Components - precise description

Drive links may be deprecated or not up-to-date, please refer to the Forge GitLab linked to this project

The susmentionned GitLab contains every details of the project.

All the specifications sheets we found are stored here
https://drive.google.com/drive/folders/1-vRpSUxZW-rc5TYF7eE5loehlPPyNJy3?usp=sharing

Here are some useful links to find electromechanical components :
- https://www.digikey.be/fr/
- RS | Distributeur de composants électroniques et solutions industrielles (rs-online.com)
- https://www.mouser.fr/

The following elements are enhanced descriptions of the components used to build the OS-SCD prototype. With added mechanical and electronical specifications.

Microcontroller

Complete name	*Arduino Nano IOT 33with headers (SKU: ABX00032)*
Dimensions	48mm x 18mm
Weight	5 grams
Operating voltage	3.3V
Connections	Two 15-pin connectors (one on each side)
Comment	The integrated DC-DC power supply allows you to power the board up to 21V while maintaining high efficiency and providing a significant amount of current to external devices without overheating. 1 piece for 1 device.
Where to buy it	https://store.arduino.cc/products/arduino-nano-33-iot-with-headers
Price	23.40€/pc.

Battery (from the initial prototype, not implemented in the device yet)

Complete name	*Galaxy 2S (7.4V) 120 mAh Lipoly Battery Pack*
Dimensions	19 x 25 x 15.5mm
Weight	11 grams
Tension de sortie	7.4V
Connexions	Mating connector : JST

Comment	12V Power Supply are a great charging solution.
Where to buy it	https://www.fingertechrobotics.com/proddetail.php?prod=G-2S-mAh
Price	8.54€/pc.

LCD-screen

Complete name	*ASunFounder IIC I2C TWI Serial 2004 20x4 LCD Module Shield)*
Dimensions	60 x 99 x 22mm
Weight	/
Operating voltage	5V
Connections	Two I/O ports : SDA and SCL
Comment	http://wiki.sunfounder.cc/index.php?title=I2C_LCD2004
Where to buy it	https://www.amazon.fr/SunFounder-Serial-Module-Arduino-Mega2560/dp/B01GPUMP9C/ref=sr_1_1
Price	12.99€/pc.

Micro-pump

Complete name	*Micro Air Pump ZR320-02PM-4.5V*
Dimensions	37.7 x 18 x 8mm
Weight	NaN
Operating voltage	4.5V (load current < 580 mA)
Air flow	> 0.3L/min (flow rate of 205ml/min from our article)
Maximum pressure	<= -55kPa
Noise	<60dB (30cm away)
Lifetime	30,000 cycles (10s on + 5s off) – drop in 15 pressure
Comment	To use between 5-45°C with a maximum 30-80% relative humidity. 1 piece for 1 device.
Where to buy it	https://www.adafruit.com/product/4700#description
Price	6.5€/pc.

Solenoid valve

Complete name	*6V Air Valve (2-positions 3-way solenoid valve)*
Dimensions	14.5 x 36.02 x 12.5mm
Weight	NaN
Operating voltage	6V
Operating current	240mA

Resistance	NaN
Comment	Warning, valves has not been tested over 300mmHg air pressure. Better valves should be selected for further iterations of the prototype. Remark: Electrovannes and solenoid valves refer to the same technologies. 3 pieces are required for one device.
Where to buy it	https://shop.mchobby.be/fr/air-pneumatic/2229-plastic-air-valve-6v-3232100022294.html
Price	3.81€/pc.

Pneumatic tube (2mm)

Complete name	PU Tube
Dimensions	ID : 2.5mm OD : 4mm (standard compatible with the solenoid valves output)
Weight	/
Material	Polyurethane (=PU)
Comment	One device requires 3m
Where to buy it	https://be.farnell.com/en-BE/smc/tu0425c-20/tubing-4mm-clear-20m/dp/3640784
Price	13.6€/20m

Pneumatic tube (4mm)

Complete name	PU Tube
Dimensions	ID : 4mm OD : 6mm (standard compatible with the pump output and valves input)
Weight	/
Material	Polyurethane (=PU)
Comment	One device requires 0.4m
Where to buy it	https://be.farnell.com/en-BE/smc/tu0604c-20/tubing-6mm-clear-20m/dp/3630006
Price	28.74€/20m

Four way connector

Complete name	Four way connector
Dimensions	OD: 4mm
Weight	/
Material	1 piece is required for one device.
Comment	Ours were ordered on amazon. The delivering cost of Qosina were too expensive.
Where to buy it	https://www.qosina.com/cross-connector-barbed-97357
Price	11.35€/10pcs.

Needles (Luer-lock females)

Complete name	*16 Gauge 1" length Blunt Tip Stainless Steel Dispense Needles*
Dimensions (needle)	Gauge : 25.4mm - Inner : 1.35mm - Outer : 1.65mm Chart of needle using different in-out diameters : NeedChart_32472.1645631065.jpg (1280×766) (bigcommerce.com)
Comment	Fits all standard Luer Lock or Luer Slip Syringes. 1-in blunt-tip. Dimensions of Luer-fittings are defined in ISO 594-2. 3 pieces are required for one device.
Where to buy it	https://www.amazon.fr/sourcing-map-aiguilles-distribution-transparent/dp/B0B3RW4YJZ/
Price	14.75€/20pcs.

Luer-lock (not implemented in the device yet)

Complete name	*Male Luer Lock to Barb Connector*
Dimensions	Fits 3/32 inch ID Tubing (0.093inch, 2.38mm)
Luer fitting	ISO 594-2
Comment	The delivering cost of Qosina were too expensive. Used to handle the connection of the bands to the system. 3 pieces are required for one device.
Where to buy it	https://www.qosina.com/male-luer-lock-to-barb-connector-11559 (female equivalent in case we need it) https://www.qosina.com/female-luer-lock-to-barb-connector-11558
Price	$0.33/pc.

TPU Coated Nylon

Complete name	*Nylon, 70den, TPU-coated one side, 170g/sqm, heat-sealable*
Dimensions	One band requires 320x125mm of textile
Fabric	TPU Coated Nylon 70d.
Comment	Taffeta fabric type. 1m is enough to produce 9 bands, 3 bands are required in one device.
Where to buy it	https://www.extremtextil.de/en/nylon-70den-tpu-coated-one-side-170g-sqm-heat-sealable.html
Price	12,61€/m

Parchment paper

Complete name	*Parchment paper*
Dimensions	One band requires 190x70mm
Comment	Can produce at least 20 bands, 3 bands are required in one device.
Where to buy it	Any supermarket.
Price	2€

Hook-and-loop fasteners

Complete name	*Hook-and-loops fasteners*
Dimensions	2000 mm x 30 mm
Comment	Loops were hand-designed and laser-cutted in 6mm wood chips. 1 meter is required for 1 device.
Where to buy it	VERITAS, 163 Louvain-la-Neuve, Place de l'accueil 10/37.
Price	11.00€/2m

Electronic components

Potentiometers	10 kΩ
Resistors	330 kΩ
Transistors	NPN (TIP28B, PN2222A)
Diode	/
Wires	/