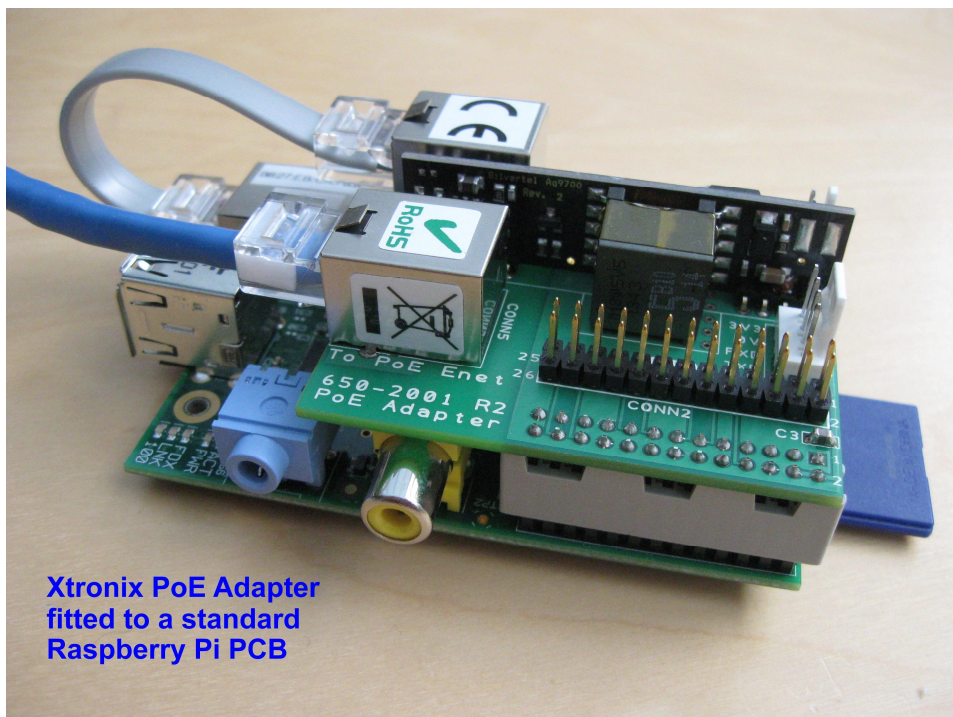
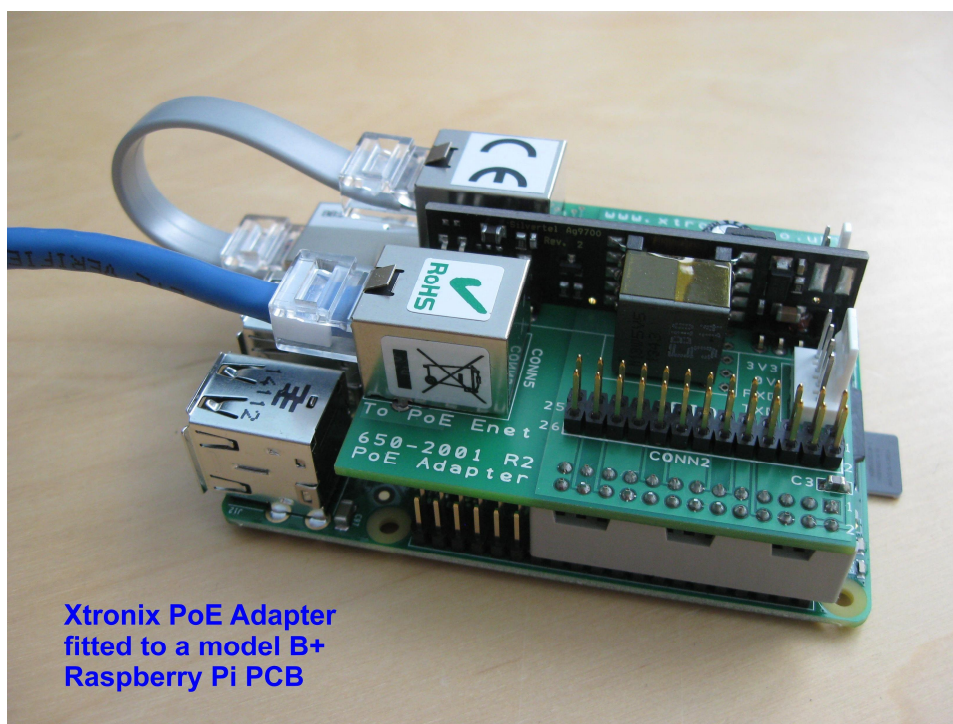


