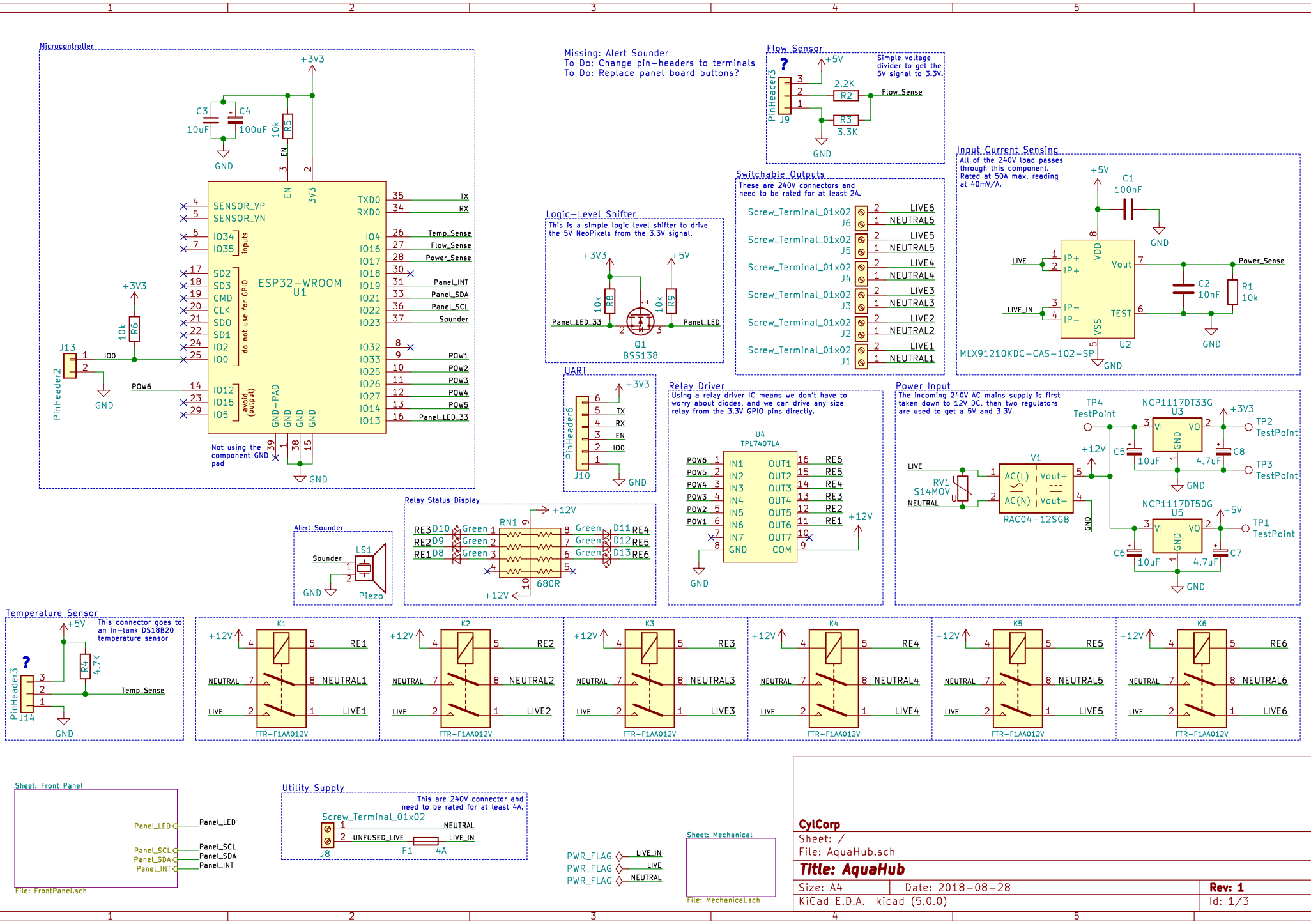
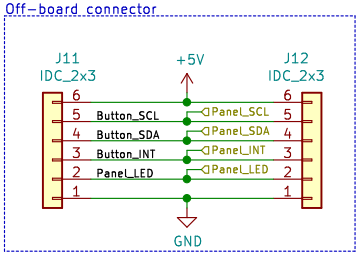
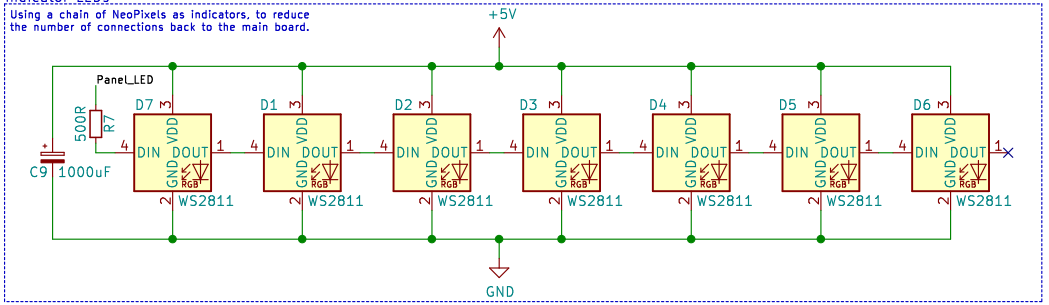

