

Ethernut Quad Supply Hardware Manual



Version 2.0

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1 Introduction

Remote Power Supply via Ethernet Cable.



WARNING: The Quad Supply doesn't conform to IEEE 802.3af, also known as Power Over Ethernet. Although using the same wires, the Quad Supply uses 12 Volts only, while the IEEE Standard requires 48 Volts, which is far above the maximum allowed for Ethernut power supply.

When using several Ethernut Boards in a local network, usually each board requires its own power supply. As an alternative, Ethernut Boards of version 1.3 or above can take power from the Ethernet Connector. The Ethernut Quad Supply injects DC voltage into the unused wires (pairs 4-5 and 7-8) of the Cat 5 Ethernet cable. Up to four Ethernut Boards can be supplied from the Cat 5 cable.

Pins	Signal	Function
1 + 2	TX	Differential transmit output pair.
3 + 6	RX	Differential receive input pair.
4 + 5	Power	Power supply.
7 + 8	Power	Power supply.

Table 1: Ethernut Twisted Pair RJ-45 Connector

The DC resistance of this cable is about 5 Ohms on the maximum supported cable length of 100 meters.

Prerequisites

Your Quad Supply comes with a switching power supply module, mains cable for European outlets, 4 jumpers and 8 plugs.


The power supply module is short-circuit proofed and operates from 90 to 264 Volts and 47 to 63 Hertz. Its connector can be easily replaced in order to fit electrical outlets of different countries. It is able to deliver upto 1.5 Ampere DC. While each Ethernut Boards draws about 100 mA, this leaves enough reserve for additional hardware connected to the Ethernut, like backlit LCDs.

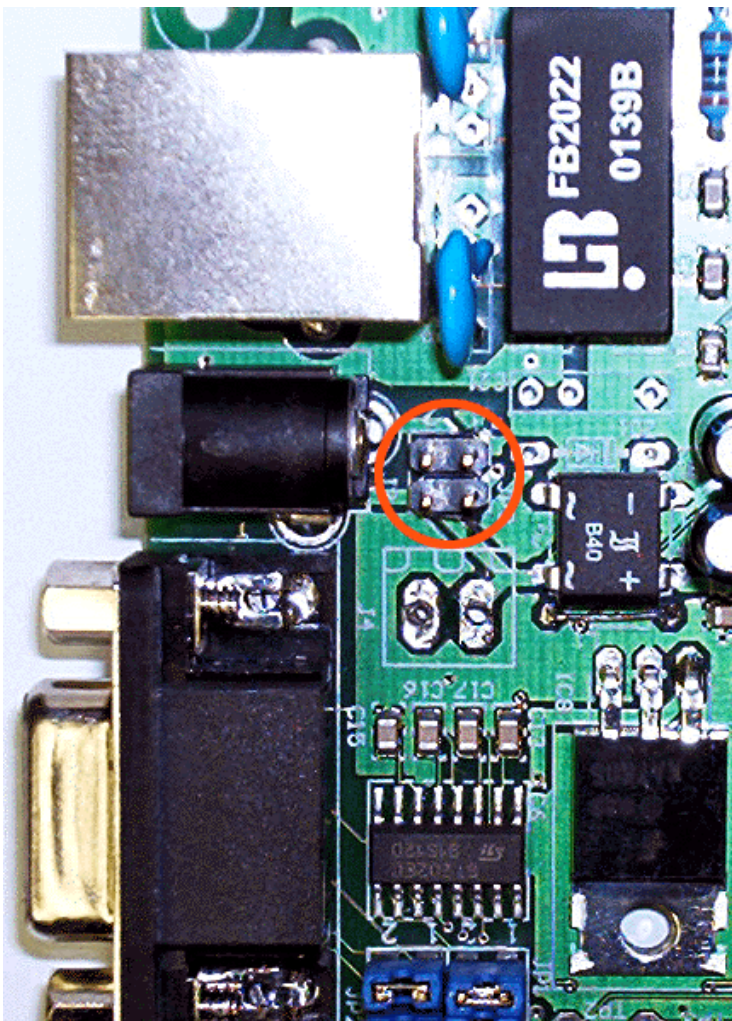
You may need soldering equipment, because typically the required jumper is not mounted on the Ethernut Board. You also need a short Cat 5 cable for each Ethernut to connect your Quad Supply to a HUB or switch. If your electrical outlet is different from the European type, you need to replace the mains cable of the power supply module.