Raspberry Pi Power Over Ethernet (PoE) Adapter R2 User Manual



Xtronix PoE Adapter
fitted to a standard
Raspberry Pi PCB



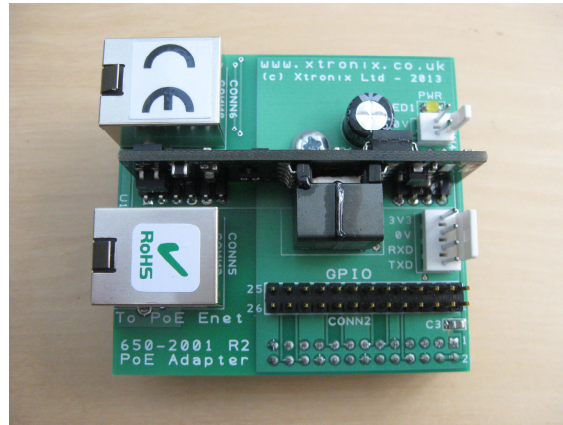
Xtronix PoE Adapter
fitted to a model B+
Raspberry Pi PCB



Raspberry Pi Power Over Ethernet (PoE) Adapter User Manual

Overview

The Xtronix 'Power Over Ethernet' (PoE) adapter Revision 2 (R2) is designed to be plugged directly on to a Raspberry Pi printed circuit board (Model B, Model B+ or Model 2) and to supply +5 Volts to the Raspberry Pi PCB. The adapter conforms to the IEEE 802.3af Power over Ethernet standard. It is intended to be powered by an IEEE 802.3af compatible switch or a separate Injector where power is supplied over the Ethernet Cable (see Page 4 for connection diagrams).



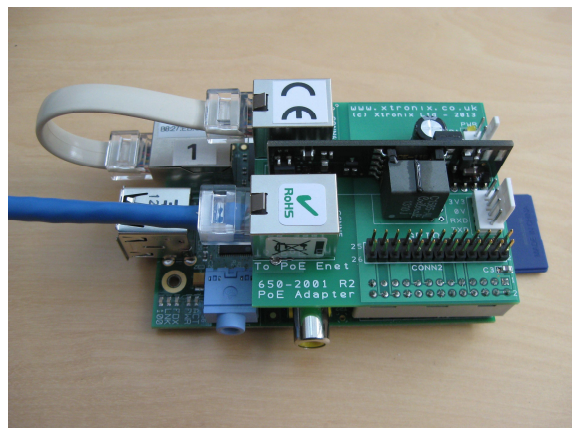
Safety Note: Only use an IEEE 802.3af compatible Switch or Injector with this adapter.

Installation to the original Pi Model B (This Pi PCB has a 26 way connector and 1 fixing hole)

- 1) Check that no power supply is connected to the Raspberry Pi PCB.
- 2) Remove the M3 screw from the bottom of the metal spacer underneath the adapter PCB.
- 3) Check that the Raspberry Pi PCB has a fixing hole adjacent to RG2 on the Pi PCB. If the fixing hole is not present, **carefully** remove the metal pillar from the adapter PCB by unscrewing the M3 screw on the top of the adapter PCB.

Damage caused by the user removing the fixing screw is not covered by the Xtronix warranty.

- 4) Plug the adapter PCB into the Raspberry Pi PCB 26 Way connector (P1) by mating the Pi PCB connector 'P1' with the adapter PCB connector 'CONN1' and aligning the adapter PCB such that it covers the Pi PCB (see photograph below).



- 5) Fix the Adapter PCB to the Pi PCB by using the M3 screw (screw the M3 screw into the metal spacer from the underside of the Pi PCB). NOTE: Early Raspberry Pi PCB may not have the fixing holes – in this case see 3) above.

**NOTE: Take care if you tighten the screw on the top of the PCB as it is easy to damage the vertical PCB.
Damage caused by the user tightening the fixing screws is not covered by the Xtronix warranty.**

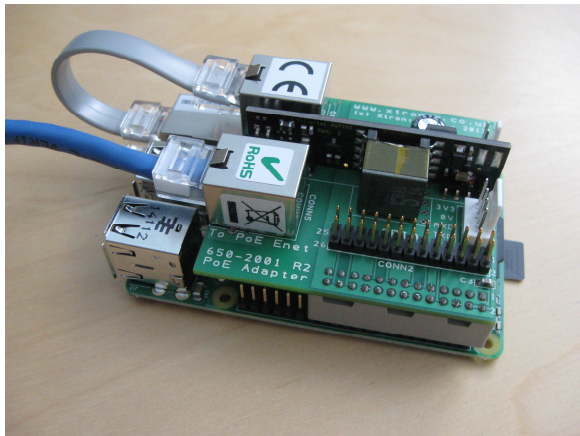
- 6) Plug in the short Ethernet cable from the adapter CONN6 (labelled 'To Pi') into the Pi PCB Ethernet connector (see photograph above).
- 7) Plug in the Ethernet cable (not supplied) into the adapter connector CONN5 (labelled 'To PoE Enet') and connect the other end of this cable to the IEEE 802.3af compatible switch or injector (not supplied).
- 8) Apply power to the switch or injector, this causes the LED on adapter PCB to light and +5V to be supplied to the Pi.

