Read this manual before you start working with Lightberry HD. Obey all instructions and warnings (marked by a red triangle with exclamation mark), in order to avoid injury or hardware (TV or Raspberry Pi) damage.

Lightberry S.C. is not responsible for hardware damage, if this manual is not followed, and you should be aware that your Lightberry HD warranty will be void in these circumstances.

Lightberry should only be used indoors.

1. **What is Lightberry HD?**

   Lightberry is a peripheral device for Raspberry Pi® and is compatible only with this microcomputer. Thanks to Lightberry, you can enjoy colourful effects behind your TV: where video is played from Raspberry Pi®, your TV’s colours will adjust to what is being displayed on the screen. You connect Lightberry HD to pins in your GPIO bus, according to the instructions in point 5 of this manual and, in order to work properly, it requires installation and proper configuration of software. Lightberry HD requires at least a 5V 6A (4m) or 8A (5m) constant current power supply with a 2.1/5.5mm plug. We recommend purchasing a Raspberry Pi® case that allows connection to GPIO through dedicated holes in the case (offered in the Lightberry store).

2. **Lightberry HD set content:**

   a. LEDs tape with drivers (32 LEDs per 1m)
   b. 10 (4m) / 12 (5m) mounting hooks with self-adhesive tape.
   c. Converter.
   d. Raspberry Pi®- Converter connector (approx 40cm)

3. **Attaching hooks.**

   Correct placing of the self-adhesive hooks on the TV is very important to ensure that the final effect is correct. You should make sure that the hooks are mounted symmetrically and at a consistently equal distance from the wall behind the TV. The LEDs should not be placed too close to the wall, as this will cause a “spot light” effect. The recommended distance for best effect is 4-15 cm from the wall but it may vary depending on your TV and placement.

   To avoid damage, you must not cover any ventilation holes in the TV. It is also recommended that you lay your TV down on a flat, soft surface before the hooks are mounted. Attaching the hooks to a hanging or standing TV may result in injury to you, or damage to the TV.
The TV fastening tape keeps it adhesive properties up to 60 degrees Celsius (the 60 degree resistance is likely to be sufficient for all standard TVs). If the back of your TV is likely to reach higher temperatures, do not mount Lightberry HD on it. Fastening tape is not designed for repeatable attachments. If you need extra hooks, please contact the Lightberry team on lightberry.eu.

Place the hooks as on below schema:

![Hooks layout](image)

**Picture1. Hooks layout**

4. **Mounting the LED tape.**

Attachment of the LED strand is done by placing LED tape into the hooks. Keep tape as straight as possible to assure even light distribution. To secure Lightberry in place remove self adhesive tape protector and attach LEDs to hooks.

![LEDs on hooks](image)

**Picture2. LEDs on hooks**
When mounting the LEDs, you should make sure that the wires are not twisted.

Note that the number of LEDs you need to use will not only depend on screen size, but also on suitable placement of the LEDs on the back of TV.

When placing the LEDs, you should consider the following factors:

- TV distance from the wall (it doesn’t have to be close to the edge, consider your TV shape).
- The minimum distance of the LEDs from the visible wall area (the part of the wall you can see when watching your TV should be at least 3cm, otherwise you may get a “spotlight” effect.
- The hook height is 25mm, so the minimum distance between the TV and the wall must be 25mm.
- Start in bottom left corner (facing back of the TV) and go up, right, down and left.

If your TV structure does not allow the installation of Lightberry according to the exact instructions above, then you should start with equally aligned LEDs on the first side of the TV, and then the LED mounting on remaining sides should be as similar as possible. You should ALWAYS make sure that wire is neither twisted nor bent.

**Picture 3. Distances from the wall**

After mounting Lightberry HD on TV and making sure that everything works as expected and is properly placed you can either secure remaining part of Lightberry HD on your tv or cut last LEDs as on the picture below. Do not cut your lightberry if there is additional power supply at the end.

After cutting Lightberry HD we will not accept returns. Warranty remains valid. If in any case you need to attach remaining part of tape (because of for e.g. TV upgrade) contact lightberry@lightberry.eu.
5. Connecting the set.

