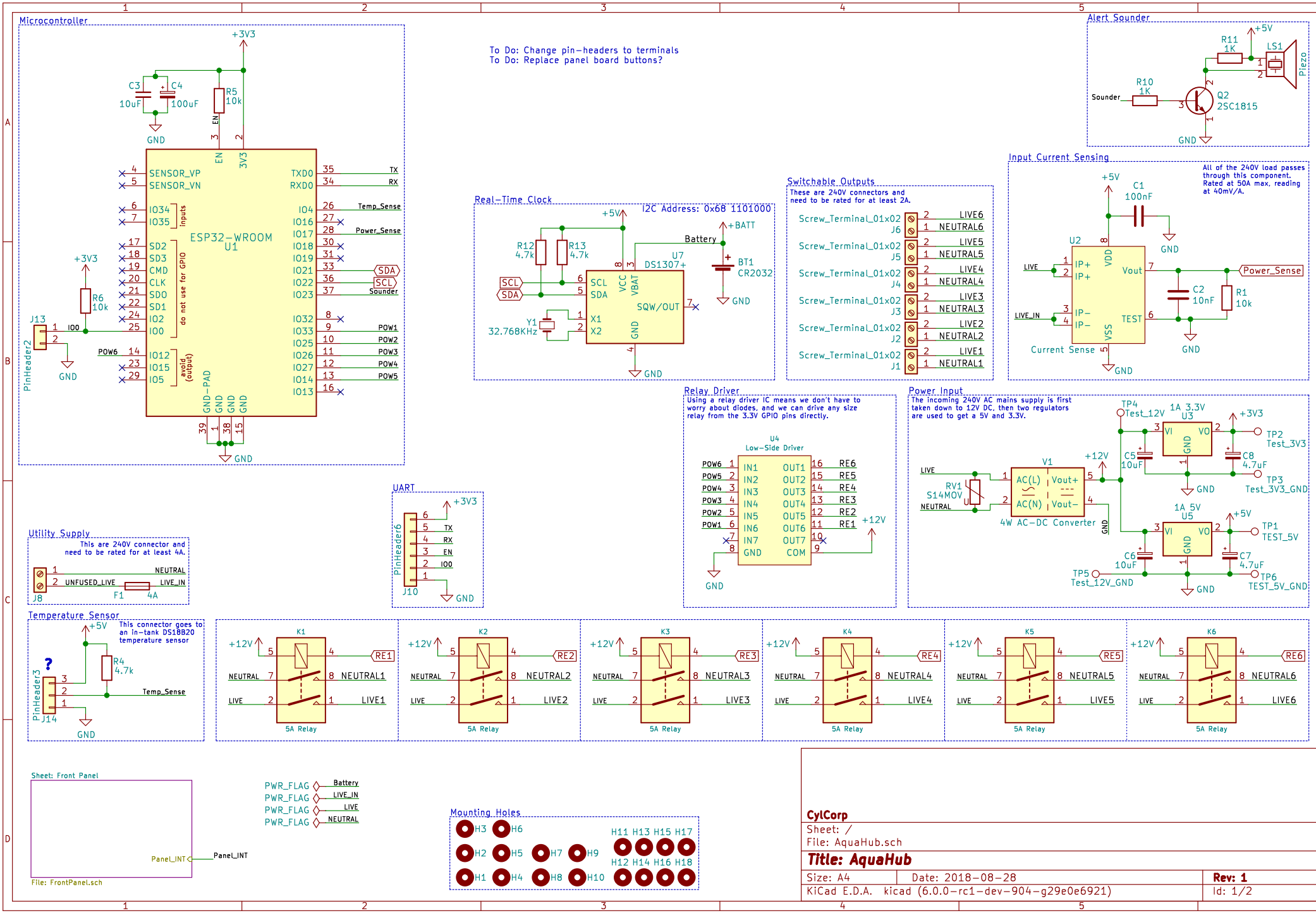
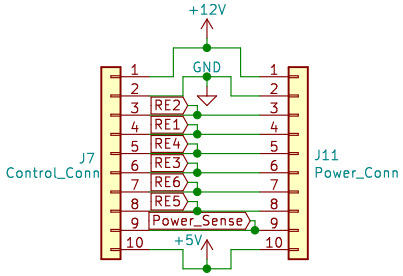
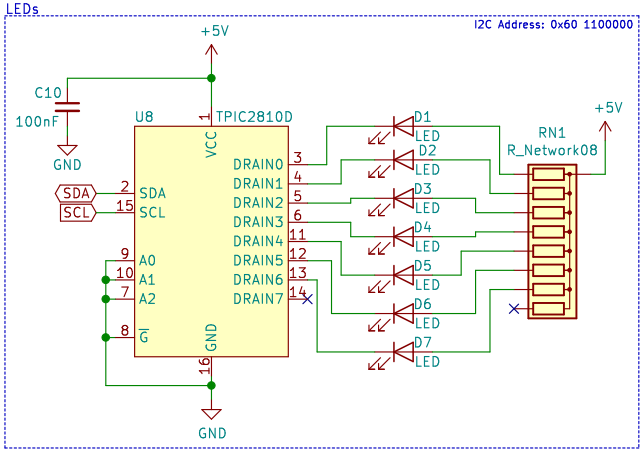
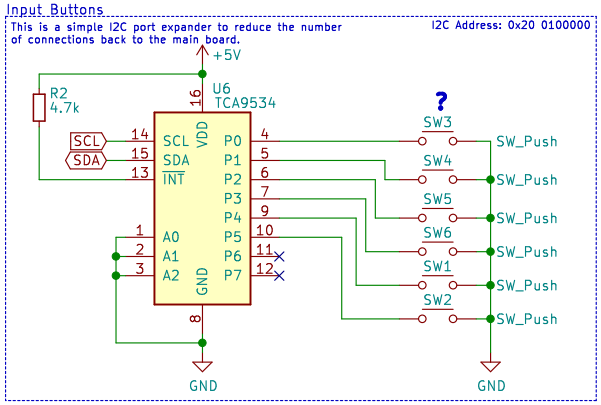

Microcontroller
ESP32-WROOM
U1
SENSOR_VP
SENSOR_VN
IO34
IO35
SD2
SD3
CMD
CLK
SD0
SD1
IO2
IO0
IO12
IO15
IO5
GND-PAD
TXD0
RXD0
IO4
IO16
IO17
IO18
IO19
IO21
IO22
IO23
IO32
IO33
IO25
IO26
IO27
IO14
IO13
Inputs
do not use for GPIO
avoid (output)
TX
RX
Temp_Sense
Power_Sense
SDA
SCL
Sounder
POW1
POW2
POW3
POW4
POW5
+3V3
GND
EN
C3
10uF
C4
100uF
R5
10k
R6
10k
J13
PinHeader2
To Do: Change pin-headers to terminals
To Do: Replace panel board buttons?
Real-Time Clock
I2C Address: 0x68 1101000
U7
DS1307+
R12
4.7k
R13
4.7k
Y1
32.768KHz
Battery
+BATT
BT1
CR2032
SCL
SDA
VCC
VBAT
SQW/OUT
X1
X2
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.
U2
IP+
IP-
VDD
VSS
Vout
TEST
Current Sense
C1
100nF
C2
10nF
R1
10k
LIVE
LIVE_IN
Power_Sense
Alert Sounder
R11
1K
R10
1K
LS1
Piezo
Q2
2SC1815
Sounder
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
Low-Side Driver
IN1
IN2
IN3
IN4
IN5
IN6
IN7
GND
OUT1
OUT2
OUT3
OUT4
OUT5
OUT6
OUT7
COM
RE6
RE5
RE4
RE3
RE2
RE1
+12V
