

Grade Crossing Project

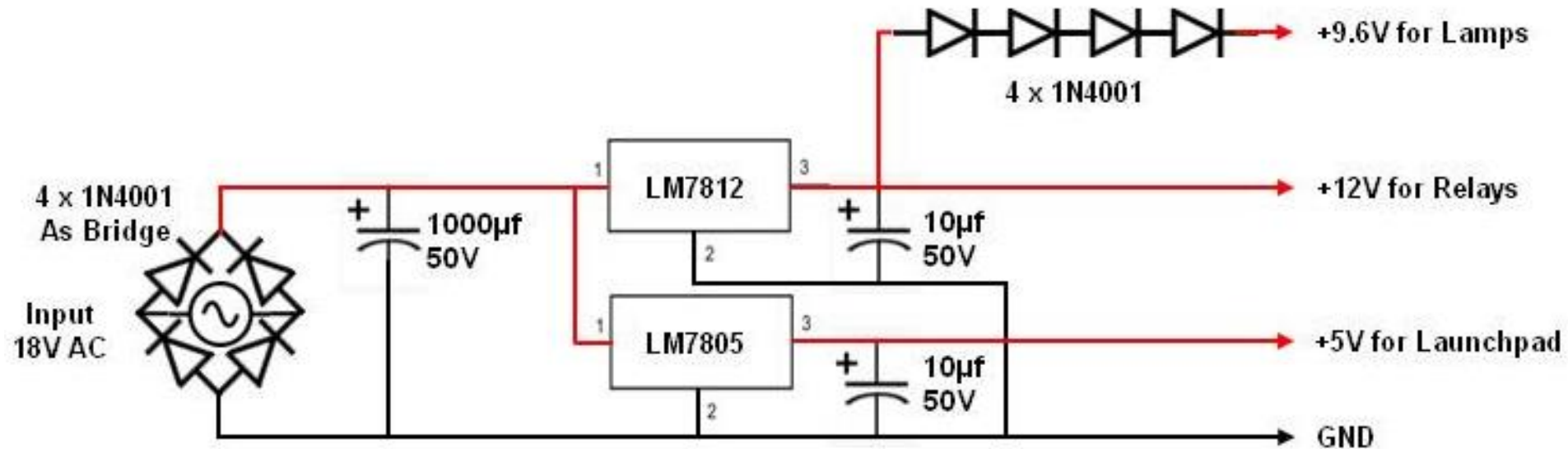
Givens

- Crossing Globes operate on 5-10V
- Relays Operate on 12V
- Block Watchers used for signal logic operate on 12V but not on a common ground with rest.
- Double track crossing
- IR detector at crossing to detect train without resistor axles (covers situation when locos of train have exited the power block leaving nothing to be detected by the Block Watcher)

