Raspberry PI Internet Radio

Vintage Radio Operating Instructions

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Contents

Operation 3
The front controls 3
Switching the radio on 4
Switching the radio off 4
Adjusting the volume 4
Muting the sound 4
Operating the tone control 5
Changing the radio station or track 5
Operating the Menu 5
Getting station or track information 5
Operating the menu button 6
Searching radio station or tracks 6
Selecting Radio or Media library 6
Changing options 6
Using the remote control 7
Using the Web Interface 8
Glossary 10

Figures

Figure 1 Front panel controls 3
Figure 2 The radio status window 4
Figure 3 The menu button 4
Figure 4 The menu knob 5
Figure 5 Remote control 7
Figure 6 The Vintage Radio Web interface 8
Figure 7 The web interface selection window 9

Tables

Table 1 Menu knob functions 5
Table 2 Menu Button modes 6

Operation

These operating instructions are for the operation of a Philips BX490A which has been converted to run as an Internet radio. The original radio was manufactured in the Netherlands in 1949.

The front controls

The following diagram shows the main control knobs and switches.

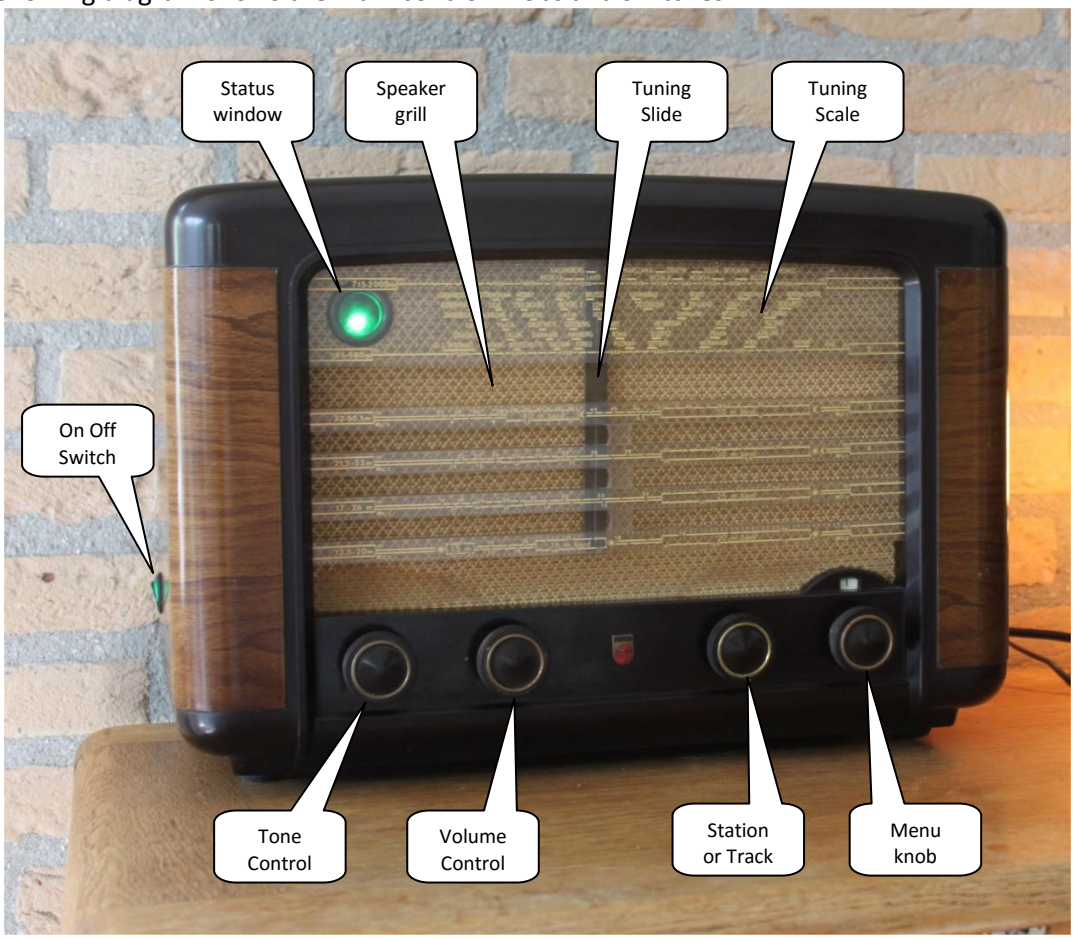

Figure 1 Front panel controls

From left to right the controls are as follows:

- On off switch – Down for on, up for off. When on the switch glows green
- Tone control – Simple passive tone control
- Volume control – Apart from changing volume it searches through artists when in search mode. It also acts as a push button to mute the radio or speak information
- Station or track – Change radio station or track, also steps through tracks in search mode
- Menu knob – Selects radio stations, information if voice on search mode and select music library.

The round status window shows the status of the radio. The status LED is glowing green in the Status Window at the top left indicates normal operation. This window also contains the IR (Infra Red) detector for the remote control.

The tuning slider moves left or right as the tuning knob is turned. However the tuner slider moves the opposite way to the tuner knob. For example if the tuner knob is turned to the right then the tuner slider will move to the left. The stations shown on the tuner scale have, of course, no relevance to the Internet stations that can be selected.

The status window colour changes depending on the status of the radio. Green is normal operation, blue is busy or starting up and red is either an error situation or the radio is shutting down.

Switching the radio on

Plug the radio into the mains. Put the tuning dial into the middle using the tuning knob. Switch the **on/off** switch on the right left side of the radio to the down position. The in-built neon light in the **on/off** switch will glow green. Also the tuning scale will be illuminated by two small lamps on either side of the scale.

Figure 2 The radio status window

At this stage there will be no light in the status window as the Raspberry Pi computer is still starting up. Once the computer has started the radio program will start. The Status window will then glow blue indicating the radio program is busy starting up and loading the radio stations. The radio will speak “Loading radio stations”.

Once all the radio stations are loaded the status window will glow green as shown in the figure on the left.

Switching the radio off

IMPORTANT – The radio needs to be shutdown properly. Do not simply switch it off. If the radio is not correctly shutdown the SD memory card in the radio may be corrupted.

Figure 3 The menu button

Press the menu button on the right side of the radio in and hold it in until the status indicator turns red. Release the menu button. The radio program will stop after about ten seconds and the status indicator will go out. Wait about fifteen seconds and the switch the radio off using the on/off switch on the left side of the radio.

Adjusting the volume

The volume is adjusted by turning the second knob from the left (See Figure 1 on page 3). Turn clockwise to increase the volume and anti-clockwise to decrease the volume. Turn the knob at a moderate speed. There is no need to turn it very fast.

Muting the sound

Muting the sound varies depending upon whether or not speech is enabled or not. If speech is enabled then press in the Volume Knob for at least two seconds. This is the mute button and will mute the sound. If speech is disabled pressing the Volume Knob in temporarily will mute the radio.

To un-mute the sound, then push the mute button once. Using any other control such as the channel change, menu button or volume control will also un-mute the radio.

Operating the tone control

The tone control is the first knob on the left. Turn the knob anti-clockwise for maximum bass or to clockwise for maximum treble. Adjust the volume as required. Selecting a lot of bass is good for background listening.

Changing the radio station or track

The radio station (channel) or the music track can be changed by turning the second knob from the right (See Figure 1 on page 3). Turn the knob anti-clockwise to change up the channel or track (The tuning slider moves in the opposite direction). Turn the knob clockwise to change down the previous channel or track. Turn the knob at a moderate speed. There is no need to turn it very fast.

IMPORTANT – Do not turn the knob if it is against either of its end stops as this may break the internal tuner slider wire. Switch off the radio (using the correct procedure) and reposition the slider in the middle of the tuning scale. Restart the radio.

Operating the Menu

The Radio menu can be operated in three different ways:

- The Menu knob as shown in the following figure
- The menu button as shown in Figure 3 The menu button on page 4
- The menu button on the remote control (See Figure 5 on page 7)

This section describes using the menu knob. The menu knob has eight positions numbered 0 through 7. Only positions 1 through 5 are used as shown in following table.

