3V3 5V0

AREF
P1

R1
10K

C1
100n

RESET

AREF

22p
C2

X1

16MHz

22p
C3

PB6

PB7

SW1
Reset

U7
ATMEGA328P

1 PC6(/RESET)
22 AGND
21 AREF
20 AVCC

9 PB6(XTAL1/TOSC1)
10 PB7(XTAL2/TOSC2)

PC0(ADC0)   23 PC0
PC1(ADC1)   24 PC1_Pulse
PC2(ADC2)   25 PC2_Pr2
PC3(ADC3)   26 PC3_Pr1
PC4(ADC4/SDA) 27 SDA
PC5(ADC5/SCL) 28 SCL

PD0(RXD)   2   RXD
PD1(TXD)   3   TXD
PD2(INT0)   4   PD2_Flow_Tx   Flow
PD3(INT1)   5   PD3   Blank
PD4(XCK/T0) 6   PD4_Flow_Rx   Flow
PD5(T1)   11 PD5_Valve   Valve
PD6(AIN0)   12 PD6   Blank
PD7(AIN1)   13 PD7_IO_X   Pump

PB0(ICP)   14 PB0_IO_R   Pump
PB1(OC1A)   15 PB1_IO_T   Pump
PB2(SS/OC1B) 16 SS   Slave Sel #1 Pr Sensor
PB3(MOSI/OC2) 17 MOSI   Pressure
PB4(MISO)   18 MISO   Pressure
PB5(SCK)   19 SCK   Pressure

VCC 7
GND 8

SOCKET_28X0.3
DIP1

5V0

ARDUINO_SHIELD

PWR_FLAG

NC   NC
5V   5V
RESET RST   RST
3V3   3V3   3V3
5V0   5V   5V
GND   GND1 GND1
      GND2 GND2
12V   V_IN V_IN

PC0   AD0   AD0
PC1_Pulse AD1   AD1
PC2_Pr2   AD2   AD2
PC3_Pr1   AD3   AD3
SDA   AD4   AD4   SCL
SCL   AD5   AD5   SDA

SCL   AD5   AD5   SCL
SDA   AD4   AD4   SDA
AREF AREF AREF AREF
GND3 GND3 GND3 GND
            SCK   13   13   SCK
            MISO 12   12   MISO
      PWM MOSI 11 11   MOSI
      PWM SS 10   10   SS
      PWM   9   9   PB1_IO_T
              8   8   PB0_IO_R

      PWM   7   7   PD7_IO_X
      PWM   6   6   PD6
      PWM   5   5   PD5_Valve
      PWM   4   4   PD4_Flow_Rx
              3   3   PD3
              2   2   PD2_Flow_Tx
        TXD   1   1   TXD
        RXD   0   0   RXD

SHIELD1

3V3 5V0

ANALOG_5V0
P2

6
5
4
3
2
1

ANALOG_GND
P3

6
5
4
3
2
1

GND

ISP Header

GND
RESET
MOSI
SCK
5V0
MISO

P4
ICSP

6 5 4 3 2 1

FTDI Header

GND
RXD
TXD
RESET
RTS

100n
C4

P5
FTDI

1 2 3 4 5 6

Mounting Holes
SC17 SC18 SC19 SC20

R2 R3
10K 10K

Sheet: pwr
12V   12V
5V0   5V0
3V3   3V3
GND   GND
SCK   SCK
File: uControl_pwr.sch

Sheet: Interface
12V   12V
5V0   5V0
GND   GND
3V3   3V3
MOSI   MOSI
SS   SS
SCK   SCK
MISO   MISO
PC3_Pr1   PC3_Pr1
PD2_Flow_Tx PD2_Flow_Tx
PD4_Flow_Rx PD4_Flow_Rx
PD7_IO_X PD7_IO_X
PB0_IO_R PB1_IO_T
PB1_IO_T PB0_IO_R
PD5_Valve PD5_Valve
SCL   SCL
SDA   SDA
PC1_Pulse PC1_Pulse
PC2_Pr2   PC2_Pr2
File: interface.sch

Sheet: RPi
5V0   5V0
GND   GND
TXD   TXD
RXD   RXD
RESET RESET
SCL   SCL
SDA   SDA
SCK   SCK
MISO   MISO
MOSI   MOSI
File: uControl_RPi.sch

