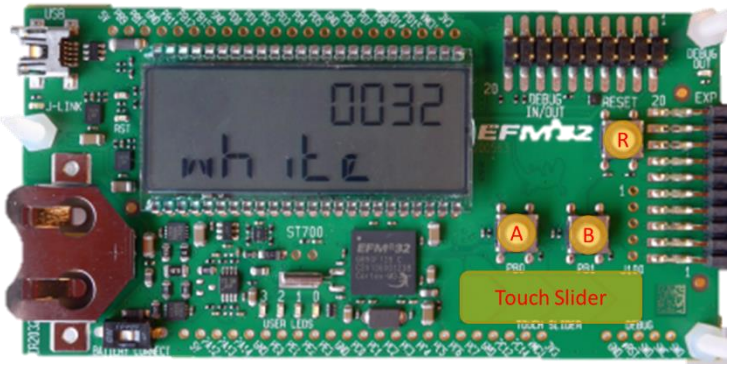
5 Software Setup

There are two ways to control your new Moodlight. If you like to interact only with the microcontroller, follow the instructions in chapter 6. If you would like to control your Moodlight with a device go on below 5.ff.

5.1 Install the app on your device	5.2 Pair your device with the LED driver	5.3 Follow instruction user interface in chapter 7
The app is not available in the Play Store. **1. Step. "Download Files"** Download the file "**ETP2.apk**" on your smartphone and remember your download folder. **2. Step. "Enable Unknown Sources"** Go to **Settings**, **Security**, **Unknown sources**: "*Allow installation of apps from sources other than the Play Store*". **Enable** the option and Click "**OK**" **3. Step. "Install the Application"** Open an explorer[1] and go to your folder you did the download of our application. Click on it to install. [1] If you haven't a **File Explorer** installed on your Android phone, go to Play Store and install one of your choice. After install the application, you have to look for the icon to the right. 	 1. When you start the app, it will search for available Bluetooth- devices. Click on your device and start pairing[2]. 2. On your screen should pop up the normal code-pairing request. ***Click to agree***. 3. The pairing was successful if the blue LED is glowing permanently.	 ***Click on "OK"*** Now you're ready to change your Moodlight- colour. If you type in "**EDIT**" you get back in the device overview where you could change to another device.

[2]If you do not know the number of your Bluetooth antenna, you can find it on the Bluetooth chip on the PCB

6 Controlling Moodlight via Microcontroller



There are two buttons “**A**” and “**B**” that will rotate the colours state. In each colour state, you are able to set the intensity of that colour from 0 to **maximum** of 255 with the **Touch Slider**.

If you like to reset your Moodlight to default, you press the Reset Button “**R**”.

You could only set red, green and blue. White will be calculated.
You get **255 white**, with **255 red**, **255 green** and **255 blue**.

There are two extended functionality states, “circle” and “pulse”.
In the state “circle” the colours change automatically, it is possible to vary the value of the function with the Touch Slider.
In the state “pulse” the light start to pulse, use the Touch Slider to set the pulse rate.

7 Controlling Moodlight via App

When you start the app, it will look automatically for Bluetooth devices. After searching you could pair your Moodlight with the App.

It’s possible to connect more than just one Moodlight.

For controlling there are two screens.

In the HSV screen you could choose a colour in the colour wheel. For setting the intensity a slider is implemented.

In the RGB screen you get the same options like on your Hardware. Again the white colour is calculated.

In the screen “MODE” there are two extended functionality, “circle” and “pulse”.
With “circle” the colours change automatically, it is possible to vary the intensity of the light with the slider.
In the state “pulse” the light start to pulse. The colour is given by the previous setup.

8 Extended functionality

8.1 Multiple Moodlight

The app has the possibility to be connected with multiple Moodlight at the same time, and set different values for each one.

8.2 Automatic colour change mode

The automatic colour change mode can be set via microcontroller or via app, this function automatically changes the colour. Furthermore it is possible to vary the intensity of the light.

App: Go in the screen "MODE", touch "circle", with the slider is it possible to vary the intensity of the light. Touch "circle" again to exit this mode.

Microcontroller: Select the state "circle", the intensity of the light can be changed with the Touch Slider. Set 0 and change state to exit this mode.

8.3 Pulse mode

This mode can be set via microcontroller or via app, the light start to pulse and the pulse rate can be set.

App: Go in the screen "MODE", touch "pulse", with the slider is it possible to vary the rate of the pulses. Touch "pulse" again to exit this mode.

Microcontroller: Select the state "pulse", the rate of the pulses can be changed with the Touch Slider. Set 0 and change state to exit this mode.

9 Troubleshooting

If the Moodlight is not changing colour, please check that your devices is connected with its controller. If this is not the case, press the reset button on the microcontroller, as shown in chapter 6. For more information, contact the developers.

10 Frequently asked questions

The objective of this Moodlight is to create a different atmosphere in a room in many situations and add personality to an environment.
The entire lamp was made with a 3D printer in PLA[1]material. The crystal was formed with a transparent PLA to aid with the diffusion of light. The crystal is fragile because it is very thin.

11 Technical support

For technical support, email us at

The rights regarding the PCB, the base part of the lamp and the app are reserved only for the developers.

[1] https://en.wikipedia.org/wiki/Polylactic_acid