

## Mad Dog Coils “Robo Dog” – User Guide

The Robo Dog is a remote-controlled antenna switching device designed to be used with a remote controlled transceiver service such as “Remote TX”. The relay board has three relays that are used to switch in and out up to three antennas. These relays are controlled from a Raspberry Pi (user supplied) via GPIO output.

The remote TX service provides three buttons in the web based software to control specific Raspberry Pi GPIO pins which provide an on/off output states to control the antenna switching relays.

The Robo Dog comes packed in a 3D printed enclosure. There are three LED indicators on the top of the enclosure (Figure 1) which illuminate based on which relay is active. The enclosure has an internal mounting location for a Raspberry Pi (Figure 2).

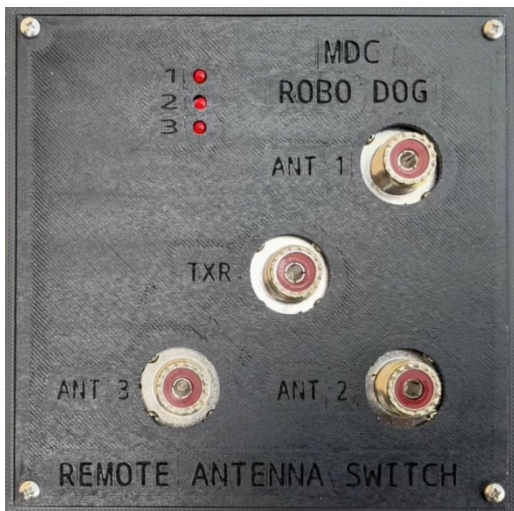


Figure 1

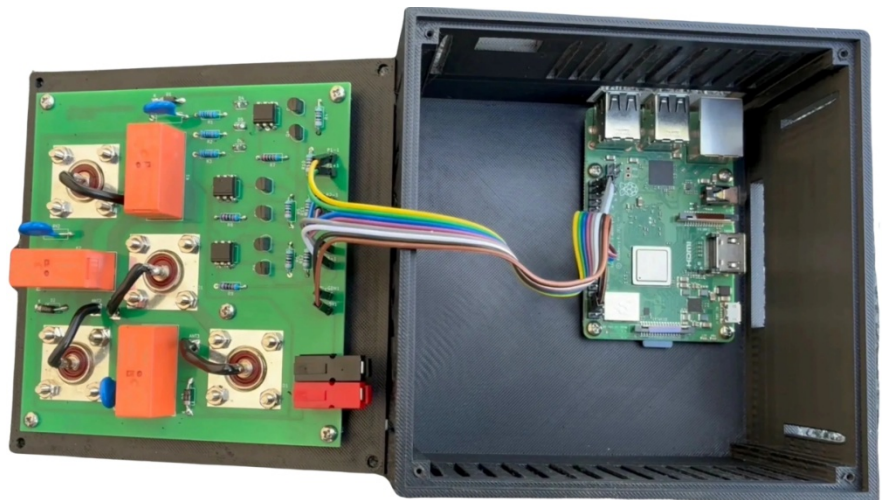


Figure 2

### Notes:

1. The screws supplied to fasten in a Raspberry Pi and also the lid on the enclosure should not be over tightened. If done up too tight it will strip the plastic.
2. The Robo Dog case does not contain and metal shielding between the RF switching board and where the Pi is designed to be mounted. If you find that you require this then it will be up to the user to create and install. Most users have not needed this.

## Specifications

### RF Power Rating

SSB: 100 W  
CW: 75 W  
AM/FM/Digital: 50 W

### Product Dimensions

Width: 140mm  
Depth: 140mm  
Height: 90mm  
Weight (without Raspberry Pi) : 375 grams

### Power Supply Requirements

12 VDC (10 – 14 VDC range) via power pole connection  
Current draw when relay active: 38 mA

### Control Voltages

Control Supply Voltage : 5 VDC  
Control Ant 1, Ant 2, Ant 3 Voltage : 3.3 to 5 VDC

I hope you get many years of use and enjoyment out of your Mad Dog Coils product. 73' Marty VK4KC

**Disclaimer :** It should be noted that the Mad Dog Coils Robo Dog should only be used in accordance to our specifications and within our stipulated intended use. All details of intended use are detailed in the documentation that is shipped with the product. We accept no liabilities for such uses outside of our intended use and stipulations.

## Connecting the Robo Dog to the Raspberry Pi

If you are using the Remote TX service there are three “Plug” buttons that are located in the Setup tab (marked in red on Figure 3). The “Single Plug Active” check box should be ticked so that only one Plug button can be activated at a time.

