Waterpump Connection plan
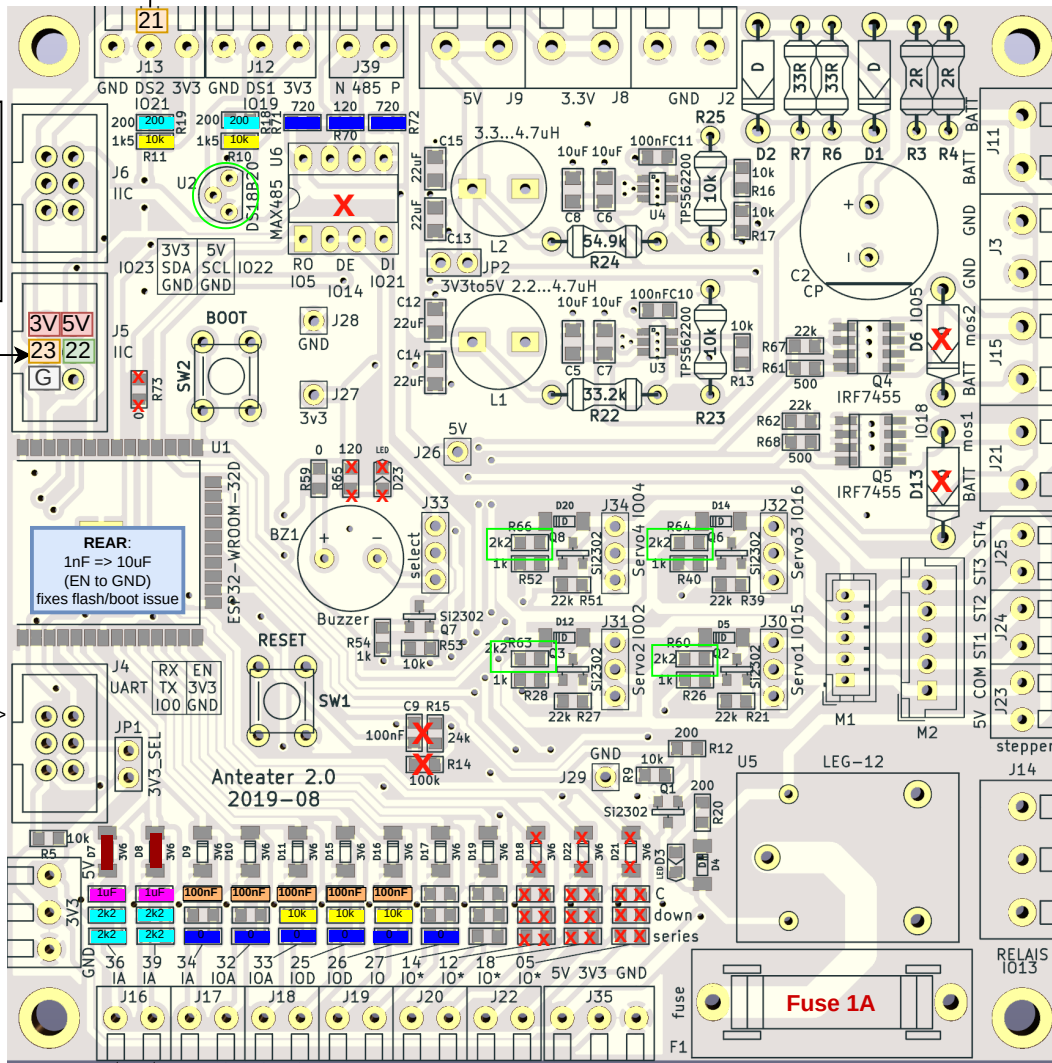## 05.05.2024

gpio 21: 7 Seg Display CS

3x 7-Seg Display
- gpio 22: CLK
- gpio 23: MOSI
- 5V

21 · J13 · GND · DS2 · 3V3 · GND · DS1 · 3V3 · IO21 · IO19 · J12 · J39 · N 485 P · 720 · 120 · 720

200 · 1k5 · R11 · 200 · 1k5 · R10 · R72 · R70

J6 IIC · U2 · D18 · MAX485 · U6 · R25 · R7 · R6 · D1 · R3 · R4 · BATT

IO23 · 3V3 SDA GND · 5V SCL GND · IO22 · RO · DE · DI · IO5 · IO14 · IO21 · J11 · J3

3V5 V · 23 22 · G · J5 IIC · SW2 · BOOT · J28 GND · J27 · 3v3

12V from ps
GND from ps

Servo GND?

12v LED?