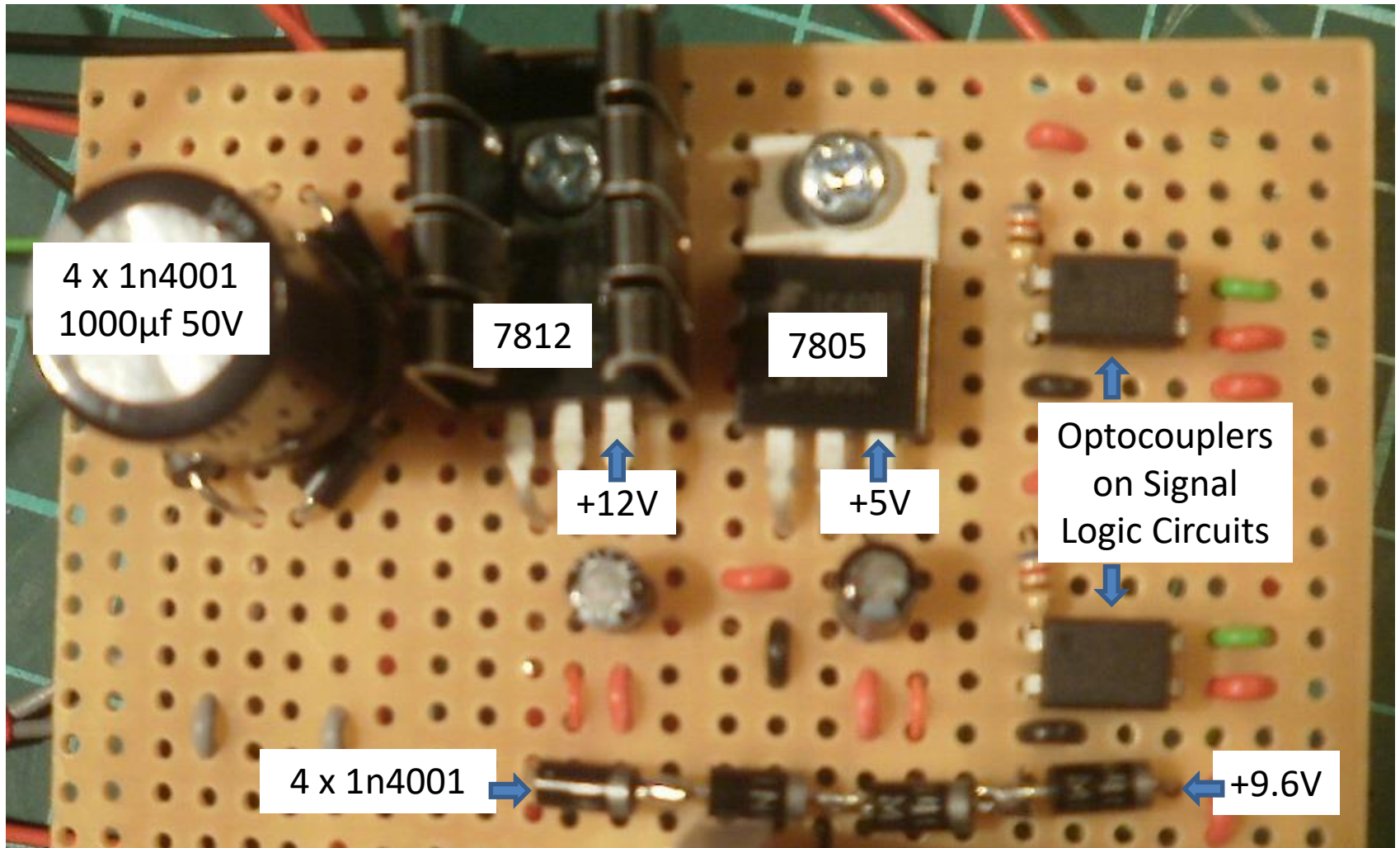
Logic

- Grade crossing to operate when:
 - train enters any end of either double track section which has the crossing
 - A non resistor axle car over road crossing (effectively any truck)
- Grade crossing should continue to operate for a minimum of 3 seconds after road crossing is cleared
- Signal system power to isolated from crossing power

