

# Two way Raspberry Pi Transceiver board with Adapter Plus



## Introduction:

The ENER314-RT add-on board can be used to Control devices and monitor devices requiring 433 MHz ISIM band control directly from a Raspberry Pi equipped with the radio transceiver PCB which incorporates a radio receiver and a transmitter. The MIHO005 Adapter Plus is part of the MiHome home automation range. The Adapter Plus allows you to monitor the power being used by an attached appliance and switching the power on or off. The Adapter Plus is capable of measuring and displaying the following parameters:

- Time
- Power
- Reactive Power
- Voltage
- Frequency

## Instructions: Reading Data

Connect the Energenie RT board to the raspberry pi as shown in figure 1. Connect the raspberry pi to a USB port using a micro USB to USB cable. Connect a HDMI cable from the raspberry pi to the monitor. The cable can be connected to a computer, laptop or adapter which is switched on. Once the raspberry pi has booted to the desktop ensure that the RT board software (HoperF\_TRX 2014-12-09.zip & bcm2835.zip) has been saved unto the raspberry pi.



Figure 1

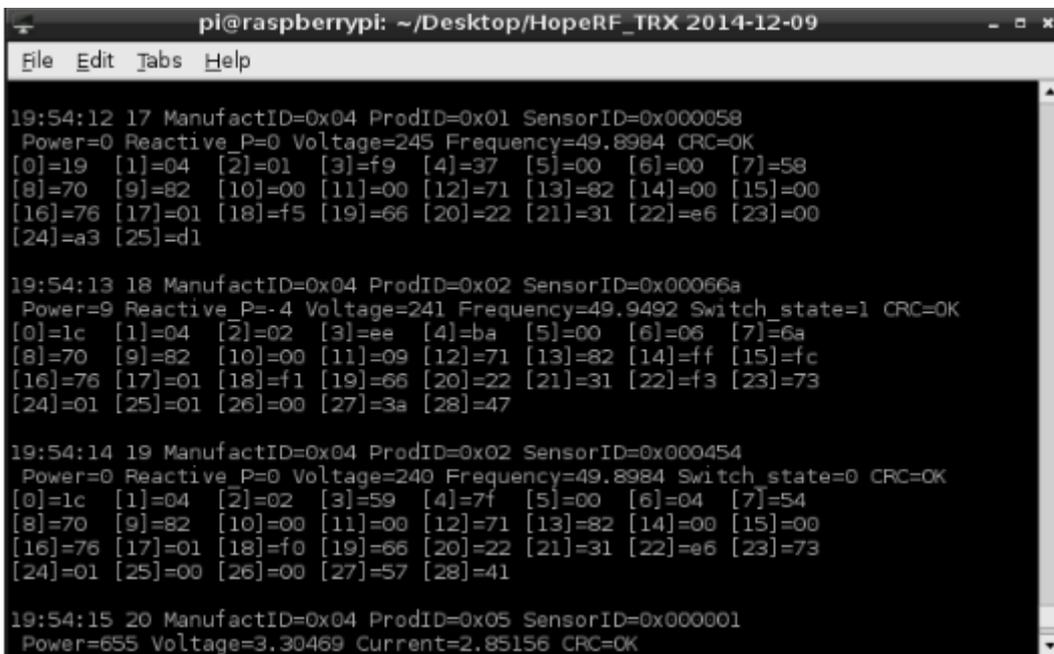
Install the bcm library if you have not done so already. To install the bcm library follow these steps:

- 1 - Enter into bcm2835 directory
- 2 - tar zxvf bcm2835-1.37.tar.gz
- 3 - cd bcm2835-1.37
- 4 - ./configure
- 5 - make
- 6 - sudo make check (This test should pass)
- 7 - sudo make install

The bcm library is a C library for Raspberry Pi (RPI). It provides access to GPIO and other IO functions on the Broadcom BCM 2835 chip, allowing access to the GPIO pins on the 26 pin IDE plug on the RPi board so you can control and interface with various external devices.

