**Peristaltic pump**

**User’s Manual**

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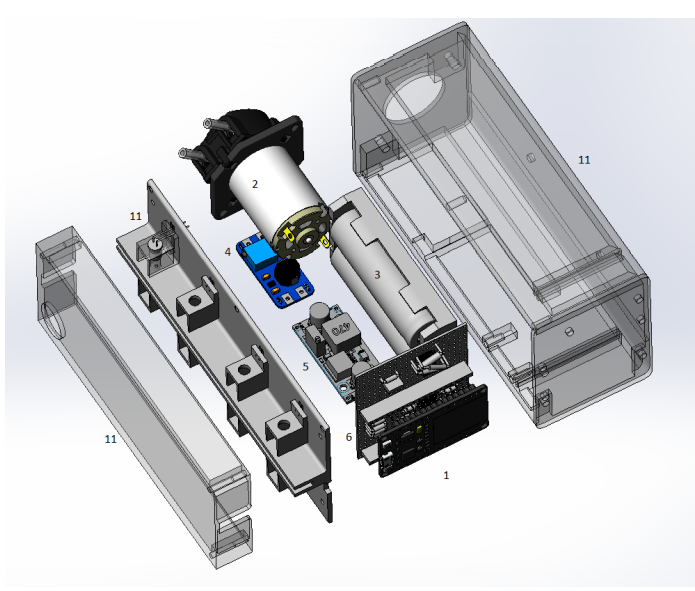
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# Package contents

* 1. ESP32 DevkitC controller
* 2. Adafruit peristaltic pump
* 3. 18650 3.6V 3350 mAh Lithium-ion battery (2pcs), 18650 double battery holder
* 4. LM2596 DC/DC buck regulator
* 5. LM2577 DC/DC step up module
* 6. Prototyping board, 1N4007 rectifier diode, 2 1k resistors, 10k resistor, LMC7101 opamp, IRF520N MOSFET (Components needs to be soldered together).
* 7. ON-OFF button
* 8. headers and pins
* 9. Wires
* 10. Bolts and nuts
* 11. 3D printed enclousre



# Safety precautions

* Solder the prototyping board components according to the schematics.
* Do wiring so that they will not becaume loose or short circuit the board.
* Upload the code through cable to the ESP32 devkitC controller. For safety reasons don’t have it connected with external batteries while uploading the code.
* Connect the EPS32 DevkitC controller right way on the prototyping board otherwise the board will get damaged.
* The batteries are connected parallel so the device usage time will be longer.
* When batteries are empty remove the case carefully and put them to charging station. After fully charged connect them them the right way. It’s good to put some polarity stickers to battery holder.

# Features

* User Interface over Wi-Fi AP
* Possible to add two slave pumps
* Timer function

# Technical description

* Flow rate 12-72 ml/min
* Tubing ID: 1mm
* Runtime 10-15min at max flow rate
* Power ON/OFF
* 18650 lithium-ion batteries (2pcs)
* Dimensions: 70x71,50x174,20(mm)

# Connection and operation

* Before operating be sure to have fully charged batteries. In order to charge it’s needed to open the device enclousure. The charging station is not included. When putting back batteries, then the batteries are connected in parallel.
* Turn the pump on from ON/OFF button
* Use a laptop or mobile phone and connect to „SmartFlowController2“.
* Enter password: „Taltech2020“
* Set the flow rate and pumping time.
* Connect one tubing to reservoir and the 2nd tube end to the lab-on-the-chip.
* When you have a slave pump, then it’s possible to add it int the interface by entering the MAC ID.