2 Installation

This chapter will help you quickly set up and start using the Ethernut Quad Supply Unit

Preparing the Ethernut Board

 **WARNING:** As with all computer equipment, the Ethernut board may be severely damaged by electrostatic discharge (ESD). Be sure to take proper precautions before removing the Ethernut board from the anti-static bag. Some soldering may be required to prepare the board. Do not overheat the solder pads to avoid damaging the board.

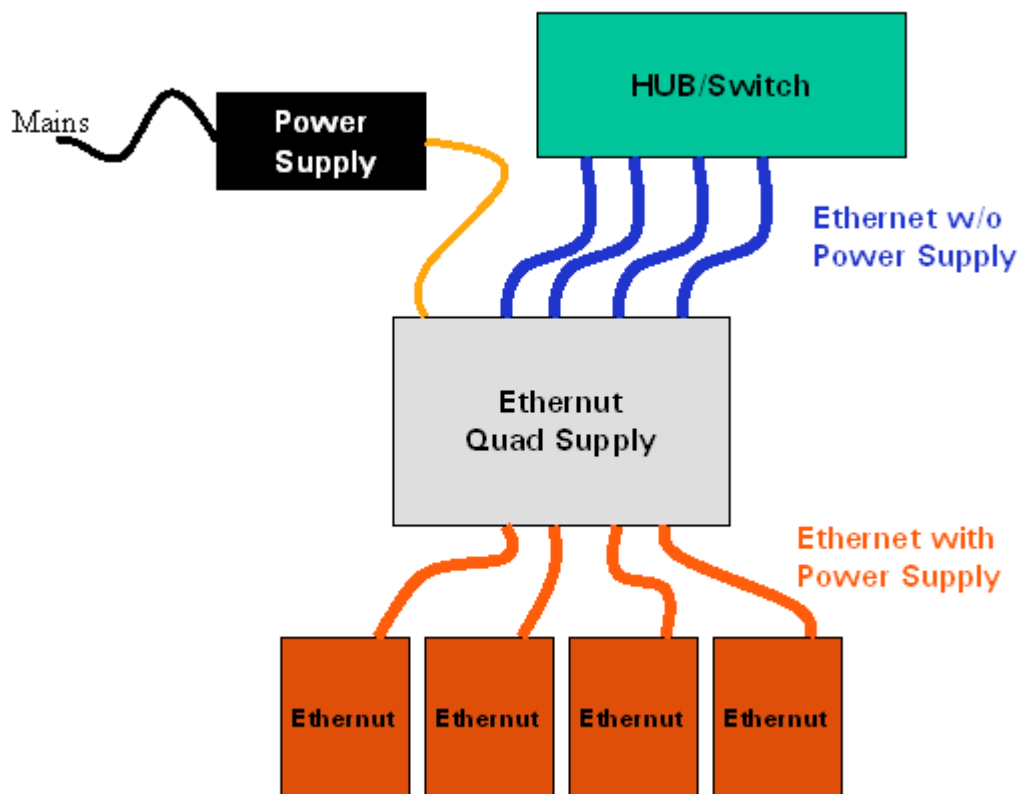


Typically the Ethernut Board is delivered with JP3 not mounted. So you may have to solder JP3 onto the board yourself. With a little experience in soldering, this should be no problem. Otherwise ask somebody else to do it for you.

After JP3 has been mounted, two jumper plugs have to be put on JP3. The plugs may be installed either vertical or horizontal, depending on the polarity of the power supply. Fortunately the Ethernut Board is equipped with a rectifier bridge and polarity doesn't matter and the plugs can be installed either way.