Installation to a Pi Model B+ or a Model 2 (This Pi PCB has a 40 way connector and 4 fixing holes)

- 1) Check that no power supply is connected to the Raspberry Pi PCB.
- 2) Very **carefully** remove the M3 screw and metal spacing pillar from the Xtronix PoE adapter PCB. Please note that it is easy to damage the PoE module during the removal of the pillar.

Damage caused by the user removing the fixing screw is not covered by the Xtronix warranty.

- 3) Plug the adapter PCB into the Raspberry Pi PCB 40 Way connector (J8) by mating the Pi PCB connector 'J8' with the Xtronix adapter PCB connector 'CONN1' and aligning the adapter PCB such that it connects the first 26 pins of the Raspberry Pi Model B+ connector J8 (see photograph below which shows attachment to a Raspberry Pi Model B+).



- 4) Plug in the short Ethernet cable from the adapter CONN6 (labelled 'To Pi') into the Pi PCB Ethernet connector (see photograph above).
- 5) Plug in the Ethernet cable (not supplied) into the adapter connector CONN5 (labelled 'To PoE Enet') and connect the other end of this cable to the IEEE 802.3af compatible switch or injector (not supplied).
- 6) Apply power to the switch or injector, this causes the LED on adapter PCB to light and +5V to be supplied to the Pi.

Cooling

Please note that the voltage converter on the adapter PCB generates some heat. Forced cooling is not normally required, but if the adapter PCB and Pi PCB are to be mounted in a sealed box, some method of removing the heat generated by the adapter and the Pi PCB should be provided such as a small fan.

GPIO Connector

The GPIO connector and the adapter PCB (CONN2) allows the user to connect to the Pi PCB GPIO. The pin out of this connector is the same as the Pi PCB GPIO connector P1.

Note: The user is responsible for correctly interfacing to these signals. Damage caused by the user interface to these signals is not covered by the Xtronix warranty of the Adapter PCB.

Console Cable

The 4 way connector 'CONN3' on the adapter PCB allows the user to plug in a suitable console cable lead. This allows access to the Pi console port. A suitable mating connector is a Molex KK series (0.1") shell and crimps.

NOTE: The signal levels on connector CONN3 are 3V3 TTL compatible.

The signals are clearly marked on the PCB: RX, TX, GND and +3V3. The serial interface settings for communication with the Pi PCB are as follows: 115200 Baud, 8 Data Bits, 2 Stop Bits, No Parity.

Note: The user is responsible for correctly interfacing to these signals. Damage caused by the user interface to these signals is not covered by the Xtronix warranty of the Adapter PCB.

Xtronix is able to supply compatible console cables that connects directly to a RS232 port or to a USB port (creating a virtual Serial Port) - contact sales@xtronix.co.uk for details.

+5V Connector

The 2 way connector 'CONN4' on the adapter PCB allows the user to plug in a suitable +5V take off lead, to power external equipment. A suitable mating connector is a Molex KK series (0.1") shell and crimps. Note that the total loading of the Adapter should not exceed 1.25 amps which includes power supplied to the Raspberry Pi via connector CONN1.

Adapter Specifications

Nominal Voltage Output	5 Volts DC
Maximum Output Current	1.25 Amps Continuous (assumes suitable PoE Switch or Injector) @ 40°C ambient
Minimum Output Current	250 mA (Note that the adapter may not function if load current is less)
Nominal Input Voltage	48 Volts DC via Ethernet Cable (38 to 57 Volts DC)
Power Injector	IEEE 802.3af compatible Injector
Temperature Range	0 to +40°C (ambient air temperature around the adapter)
Humidity	+5 to +80% Non-Condensing
Console Connector	4 Way 0.1" Molex (RXD, TXD, GND, +3V3) Note: 3V3 TTL Levels
GPIO Connector	26 Way 2 Row 0.1 Header – pin out as per Raspberry Pi Model B PCB
CE Marked	Yes – Safety, EMC, ROHS and WEEE
Compatibility	Raspberry Pi PCB Model B, Model B+ and Model 2.

