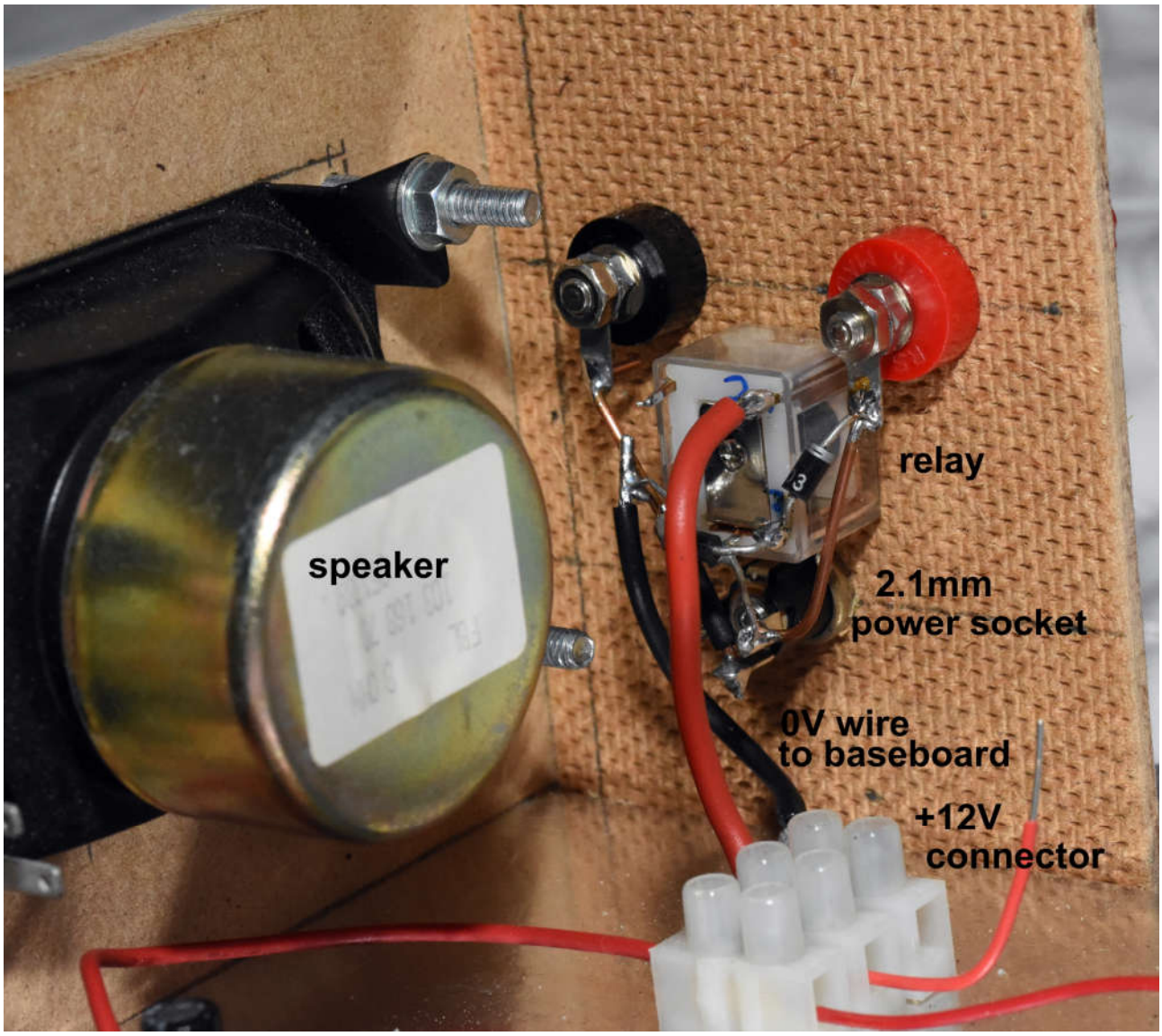
Power supply panel.

Specification

4mm input sockets
2.1mm input socket
Reverse polarity protection

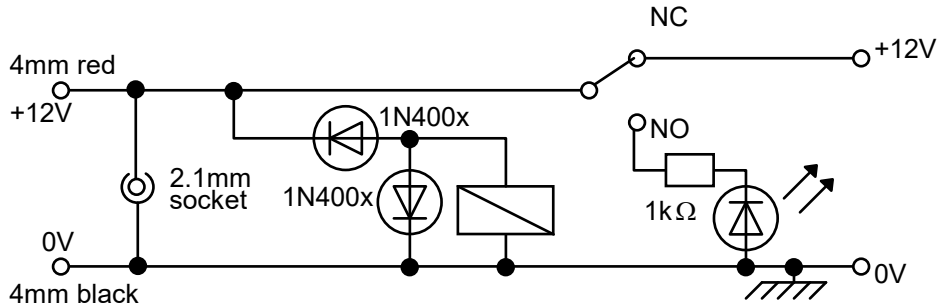
This panel becomes essential when several subsystems need to receive power. A piece of hardboard 10cm × 7cm was used and screwed to the baseboard opposite the volume control panel.
The panel has both 4mm socket and a 2.1mm power socket, so that a variety of 12V power supplies can be used.



The 2.1mm power socket can just be seen in the picture above and is wired with the centre pin as positive, which is standard for many power-supplies.

The black 4mm connector and the negative connector of the 2.1mm power socket are connected directly to the aluminium foil with a 3mm solder tag screwed into the baseboard. This connects the aluminium foil to 0V.
The red 4mm connector and the centre pin of the 2.1mm power socket are connected together and then to a few screw terminal block connectors for the +12V power supply. The screw connectors enable quick connection of experimental subsystems.

The reverse polarity protection circuit, though not essential, it is useful when the system is being used for experimenting. The circuit diagram is below.



The relay has a 12V coil and 5A contacts. Under normal conditions, current flows through the normally closed (NC) relay contacts to the circuit.
When reverse connected, the diode in series with the relay coil conducts, operating the relay and disconnecting power from the circuit. An optional LED, connected to the normally open contacts can be used to provide an indication of a reverse connected power supply, though this is currently not used.
The diode connected in parallel with the relay coil prevents any large induced voltage, when the power is disconnected.