Power Supply Circuit



Power Supply Circuit

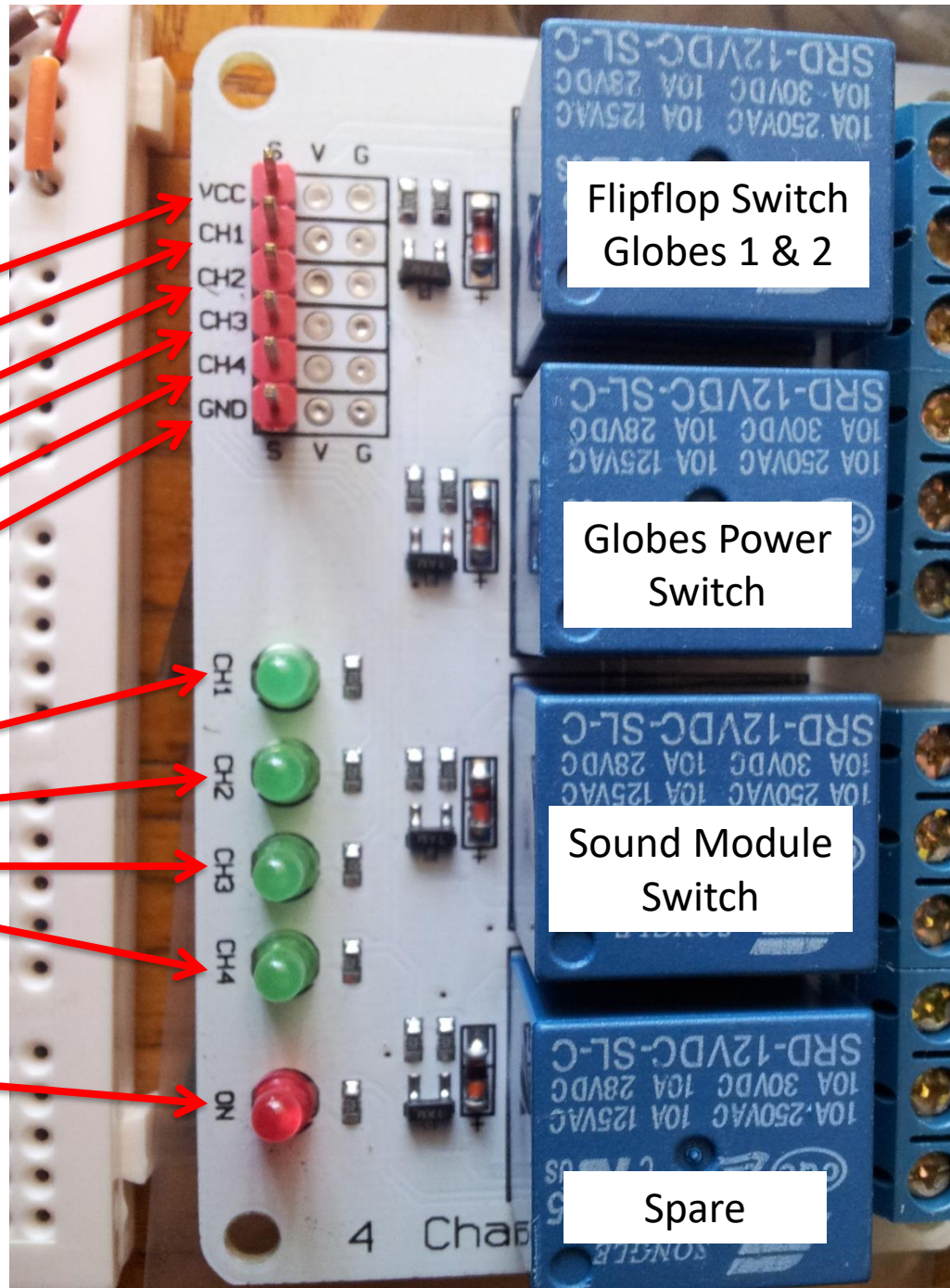


Relays

+12V
Input 1 from LP
Input 2 from LP
Input 3 from LP
Input 4 not used
GND
(LP = LaunchPad)

