



RDL_LI-FI

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Introduction:

At the heart of this technology, a new generation of high-brightness lightemitting diodes. Very simply, if the LED is ON, user can transmit a digital string of 1, if it's OFF then user can transmit a string of 0. It can be switched ON and OFF very quickly, which gives instant opportunity for transmitting data. It is possible to encode data in the light by varying the rate at which the LEDs flicker ON and OFF to pass different strings of 1s and 0s. The modulation is so fast that the human eye doesn't notice. There are over 14 billion light bulbs used across the world, which needs to be replaced with LEDs ones that transmit data.

Features:

- It can transmit data 38400 baud rate serially.
- Distance can be achieved 1 Feet to 10 Feet for wireless open optical communication*.
- High intensity LED matrix.
- High quality PCB FR4 Grade with FPT Certified.

Applications:

- Indoor wireless open optical communication.
- Indoor navigation.
- Under water visible light communication.
- Smart indoor blind assistive application.
- Vehicle to vehicle communication.

Compatibility:

- Raspberry Pi
- Raspberry Pi 2
- Raspberry Pi Model B+
- Raspberry Pi zero

Package Contains:

LiFi (Visible Light Communication) Compatible for Raspberry Pi + LED Matrix

Note1 : The Raspberry Pi in the picture above is just for reference, it does not include in the package.

Note2: Base board is only used for soldering the LiFi shield and establishing the respective connectivity with Raspberry Pi I/O pins.

Note3: Single panel will give you the distance maximum up to 1Ft-30CM. By cascading 4 LED panels you can communicate with distance of 120CM.

Internal Block connections:

Image: state state

Li-Fi Tx:

Li-Fi Rx



Installing pyserial package:

First download and install python serial package called pyserial from the below site.

https://pypi.python.org/pypi/pyserial

unzip the file and enter into that folder using command

cd "package name"

inside the package name there will be setup file, called setup.py. install the software by typing following command.

sudo python setup.py install

🧬 pi@raspberrypi	: ~/pyserial-2.7				
pi@raspberryp build CHANGES.txt documentation pi@raspberryp	i ~/pyserial-2 examples gsm.py LICENSE.txt i ~/pyserial-2	.7 \$ 1s MANIFEST.in PKG-INFO pygsm.py .7 \$	pyrecv.py README.txt receive.py	serial sermsg.py sermsg.py.save	serr.py setup.py tott
P	ackage name			Setup file	
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Sample python code:

Please go through Lifi fine tune steps mentioned in the below link

http://researchdesignlab.com/projects/Li-Fi.pdf

Testing Lifi-Rx board:

• Connect Lfi-Rx board to one raspberry pi and open nano editor by typing following command

Nano filename.py



 Type the following code inside the editor import serial ser = serial.Serial('/dev/ttyAMA0',38400)

while True:

```
p = ser.readline()
print p
```



• now run the code by following command

sudo python filename.py

When we press switch S2 on Li-fi board we can see research designlab.com is printing on raspberry screen.



Testing Lifi-Tx board:

• Next connect Lifi-Tx to another raspberry board and run same test1.py code on Lifi-Rx board. And press reset switch on Lifi-Tx board. This will print researchdesignlab.com on Lifi-Rx raspberry pi screen.



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Communication between Lif-Tx and Lifi-Rx:

• open nano editor in Lifi-Tx raspberry and enter following code



 Run the above code by typing following command. And at the same time run Li-Fi –Rx code in another raspberry pi sudo python filename.py



• We can see whatever message typed in Lifi-Tx is printing on Lifi-Rx.

LiFi-Tx



