

Control board v2.1

<http://microfluidics.utoronto.ca/trac/dropbot/wiki/ControlBoard>

Document revision: 3

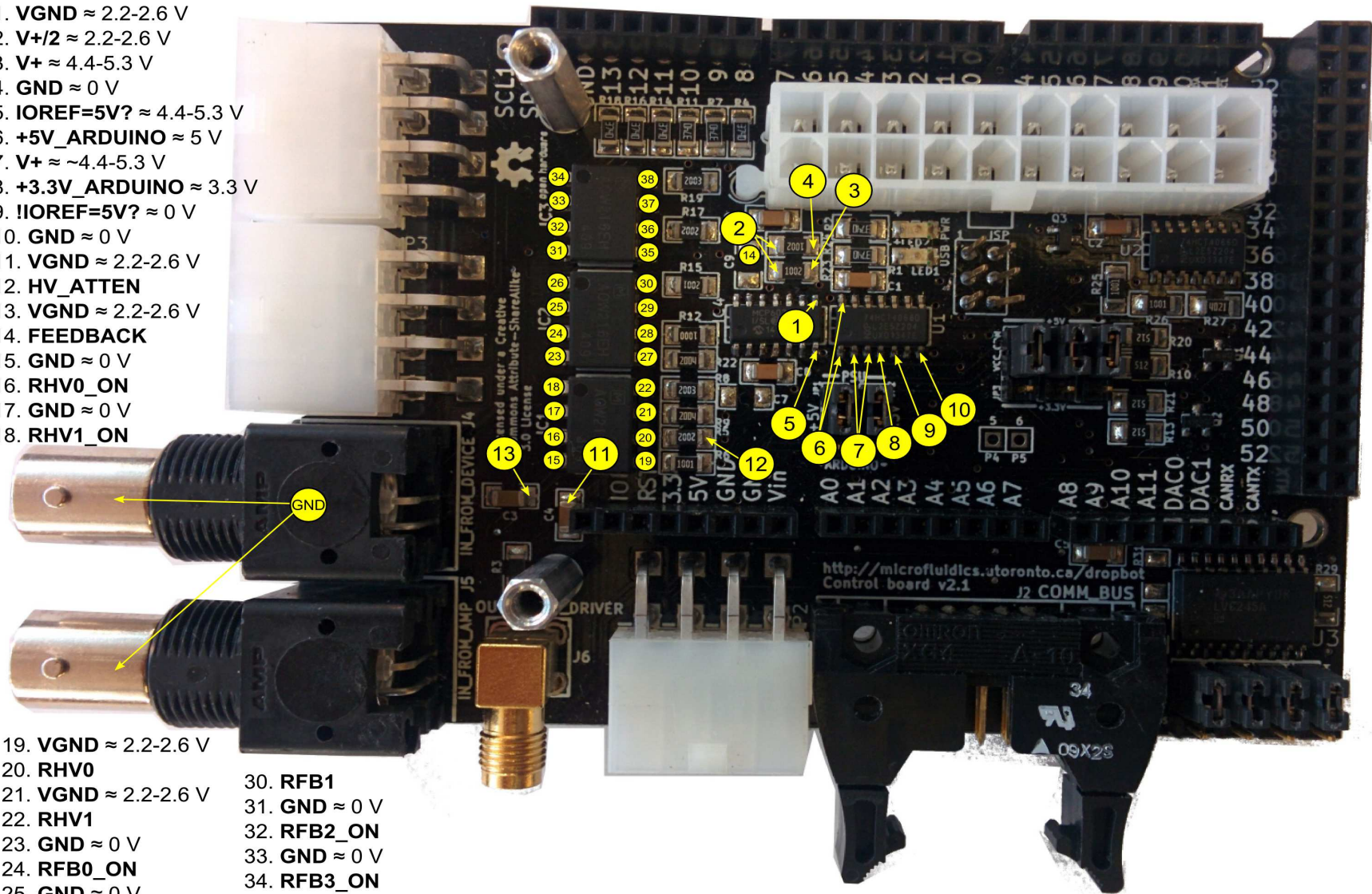
Last updated: 2015-03-17

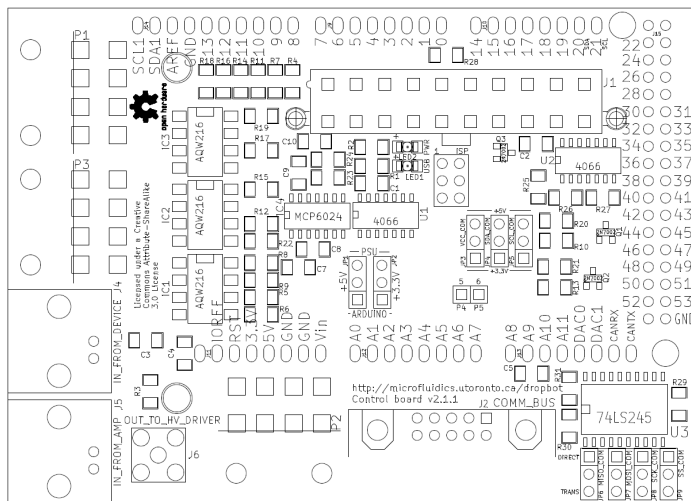


Control Board v2.1 Test Points

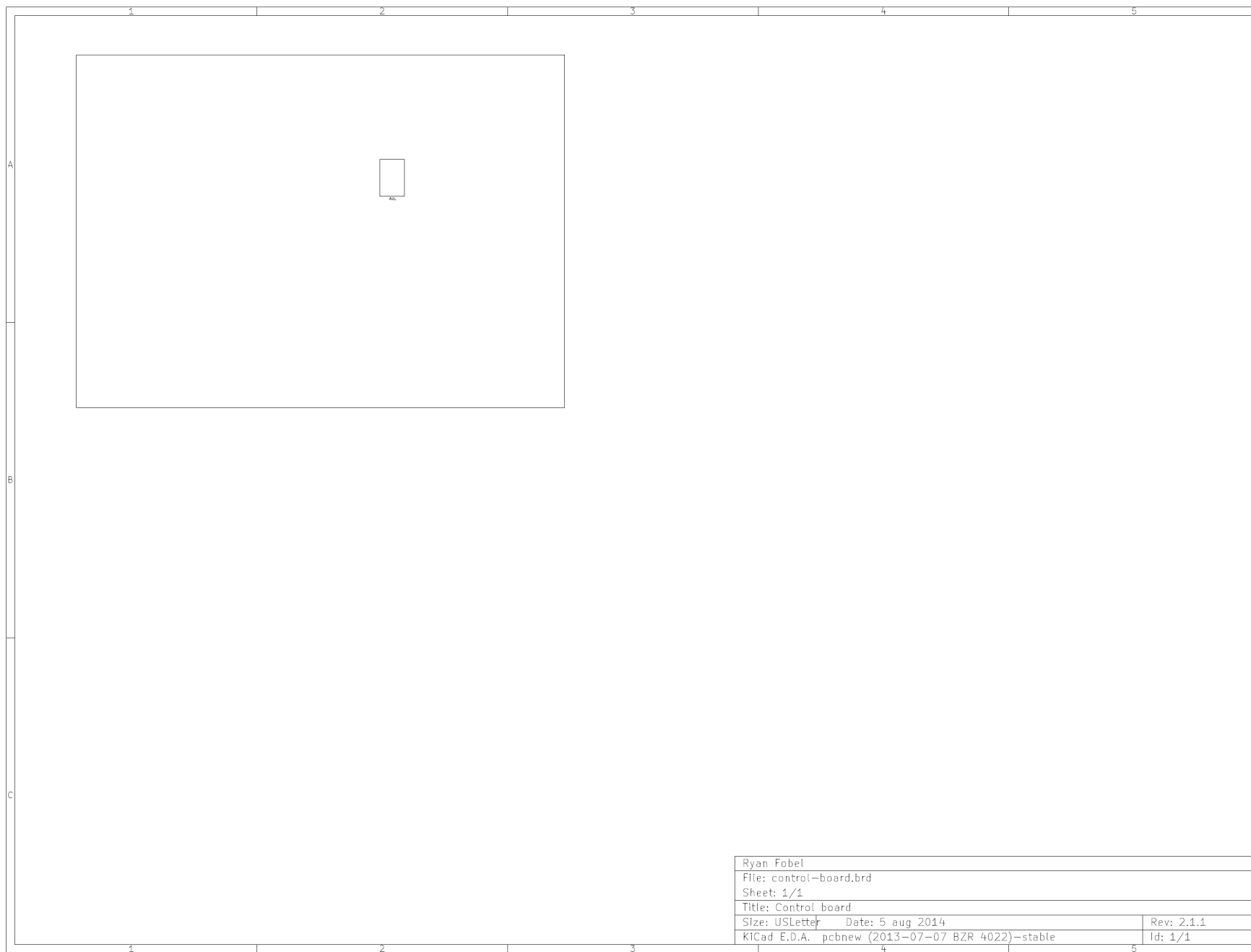
1. **VGND** $\approx 2.2\text{-}2.6\text{ V}$
2. **V+/2** $\approx 2.2\text{-}2.6\text{ V}$
3. **V+** $\approx 4.4\text{-}5.3\text{ V}$
4. **GND** $\approx 0\text{ V}$
5. **IOREF=5V?** $\approx 4.4\text{-}5.3\text{ V}$
6. **+5V_ARDUINO** $\approx 5\text{ V}$
7. **V+** $\approx \sim 4.4\text{-}5.3\text{ V}$
8. **+3.3V_ARDUINO** $\approx 3.3\text{ V}$
9. **IIOREF=5V?** $\approx 0\text{ V}$
10. **GND** $\approx 0\text{ V}$
11. **VGND** $\approx 2.2\text{-}2.6\text{ V}$
12. **HV_ATTEN**
13. **VGND** $\approx 2.2\text{-}2.6\text{ V}$
14. **FEEDBACK**
15. **GND** $\approx 0\text{ V}$
16. **RHV0_ON**
17. **GND** $\approx 0\text{ V}$
18. **RHV1_ON**