Input 1 active LED
Input 2 active LED
Input 3 active LED
Input 4 active LED

Power On LED



Flipflop Switch
Globes 1 & 2

Globes Power
Switch

Sound Module
Switch

Spare

NO – Normally Open
NC – Normally Closed
Sw - Switch Contact

NC Globes 1

Sw +5V Switched

NO Globes 2

NC

Sw +5V Switched
for Globes

NO +5V

NC

Sw Sound Power

No To Sound Module

NC

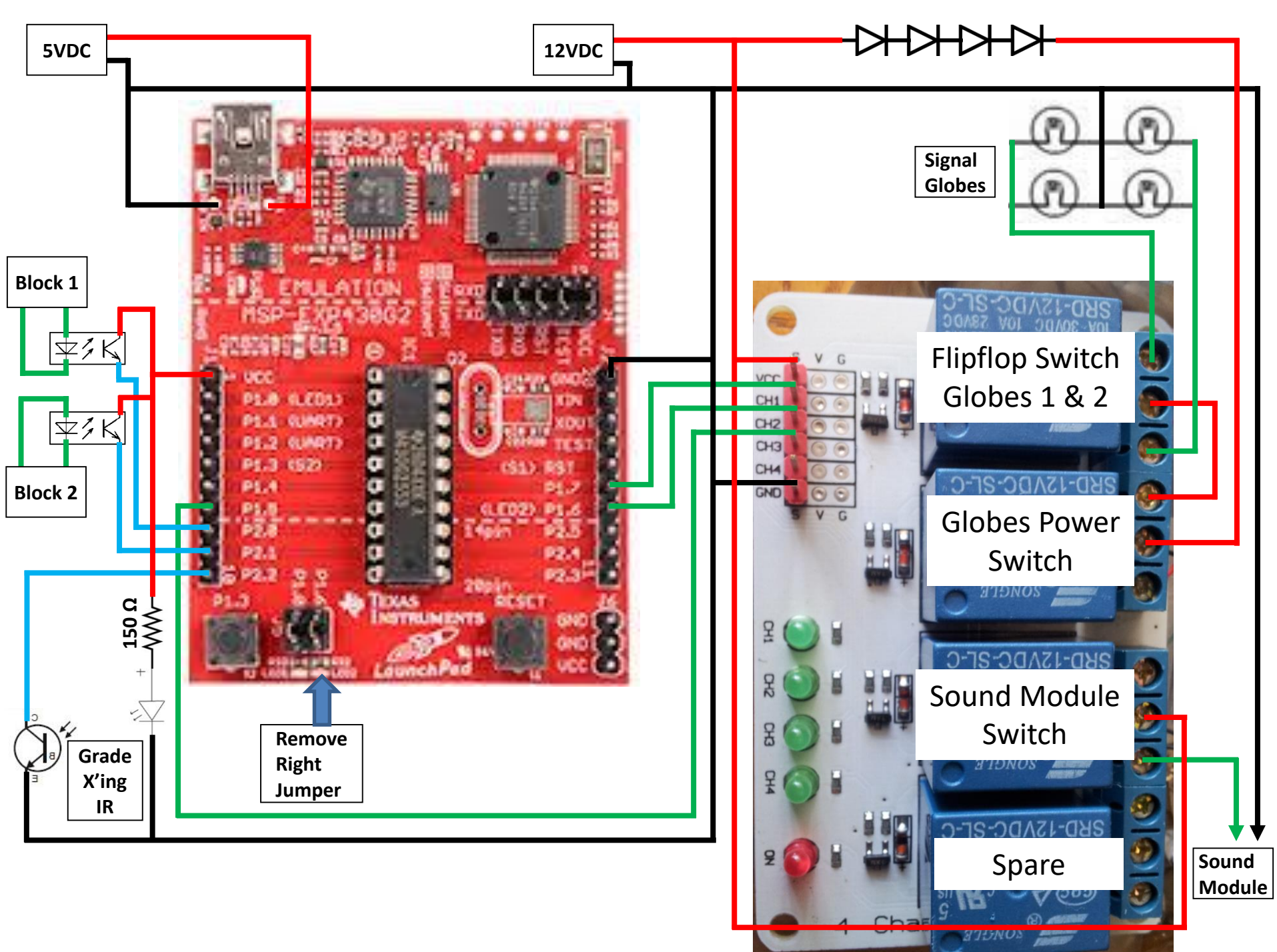
Sw

NO

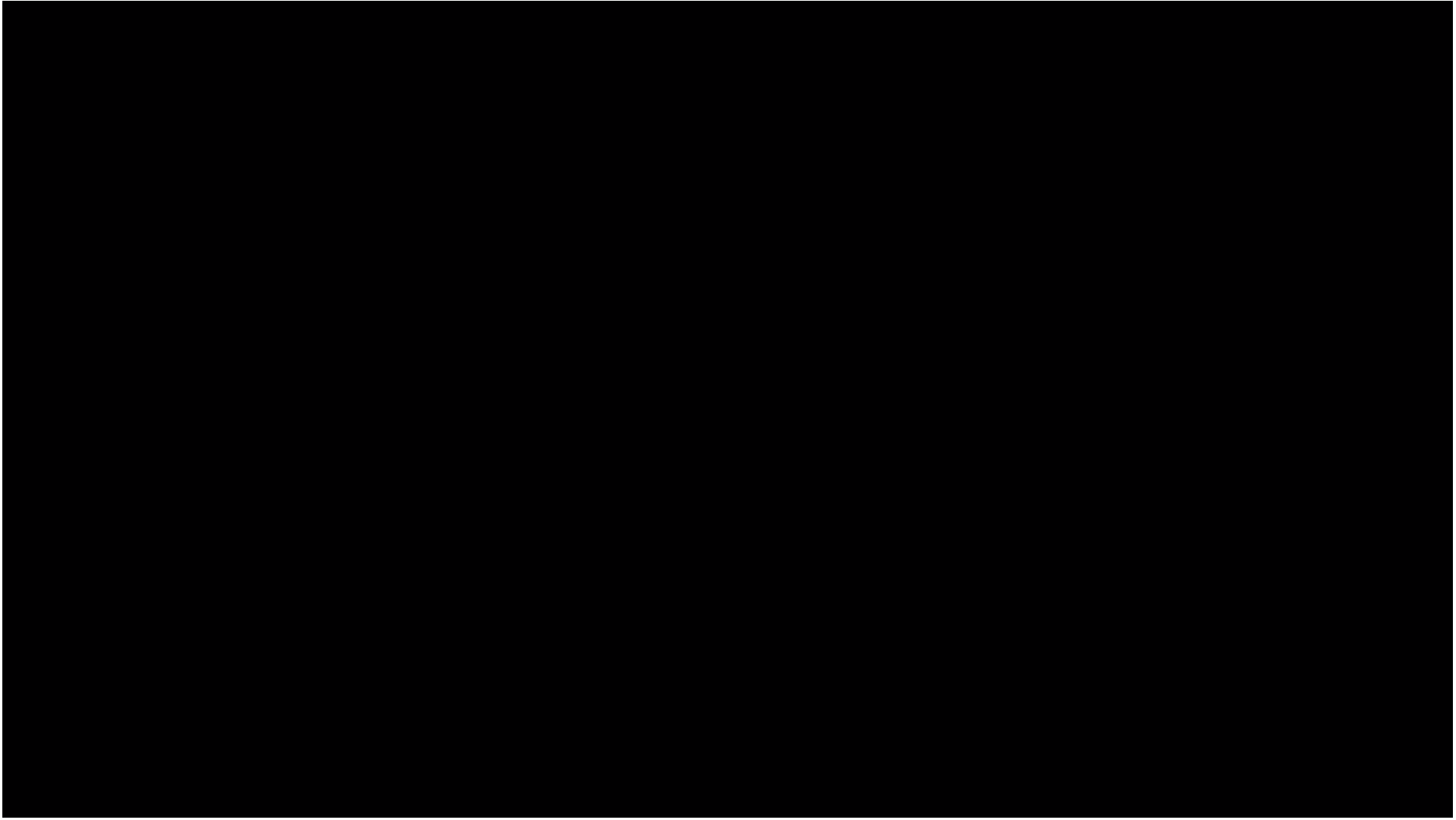
Sound Module

Innovative Train Technology Products HQ300-1 Grade Bell ([link](#))