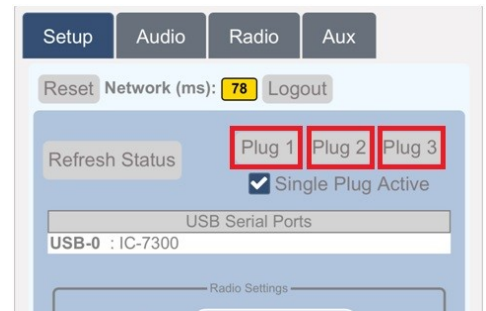


Figure 3

Raspberry Pi GPIO Header For Remote TX Plug Buttons		Pin No.		
3.3V	1	2	5V	
GPIO2	3	4	5V	Brown Wire
GPIO3	5	6	GND	Black Wire
GPIO4	7	8	GPIO14	
GND	9	10	GPIO15	
GPIO17	11	12	GPIO18	Yellow Wire
GPIO27	13	14	GND	
GPIO22	15	16	GPIO23	Green Wire
3.3V	17	18	GPIO24	
GPIO10	19	20	GND	Blue Wire
GPIO9	21	22	GPIO25	Purple Wire
GPIO11	23	24	GPIO8	
GND	25	26	GPIO7	
DNC	27	28	DNC	
GPIO5	29	30	GND	
GPIO6	31	32	GPIO12	
GPIO13	33	34	GND	
GPIO19	35	36	GPIO16	
GPIO26	37	38	GPIO20	
GND	39	40	GPIO21	

Figure 4

The coloured wires of the ribbon cable make it easy to connect to the Raspberry Pi GPIO pins based on Fig 4.

Brown Wire - Pin 4 +5V  
Black Wire - Pin 6 GND

Remote-TX service Plug 1  
Green Wire - Pin 16 +3.3V  
Yellow Wire - Pin 14 GND

Remote-TX service Plug 2  
Purple Wire - Pin 22 +3.3V  
Blue Wire - Pin 20 GND

Remote-TX service Plug 3  
White Wire - Pin 37 +3.3V  
Grey Wire - Pin 39 GND

### Important:

Please ensure Robo Dog and Raspberry Pi are powered off when connecting the ribbon cable control wires

## Node Red Option

Remote TX subscribers can request a Node Red antenna switch dashboard (Figure 5) rather than using the three Plug buttons. To enable this service please send an email to [contact@remotetx.net](mailto:contact@remotetx.net) and request this option. The Raspberry Pi GPIO pin out for Remote TX Node Red integration is as per Figure 6.

Brown Wire - Pin 4 +5V  
Black Wire - Pin 6 GND

Remote-TX Node Red ANT-1  
Green Wire - Pin 7 +3.3V  
Yellow Wire - Pin 9 GND

Remote-TX Node Red ANT-2  
Purple Wire - Pin 32 +3.3V  
Blue Wire - Pin 30 GND

Remote-TX Node Red ANT-3  
White Wire - Pin 12 +3.3V

Grey Wire - Pin 14 GND

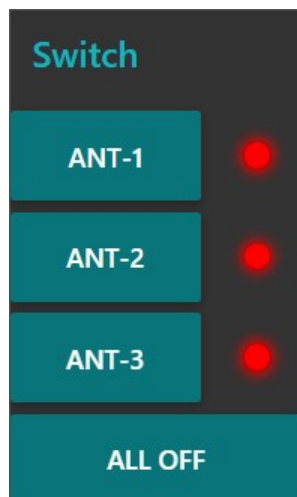


Figure 5

Raspberry Pi GPIO Header for Remote TX Node Red		Pin No.		
3.3V	1	2	5V	
GPIO2	3	4	5V	Brown Wire
GPIO3	5	6	GND	Black Wire
GPIO4	7	8	GPIO14	
GND	9	10	GPIO15	
GPIO17	11	12	GPIO18	White Wire
GPIO27	13	14	GND	Grey Wire
GPIO22	15	16	GPIO23	
3.3V	17	18	GPIO24	
GPIO10	19	20	GND	
GPIO9	21	22	GPIO25	
GPIO11	23	24	GPIO8	
GND	25	26	GPIO7	
DNC	27	28	DNC	
GPIO5	29	30	GND	Blue Wire
GPIO6	31	32	GPIO12	Purple Wire
GPIO13	33	34	GND	
GPIO19	35	36	GPIO16	
GPIO26	37	38	GPIO20	
GND	39	40	GPIO21	

Figure 6

For those that would like to use the Robo Dog without the Remote TX service I can supply a Node Red flow (json file). The user will need a raspberry Pi with node red installed and some knowledge of node red to get it functioning. Please email [maddogcoilsaus@gmail.com](mailto:maddogcoilsaus@gmail.com) to request the Node Red flow.