Sheet: rtc
5V0   5V0
GND   GND
SCL   SCL
SDA   SDA
RST   RST
SQR   SQR
32k   32k
BAT   BAT
File: uControl_rtc.sch

WyoLum
File: uControl_v1.sch
Sheet: /
Title: uControl
Size: A4   Date: 4 jan 2013   Rev: 1
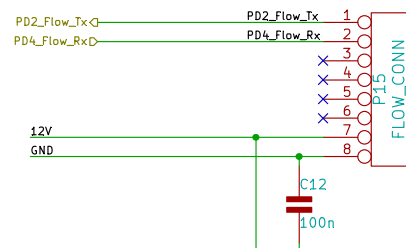KiCad E.D.A. eeschema (2012-01-19 BZR 3256)-stable   Id: 1/5

Gage Sensor #1 on SPI Bus

3V3 — 3V3 — 1
GND — GND — 2
PC3_Pr1 — PC3_Pr1 — 3
MISO — P_MISO — 4
SCK — P_SCK — 5
SS — P_SS — 6
— 7
MOSI — P_MOSI — 8

P7 GAGE_PR

5V0 3V3
C7 100n   C8 100n
U1 TXB0104D
VCCB VCCA
OE
B1 A1
B2 A2
B3 A3
B4 A4
NC GND NC
R4 10K
C10 100n

Absolute Pressure Sensor #2 on I2C Bus

C5 100n
5V0 — 1
PC2_Pr2 — PC2_Pr2 — 2
GND — 3
SDA — 4
— 5
SCL — 6
P8 ABS0_PR
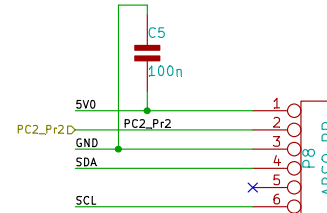
Pulse Sensor
Analog + I2C on C3SB Bus

PC1_Pulse — PC1_Pulse — 1
5V0 — 2
GND — 3
P6 Pulse
C6 100n

5V0 — 1
SCL — 2
SDA — 3
GND — 4
P9 C3SB
C9 100n

SPARE

5V0 — 1
SCL — 2
SDA — 3
GND — 4
P10 C3SB
C11 100n

Flow Meter on Serial

PD2_Flow_Tx — PD2_Flow_Tx — 1
PD4_Flow_Rx — PD4_Flow_Rx — 2
— 3
— 4
— 5
— 6
12V — 7
GND — 8
P15 FLOW_CONN
C12 100n
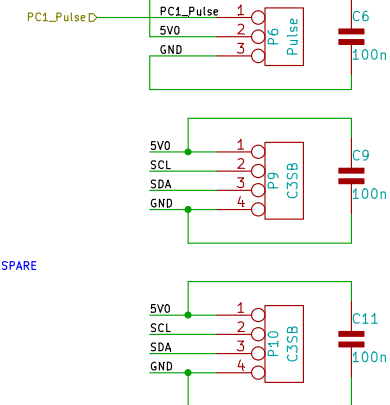
Mounting Holes
SC1 SC2 SC3 SC4
PCB_Flow
PCB3

1
2
3
4
P16 FLOWMETER
EM1NR4ROV_1A

Valve on digital PWM port
either 12V (V_IN) or 5V0
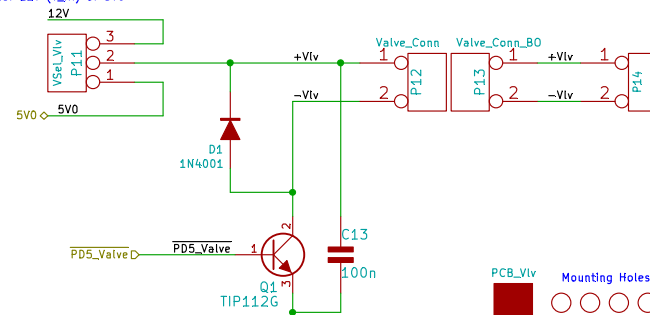
12V
3
2
1
VSel_Vlv P11
5V0 — 5V0

Valve_Conn
+Vlv — 1
2
P12
Valve_Conn_B0
1 — +Vlv
2 — −Vlv
P13
+Vlv — 1
−Vlv — 2
P14 X_VALVE