Now you are ready to run the program. Follow these steps to run the monitoring program:

- Go into HopeRF\_TRX 2014-12-09 directory
- Type: chmod +x hoperf\_trx
- Type: sudo ./hoperf\_trx 242



```
pi@raspberrypi: ~/Desktop/HopeRF_TRX 2014-12-09
File Edit Tabs Help

19:54:12 17 ManufactID=0x04 ProdID=0x01 SensorID=0x000058
Power=0 Reactive_P=0 Voltage=245 Frequency=49.8984 CRC=OK
[0]=19 [1]=04 [2]=01 [3]=f9 [4]=37 [5]=00 [6]=00 [7]=58
[8]=70 [9]=82 [10]=00 [11]=00 [12]=71 [13]=82 [14]=00 [15]=00
[16]=76 [17]=01 [18]=f5 [19]=66 [20]=22 [21]=31 [22]=e6 [23]=00
[24]=a3 [25]=d1

19:54:13 18 ManufactID=0x04 ProdID=0x02 SensorID=0x00066a
Power=9 Reactive_P=-4 Voltage=241 Frequency=49.9492 Switch_state=1 CRC=OK
[0]=1c [1]=04 [2]=02 [3]=ee [4]=ba [5]=00 [6]=06 [7]=6a
[8]=70 [9]=82 [10]=00 [11]=09 [12]=71 [13]=82 [14]=ff [15]=fc
[16]=76 [17]=01 [18]=f1 [19]=66 [20]=22 [21]=31 [22]=f3 [23]=73
[24]=01 [25]=01 [26]=00 [27]=3a [28]=47

19:54:14 19 ManufactID=0x04 ProdID=0x02 SensorID=0x000454
Power=0 Reactive_P=0 Voltage=240 Frequency=49.8984 Switch_state=0 CRC=OK
[0]=1c [1]=04 [2]=02 [3]=59 [4]=7f [5]=00 [6]=04 [7]=54
[8]=70 [9]=82 [10]=00 [11]=00 [12]=71 [13]=82 [14]=00 [15]=00
[16]=76 [17]=01 [18]=f0 [19]=66 [20]=22 [21]=31 [22]=e6 [23]=73
[24]=01 [25]=00 [26]=00 [27]=57 [28]=41

19:54:15 20 ManufactID=0x04 ProdID=0x05 SensorID=0x000001
Power=655 Voltage=3.30469 Current=2.85156 CRC=OK
```

The program will display the following:

- a. Time
- b. Message number
- c. Manufacturer ID
- d. Product ID
- e. Sensor ID
- f. Power
- g. Reactive Power
- h. Voltage
- i. Frequency
- j. Switch state
- k. 28 Byte encrypted Data

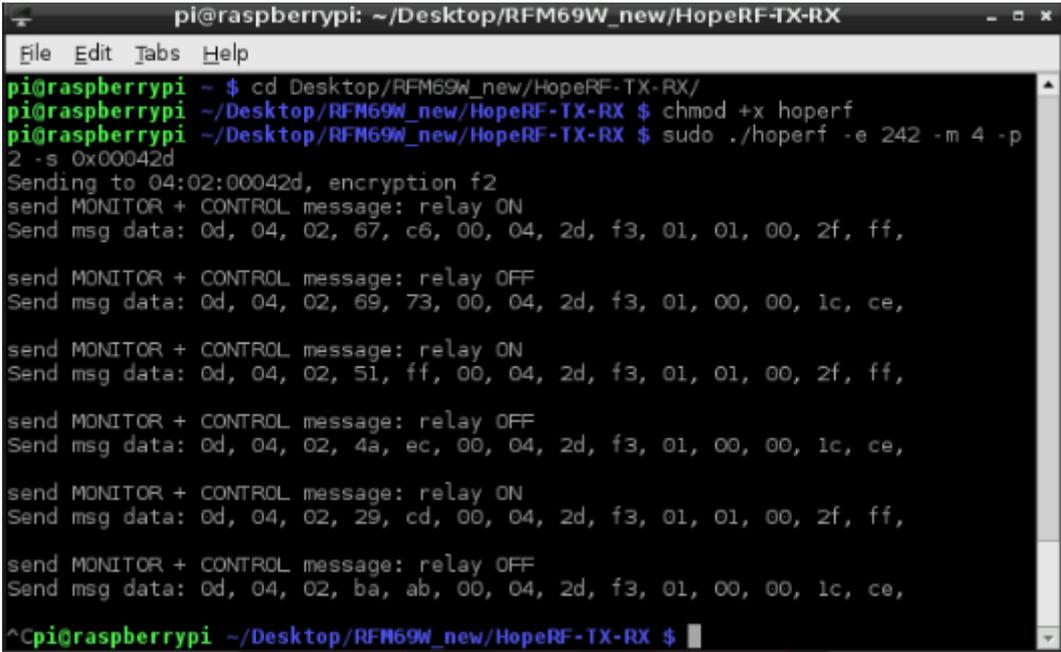
## Instructions: Switching the Adapter Plus

