Universal LightProbe™ Spectra USB Sensors Installation

For Linux OS and Minicom

Driver Installation Instructions for the Optomistic Products Universal LightProbe Spectra USB Sensor

The operation of the Universal LightProbe Spectra USB Sensor has been verified on the following Linux distributions:

- Ubuntu 16
- Linux Mint 18
- CentOS 7

Instructions below apply to the distros mentioned above but should be applicable to any distro. The user may need to be signed in as root or use sudo in order to execute the commands.

1. Insert flash-drive into computer

2. From the flash-drive, copy the files in the folder *Spectra USB Sensor Linux Driver* to a folder on your computer

3. Open a terminal window and, from the command line, navigate to the folder the files were copied to

4. Compile the module (driver) by typing “make”on the command line

```
make
```

Note: If the “make” command fails, you may need to update your kernal header. Refer to your Linux distributions instructions on kernal headers

5. Copy the module to the serial folder - the <kernel version> is specific to your distro installation

```
cp cp210x.ko /lib/modules/<kernel-version>/kernel/drivers/usb/serial
```

or

```
cp cp210x.ko /lib/modules/`uname -r`/kernel/drivers/usb/serial
```

Your kernel version can be found by using “uname -r” on the command line or insert the “uname-r” command into the file path as shown above and in Figure 1 below. If using the file path, make sure to use the backward single quote (`)

6. Update kernel module dependencies

```
depmod -A
```

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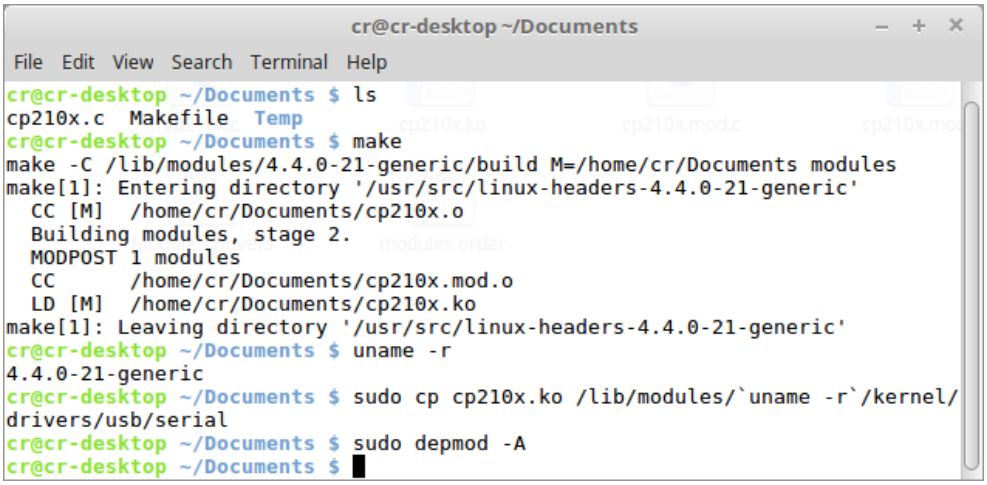
Figure 1 below shows the output of steps 4, 5 and 6



7. Plug in the LightProbe Sensor and check dmesg for ttyUSBx (x is usually 0 or 1)

`dmesg | grep tty` or `dmesg | grep cp210x`

If the driver has been installed correctly, the dmesg output will be as follows:

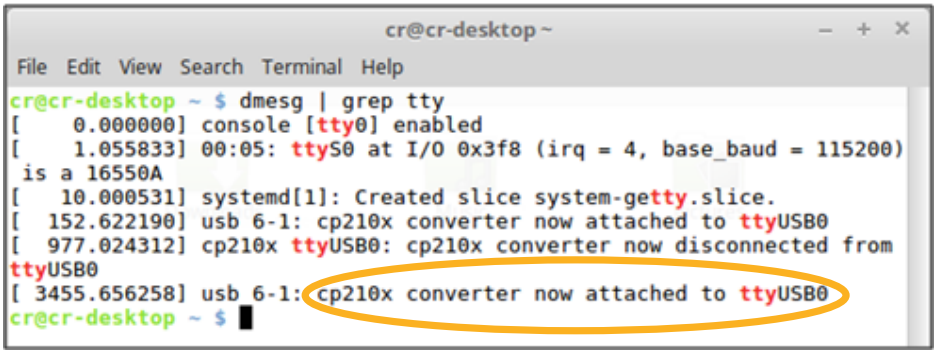


Figure 2 - dmesg Output

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Minicom Serial Port Communications Program

Minicom is a text-based serial port communications program used to communicate with your Universal LightProbe Spectra USB Sensor and is run from the command line.

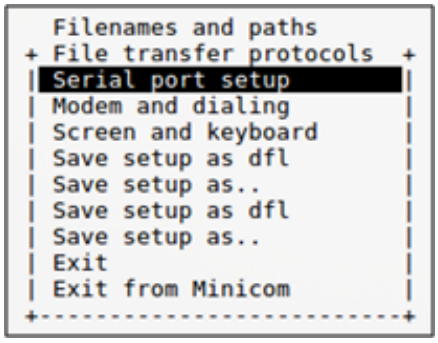
You can install Minicom from the command line using the apt-get, yum, or dnf installation commands depending on your Linux distribution. Also, depending on your Linux distribution, you may be able to use your desktop software manager to install Minicom. For more information, many Linux distribution's user forums have documentation on Minicom.