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.
V1
AC(L)
AC(N)
Vout+
Vout-
4W AC-DC Converter
RV1
S14MOV
LIVE
NEUTRAL
U3
1A 3.3V
VI
VO
C5
10uF
C8
4.7uF
U5
1A 5V
C6
10uF
C7
4.7uF
TP1
TEST_5V
TP2
Test_3V3
TP3
Test_3V3_GND
TP4
Test_12V
TP5
Test_12V_GND
TP6
TEST_5V_GND
UART
PinHeader6
J10
TX
RX
EN
IO0
Utility Supply
This are 240V connector and need to be rated for at least 4A.
J8
UNFUSED_LIVE
LIVE_IN
NEUTRAL
F1
4A
Temperature Sensor
This connector goes to an in-tank DS18B20 temperature sensor
PinHeader3
J14
R4
4.7k
Temp_Sense
K1
K2
K3
K4
K5
K6
5A Relay
RE1
RE2
RE3
RE4
RE5
RE6
NEUTRAL1
NEUTRAL2
NEUTRAL3
NEUTRAL4
NEUTRAL5
NEUTRAL6
LIVE1
LIVE2
LIVE3
LIVE4
LIVE5
LIVE6
Sheet: Front Panel
File: FrontPanel.sch
Panel_INT
PWR_FLAG
Battery
LIVE_IN
LIVE
NEUTRAL
Mounting Holes
H1
H2
H3
H4
H5
H6
H7
H8
H9
H10
H11
H12
H13
H14
H15
H16
H17
H18
CylCorp
Sheet: /
File: AquaHub.sch
Title: AquaHub
Size: A4
Date: 2018-08-28
Rev: 1
KiCad E.D.A. kicad (6.0.0-rc1-dev-904-g29e0e6921)
Id: 1/2







CylCorp		
Sheet: /Front Panel/ File: FrontPanel.sch		
Title: AquaHub		
Size: A4	Date: 2018-08-28	**Rev: 1**
KiCad E.D.A. kicad (6.0.0-rc1-dev-904-g29e0e6921)		Id: 2/2