How to power a Raspberry Pi using PoE

Silvertel, a UK manufacturer of telecom, POE and power modules, have released a circuit and PCB layout for a 5V PoE adapter board ideal for Raspberry Pi. The information provided is available for free download and use by any manufacturer of accessories or general hobbyists. This adapter board can be used to power any 5V device (up to a power of 9W), e.g. a Raspberry Pi, via a standard USB cable or DC connection. The information pack provided includes: a full bill of materials (parts readily available from on-line electronic component suppliers), a circuit schematic and the PCB layout. There are minimal components, with a total typical cost of less than £7.

Figures 1 and 2 show the PCB with components fitted. The module provides an IEEE 802.3 compliant PoE input, capable of taking PoE power and data from any PoE injector. The 5V/1.8A output is provided on a USB connector or DC plug. The board provides an IEEE802.3af signature to avoid any potential damage that could be caused by incorrect or shorted Ethernet cables.

Figure 1: PoE adapter Board (Top View)

Figure 2: PoE adapter Board (Bottom View)

Figure 3 below shows a populated adapter board powering a Raspberry Pi over a USB connector. The blue CAT6 Ethernet cable is connected to a PoE switch delivering power and data. The PoE adapter board splits these out; data onto the short CAT5/Ethernet cable and power out on to the standard USB to micro USB cable.

The PoE adapter board provides convenient mounting holes compatible with the Raspberry Pi board.
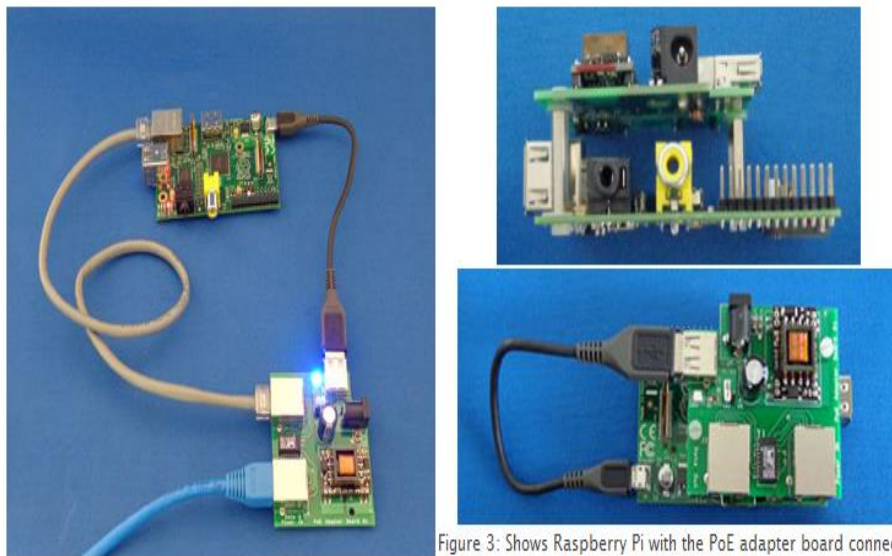

Figure 3: Shows Raspberry Pi with the PoE adapter board connected