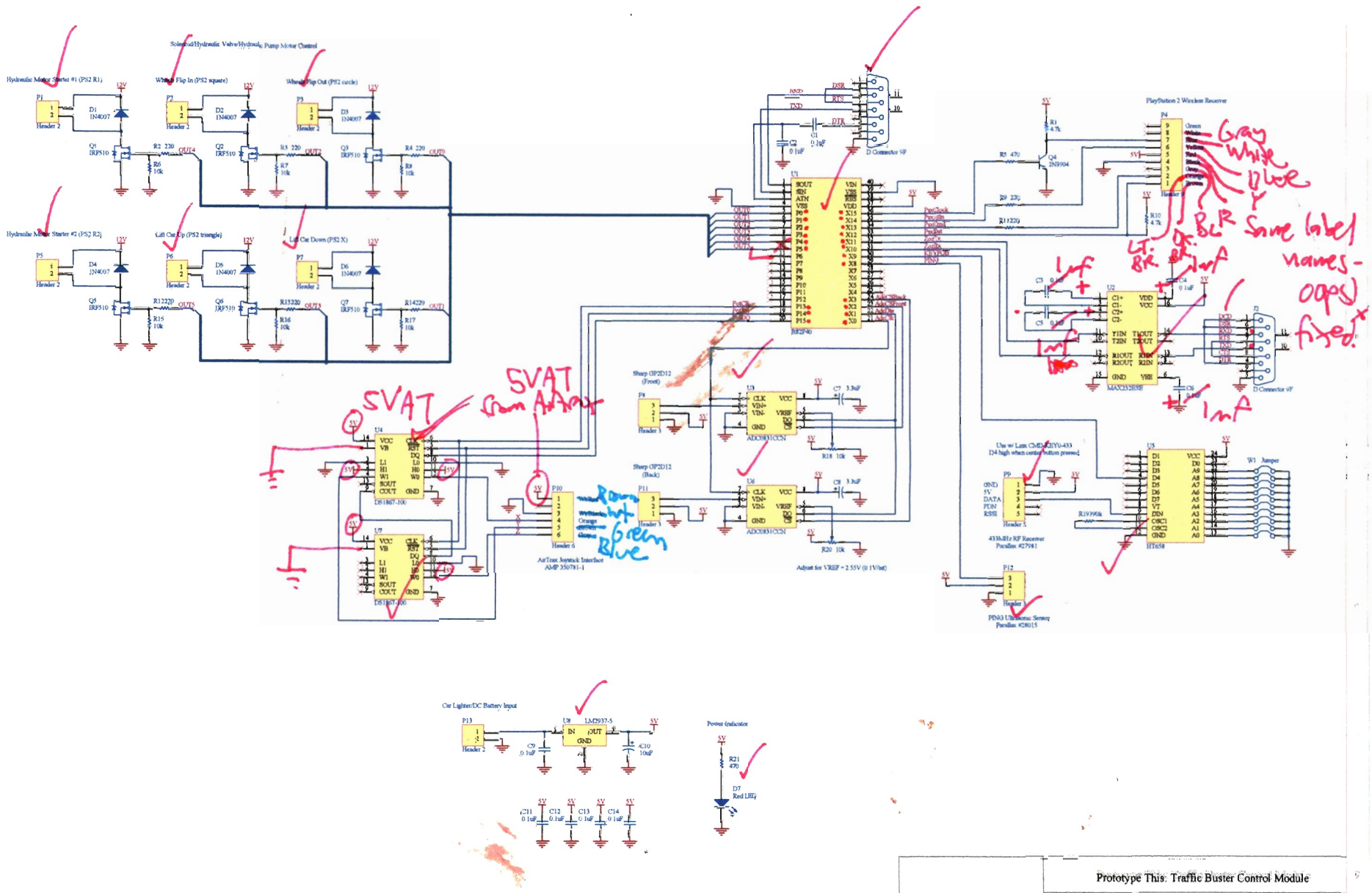
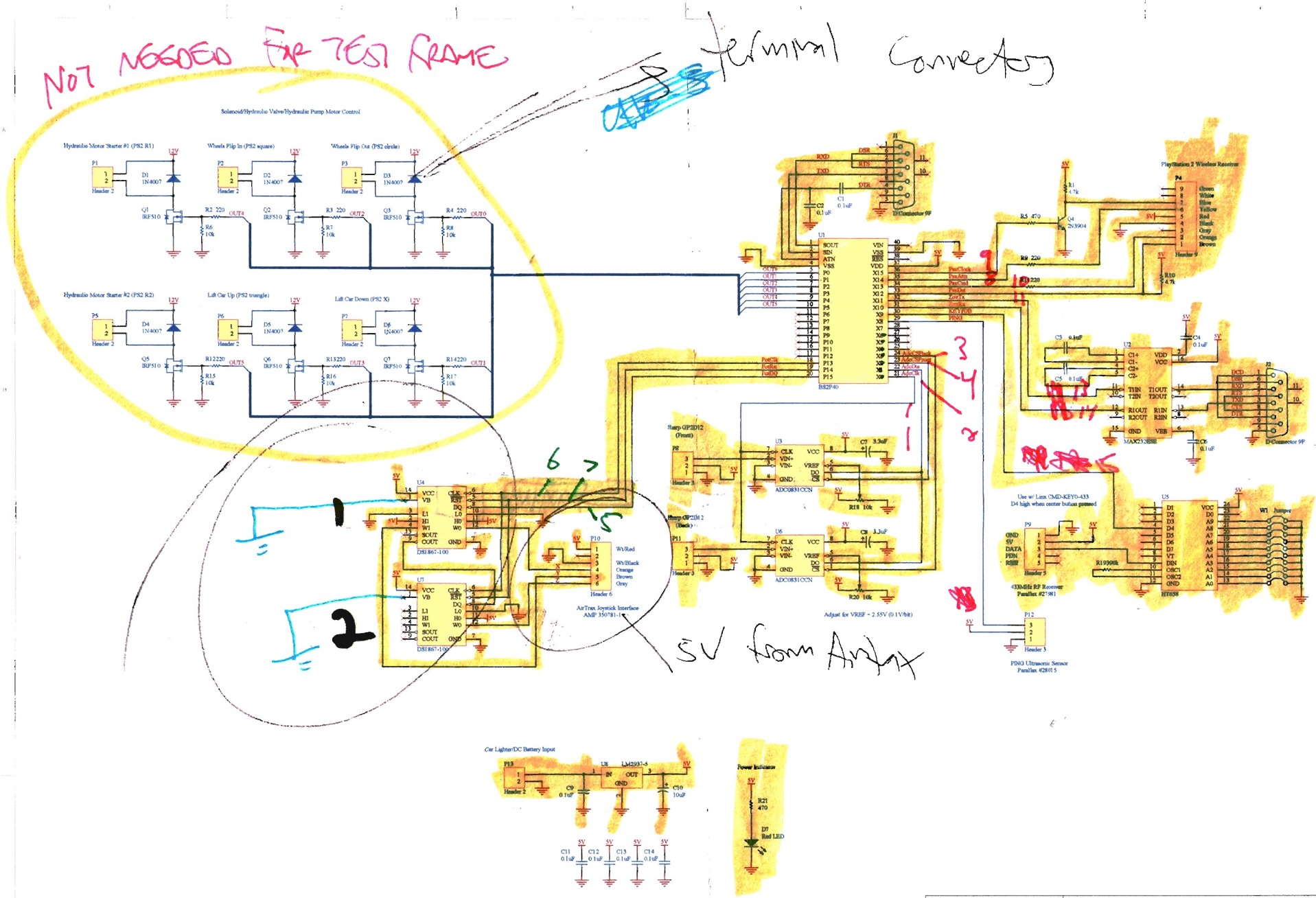
