# Waterpump Connection plan
## 03.05.2024

gpio 21: 7 Seg Display CS

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

3V 5V
23 22
G

UART<=> USB for firmware upload

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

BOOT
SW2

RESET
SW1

Anteater 2.0
2019-08

ESP32-WROOM-32D

Buzzer BZ1

Fuse 1A

12V from ps
GND from ps

Servo GND?

12v LED?
12V to Relay COM

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

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

RELAIS IO13

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

### cable configuration

#### control-box => VFD

Oelflex 7x0.5mm²
gn: GND (driver)
01. 5V (reserve)
02: 3V3
03: 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
## 03.05.2024

### 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:
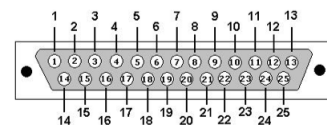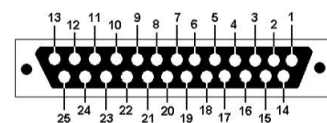Negative- (GND)  ;Yellow: NPN  Pulse signal (OUT)

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