Figure 4 The menu knob

Menu knob number	Function
1	Select Radio
2	Station or track information
3	Search mode
4	Select Media Library instead of radio
5	Reload Media Library

Table 1 Menu knob functions

Normally the menu knob will either be in position 1 (Radio) or 4 (Media library). When turning the knob it is only read after two seconds. So it is possible to turn from position 1 say to 4 without operating the intermediate functions for position 2 and 3 provided that this does not take longer than two seconds. Selecting position 2 will speak information about the current radio station or track. Position 3 will put the radio into search mode (more on this later). Position 5 will reload the Media library into the radio's database. Always put the switch back to position 1 (Radio) or 4 (Media Library) after finishing with any of the other functions.

Getting station or track information

There are three ways of getting radio station or track information.

- Select position 2 on the Menu Knob – When finished put the knob back to position 1 or 4.
- Give the volume knob a short press.

- Press the information button on the remote control (explained later)

This assumes that the speech function is enabled.

Operating the menu button

The menu button is situated on the right hand side of the radio as already shown in Figure 3 on page 4. It is a single press button which cycles through the menus. The radio speaks the menu name as the menu button is pressed each time.

Table 2 Menu Button modes

Menu name	Function
Main	Normal play
Search	Station or track information
Source	Select Radio or Media library
Options	Radio options (Media library only) - *Random on/off – Random tracks* - *Consume on/off – Only play a track once* - *Repeat on/off – Repeat play the same track* - *Reload Media Library (If media library playing)*

Press the menu button one short press to move through the menu.

Searching radio station or tracks

Select the search mode using the Menu button (Figure 3 on page 4) or the Menu knob (Figure 4 on page 5). In search mode the Tuner knob are used to step through stations or tracks. If the Media library is playing the Volume knob selects the next Artist.

When finished press the menu button (If that was used) just once to play your selection. If the Menu knob was used then put it back to position 1 (Radio) or 4 (Media library).

Selecting Radio or Media library

Either use the Menu Knob or the Menu button to select the Radio or Media library.
If the Menu knob was used then select either position 1 (Radio) or position 4 (Media library). Leave the knob in the selected position.

If the Menu knob was used then use the tuner knob to cycle between Radio or Media library. Once the desired music source has been selected press the menu button once to load the selection.

Changing options

The options are only relevant for the Media (Music) library. Keep pushing the menu button (Figure 3 on page 4) until the word “Options” is heard followed by the usually by the “Random option”. Cycle through the options (See *Table 2 Menu Button modes – Options* on page 6) using the Tuner Knob. Toggle the option as required using the Volume Knob.

Using the remote control

To use the remote control point it at the round status window (usually glowing green).