## Optional Antenna Selection Switch

Marcus of the Remote TX service (remotetx.net) and myself have been improving the node red program to allow for one “momentary on” push button switch to be used to switch between the three antenna output sockets on the Robo Dog.

The action is as follows:

- 1st press - antenna port 1 on
  - 2nd press - antenna port 2 on
  - 3rd Press - antenna port 3 on
  - 4th press - all antenna ports off
- The action then repeats.

**NOTE: This push button switch does not switch the antenna ports unless it is connected to a Rasp0erry Pi running Node Red.**

This is especially helpful for those times when the operator is “hands on” using their transceiver (not remote) with the Robo Dog in place as the antenna switch and would like to switch antenna ports with a physical button rather than using the remote TX software “Plug 1, 2 & 3” buttons or node red dashboard buttons.

To enable the functionality of this physical switch a momentary push button switch is required to be hooked up to two assigned raspberry pi GPIO pins. Also required is Node Red to be installed on the Raspberry Pi and the node red program script installed. For this to be installed, the user needs to contact Marcus of Remote TX and ask him to remotely install Node Red and the program script onto the users Raspberry Pi. Please inform Marcus if you are going to use the default remote-tx assigned Raspberry Pi GPIO output pins (GPIO 23, 25 & 26) or if you would like the other option of GPIO 4, 12 & 18, but if you choose this 2nd option you will need to use the Node Red Dashboard to remotely switch the antenna ports and not the Remote-TX software plug buttons as they will not work.

I would recommend using the default remote-tx assigned Raspberry Pi GPIO output pins as then the user can use both the node red dashboard and also the Remote-tx plug buttons for remote switching. Note that with this configuration when the physical push button is used to change the antenna selected the node red dashboard will also follow and show the correct antenna port that is selected but the remote-tx screen will not show the change in “Plug” buttons until the window is refreshed.

Raspberry Pi GPIO Header For Remote TX Plug Buttons			
	Pin No.		
3.3V	1	2	5V
GPIO2	3	4	5V
GPIO3	5	6	GND
GPIO4	7	8	GPIO14
GND	9	10	GPIO15
GPIO17	11	12	GPIO18
GPIO27	13	14	GND
GPIO22	15	16	GPIO23
3.3V	17	18	GPIO24
GPIO10	19	20	GND
GPIO9	21	22	GPIO25
GPIO11	23	24	GPIO8
SWITCH	GND	25	GPIO7
DNC	27	28	DNC
SWITCH	GPIO5	29	GND
GPIO6	31	32	GPIO12
GPIO13	33	34	GND
GPIO19	35	36	GPIO16
GPIO26	37	38	GPIO20
GND	39	40	GPIO21

The two leads from the momentary push button switch are to be plugged into Raspberry Pi pin 25 which is ground and pin 29 which is GPIO-05. As it is just a “momentary on” push button switch there is no polarity involved so it doesn’t matter which colour wire goes to which pin, just as long as one of them is in pin 25 and the other in pin 29.



A momentary on push button switch with leads ready to connect to a Raspberry Pi is available for purchase from the Mad Dog Coils website or you can make your own.

Any orders received for the Robo Dog after the 5th February 2026 will come with mounting holes for this push button switch in the Robo Dog 3D printed case.

Users who have ordered a Robo Dog prior to 5th February 2026 may choose to make a 13mm hole in the case to suite the switch that is sold at Mad Dog Coils. If drilling the hole please use a very slow drilling speed. If you are providing your own switch please ensure it is a momentary on push button switch.



## Create Custom Labels for the Remote TX Plug Buttons

Marcus has made an update to RemoteTx so you can now create custom labels for the plug buttons.

Here is the process:

Ensure that the version of Remote TX is 1.5.4 or newer. If it is older you update at the bottom of the Setup tab. Once you click update it should be at version 1.5.4. or higher.

Then you need to create a small text file and put it on the sd card in the same directory that your remotetx.conf file is. (So you need to remove sd card and do this with your PC)

The file needs to be named 'rtx\_settings.conf'

The exact format needs to be like either of these two examples: (1 line in file)

```
{"plugs": {"p1": "40/80 M", "p2": "20 M", "p3": "17 M"}}
```

The above example will have the plugs labelled as: 40/80 M, 20 M, and 17 M

```
{"plugs": {"p1": "Classic", "p2": "WARC", "p3": "Spare"}}
```

The above example will have the plugs labelled as: Classic, WARC and Spare

Each title can have up to 10 characters. You modify the section of the line that has the antenna labels to suit your setup.

Once the file has been copied onto the Raspberry Pi SD card, the card can be installed into the Raspberry Pi and power on. Open remote TX and you will see your new labels instead of PLUG1, PLUG2 and PLUG 3.