12V to Relay COM

U1 · REAR: 1nF => 10uF (EN to GND) fixes flash/boot issue

BZ1 · Buzzer · J33 select · J34 · J32 · M1 · M2 · stepper

gpio 04: VFD Start
gpio 16: VFD Speed-2
gpio 02: VFD Speed-3
gpio 15: VFD Speed-1
5V from VFD

note: gpio 15 is ON during boot/flash!

RESET · SW1 · Anteater 2.0 2019-08 · J29 · U5 · LEG-12 · J14

gpio13: Relay
NC
COM 12V
NO 12V servo supply

UART<=> USB for firmware upload

J4 UART · RX TX IO0 · EN 3V3 GND · JP1 3V3_SEL

36 IA · 39 IA · 34 IOA · 32 IOA · 33 IOA · 25 IOD · 26 IOD · 27 IO* · 14 IO* · 12 IO* · 18 IO* · 05 IO* · 5V 3V3 GND
J16 · J17 · J18 · J19 · J20 · J22 · J35

fuse · **Fuse 1A** · F1 · RELAIS IO13

gpio 36: ADC in: Pressure Sensor 0-5V -> 0-2.5V
gpio 39: ADC **FREE**
gpio 34: ADC **FREE**
gpio 32: ADC **FREE**
gpio 3 3: UI: Poti 0-3.3V
gpio 25: UI: Button 'Set'
gpio 26: UI: Button 'Mode/Start'
gpio 27: Servo Signal (PWM out)
gpio 14: Flow-Sensor (Pulses in)
gpio 12: [RS485]
gpio 18: [LED/BUZZER]
gpio 05: [MOS1]
[MOS2]

cable configuration

control-box => VFD

Oelflex 7x0.5mm²
gn: GND (VFD)
01. 5V (VFD)
    (to mosfets common)
02: ~~3V3~~ (reserve)
03: X4 Start
04: X1 speed bit 0
05: X2 speed bit 1
06: X3 speed bit 2

control-box => UI Panel

Oelflex 12x0.5mm²
gn: GND - Poti, led
01. GND - Display
02: 3V3 - 2xButton, Poti, ~~LED?~~
03: 5V - Display
04: **FREE**

05: Poti Analog (0 - 3.3V)
06: **FREE**
07: Display: CLK
08: Display: DIN (MOSI)
09: Display: CS

10: Button Set (-> switch to 3V3)
11: Button Mode (-> switch to 3V3)

Legend pcb
0 Ohm Resistor	
3v3 Z-Diode	
0 Ohm Optional	
[xxx]	Conflicting Component
xx	nopop
	critical / important

Components on Pump
05.05.2024

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servo

Oelflex 12x0.5mm^2
gn : GND (brown)
1: 12V (red)
2: PWM signal (orange)

150kg
DS51150-12V

https://de.aliexpress.com/item/1005006064899449.html

Brown (-)
Red (+)
Orange (S)

Black (-)
Red (+)
White (S)

---

pressure sensor

Oelflex 12x0.5mm^2
gn : GND (black)
1: 5V (red)
2: Analog-out (green)

0.5 - 4.5V
0 - 500 psi
0 - 34.5 bar

https://de.aliexpress.com/item/1005003614240635.htm

Flow meter

Oelflex 3x0.5mm^2
gn : GND (black)
1: 3,3V ~~5V~~ (red)
2: Pulse out (yellow)

note: no pulldown/pullup
       needed

1l = 12 pulses
5-24V

Cable Conection: Red: Positive+ (IN) ; Black:
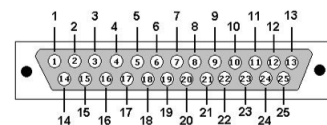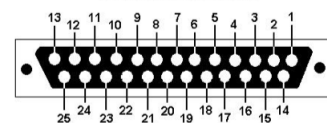Negative- (GND) ;Yellow: NPN Pulse signal (OUT)

https://de.aliexpress.com/item/4000379407344.html

TODO: add
connectors
servo, flow
sensor

Pump->Box

D-Sub 25 pin Connector, pin assignment

Signal	Device	Color	Pins
GND	Servo	black, brown, red, orange	1, 2, 3, 4
GND	Pressure sensor	yellow	5
GND	Flow sensor	green	6
12 V	Servo	blue, purple, gray, pink	7, 8, 9, 10
5 V	Pressure sensor	light brown	11
3.3 V	Flow sensor	white	12
PWM 3.3 V	Servo	white-black	13
Analog 0-5 V	Pressure sensor	white-brown	14
Pulse	Flow sensor	white-red	15
FREE			16-25

View looking into male connector

View looking into female connector