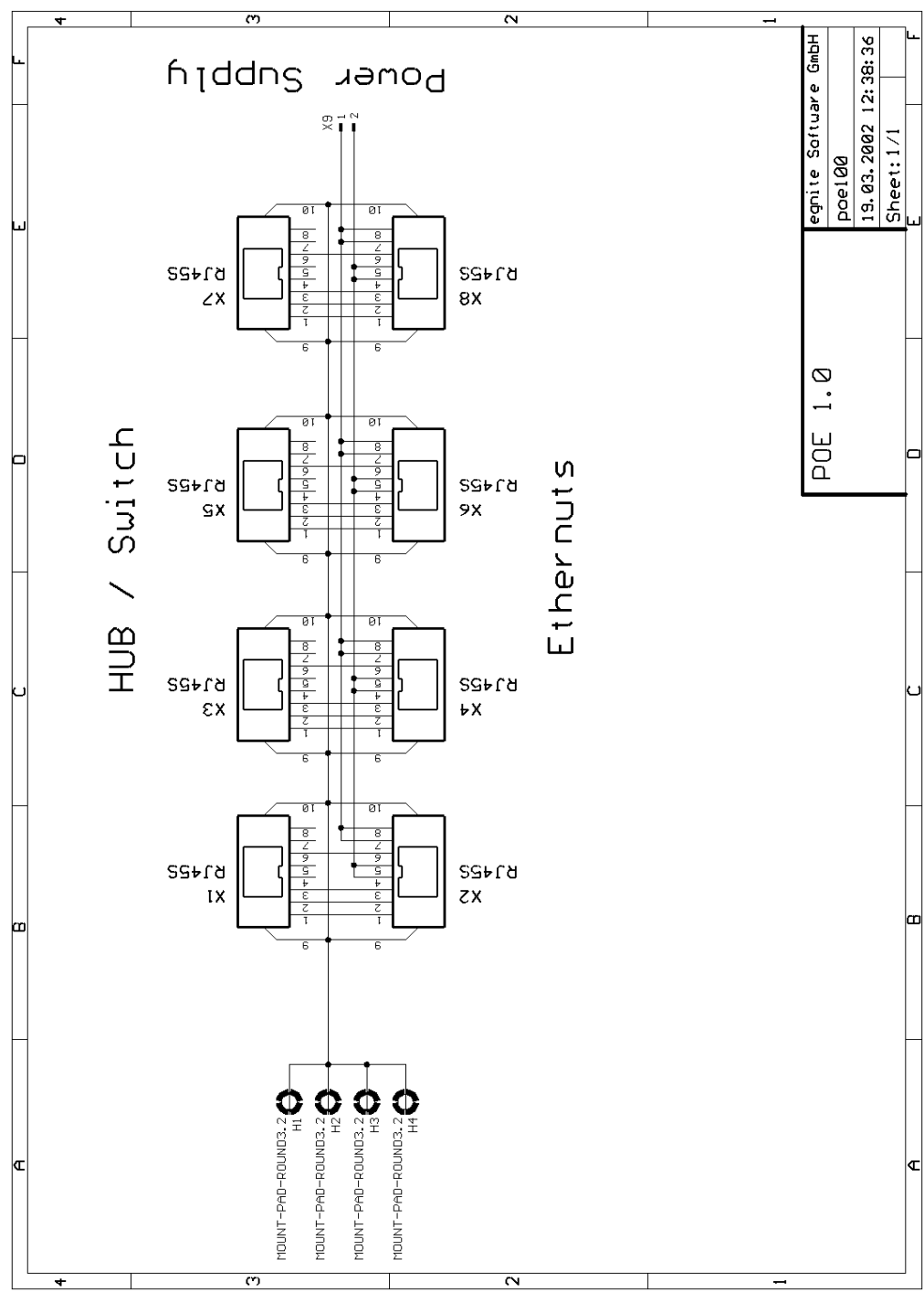
Connecting the Ethernut Board

⚡ WARNING: Remove any power supply from the DC barrel connector of the Ethernut Board when using the Ethernut Quad Supply. Note, that the Quad Supply has two sides equipped with RJ-45 connectors, which must never be changed by mistake. The side with the additional power connector is used to connect the Quad Supply to a HUB or switch, while the side without power connector is reserved for Ethernuts. Never connect any other equipment than Ethernuts on the Ethernut side of the Quad Supply.