Video - Testing Relays



Power Supply Circuit Connections

18V AC

0V DC GND

+12V DC

+9.6V DC

+5V DC

Connection to Launchpad VCC+3.2V DC

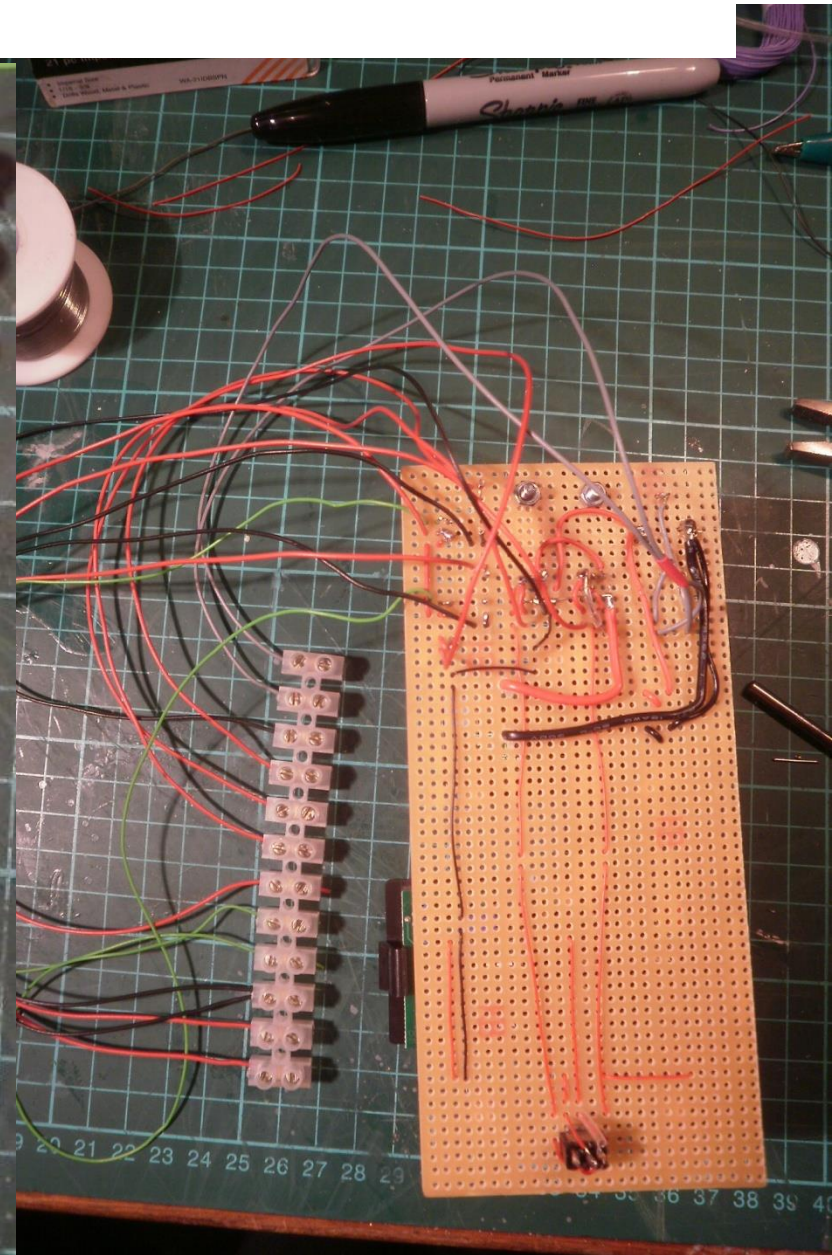
Connection to Launchpad Pin 2.0

