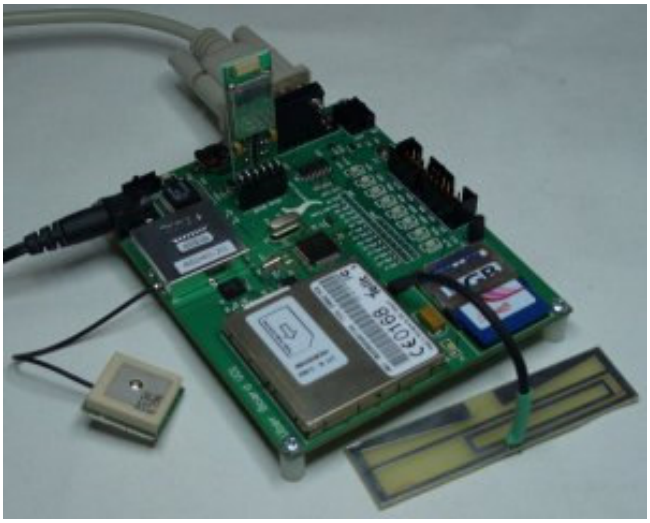


Uber Board v1

Hints and Tips
10/12/2005

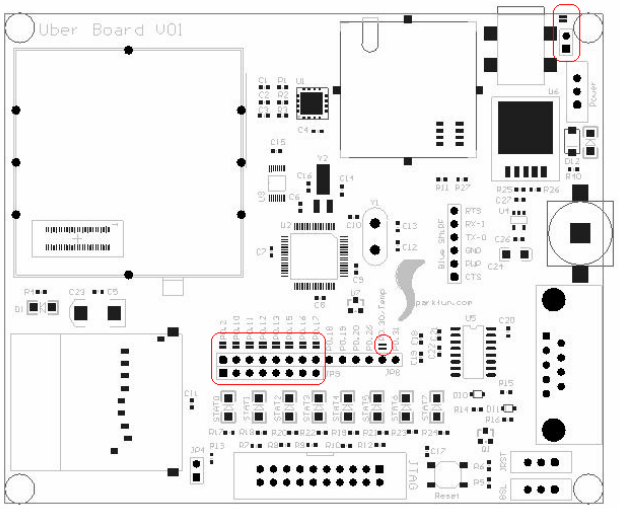
1 Overview

The Uber Board is a conglomeration of a lot of interesting technologies. Blue Tooth, Cell, GPS, 3D acceleration readings, temperature and large capacity SD storage all coordinated by a Phillips LPC2138 ARM7 uC capable of running up to 60MHz. We've tried to pack as much versatility into it as anyone could stand, and we're proud of the results.

Most of the pertinent information about the Uber Board itself can be discovered by viewing its schematic. We've put this document of hints and tips together to try help users with some of the basic configurations and some of the common questions.

2 Solder Jumpers, Regular Jumpers

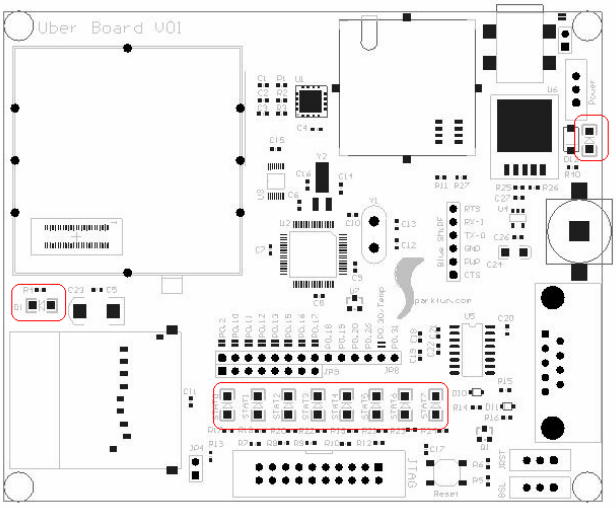
There are ten solder jumpers on the board, marked in red below:



The one in the upper right connects GND at the point of power in. The purpose is to provide a current measurement point of access. If the solder jumper is closed, GND is connected. Alternately, you can open the solder jumper and install a .1" header with jumper next to the power jack. This allows the user to install a meter in-line for current measurements, or to use a small resistor and a scope to do your current measurements.

The eight solder jumpers near the bank of status LEDs control the connections to the GPIO pins. You have the option of opening the jumpers, installing real .1" jumpers, or you can open the jumpers and use the .1" footprints for external device connections.

The last solder jumper is for the onboard temperature sensor. If that solder jumper is shorted, you're hardwired to the sensor on P0.30.



3 LEDs

There are 10 LEDs on the Uber Board, marked in red.

There's one LED over by the power section in the upper right that just indicates power on, one on the left (marked "D1") that indicates GM862 status, and 8 labeled "STAT0" through "STAT7". These 8 status LEDs are connected to the associated I/O lines read from left to right in the solder jumper block that mentioned in the last section (please see the schematic). Why 8 status LEDs, you ask? Because they're COOL! OK, OK, you don't have to use them if you don't want to. Opening the near-by solder jumpers will release the I/O pin for general use.

5 UART1 Multiplexer

As you may have noticed, we have a few gadgets on this thing, and they all talk by means of a UART. That would complicate matters a bit, except that we chose to multiplex UART1 between all of these devices and left UART0 available for continuous dialog with the LPC2138. Nifty, no?

Now, we know you've been looking at the schematic all along while reading this, but here's how the mux works. There are 2 select lines that go to the multiplexer; line A goes to P0.21, and line B goes to P0.22. Here's the select sequence:

P0.22	P0.21	Device
0	0	GPS, TSIP
0	1	GPS, NMEA
1	0	Blue Tooth
1	1	GM862

Simple enough, but here are some more helpful hints if you're struggling:

Peripherals: the Lassen IQ defaults to 9600 baud on Port12 and 4800bps on Port 2. The Blue SMiRF defaults to 9600 baud. The GM862 auto-bauds, which means that you send it "AT<cr>" at whatever rate you like and it adjusts accordingly. We like 38400 for the GM862.

LPC2138 tip: when setting and clearing P0.21 and P0.22, remember that to make the line go high you use IOSET0 and to make the line go low you use IOCLR0. You can't write a zero to IOSET0 and get anything to go low or vice-versa.

6 GM862 Power Up

The data sheet for the GM862 states that you have to use a totem-pole configuration for sending the power up/down pulse. Well, we didn't do that. What to do? When the line is high, make it high Z (which is to say, make it an input). That'll clear it up. Also as an alternative to the power pulse for shut down, you can send it "AT#SHDN<cr>".

7 Blue SMiRF Port

Have a look at the labels we've put on the board next to that port. They correspond to the labels that you'll find on a Blue SMiRF. No biggie, until you try hooking anything else up to that port. Specifically, the pin with "RX-I" will connect you to TXD1 and the pin with "TX-O" will connect you to RXD1. Sorry for the confusion, but as long as you keep that in mind you can use

that port for anything you like (one of our serial LCDs, for example).

8 One Final Note...

We'd like to take this opportunity to remind the reader that there are probably over a thousand pages of documentation regarding the peripheral devices employed on the Uber Board. We've tried to cover some of the more elementary bits for getting acquainted with it, but given the versatility and the scope of the individual components we've barely scratched the surface. This is the information that our own testing (which has been extensive) has shown to be helpful from the get-go. But when all else fails, you must revert to the old adage: read the data sheet.

In spite of that, we hope that future revisions of this document will incorporate questions and comments that we will undoubtedly receive.

Good luck, and have fun!