Microcontroller
ESP32-WROOM
U1
SENSOR_VP
SENSOR_VN
IO34
IO35
SD2
SD3
CMD
CLK
SDO
SD1
IO2
IO0
IO12
IO15
IO5
IO4
IO16
IO17
IO18
IO19
IO21
IO22
IO23
IO32
IO33
IO25
IO26
IO27
IO14
IO13
TXD0
RXD0
GND-PAD
EN
3V3
do not use for GPIO
Inputs
avoid (output)
Not using the component GND pad
TX
RX
Temp_Sense
Flow_Sense
Power_Sense
Panel_INT
Panel_SDA
Panel_SCL
Sounder
POW1
POW2
POW3
POW4
POW5
Panel_LED_33
Missing: Alert Sounder
To Do: Change pin-headers to terminals
To Do: Replace panel board buttons?
Flow Sensor
Simple voltage divider to get the 5V signal to 3.3V.
PinHeader3
J9
2.2K
R2
3.3K
R3
Flow_Sense
Switchable Outputs
These are 240V connectors and need to be rated for at least 2A.
Screw_Terminal_01x02
J6
J5
J4
J3
J2
J1
LIVE6
NEUTRAL6
LIVE5
NEUTRAL5
LIVE4
NEUTRAL4
LIVE3
NEUTRAL3
LIVE2
NEUTRAL2
LIVE1
NEUTRAL1
Input Current Sensing
All of the 240V load passes through this component. Rated at 50A max, reading at 40mV/A.
MLX91210KDC-CAS-102-SP
C1
100nF
C2
10nF
R1
10k
Power_Sense
Logic-Level Shifter
This is a simple logic level shifter to drive the 5V NeoPixels from the 3.3V signal.
Q1
BSS138
R8
R9
Panel_LED_33
Panel_LED
UART
PinHeader6
J10
Relay Driver
Using a relay driver IC means we don't have to worry about diodes, and we can drive any size relay from the 3.3V GPIO pins directly.
U4
TPL7407LA
Power Input
The incoming 240V AC mains supply is first taken down to 12V DC, then two regulators are used to get a 5V and 3.3V.
RV1
S14MOV
V1
RAC04-12SGB
NCP1117DT33G
U3
NCP1117DT50G
U5
TP1 TestPoint
TP2 TestPoint
TP3 TestPoint
TP4 TestPoint
Alert Sounder
LS1
Piezo
Relay Status Display
RN1
680R
Temperature Sensor
This connector goes to an in-tank DS18B20 temperature sensor
PinHeader3
J14
R4
4.7K
K1
K2
K3
K4
K5
K6
FTR-F1AA012V
Sheet: Front Panel
File: FrontPanel.sch
Utility Supply
This are 240V connector and need to be rated for at least 4A.
Screw_Terminal_01x02
J8
F1
4A
UNFUSED_LIVE
LIVE_IN
NEUTRAL
PWR_FLAG
Sheet: Mechanical
File: Mechanical.sch
CylCorp
Sheet: /
File: AquaHub.sch
Title: AquaHub
Size: A4
Date: 2018-08-28
Rev: 1
KiCad E.D.A. kicad (5.0.0)
Id: 1/3

Off-board connector



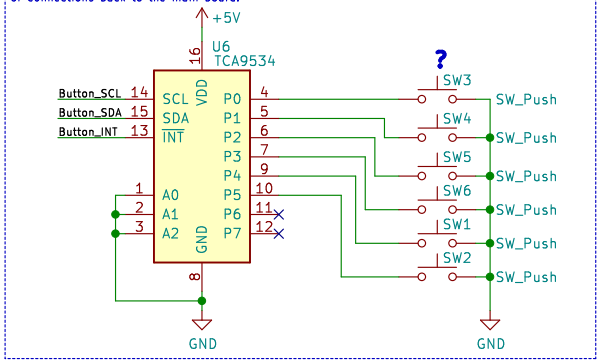
Indicator LEDs

Using a chain of NeoPixels as indicators, to reduce the number of connections back to the main board.



Input Buttons

This is a simple I2C port expander to reduce the number of connections back to the main board.



CylCorp		
Sheet: /Front Panel/		
File: FrontPanel.sch		
Title: AquaHub		
Size: A4	Date: 2018-08-28	**Rev: 1**
KiCad E.D.A. kicad (5.0.0)		Id: 2/3

Main board mounting

MH1 MH3

MH2 MH4

Panel mounting

MH5 MH6

Panel perforations

MH7 MH8 MH9 MH10

Sheet: /Mechanical/
File: Mechanical.sch

Title:

Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad (5.0.0)		Id: 3/3