D1 1N4001
PD5_Valve — PD5_Valve — 1
Q1 TIP112G
C13 100n

PCB_Vlv
PCB5
Mounting Holes
SC9 SC10 SC11 SC12

MANIFOLD
M1

3
4
2
1
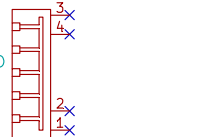
PCB_MFold
PCB6
Mounting Holes
SC13 SC14 SC15 SC16

Pump on digital port
V_IN = 12V DC
IO_X = 3V3 for pump control

12V — 12V — 1
2
3
PD7_IO_X — PD7_IO_X — R6 220E — IO_X — 4
PB0_IO_R — PB0_IO_R — R5 220E — IO_R — 5
PB1_IO_T — PB1_IO_T — 6
P17 Pump_Conn
Pump_Conn_B0 P18

12V — 1
P++ — 2
GND — 3
IO_X — 4
IO_R — 5
PB1_IO_T — 6
P19 PUMP_CONN_FLEX

1N5225B D2   1N5225B D3
C17 100n
GND
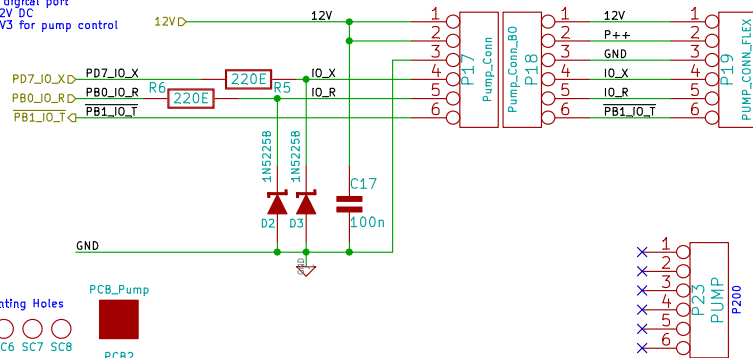
Mounting Holes
SC5 SC6 SC7 SC8
PCB_Pump
PCB2

1
2
3
4
5
6
P23 PUMP
P200

Temp Sensor on I2C
with 3V3<>5V0 translator

5V0   3V3
C14 100n   C15 100n
U2 TXS0102DCT
VCCB VCCA
OE
B1 A1
B2 A2
GND
SDA — SDA
SCL — SCL
TSDA
TSCL
R7 10K

Temp_Conn P20
Temp_Conn_B0 P21
TSDA — 1
GND — 2
3
TSCL — 4
3V3 — 5
6
P22 Temp
C16 100n
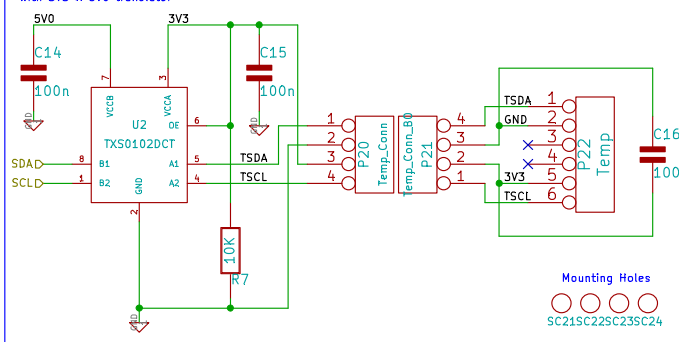
Mounting Holes
SC21 SC22 SC23 SC24