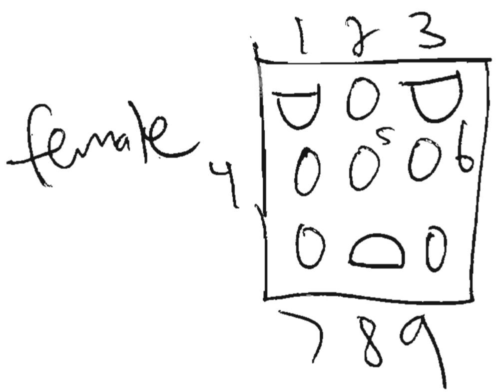
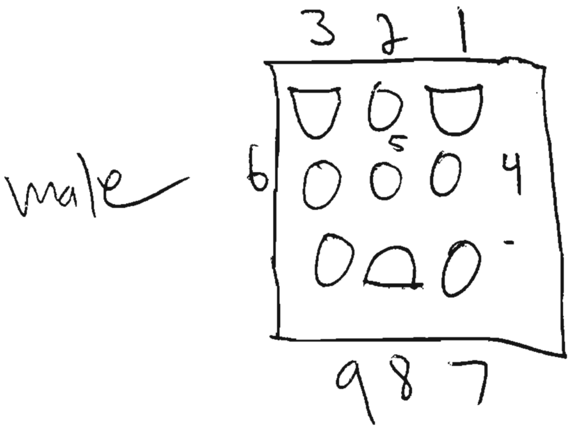