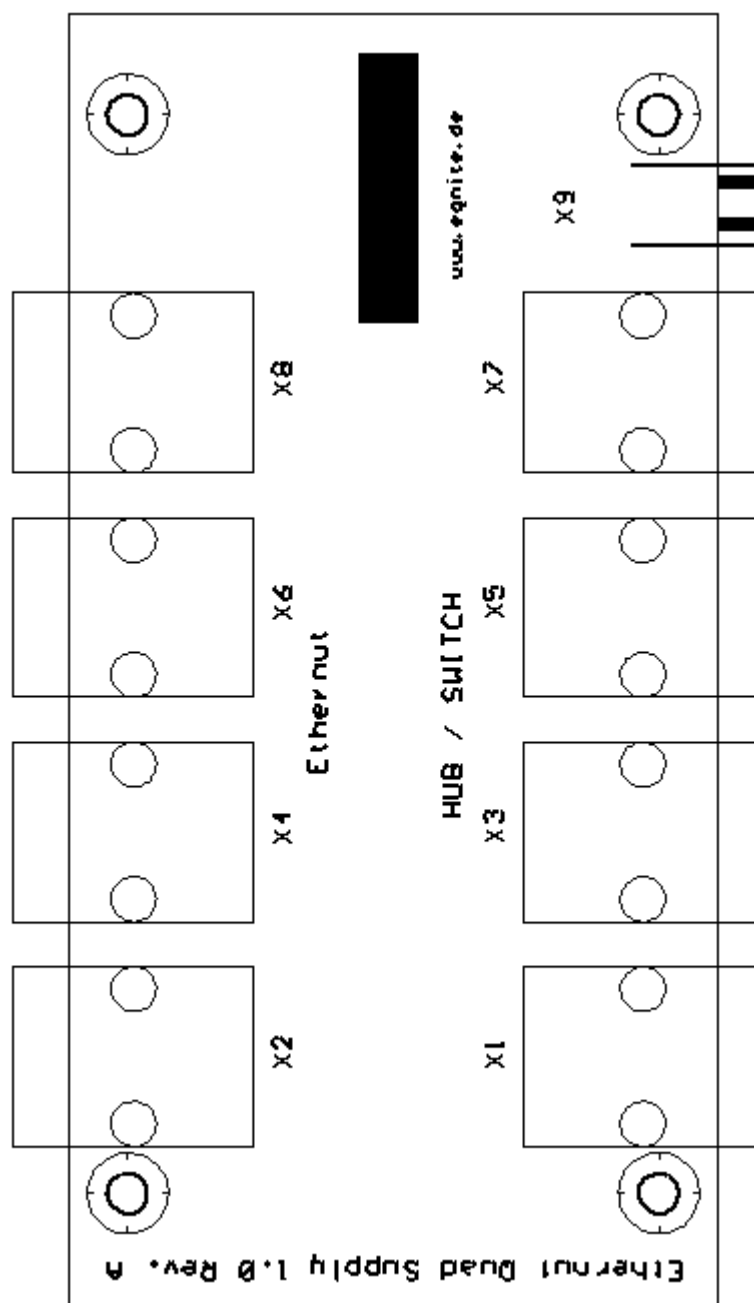


Connect the RJ-45 sockets on the side of your Quad Supply, which has the additional power supply connector with your switch or HUB, using standard TP cable. Connect the RJ-45 sockets on the other side with your Ethernut boards, also using standard TP cable. Finally connect the power supply to the screw connector on the Quad Supply. Apply power to the Ethernut boards by connecting the power supply to an electrical outlet. When the board is powered up, at least the red power LEDs on the Ethernut Boards should go on.

3 Schematic



4 Board Layout



5 Links

Where to find additional information.

<http://www.ethernut.de/>

Information about the Ethernut board.

<http://www.egnite.de/>

Home of egnite Software GmbH, the developer of Nut/OS and the Ethernut hardware reference design.

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