19. **VGND** $\approx 2.2\text{-}2.6\text{ V}$
20. **RHV0**
21. **VGND** $\approx 2.2\text{-}2.6\text{ V}$
22. **RHV1**
23. **GND** $\approx 0\text{ V}$
24. **RFB0_ON**
25. **GND** $\approx 0\text{ V}$
26. **RFB1_ON**
27. **VGND** $\approx 2.2\text{-}2.6\text{ V}$
28. **RFB0**
29. **VGND** $\approx 2.2\text{-}2.6\text{ V}$
30. **RFB1**
31. **GND** $\approx 0\text{ V}$
32. **RFB2_ON**
33. **GND** $\approx 0\text{ V}$
34. **RFB3_ON**
35. **VGND** $\approx 2.2\text{-}2.6\text{ V}$
36. **RFB2**
37. **VGND** $\approx 2.2\text{-}2.6\text{ V}$
38. **RFB3**





Ryan Fobel		
File: control-board.brd		
Sheet: 1/1		
Title: Control board		
Size: USLetter	Date: 5 aug 2014	Rev: 2.1.1
KiCad E.D.A. pcbnew (2013-07-07 BZR 4022)-stable		Id: 1/1



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Item #	Qty	Reference Designator	Description	Manufacturer	Part No.	Digikey Part No.
1	5	C1 C2 C5 C8 C10	Capacitor, Ceramic, 0.1uf, 10%, 50V, X7R	KEMET ELECTRONICS CORPORATION	C1206C104K5RACTU	399-1249-1-ND
2	2	C3 C4	Capacitor, Ceramic, 1uF, 100V, X7R, 1206	SAMSUNG ELECTRO-MECHANICS AMERICA, INC	CL31B105KCHSNNNE	1276-2747-1-ND
3	1	C9	Capacitor, Ceramic, 1pF, 50V, NP0, 1206	SAMSUNG ELECTRO-MECHANICS AMERICA, INC	CL31C010CBNNNNC	1276-2796-1-ND
4	3	IC1 IC2 IC3	Relay, PhotoMOS, 600V	PANASONIC ELECTRIC WORKS	AQW216EHA	255-2671-ND
5	1	IC4	IC, Opamp, Quad, R-R, 14-SOIC	MICROCHIP TECHNOLOGY	MCP6024-I/SL	MCP6024-I/SL-ND
6	1	J1	CONN HEADER 20POS 4.2MM VERT TIN	MOLEX INC	39-29-9202	WM7346-ND
7	1	J2	Connector, PCB, Right Angle, 10 Position	OMRON ELECTRONICS INC	XG4A-1034	OR1001-ND
8	2	J4 J5	Connector, PCB, Right Angle, BNC	TYCO ELECTRONICS	5227161-2	A32245-ND
9	1	J6	Connector, PCB, Right Angle, SMA	TE CONNECTIVITY	5-1814400-1	A97593-ND
10	5	J9 J10 J11 J12 J13	Arduino stackable header pins, 8x1	SAMTEC INC	SSQ-108-23-F-S	
11	1	J14	Arduino stackable header pins, 10x1	SAMTEC INC	SSQ-110-23-F-S	
12	1	J15	Arduino stackable header pins, 16x2	SAMTEC INC	SSQ-116-23-F-D	