Prototype This: Traffic Buster Control Module
GRAND idea studio
May 14, 2007
J. Grand


NOT NEEDED FOR TEST FRAME
Terminal Connecting
Solenoid/Hydraulic Valve/Hydraulic Pump Motor Control
Hydraulic Motor Starter #1 (PS2 R1)
Wheels Flip In (PS2 square)
Wheels Flip Out (PS2 circle)
Hydraulic Motor Starter #2 (PS2 R2)
Lift Car Up (PS2 triangle)
Lift Car Down (PS2 X)
5V from Arbot
Car Lighter/DC Battery Input
Power Indicator
Prototype This. Traffic Buster Control Module
GRAND idea studio
May 14, 2007
J. Grand





	wire #	pin	color	
	28 ✓x ✓	1	white	plug electrical tape
	10 ✓x ✓	2	black	pins no tape
	8 ✓x ✓x	3	red	
brake	70 ✓x ✓x	4	yellow (thick)	
	37 ✓x ✓x	5	unshielded/bare	
	72 ✓x ✓x	6	green	
	x	7	x	
	x	8	x	
brake	35 ✓x ✓x	9	green (thick)	

AIRTRAX SIGNAL/BUS CABLING 6/8/07

AIRTRAX JOYSTICK CONTROL - RECEIVER 5/9/07

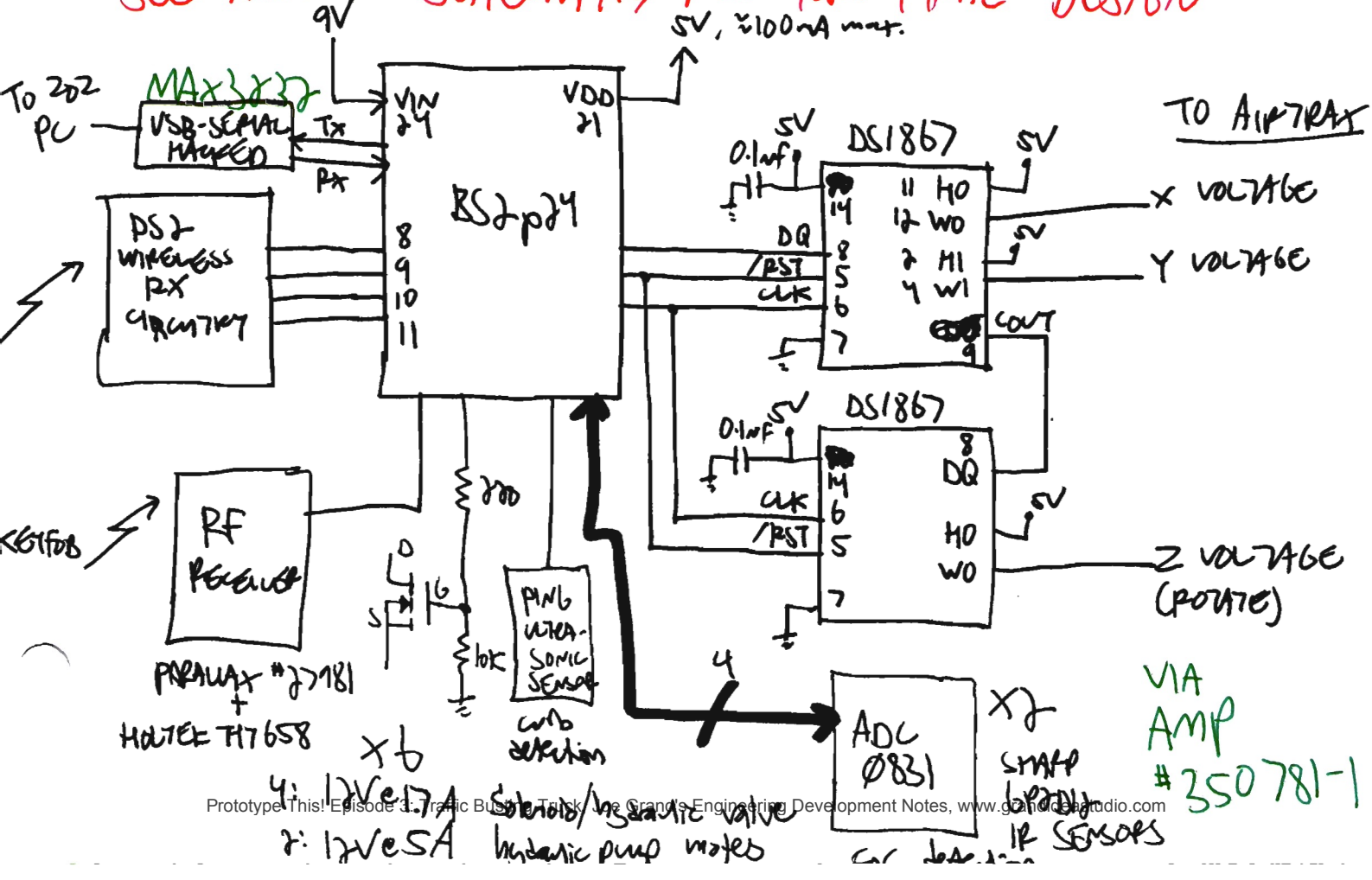