Setting up and Using Minicom

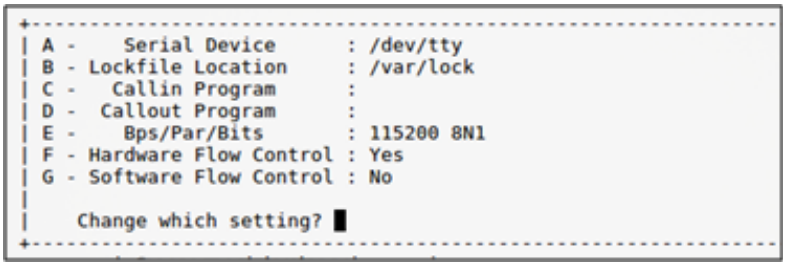
NOTE: Some distros may require setting up and running Minicom as root.

1. From the command line:
`~$ minicom -s` (The –s argument is for setup)

You will see the following screen:



2. Use the arrow key to highlight **"Serial port setup"** and press **Enter**



a. Push the **"A"** key to set the Serial Device. Type **"/dev/ttyUSBx"** where x is 0 or 1 and press enter. The ttyUSB can be found by executing the **dmesg** command as shown in step 5 of the driver installation instructions.

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b. Push the **"E"** key to set the baud rate. Press the **"A"** or **"B"** key until the **Current:** setting is 19200 as seen below.

```
+---------[Comm Parameters]----------+
|                                    |
|     Current: 19200 8N1             |
| Speed              Parity      Data|
| A: <next>          L: None     S: 5|
| B: <prev>          M: Even     T: 6|
| C:  9600           N: Odd      U: 7|
| D:  38400          O: Mark     V: 8|
| E: 115200          P: Space        |
|                                    |
| Stopbits                           |
| W: 1               Q: 8-N-1        |
| X: 2               R: 7-E-1        |
|                                    |
|                                    |
| Choice, or <Enter> to exit?        |
+------------------------------------+
```

Press **Enter** to exit this screen

3. Your setup screen should look like the screenshot below. Press **Enter** to exit.

```
+-------------------------------------------------------
| A -    Serial Device      : /dev/ttyUSB0
| B - Lockfile Location     : /var/lock
| C -   Callin Program      :
| D -  Callout Program      :
| E -    Bps/Par/Bits       : 19200 8N1
| F - Hardware Flow Control : Yes
| G - Software Flow Control : No
|
|    Change which setting?
+-------------------------------------------------------
```

4. You are now ready to use Minicom to read data from your Universal LightProbe Spectra USB Sensor. If not done already, plug in your LightProbe sensor.

5. Use the arrow keys to highlight **"Exit"** and press Enter.

```
+-----[configuration]------+
| Filenames and paths      |
| File transfer protocols  |
| Serial port setup        |
| Modem and dialing        |
| Screen and keyboard      |
| Save setup as dfl        |
| Save setup as..          |
| Exit                     |
| Exit from Minicom        |
+--------------------------+
```

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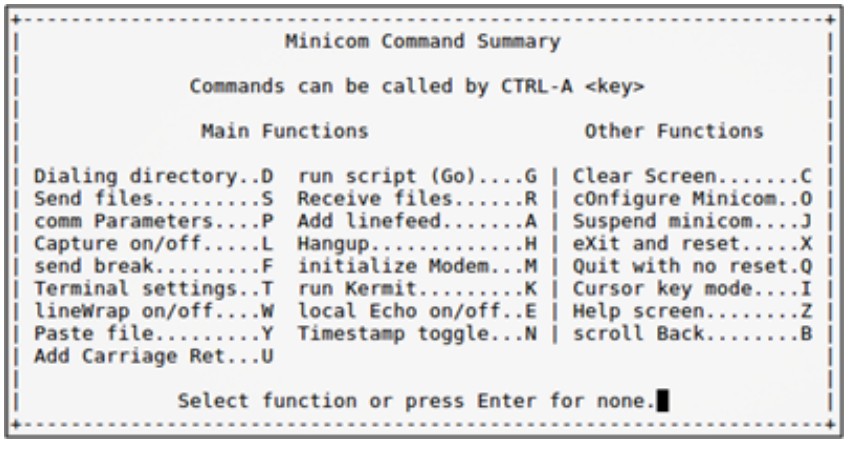
Data from the light probe will begin to scroll in the terminal window.

You will see **"w=1000 i=4"** until a light source is detected by the LightProbe sensor.

6. To exit, type **"Ctrl A"** and then type **"Q"** to quit. Select **"Yes"** to quit without reset and you will be back at the command line.

7. You can now invoke Minicom without setup by typing **"minicom"** on the command line.

8. Typing **"Ctrl A"** and then pressing **"Z"** will open the help menu with a list of shortcut keys



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