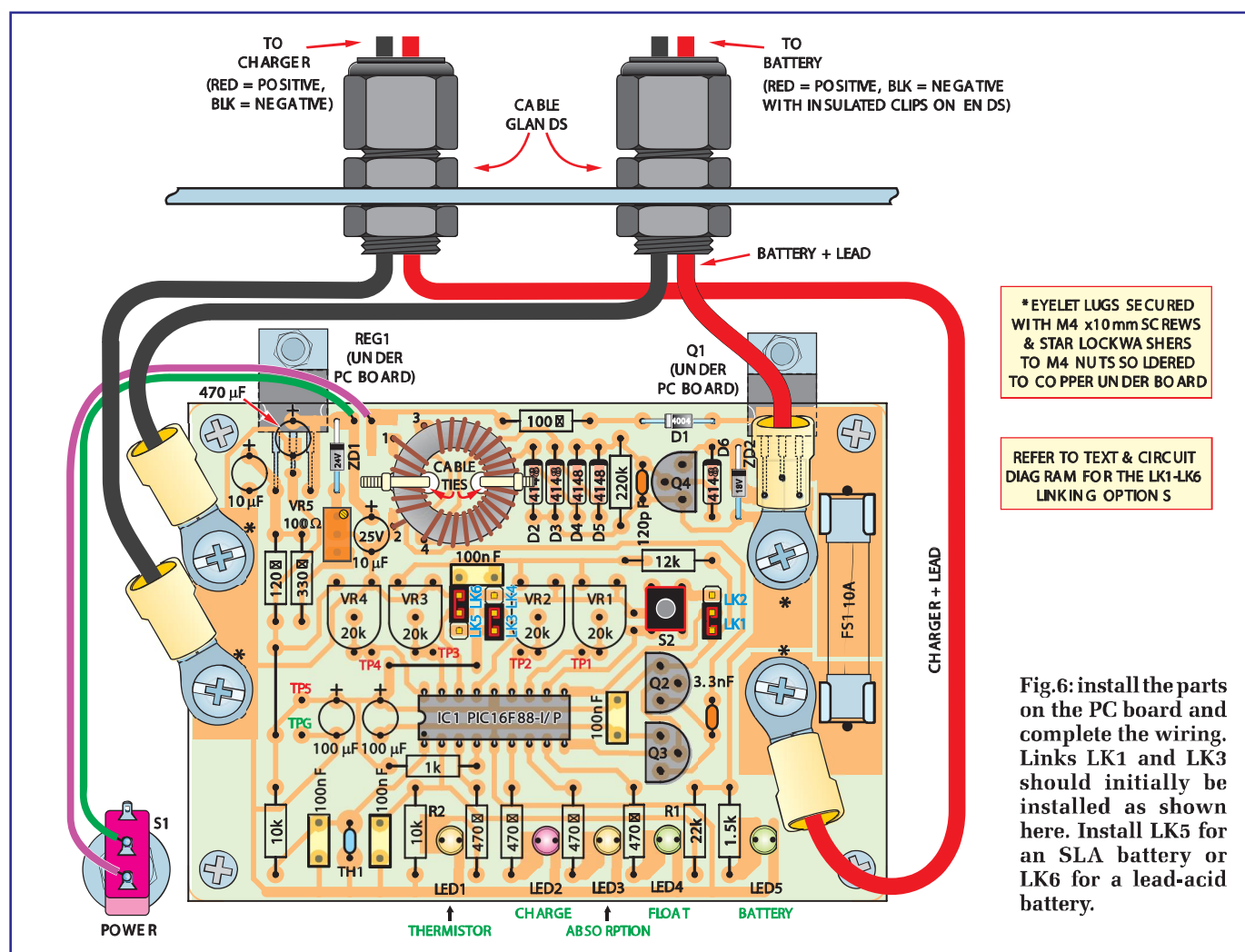


# Constructional Project



## Power supply

Power for the circuit is obtained from the charger via diode D1, or it can come from the battery via the reverse diode within Q1. However, the latter is a spurious mode which has no useful function.

Diode D1 prevents reverse current to the controller circuit should the charger or battery be connected with incorrect polarity. The incoming supply from diode D1 and switch S1 is filtered using a 470 $\mu$ F 25V electrolytic

capacitor and fed to an adjustable voltage regulator (REG1) that is set to deliver a precise 5.0V. This feeds IC1 and buffer stage transistors Q2 and Q3.

IC1 monitors the battery voltage via a voltage divider comprising R1 and R2, and converts it to a 10-bit digital value via the AN3 input, pin 2. The signal is filtered with a 100nF capacitor to remove noise from the measurement. Furthermore, the battery voltage measurements are made after the 500kHz










signal from pin 9 is switched off.

In addition, having Q1 switched off also prevents voltage fluctuations due to charging current in the leads to the battery 'under charge'.

## Temperature measurement

As mentioned, an NTC thermistor (TH1) is used to measure temperature. It is connected in series with a 10k $\Omega$  resistor across the 5V supply. The resulting voltage across the thermistor is fed to IC1

## Table 1: Resistor Colour Codes

	No.	Value	4-Band Code (1%)	5-Band Code (1%)
	1	220kΩ	red red yellow brown	red red black orange brown
	1	22kΩ	red red orange brown	red red black red brown
	1	12kΩ	brown red orange brown	brown red black red brown
	2	10kΩ	brown black orange brown	brown black black red brown
	1	1kΩ	brown black red brown	brown black black brown brown
	4	470Ω	yellow violet brown brown	yellow violet black black brown
	1	330Ω	orange orange brown brown	orange orange black black brown
	1	100Ω	brown black brown brown	brown black black black brown