Connecting Lightberry is very simple and consists of the following steps:

a. Turn off/disconnect Raspberry Pi® power supply. Keep Lightberry power supply unplugged as well.

b. Connect Converter to Raspberry Pi® with the supplied connection cable. Connection to Raspberry Pi® is made through GPIO port to the pins presented on picture 3.
Make sure that GPIO pins and wire colors are exactly as presented in Picture 3. Incorrect connection may lead to Raspberry Pi® and/or Lightberry damage.

c. Connect LED strand to Converter.

d. Plug in power supply to Converter – make sure that your power adapter is unplugged from electrical socket.

e. Plug in your power adapter to the electrical socket.

f. Start/Turn on Raspberry Pi®.

If you use a Raspberry Pi® case, it is possible you will now not be able to close it, if you need a suitable RPi case, check in our Lightberry store.

6. **Automatic configuration using Lightberry Config Downloader**

Install XBMC Lightberry Config Downloader from https://github.com/LightberryEu/lightberry-config-downloader following instruction.
7. **Manual Boblight configuration**

If you have the standard configuration of LEDs on your TV, you will be able to download the boblight config file from the Lightberry website at Lightberry.eu. If you need a specific configuration, you can easily create this with BoblightConfigTool, which you can find via google. At the time of preparation of this manual, the tool is available at: http://www.sedu-board.de/sedu-ambilight/howto-boblightconfigtool/.

Parameters to be set in BoblightConfigTool:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>ws2801</td>
</tr>
<tr>
<td>Output</td>
<td>/dev/spidev0.0</td>
</tr>
<tr>
<td>Interval</td>
<td>30000</td>
</tr>
<tr>
<td>RED adjust</td>
<td>1</td>
</tr>
<tr>
<td>BLUE adjust</td>
<td>1</td>
</tr>
<tr>
<td>GREEN adjust</td>
<td>1</td>
</tr>
</tbody>
</table>

Remaining parameters depend on your individual needs such as the number of LEDs, or placement of the first LED on your TV.

In order to download boblight configuration file from Lightberry.eu, execute the following commands after connecting to Raspberry Pi® terminal via SSH: (appropriate for your setup link address can be obtained from lightberry.eu in Download section)

```bash
cd
wget [link address]
sudo cp boblight.conf /etc/boblight.conf
```

As a next step, please turn on boblight in Programs->Raspbmc Settings -> System Configuration -> Boblight support and restart Raspberry Pi®.

8. **Manual Hyperion configuration**

If you have the standard configuration of LEDs on your TV, you will be able to download the hyperion config file from the Lightberry website at Lightberry.eu. If you need a specific configuration, you can easily create this with HyperCon, which you can find via google. At the time of preparation of this manual, the tool is available at: https://github.com/tvdzwan/hyperion/wiki/configuration/. You can find full instruction under this address.

Parameters to be set in HyperCon tool:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>lightberry</td>
</tr>
<tr>
<td>Output</td>
<td>/dev/spidev0.0</td>
</tr>
<tr>
<td>RGB byte order</td>
<td>RGB</td>
</tr>
<tr>
<td>HSV Saturation gain</td>
<td>1</td>
</tr>
<tr>
<td>HSV Value gain</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Color</th>
<th>Threshold</th>
<th>Gamma</th>
<th>Blacklvl</th>
<th>Whitelvl</th>
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</thead>
<tbody>
<tr>
<td>Red</td>
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<td>1.7</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Green</td>
<td>0.05</td>
<td>1.7</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Blue</td>
<td>0.05</td>
<td>1.7</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

9. **Lightberry Kits**

Along with Lightberry there are 3 Kits available that extends Lightberry functionality. Follow below steps and appropriate connection schema below to connect Kit to your Lightberry:
a. Turn off/disconnect Raspberry Pi® power supply. Keep Lightberry power supply unplugged as well.
b. Connect all elements following connection schema along with dedicated power supplies (if any)
c. Plug in your power adapter to the electrical socket.
d. Start/Turn on Raspberry Pi®.

10. **Troubleshooting** - Visit lightberry.eu/support.