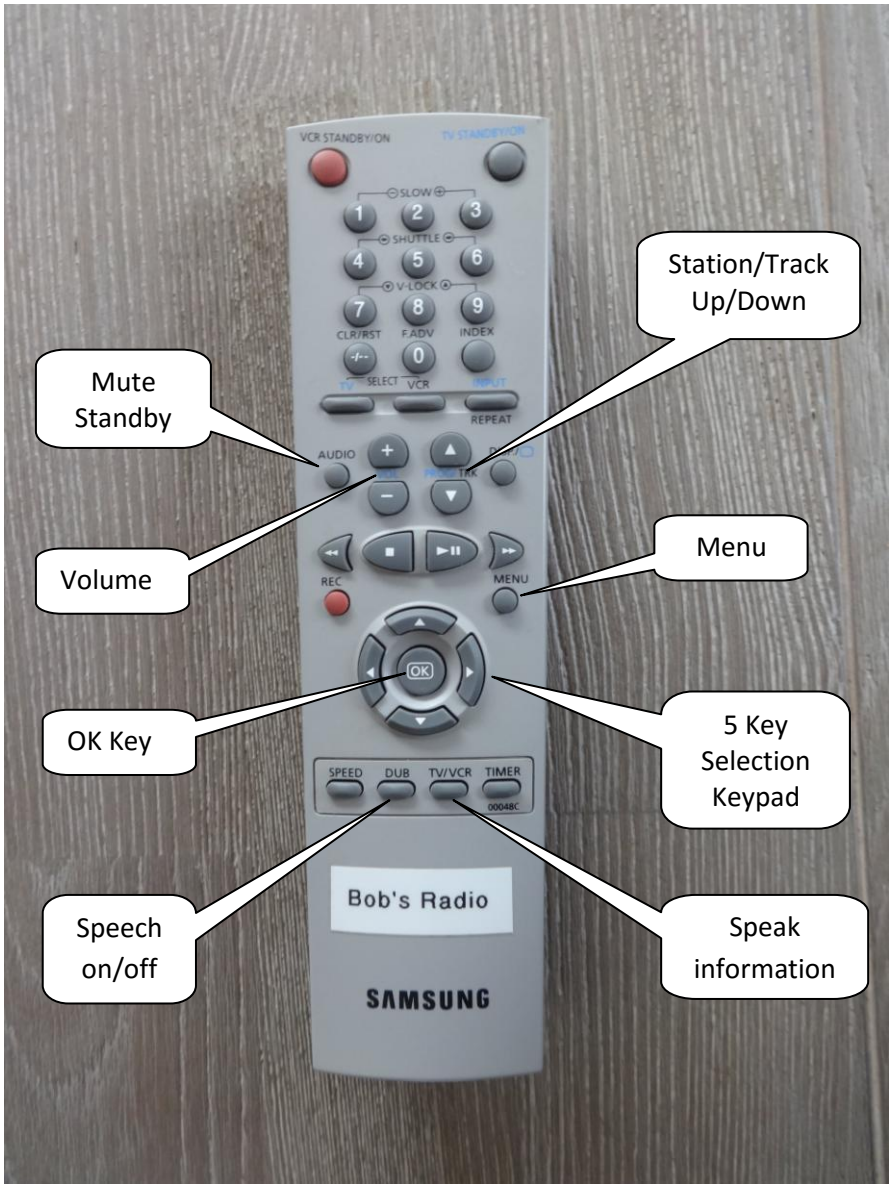

Figure 5 Remote control

When a valid remote control button is pressed the RGB LED in the status window will flash red. Unused remote control buttons do nothing. Point the remote control at the status window (Figure 2 on page 4). The OK key and the Menu key currently do the same thing.

The 5 key selection pad is only used in search mode. The Up/Down keys select the next/previous radio station or track. The left right keys on the keypad select the next or previous artist (Media library only).

Speech can be switched on or off with the **Speech On/Off** button. Finally station or track information is spoken by pressing the **Speak information** button.

Using the Web Interface

The radio can also be operated using the Web Interface. Start up any web browser from a PC, a mobile phone or a tablet. Point the browser at the IP address of the radio, for example:

```
http://192.168.2.10
```

The following will be displayed in the browser:

Figure 6 The Vintage Radio Web interface

This is just the introduction page. Click on the second tab “Web Interface” at the top of the page.

It is possible that the IP address of the radio may change. There is a handy App that runs on almost any tablet or mobile phone called **Fing** which can be used to display the IP addresses of devices connected to the network. If the IP address of the radio changes record it here and cross out the old one. Use the new address instead of the one shown in this manual.

IP Address	IP Address
192.168.2.10	

The following screen will be displayed:

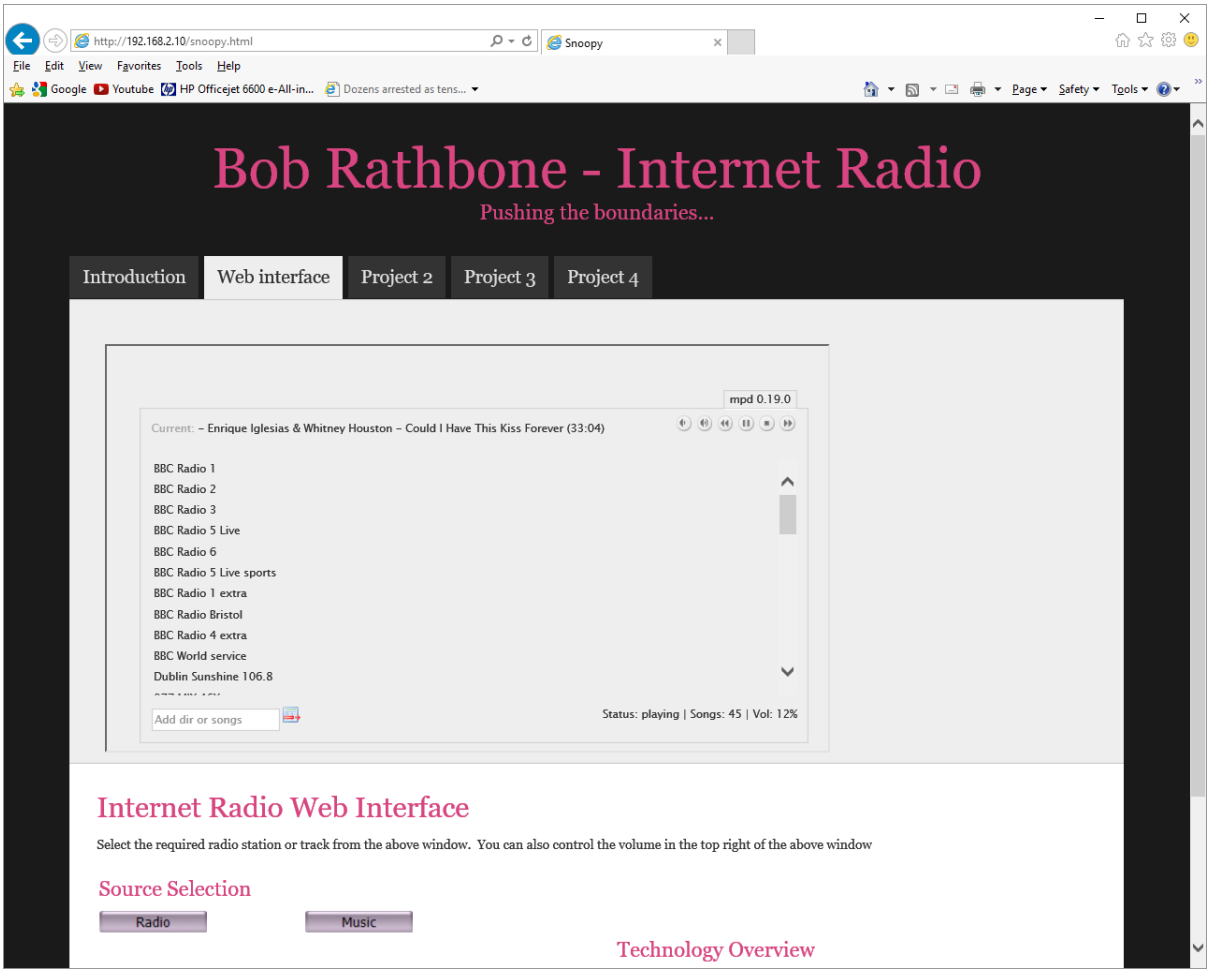

Figure 7 The web interface selection window

The current radio station and artist are displayed in the Web Interface window at the top.
Using the web interface click on the radio station required. Scroll down using the right hand scroll bar as required.

In the top right of this window just below “mpd 0.19.0” there are the volume controls, next/previous track, pause and stop buttons.

At the bottom of the screen there are two buttons to switch between the Radio and the Music (Media) library.

All of the other browser tabs Project 2, 3 and 4 are unused.

Glossary

IP	Internet Protocol – IP address
IR	Infra Red (for remote control)
LED	Light Emitting Diode
RGB	Red, Blue, Green. In this case an RGB LED
WiFi	Wireless Internet synonymous with Wireless Local Area Network