Breakout board for Quectel L80 and L86 GPS modules

This is a board that allows you to use a Quectel L80 or L80 GPS with your microcontroller projects. In is simplest build all you need to do is solder the GPS module to the board, add a 4 pin 0.1” header and make two links. Thats it you can use the GPS module.

There are options you can add to the board;

LED fix indicator

Extra decoupling capacitors

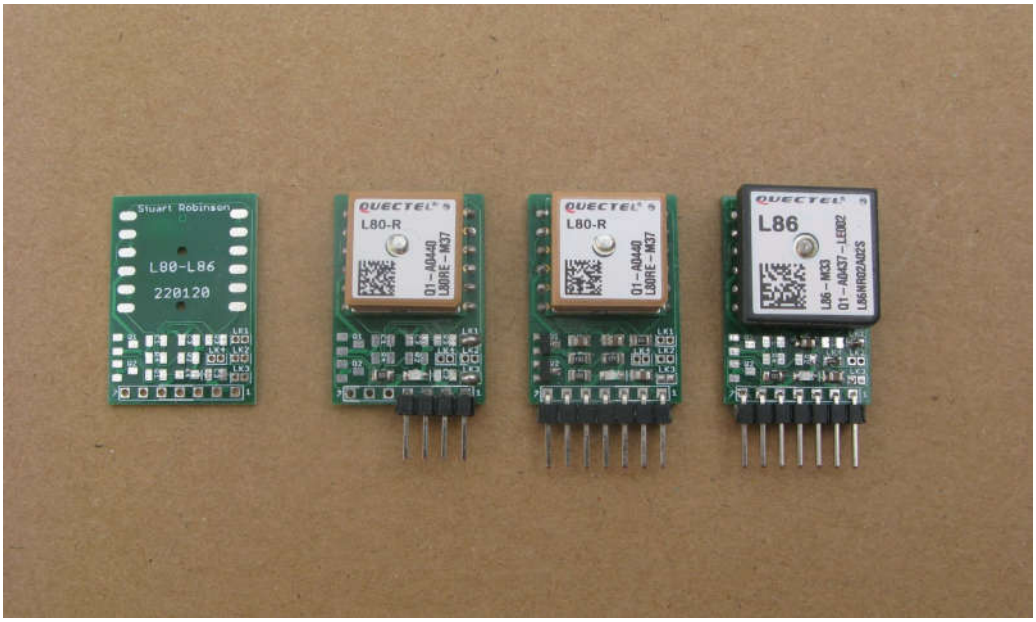
Lithium backup battery

Power switching to turn the GPS off and save power.

The board uses 0805 sized surface mount components to keep the size and weight down. The assembled GPS module is for use on 3.3V microcontroller projects only, do not connect directly to 5V microcontrollers such as the Arduino UNO.

Basic mode build

Solder the GPS in place, not the correct orientation, the GPS could be damaged if you fit it the wrong way around. Solder a 4 pin angled 0.1” connector in place for CONA. Bridge LK1 and LK3 with a blob of solder or solder a wire link in place.



LED fix indicator

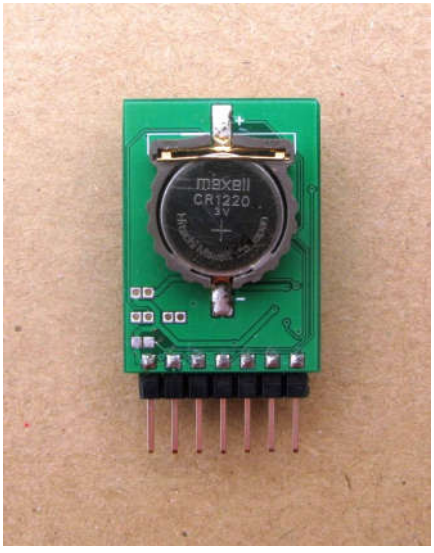
Fit L1 and R1, these are 0805 size surface mount components. A red LED is preferred, it will be brighter at the 3.3V operating voltage of the GPS. The 1st GPS on the left above (next to the bare PCB) is the basic mode build with fix LED added.

Extra decoupling capacitors

Fitting C3 might help the GPS perform better in a noisy electrical environment.

Lithium backup battery

If you want the GPS to save its current satellite data if the connected project is powered down fit the battery. Fit the 1220 battery holder on the rear of the PCB and add a CR1220 battery, fit C2 also. A 1216 battery should fit also. This should allow the GSP to get a new fix more quickly when power is restored.



Power switching to turn the GPS off and save power

This option will allow you to use a logic pin to power the GPS on and off, this is pin 6 of CONA. When off in backup mode the current consumption can drop to as low as 8uA, compared to 20-30mA when running.

Solder a 7 pin angled 0.1” connector in place for CONA.

Fit C1, R3, R4, C3 and Q1. Make sure LK1 is open and not connected. If you want to use a logic low to turn the GPS on, then bridge LK2 with blobs of solder or bit of wire. If you want to use a logic high to turn the GPS on than also fit R2 and Q2 and do not bridge LK2.

You can use a Lithium battery for the power the GPS needs to keep its backup when its turned off, see the ‘Lithium backup battery option’. Alternativly make up LK3 and fit C2. The backup power will then be supplied by the incoming VCC to the board even when the power switching turns the GPS off.

The middle GPS in the picture above shows the logic high active power switching components fitted.

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