VLV_90_M P28
+Vlv
−Vlv
VLV_90_F P29
1-12
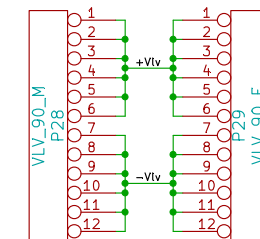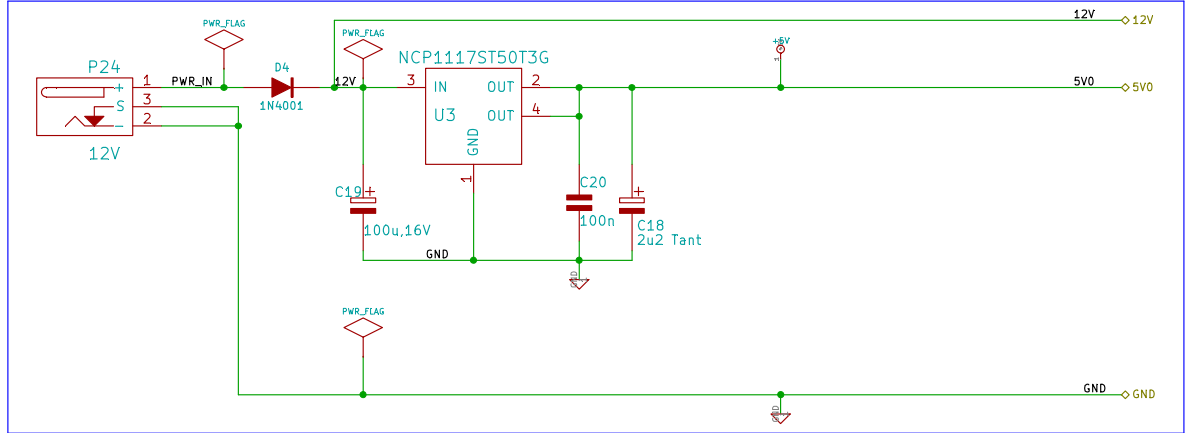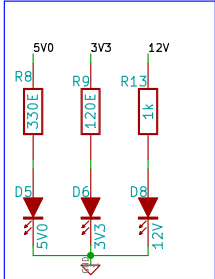
Dummy Mounting Headers
for Valve Board, 2 x 6 way

File: interface.sch
Sheet: /Interface/
Title:
Size: A4   Date: 4 jan 2013   Rev:
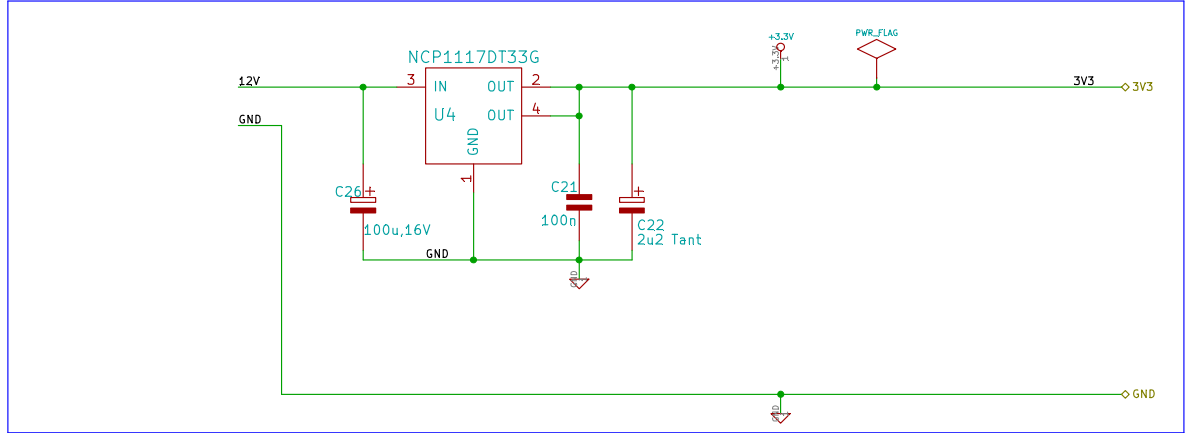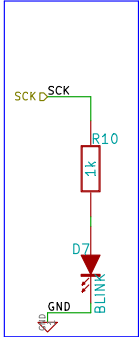KiCad E.D.A. eeschema (2012-01-19 BZR 3256)-stable   Id: 2/5