Ordering Information Xtronix Part Number 650/9001 R2

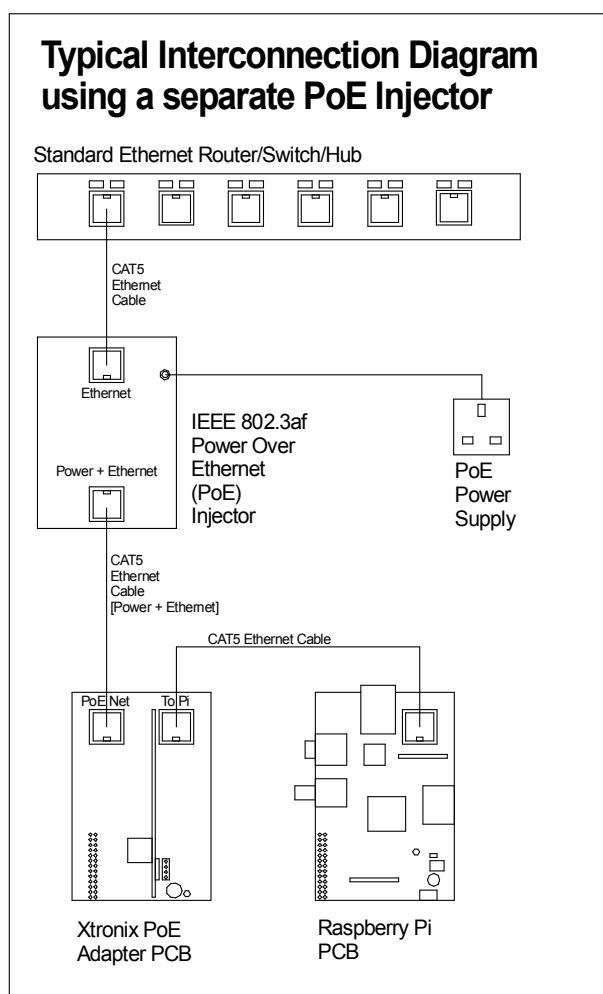
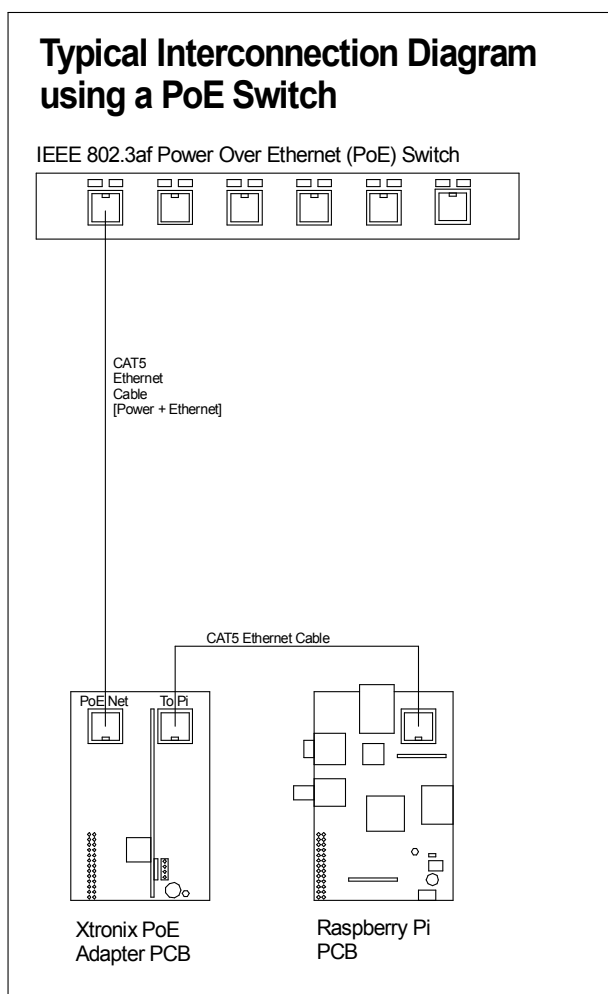
Items Supplied Adapter PCB Assy 650/9001, short Ethernet cable, metal spacer, two M3 screws.

EMC Directive

The unit is sold as a component for incorporation into equipment or apparatus along with other items. It has been shown that the unit complies with the European Union EMC directive when it is mounted on a Raspberry Pi that is enclosed in a suitable metal enclosure with the other equipment or apparatus connected using screened cables.

WEEE Directive (Waste Electronic and Electrical Equipment)

The adapter PCB and the short Ethernet cable supplied with it, come under the European Union WEEE Directive and must be disposed of in an appropriate collection point and not be placed in the normal domestic waste stream.



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