## Setting up LIRC

Perform the steps below to download LIRC source, patch it, compile it, and install it. These procedures are necessary because buster handles remote codes slightly differently than previous versions of raspian. If this procedure is followed, rrecord will be able to recognize the codes for your remote and build the configuration file needed to work with volumio. Please note that these procedures are copied, with minor alterations, from the following url:

<https://gist.github.com/billpatrianakos/cb72e984d4730043fe79cbe5fc8f7941>

Also, please note that accuracy is imperative. Pay careful note to the notification messages and address all error messages encountered for each step before moving to the next step.

* Download the volumio-3.010-2020-08-21-raspberry.zip (buster beta image) from the following url:

<https://drive.google.com/uc?id=1OMKaTyybQZZZABvPn77Gj1ecmTTH7JbC&export=download>

* Using your imaging tool, Install the volumio image on a micro usb card and boot it up.
* Install dependencies

sudo su -c "grep '^deb ' /etc/apt/sources.list | sed 's/^deb/deb-src/g' > /etc/apt/sources.list.d/deb-src.list"

sudo apt update

sudo apt install -y vim devscripts dh-exec doxygen expect libasound2-dev libftdi1-dev libsystemd-dev libudev-dev libusb-1.0-0-dev libusb-dev man2html-base portaudio19-dev socat xsltproc python3-yaml dh-python libx11-dev python3-dev python3-setuptools

Note: the last character of the libftdi1 library is the numeral one not the letter l.

* Download LIRC source code

mkdir ~/lirc-src

cd ~/lirc-src

apt source lirc

* Apply a patch to fix LIRC for Raspberry Pi

wget https://raw.githubusercontent.com/neuralassembly/raspi/master/lirc-gpio-ir-0.10.patch

patch -p0 -i lirc-gpio-ir-0.10.patch

cd lirc-0.10.1

debuild -uc -us -b

* Install LIRC (built on the previous step)

cd ~/lirc-src

sudo apt install ./liblirc0\_0.10.1-6.2~deb10u1\_armhf.deb ./liblircclient0\_0.10.1-6.2~deb10u1\_armhf.deb ./lirc\_0.10.1-6.2~deb10u1\_armhf.deb

* Edit /etc/lirc/lirc\_options.conf and make sure that driver and device are set as:

driver = default

device = /dev/lirc1

**NOTE:** Device **/dev/lirc1** is the receiver and device **/dev/lirc0** is the transmitter. Initially **/dev/lirc1** is used to scan a remote control. After that the configuration has to be updated to **/dev/lirc0** in order to send infrared commands.

* Edit /boot/config.txt (with sudo or as root) and configure kernel extensions by adding the following line to the end of the file:

dtoverlay=gpio-ir-tx,gpio\_pin=17

dtoverlay=gpio-ir,gpio\_pin=18

* Reboot Raspberry Pi:

Once you have a successful install, you’ll need to reboot the raspberry pi using the following command:

sudo shutdown -r now

## Using IR Receiver

Follow the steps below to verify that the IR receiver is working as expected:

* Stop LIRC systemd service:

sudo systemctl stop lircd

* Start outputting raw data from the IR receiver

mode2 -d /dev/lirc1

* Point a remote control at the IR receiver on ANAVI Infrared pHAT and press its buttons. If the IR receiver is configured successfully you will see similar output:

space 3662230

pulse 2428

space 594

pulse 1201

space 596

pulse 1230

space 595

pulse 1209

space 590

pulse 1204

## Using IR LED

Follow the steps below to create LIRC configuration filer:

* Stop LIRC systemd service

sudo systemctl stop lircd

* List all available names for buttons supported by LIRC:

irrecord --list-namespace

* Type in the following command to create new LIRC control configuration file and follow the on screen instructions to scan a remote control:

irrecord -d /dev/lirc1 ~/lircd.conf

Example configuration output with name hifi:

Using driver default on device /dev/lirc1

irrecord - application for recording IR-codes for usage with lirc

Copyright (C) 1998,1999 Christoph Bartelmus(lirc@bartelmus.de)

This program will record the signals from your remote control

and create a config file for lircd.

A proper config file for lircd is maybe the most vital part of this

package, so you should invest some time to create a working config

file. Although I put a good deal of effort in this program it is often

not possible to automatically recognize all features of a remote

control. Often short-comings of the receiver hardware make it nearly

impossible. If you have problems to create a config file READ THE

DOCUMENTATION at https://sf.net/p/lirc-remotes/wiki

If there already is a remote control of the same brand available at

http://sf.net/p/lirc-remotes you might want to try using such a

remote as a template. The config files already contains all

parameters of the protocol used by remotes of a certain brand and

knowing these parameters makes the job of this program much

easier. There are also template files for the most common protocols

available. Templates can be downloaded using irdb-get(1). You use a

template file by providing the path of the file as a command line

parameter.

