

# ASSEMBLING A RASPBERRY PI & INTERFACING A TRANSCEIVER

## Material List:

1) Raspberry Pi Motherboard - Photo is of a Model 3B+. The latest and most powerful version is Series 4. Its power and speed are not needed for running digital mode software. If portable off-grid (battery power) operations are contemplated the 3B+ might be a better option.

2) 5VDC 2.5 Amp Power Supply – about \$12

3) HDMI monitor cable - about \$5

4) Monitor – \$50 to \$75

5) Keyboard & mouse – about \$12

6) Case – physical protection of RPi – starting at about \$6



Note: Various kits are available via Amazon et. al. - which might include all or most of the above

7) MicroSD Chip – Recommend 32GB class 10 - about \$9. Note: 16GB is ok, and having more than 32GB is probably unnecessary. For best speed, get a Class 10 MicroSD Chip.

8) Transceiver to RPi interface. Interface may be purchased or DIY (Do It Yourself). A simple effective DIY interface including a USB Sound Card dongle & USB cable will cost about \$20+. Exact construction depends on the transceiver.

Notes: Commercial digital interfaces can be expensive (\$100+). The DIY audio and transceiver keying cable might need assembly including a couple of soldered wires.

Installing Ham Radio related software on an RPi can be a pain. If you are not into pain, we have a mentor, (Brooks Wilson - KD8XJ) that can provide a MicroSD chip with FLDigi & FLRig and other software already installed. (Please kindly pay Brooks in advance for any parts he may need to purchase for you)

## Raspberry Pi Assembly

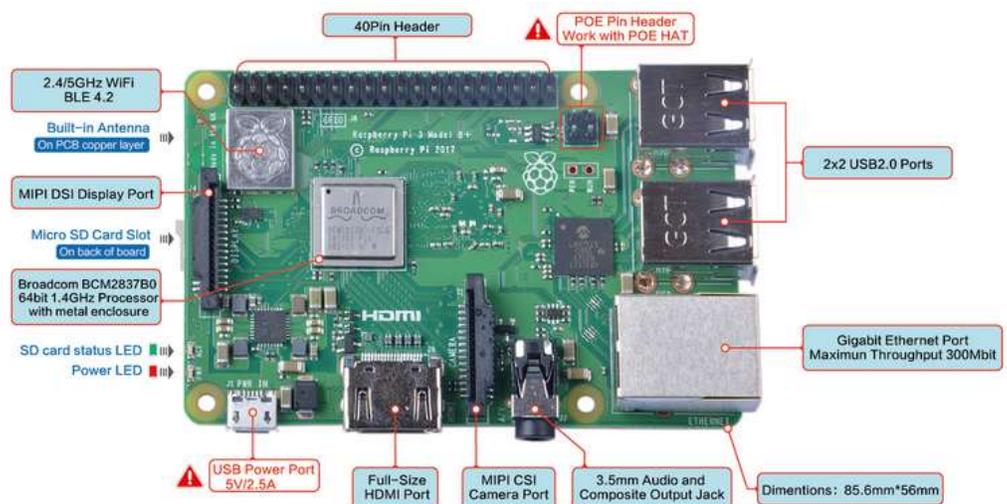
1) The RPi motherboard comes completely assembled as at right.

2) Insert a programmed Micro SD card

3) connect 5v power, HDMI monitor, and USB keyboard & mouse

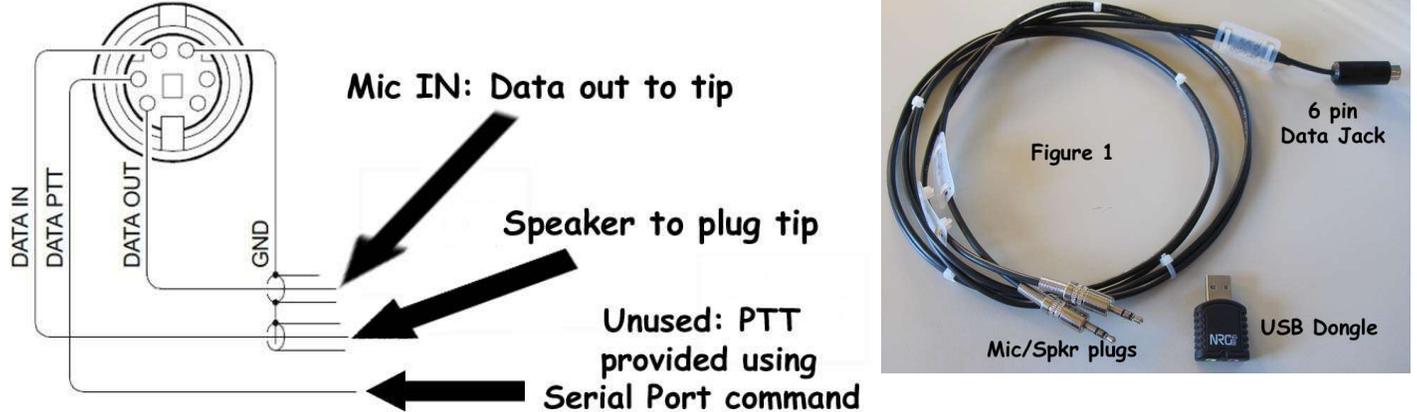
4) apply power - done!

Note: a protective case is recommended



## Building a Digital Interface

Details of building a Transceiver Digital Interface depends on the exact transceiver being connected. Instructions and drawings below are for a Yaesu FT-450D transceiver digital interface.



The interface between computer (in this case an RPi) and transceiver requires some method of passing audio signals to and from the transceiver and computer plus a method for keying the transceiver.

Parts needed: USB Dongle, Audio cable with 1/8" mic & speaker plugs & 6-pin data jack

Assumed: RPi is ready with FLDIGI/FLRIG already installed and a cable prepared as above.

- 1) Plug the USB dongle with audio cables into an unused RPi port and the 450 data port. Note: Using the built-in RPi sound card is possible but can lead to confusion and problems that may be avoided for the cost of a USB sound dongle - a 'no brainer'.
- 2) Apply power to the RPi and 450. Note: a dummy load is recommended for testing.
- 3) Adjust FLDIGI/FLRIG & 450 settings as appropriate.
- 4) Enjoy running digital modes!