BARREL POWER SOCKET

P24

12V

PWR_FLAG

PWR_FLAG

D4
1N4001

NCP1117ST50T3G
U3
IN   OUT
OUT
GND

+5V

C19
100u,16V

C20
100n

C18
2u2 Tant

GND

PWR_FLAG

12V   12V

5V0   5V0

GND   GND

INDICATORS

5V0   3V3   12V

R8   R9   R13
330E   120E   1k

D5   D6   D8
5V0   3V3   12V

BARREL POWER SOCKET

12V

GND

NCP1117DT33G
U4
IN   OUT
OUT
GND

+3.3V

PWR_FLAG

C26
100u,16V

C21
100n

C22
2u2 Tant

GND

3V3   3V3

GND   GND

BLINK LED – D13

SCK   SCK

R10
1k

D7
BLINK

GND

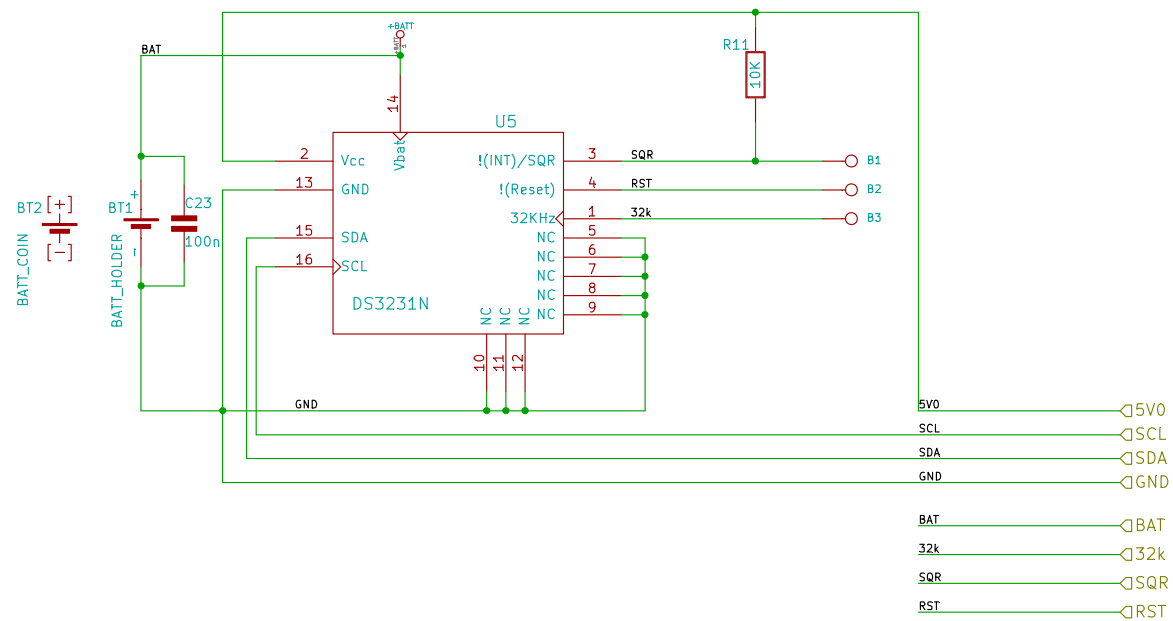Logo_Wyolum

G1
Logo_Wyolum

G2
Logo_OH

G3
Logo_OH

G4
PCB

PCB1

WyoLum
File: uControl_pwr.sch
Sheet: /pwr/
Title: uControl
Size: A4   Date: 4 jan 2013   Rev: 1
KiCad E.D.A. eeschema (2012-01-19 BZR 3256)-stable   Id: 3/5

BAT

+BATT

R11
10K

U5

2	Vcc		!(INT)/SQR	3	SQR		B1
13	GND		!(Reset)	4	RST		B2
			32KHz	1	32k		B3
15	SDA		NC	5			
16	SCL		NC	6			
			NC	7			
			NC	8			
			NC	9			

14
Vbat

DS3231N

NC NC NC NC
10 11 12

BT2 [+]
[−]
BATT_COIN

BT1 +
BATT_HOLDER

C23
100n

GND

GND

5V0 ─────── 5V0
SCL ─────── SCL
SDA ─────── SDA
GND ─────── GND

BAT ─────── BAT
32k ─────── 32k
SQR ─────── SQR
RST ─────── RST

WyoLum
File: uControl_rtc.sch
Sheet: /rtc/
Title: uControl
Size: A4 | Date: 4 jan 2013 | Rev: 1
KiCad E.D.A. eeschema (2012-01-19 BZR 3256)-stable | Id: 4/5

this jumper enables/disables the Voltage Translator U6,
thereby allowing/dis-allowing communication
between the Raspberry-Pi and a La Mode
EDIT:Permanenty shorted(23-08-2012)

allows hooking up Ras-Pi 5V
to uControl

Mounting Holes
for Raspberry-Pi

NOTE : GPIO voltage levels are 3v3 and are not 5v tolerant.

WyoLum		
File: uControl_RPi.sch		
Sheet: /RPi/		
Title: uControl		
Size: A4	Date: 4 jan 2013	Rev: 1
KiCad E.D.A. eeschema (2012-01-19 BZR 3256)-stable		Id: 5/5