USING LOGITECH PS2 CORDLESS PRECISION #C-X2C31
P/N# 863279-000
AS TRANSMITTER

LEFT ANALOG JOYSTICK: X AXIS: TRACK LEFT/RIGHT
Y AXIS: TRACK FORWARDS/BACKWARDS

RIGHT ANALOG JOYSTICK: X AXIS: ROTATE LEFT/RIGHT

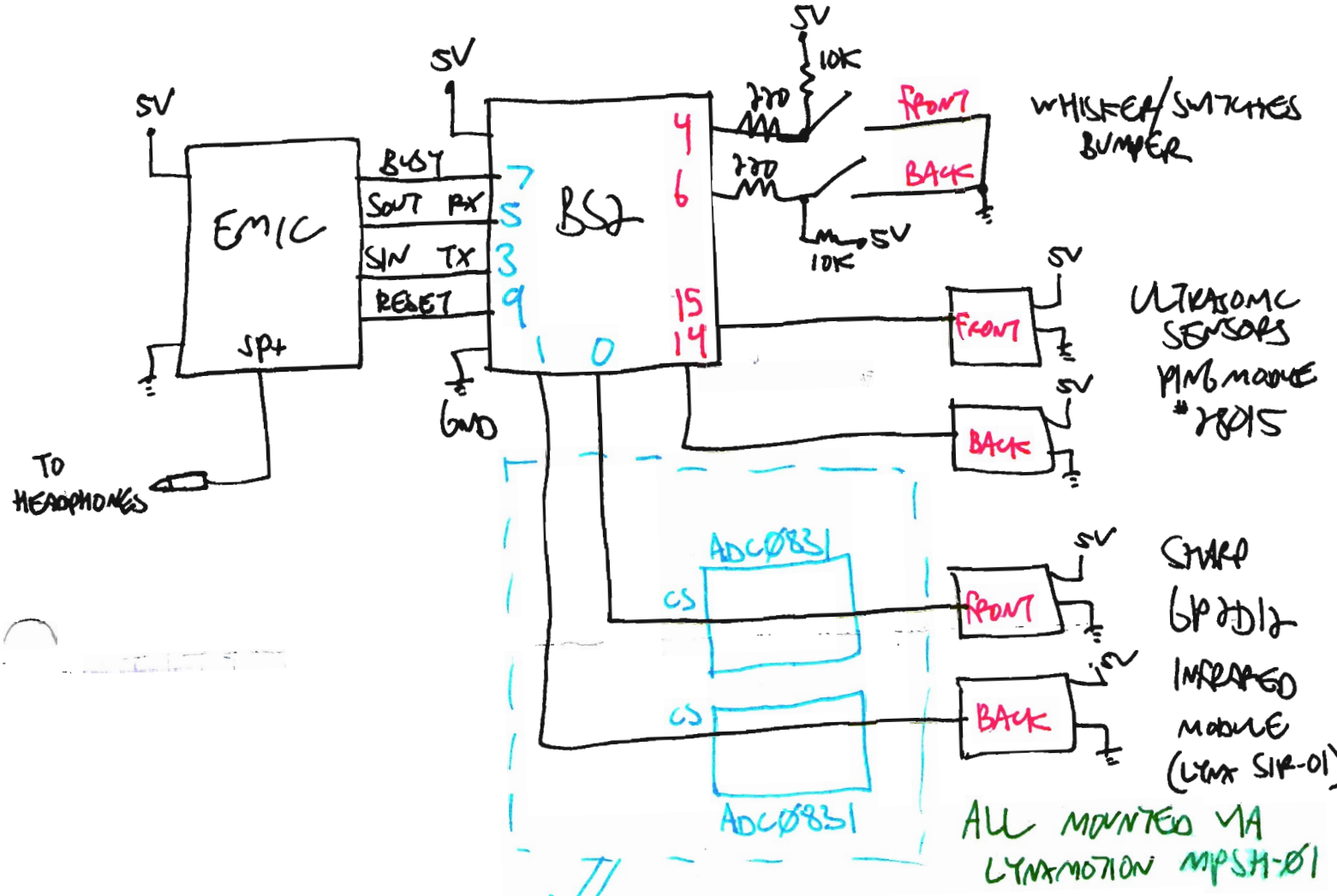
DIGITAL BUTTONS:
4 □ WHEELS PUMP IN (small cylinder)
1 ○ WHEELS PUMP OUT (small cylinder)
2 △ LIFT CAR UP (big cylinder)
3 X LIFT CAR DOWN (big cylinder)
P1, P2 STARTER FOR HYDRAULIC MOTORS

