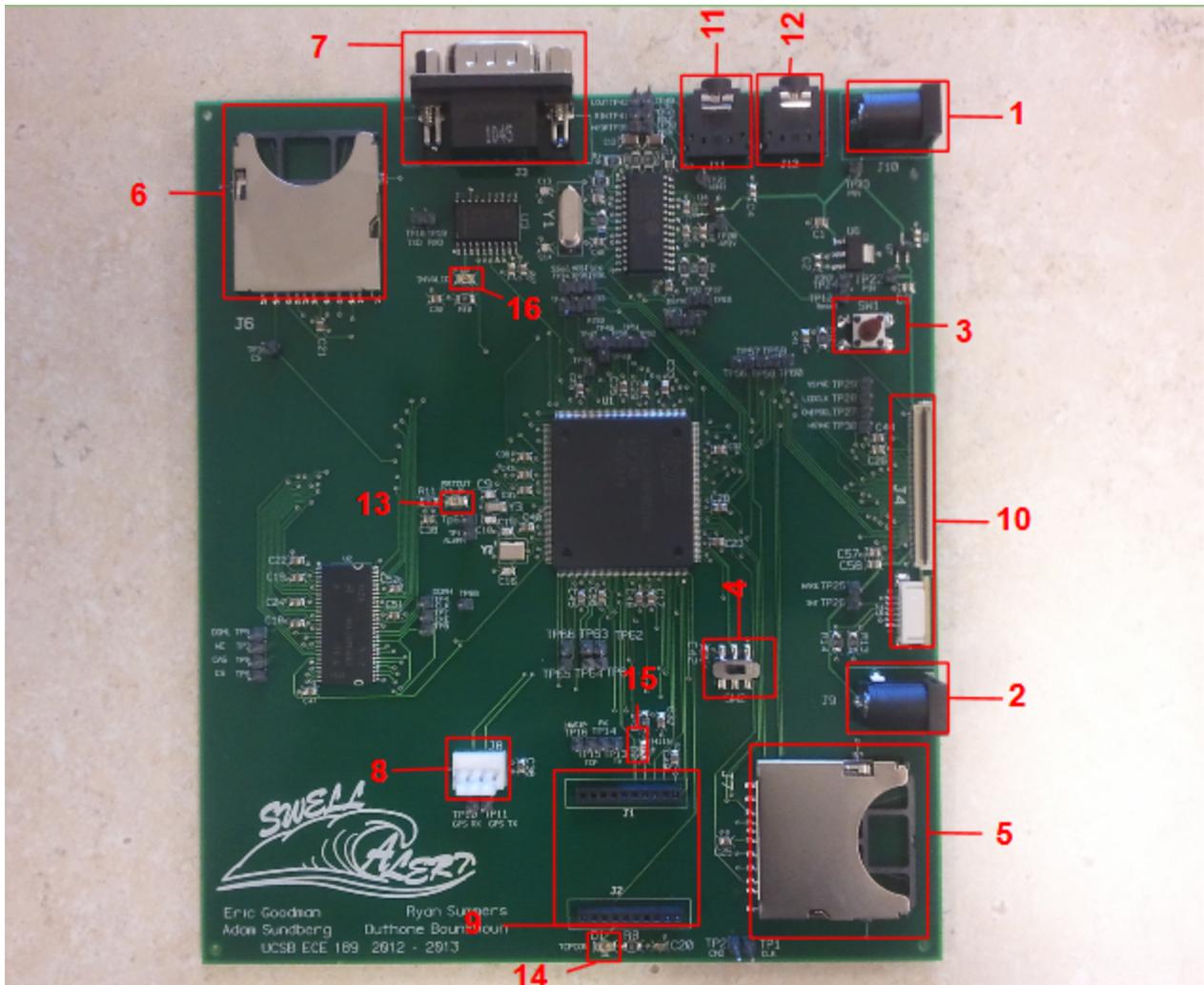# Swell Alert
Controls, Indicators and Interconnects

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1 - 5V power supply input

This is the input which is stepped down from in order to power all of the board except the LCD backlight.

2 - 19V power supply input

Power for the LCD backlight.