13	1	J16	Arduino stackable header pins, 3x2	SAMTEC INC	SSQ-103-23-F-D	
14	9	JP1-9	Male Headers Pins, 0.1" spacing, 3x1	OMRON ELECTRONICS INC	XG8S-0331	OR1104-ND
15	2	LED1 LED2	LED, Vis, Solid State, Green, 1206	KINGBRIGHT COMPANY LLC	APL3015SGC-F01	754-1111-1-ND
16	3	P1 P2 P3	Mini-Fit Jr Connection header, 8POS 4.2MM R/A TIN	MOLEX INC	39301080	WM1354-ND
17	3	Q1 Q2 Q3	MOSFET N-CH 60V SOT-23	NXP SEMICONDUCTORS	2N7002P,215	568-5818-1-ND
18	1	R12	Resistor, Metal Film, 100, 1%, 1/4W, 1206	STACKPOLE ELECTRONICS INC	RMCF1206FT100R	RMCF1206FT100RCT-ND
19	8	R1 R2 R4 R7 R11 R14 R16 R18	Resistor, Metal Film, 374, 1%, 1/4W, 1206	YAGEO	RC1206FR-07374RL	311-374FRCT-ND
20	4	R6 R25 R26 R30	Resistor, Metal Film, 1k, 1%, 1/4W, 1206	STACKPOLE ELECTRONICS INC	RMCF1206FT1K00	RMCF1206FT1K00CT-ND
21	2	R15 R31	Resistor, Metal Film, 2k, 1%, 1/4W, 1206	STACKPOLE ELECTRONICS INC	RMCF1206FT2K00	RMCF1206FT2K00CT-ND
22	1	R27	Resistor, Metal Film, 4.02k, 1%, 1/4W, 1206	STACKPOLE ELECTRONICS INC	RMCF1206FT4K02	RMCF1206FT4K02CT-ND
23	5	R10 R13 R20 R21 R29	Resistor, Metal Film, 5.1k, 5%, 1/4W, 1206	STACKPOLE ELECTRONICS INC	RMCF1206JT5K10	RMCF1206JT5K10CT-ND
24	3	R23 R24 R28	Resistor, Metal Film, 10k, 1%, 1/4W, 1206	STACKPOLE ELECTRONICS INC	RMCF1206FT10K0	RMCF1206FT10K0CT-ND
25	2	R5 R17	Resistor, Metal Film, 20k, 1%, 1/4W, 1206	STACKPOLE ELECTRONICS INC	RMCF1206FT20K0	RMCF1206FT20K0CT-ND
26	2	R8 R19	Resistor, Metal Film, 220k, 1%, 1/4W, 1206	STACKPOLE ELECTRONICS INC	RMCF1206FT220K	RMCF1206FT220KCT-ND
27	2	R9 R22	Resistor, Metal Film, 2M, 1%, 1/4W, 1206	STACKPOLE ELECTRONICS INC	RMCF1206FT2M00	RMCF1206FT2M00CT-ND
28	1	R3	Resistor, High Voltage, 10M, 1%, 1/4W, 1206	STACKPOLE ELECTRONICS INC	HVCB1206FKC10M0	HVCB1206FKC10M0CT-ND
29	2	U1 U2	IC, SWITCH QUAD 1X1	NXP SEMICONDUCTORS	74HCT4066D	568-8177-1-ND
30	1	U3	IC, Bus Transceiver, 8-bit, 20-SOIC	TEXAS INSTRUMENTS	SN74LVC245ADWR	296-1232-1-ND
31	5	S1-9	Shunt Jumper .1"	3M	969102-0000-DA	3M9580-ND

Note: C7 and S1-9 do not have to be placed