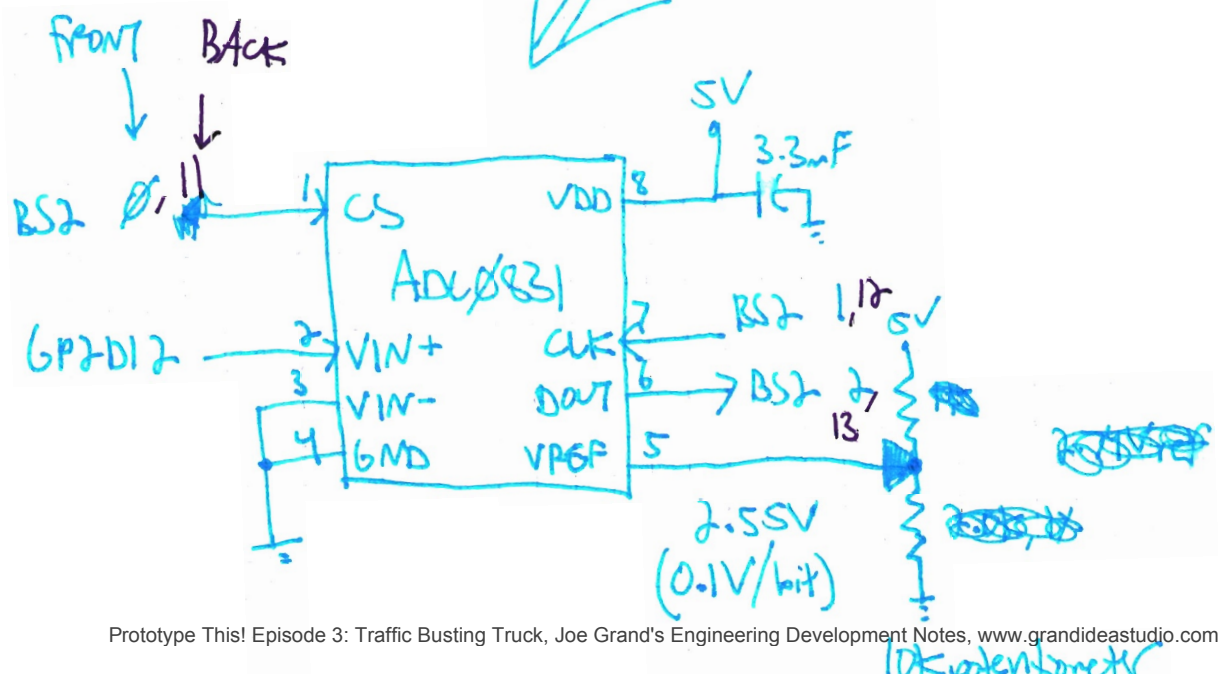
SEE ALTIUM SCHEMATIC/PCB FOR FINAL DESIGN



5/7/07

SENSOR TEST CIRCUITRY - SUPER-DUPER TRUCK 2020





AIRTRAX CONTROL INTERFACE

5/9/07

2 connectors:

1) 6-pin (2x3) joystick → input power 12V
female → 3 axis analog control
need extra

