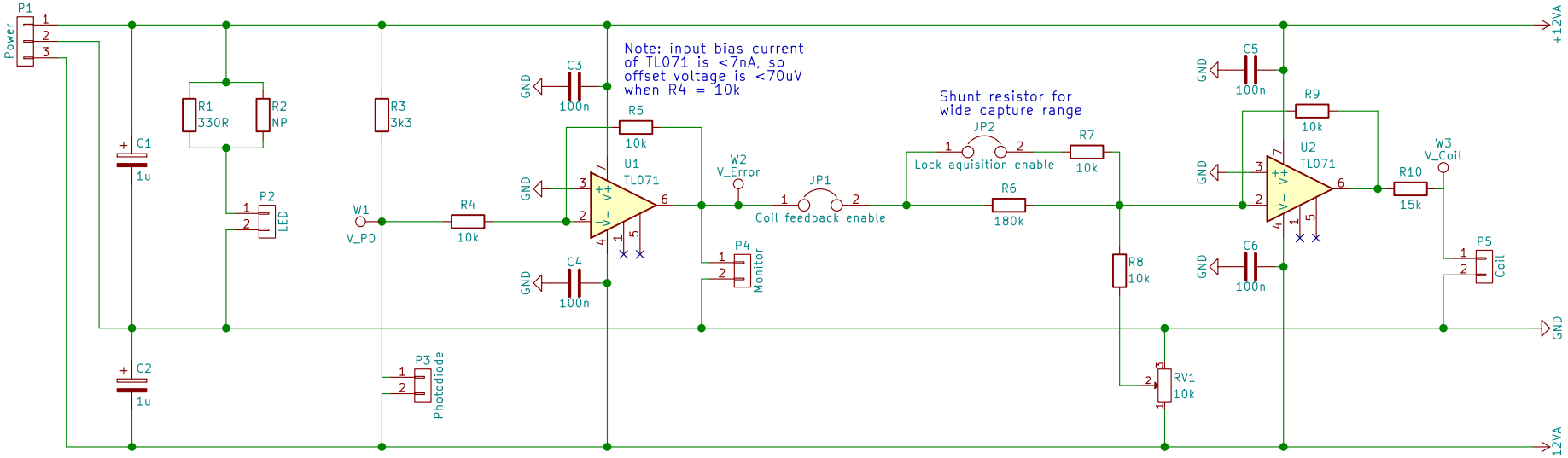

Circuit notes:

– Try to understand how the signal wires on this schematic correspond to the tracks on the board. Note that the board has a "ground plane", so grounded connections are attached directly to the board's copper surface to minimise impedance.
– Be careful not to reverse the supply voltages – this can damage components, especially the op-amps and electrolytic capacitors.
– C1 and C2 provide supply decoupling to decrease noise and ripple from the bench-top power supplies. These are probably not necessary for low noise operation, but their presence doesn't hurt.
– C3, C4, C5 and C6 provide local supply filtering to each op-amp, to minimise noise picked up from the environment and nearby components.
– R2 is not populated ("NP"). It can be populated with a suitable value to provide more current through the LED, hence brighter light output.
– V_PD, V_Error and V_Coil provide test points for the voltage at the photodiode, error signal and coil signal, respectively.

Construction notes:

– Install components in ascending order of height: fixed resistors, op-amps, ceramic capacitors, jumper headers, potentiometer, electrolytic capacitors, screw terminals.
– The TL071 op-amps can be swapped for similar JFET models such as LF356, AD8610, TL081 or (noisier) TL061.
– C1 and C2 are polarised electrolytic capacitors: they must be inserted in the correct orientation.
– The LED and photodiode are polarised and will only produce light or voltage in one orientation.
– The op-amps must be inserted in the correct orientation. The small circular extrusion on the package indicates pin 1.
– It is useful to solder a DIL socket (such as Winslow W30508TRC) between the op-amps and the board to allow for easy replacement. The op-amp legs must be carefully bent in order to fit into the DIL socket.
– The male jumper headers JP1 and JP2 can be shorted using a female jumper (such as RS Pro W8010T50RC).

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Title: Magnetometer board

Size: A4	Date: 2017-10-13	**Rev: 1**
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