3 - Master Reset

All modules except processor, SRAM, and GPS. Press this button in order to reset all other external modules.

4 - Boot Select

This toggle button is used in order to choose which mode to put the board into, either Load to board or Run.

5 - SD Reader

Via 4 bit used as memory for the MP3 Decoder (NOT USED).

6 - Secondary SD Reader

Via SPI used as memory for boot images, MP3 songs.

7 - RS-232

Connector between the programming PC and the Swell Alert board.

8 - Molex Connector for GPS

External GPS connects here. Wiring from left to right: Ground, GPS RX, GPS TX, 3.3V Power

9 - Connector for WIFI module

External WIFI module. Roving Networks' product RN171XV

10 - LCD Connector

Both the CPT and LCD connector that connects to external display. Connections are for a 3.5 inch touchscreen with part number NHD-3.5-320240MF-ATXL#-CTP

11 - Audio Out

Standard 3.5mm jack for music output to speakers.

12 - Audio In

For use with Aux cable.

13 - Reset Out LED

Orange indicator LED. Turns on when processor is reset from master reset signal or not enough power being supplied (brownout condition).

14 - TCP connection LED

Orange indicator LED. Turns off when a TCP connection has been established with destination server. You must first be connected with a Wifi network for the Swell Alert$_{TM}$ device to establish a connection with the server

15 - Wifi boot LED

Orange indicator LED. Turns on when the wifi module is first booting, very brief (almost invisible) flash occurs.

16 - Invalid Data LED

Orange indicator LED. Turns on when the UART cable is disconnected from the programming computer or when invalid/corrupt data is received from the programming computer.

OPERATING INSTRUCTIONS

Powering the device:
1) Make sure that the SD card is in the secondary SD card reader, featured as number 6 above.
2) Ensure that the GPS is properly connected, featured as number 8 above
3) The wifi module should be seated as such that the antenna is furthest from the Swell Alert logo.
4) Make sure your router is on, the ssid set to 'Swell Alert' with password 'swellalert'
5) Finally: Boot the board by first connecting the 5V power supply (featured as connector number 1 above)
6) If you are in a dark area and cannot see the touchscreen, you need to plug in a 19V power supply (featured as connector 2 above)

Using the device:
The User Interface is relatively easy to use. There are several menu screens.
1) Time Menu:
When the Screen first boots, the time menu is displayed. Across the top, all beaches within 25 miles of your current location are displayed. At the bottom left is a button that allows you to enter Music Play mode. At the bottom left, there is a button for the settings menu
2) Music menu
The SD card play menu can be switched back and forth with the streaming from server menu. To play a song, simply tap it. This will take you to the now playing screen and begin playing the song. If you want to stream a song, click 'stream song'. This will take you to a keyboard screen, where you can type part of the name of the song you want to hear. Hitting enter will take you to the streaming menu, which looks almost exactly like the SD card play menu and has the same functionality
3) Now playing menu
There are two buttons that work on this screen. The return button will take you back to the SD card music menu. The set as alarm song will save the name of the song you're playing and either play it from the SD card or stream from the server when the alarm goes off
4) Settings Menu
Here we have options to set the current time, set the alarm time (which will go off no matter what as long as it is set), set the surf alarm time, set surf alarm criteria and set location.
5) Setting Current/Alarm/Surf Alarm time
Each of these menu options will take you to a similar layout. You can hit set hours (in military time, midnight is 00 and ten pm is 22), or hit set minutes. These buttons will take you to a keyboard layout where you can type numbers.
6)Set surf alarm criteria
This is where you can set your desired wave height and other information, which will be checked against all beaches in the list when the surf alarm time is hit.
7) Set location
You can type in an address, partial address, or coordinates at this screen. Because we used the

google maps API on our server, you can type any string that google maps would recognize and have a GPS and text location returned to you.

Note#1: In order to have the device boot properly, you must ensure the set up on the SD card is correct such that it has all of the background images used to boot the touchscreen.
Note#2: The server must have the attached java server code running on port 56789 and be designated the IP address 192.168.1.69 via static setting of the router. Additionally, the router SSID must be named "SwellAlert" and have the passkey 'swellalert'

Currently if you don't have the server and the router set up properly, our board will not boot.