The Switching program will enable you to switch a single Adapter Plus from your raspberry Pi  
Instructions for use:

Go into the RFM69W\_new\HopeRF-TX-RX\ directory

Type: `chmod +x hoperf`

Type: `sudo ./hoperf -e 242 -m 4 -p 2 -s (sensor ID of device)`



```
pi@raspberrypi: ~/Desktop/RFM69W_new/HopeRF-TX-RX
File Edit Tabs Help
pi@raspberrypi ~ $ cd Desktop/RFM69W_new/HopeRF-TX-RX/
pi@raspberrypi ~/Desktop/RFM69W_new/HopeRF-TX-RX $ chmod +x hoperf
pi@raspberrypi ~/Desktop/RFM69W_new/HopeRF-TX-RX $ sudo ./hoperf -e 242 -m 4 -p
2 -s 0x00042d
Sending to 04:02:00042d, encryption f2
send MONITOR + CONTROL message: relay ON
Send msg data: 0d, 04, 02, 67, c6, 00, 04, 2d, f3, 01, 01, 00, 2f, ff,
send MONITOR + CONTROL message: relay OFF
Send msg data: 0d, 04, 02, 69, 73, 00, 04, 2d, f3, 01, 00, 00, 1c, ce,
send MONITOR + CONTROL message: relay ON
Send msg data: 0d, 04, 02, 51, ff, 00, 04, 2d, f3, 01, 01, 00, 2f, ff,
send MONITOR + CONTROL message: relay OFF
Send msg data: 0d, 04, 02, 4a, ec, 00, 04, 2d, f3, 01, 00, 00, 1c, ce,
send MONITOR + CONTROL message: relay ON
Send msg data: 0d, 04, 02, 29, cd, 00, 04, 2d, f3, 01, 01, 00, 2f, ff,
send MONITOR + CONTROL message: relay OFF
Send msg data: 0d, 04, 02, ba, ab, 00, 04, 2d, f3, 01, 00, 00, 1c, ce,
^Cpi@raspberrypi ~/Desktop/RFM69W_new/HopeRF-TX-RX $
```

The sensor ID can be found by running the HopeRF\_TRX 2014-12-09 program. Each sensor ID is unique to each device. When running the switching program it is necessary to state the sensor ID of the particular device you wish to switch.

This will initiate a loop to switch your adapter. Users may alter this program to cater to their needs.

## Troubleshooting:

The program (RFM69W\_new) will run but if the parameters aren't input correctly or if the Pi doesn't receive an acknowledgement from the socket then the MIHO005 won't switch.

Few tips:

- Run the HopeRF\_TRX 2014-12-09 program. Only have your desired MIHO005 socket powered
- Note down the sensor ID of your desired socket, eg 0x000463
- When inputting parameter arguments into the command line ensure that each parameter is spaced out

eg:

```
sudo ./hoperf[Space]-e[Space]242[Space]-m[Space]4[Space]-p[Space]2[Space]-s[Space]0x000463
```

it will look like this:

```
sudo ./hoperf -e 242 -m 4 -p 2 -s 0x000463
```

If you have any further queries please contact: [enquiries@energenie4u.co.uk](mailto:enquiries@energenie4u.co.uk)