Please take the time to finish the file as described in

https://sourceforge.net/p/lirc-remotes/wiki/Checklist/ an send it

to <lirc@bartelmus.de> so it can be made available to others.

Press RETURN to continue.

Checking for ambient light creating too much disturbances.

Please don't press any buttons, just wait a few seconds...

No significant noise (received 0 bytes)

Enter name of remote (only ascii, no spaces) :onkyo

Using onkyo.lircd.conf as output filename

Now start pressing buttons on your remote control.

It is very important that you press many different buttons randomly

and hold them down for approximately one second. Each button should

generate at least one dot but never more than ten dots of output.

Don't stop pressing buttons until two lines of dots (2x80) have

been generated.

Press RETURN now to start recording.

................................................................................

Got gap (45034 us)}

Please keep on pressing buttons like described above.

...............................................................................

Please enter the name for the next button (press <ENTER> to finish recording)

KEY\_POWER

Now hold down button "KEY\_POWER".

Please enter the name for the next button (press <ENTER> to finish recording)

KEY\_PLAY

Now hold down button "KEY\_PLAY".

Please enter the name for the next button (press <ENTER> to finish recording)

KEY\_PAUSE

Now hold down button "KEY\_PAUSE".

Please enter the name for the next button (press <ENTER> to finish recording)

KEY\_STOP

Now hold down button "KEY\_STOP".

Please enter the name for the next button (press <ENTER> to finish recording)

KEY\_VOLUMEUP

Now hold down button "KEY\_VOLUMEUP".

Please enter the name for the next button (press <ENTER> to finish recording)

KEY\_VOLUMEDOWN

Now hold down button "KEY\_VOLUMEDOWN".

Please enter the name for the next button (press <ENTER> to finish recording)

KEY\_NEXTSONG

Now hold down button "KEY\_NEXTSONG".

Please enter the name for the next button (press <ENTER> to finish recording)

KEY\_PREVIOUSSONG

Now hold down button "KEY\_PREVIOUSSONG".

Please enter the name for the next button (press <ENTER> to finish recording)

(Press <ENTER>)

Checking for toggle bit mask.

Please press an arbitrary button repeatedly as fast as possible.

Make sure you keep pressing the SAME button and that you DON'T HOLD

the button down!.

If you can't see any dots appear, wait a bit between button presses.

Press RETURN to continue.

..............................Cannot find any toggle mask.

You have only recorded one button in a non-raw configuration file.

This file doesn't really make much sense, you should record at

least two or three buttons to get meaningful results. You can add

more buttons next time you run irrecord.

Successfully written config file onkyo.lircd.conf

* Backup the original LIRC configuration file:

sudo mv /etc/lirc/lircd.conf /etc/lirc/lircd-backup.conf

* Load the new configuration file, for example:

**NOTE: The name of configuration depends on the selected name of remote. Please adapt the command below depending on your name of remote!**

sudo mv onkyo.lircd.conf /etc/lirc/lircd.conf

* **Restart lircd.**

sudo systemctl stop lircd

sudo systemctl start lircd

* **Use the irw command to test your button definitions**

Enter **irw at the command prompt and press Enter. Push several different buttons on your remote while it is pointed to the IR sensor. You should see something like this:**

**000000004b40b14e 00 KEY\_PLAY onkyo**

**000000004b40718e 00 KEY\_STOP onkyo**

**000000004b4009f6 00 KEY\_PREVIOUSSONG onkyo**

**000000004b40f10e 00 KEY\_NEXTSONG onkyo**

**000000004bb6c03f 00 KEY\_VOLUMEDOWN onkyo**

**000000004bb640bf 00 KEY\_VOLUMEUP onkyo**

**000000004b36d32c 00 KEY\_POWER onkyo**

**Note that each button will repeat if it is held down.**

**<ctrl>c will get you out of irw**

* **Create your execution file and add directives**

sudo nano /etc/lirc/lircrc

Enter the following directives into this file:

begin prog = irexec

button = KEY\_PREVIOUSSONG

config = volumio previous

end

begin prog = irexec

button = KEY\_NEXTSONG

config = volumio next

end

begin prog = irexec

button = KEY\_PLAY

config = volumio play

end

begin prog = irexec

button = KEY\_PAUSE

config = volumio pause

end

begin prog = irexec

button = KEY\_STOP

config = volumio stop

end

begin prog = irexec

button = KEY\_VOLUMEUP

config = volumio plus

end

begin prog = irexec

button = KEY\_VOLUMEDOWN

config = volumio minus

end

begin prog = irexec

button = KEY\_POWER

config = volumio vstop

end

* **Add the following directive to /etc/rc.local before exit 0:**

**/usr/bin/irexec –d /etc/lirc/lircrc**

* **Restart the volumio server.**

**Shutdown –r now**

**When the server reboots, the remote should work.**