Connection to Launchpad Pin 2.1

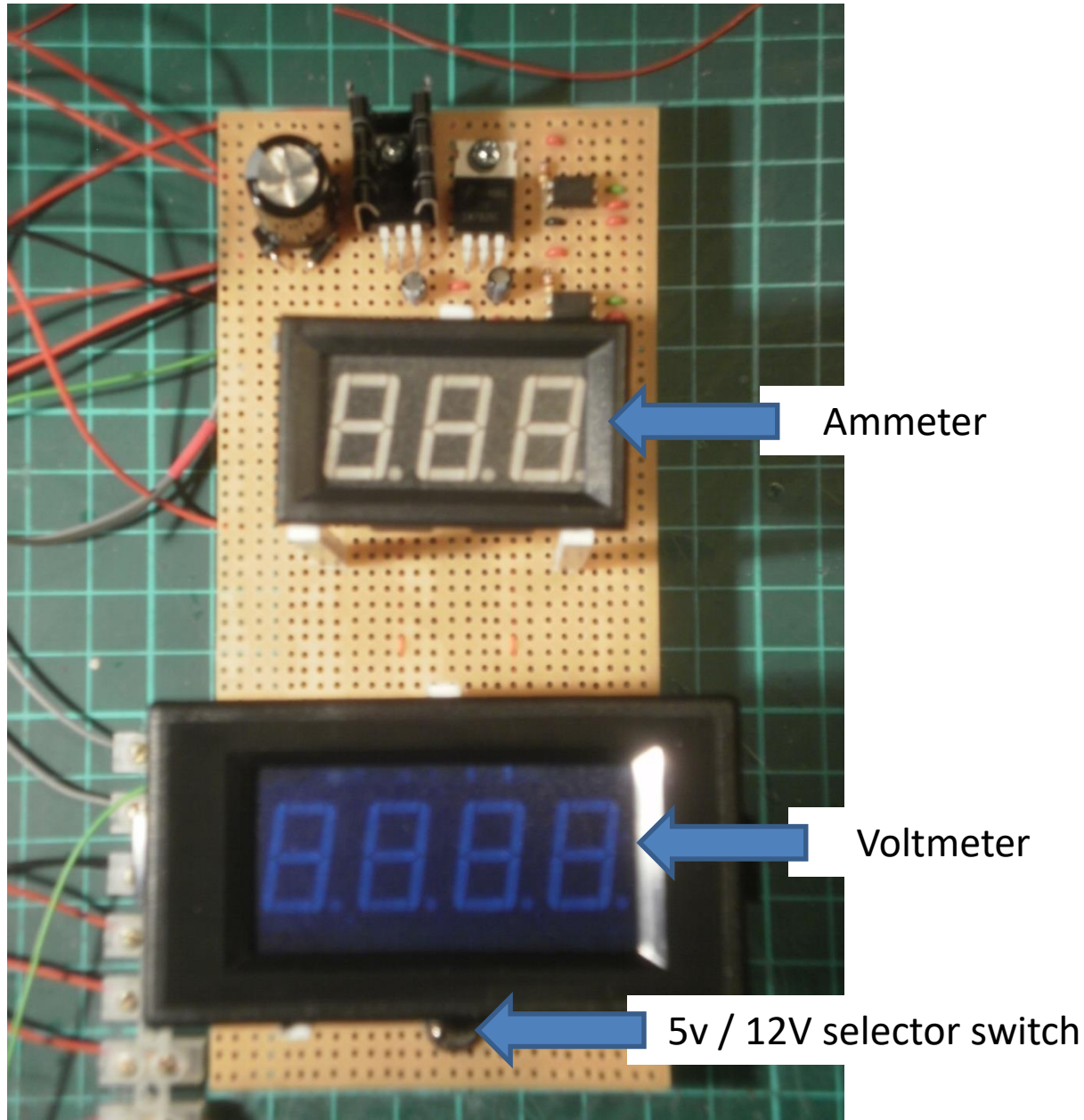
Signal Circuit 0V DC GND

Signal Circuit Block Watcher 1 J4 +12V DC

Signal Circuit Block Watcher 1 J4 +12V DC



Voltage & Current Meters



Putting it all together