x = 0-5V
y =
z =

2.5V
ground

0.5V - 4.5V
→ will shut down if outside of that range

256

86 steps / in each axis

deadband around 2.5V

86 + 84 + 86

2) 5-pin single - button/trigger

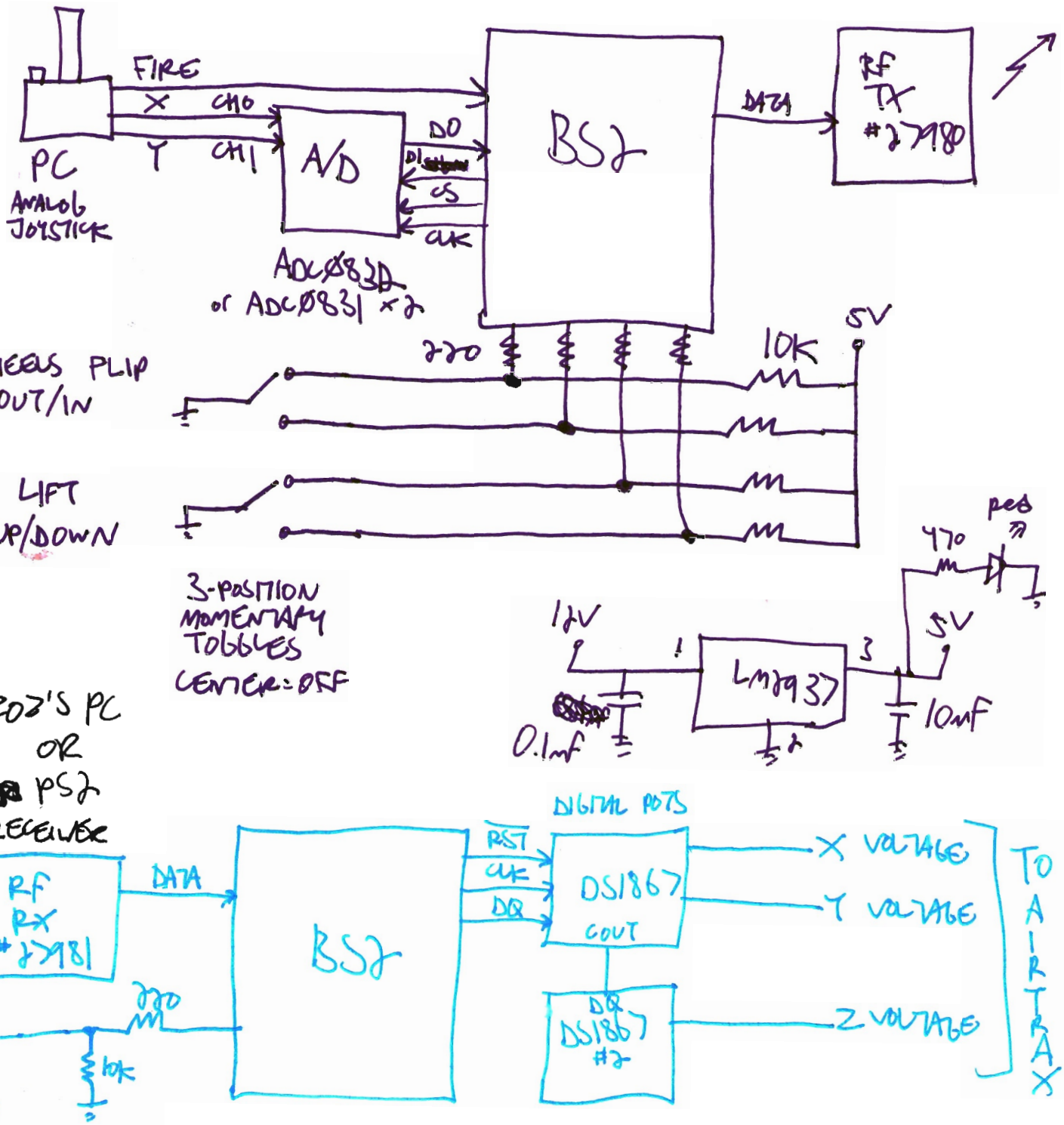
↑ not needed for drive

Each drive module
- control with CAN
power

Dead reckoning - x, y, z 2 minutes 17 turns
5m return within 1cm
on flat surface

AIRTRAX JOYSTICK CONTROL HACK 5/7/07

INITIAL BLOCK DIAGRAM



4/3/07

AIRTRAX CONTROL SYSTEM

- Open-loop analog control - joysticks
  - 3 AXIS → 0-5V analog 788 steps
    or CAN-interface for longer-distance away controls

- closed-loop motor control system w/ quadrature encoder per wheel - communicates w/ ~~Bus~~ master control module

3 MPH, 7-10K pounds - 17" wheel module

GROUND, SHIELD, +48, CAN H, CAN L

* 48V
* harness connector for control] connect to each wheel module

48V DC (sof-cat deep cycle)
4 x 12V
8 x 6V

200A maximum
50A peak drive/wheel
5-10A typical per wheel