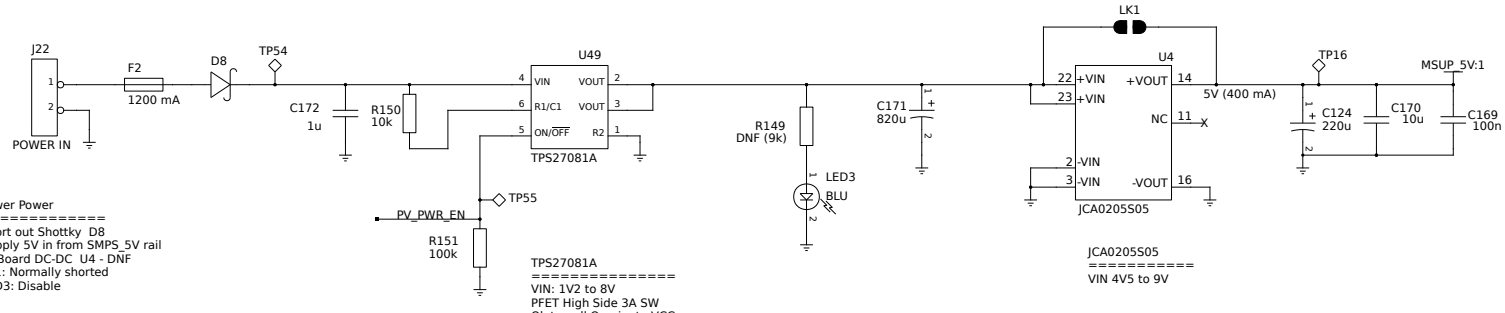
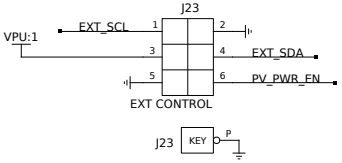
PUMP / VALVE DRIVERS



Lower Power
==========
Short out Shottky D8
Supply 5V in from SMPS_5V rail
OnBoard DC-DC U4 - DNF
LK1: Normally shorted
LED3: Disable

TPS27081A
==========
VIN: 1V2 to 8V
PFET High Side 3A SW
Ok to pull On pin to VCC
for testing.

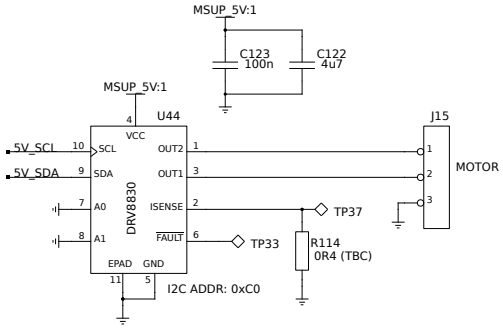
JCA0205S05
==========
VIN 4V5 to 9V



EXT CONTROL:
==========
A corresponding Micromatch 6 way header will be available on both the current sense board ADICUP and on the comms board.

ADICUP will be used for initial testing, following Jan 2020 configuration.

The Boron System controller on the comms board may later take over the control of this board also as it may need to operate pumps and valves when the ADICUP board is powered down. This would apply for pumping gases to the EC sensor and others when the GSFETs are not being measured.

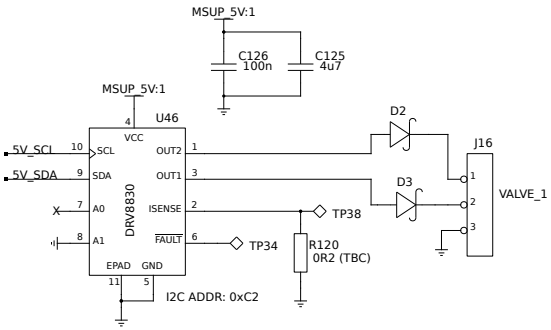


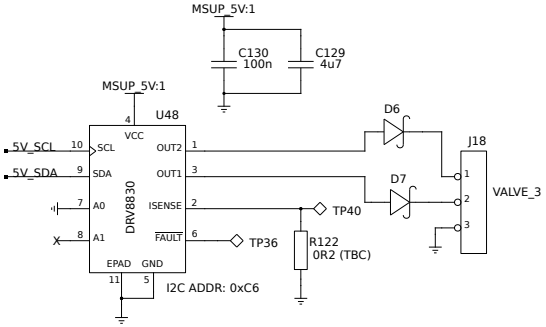
DRV8830

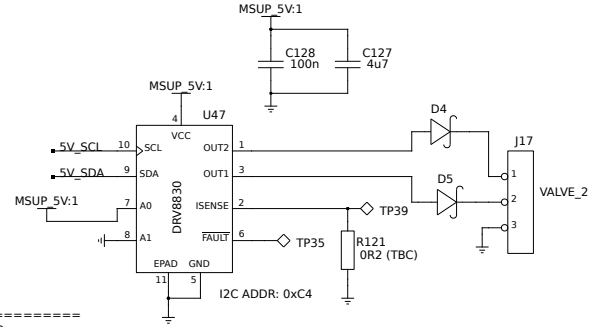
VSUP: 2V8 to 6.8V

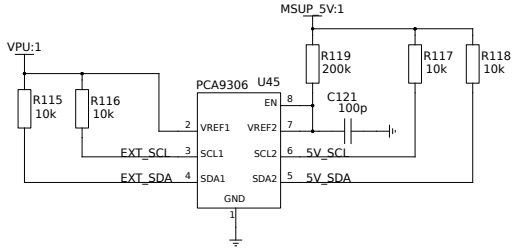
I2C ADDR (W)
==========
Motor: A1:0, A0:0 => 0xC0
Valve1: A1:0, A0:Open => 0xC2
Valve2: A1:0, A0:1 => 0xC4
Valve3: A1:Open, A0:0 =>0xC6
(5 more addresses available)

FAULT: Status can be determined by reading a register.









PCA9306
==========
POWER: 7V Absolute Max, Max 5V5 recommended
I2C LEVEL TRANSLATOR
3V3 MICROCONTROLLER <-> 5V DRV8830

Sep 2020 version will use _LEE_ valves.

Following related to Jan 2020 version.
==========
Need to cater for both 3-wire and 2-wire latching valves.

FIMVALVOLE:
Double Coil
3 Connections {Latch, Common, unlatch}
Fit Schottky Diodes

LEE:
Single Coil
2 Connections - Reverse Polarity to unlatch
Replace Shottky with 0R
16 ms Pulse
5V 550mW (104mA)

PUMP Testing:
Replace Shottky with 0R

Notes:
==========
V0_0: Original tested in Jan 2020 Field Trial.
I2C controlled by ADICUP Board.
Power in from 7V5 rail (shared with ADICUP Board).

V0_1: Added High Side Power Switch.
Added Polarised Micromatch Header.
I2C control could be changed to Boron System controller as it may need to turn on pump/ valves just for the Electrochemical sensor / Temp/RH/ VOC sensors. i.e. at a time when the ADICUP board is powered down because the GSFETs are not needing to be measured.

Also possible to increase efficiency by supplying 5V direct to this board from the new additional SMPS_5V rail. Then the JCA DC-DC can be removed. The footprint is kept so that initial testing can be incrementally changed from the existing working setup.

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TITLE Pump/Valve Driver - V0_1	
FILE:	REVISION: 2 JUN 2020
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