

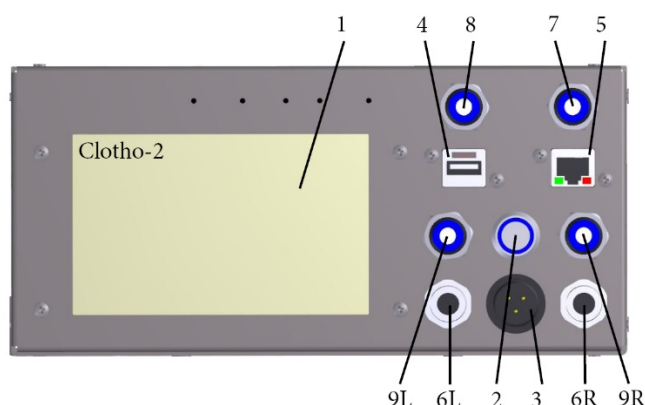
## LEAFLET for Clotho-2

Dual channel Drive Unit for one Clio Single-Use-Pump or one Thalia Single-Use-Exchanger.

Product, model name	Clotho-2
Purpose	Single O-SUP/ A-SUE drive
Single-Use-Pump size, ml/stroke	30, 100, 60, 200
Drive gas pressure supply	>1 - <4 bar atmospheric
Drive gas vacuum supply	<0,1 bar absolute
Power supply	24 VDC, 2 amp
Hephaestus cabinet size	U2
Weight, kilo	3.5

### Design

For use with two CellMembra or CellRetention Perfusion-Single-Use-Bioreactor's (P-SUB's) for high cell density cultivation operating in perfusion mode supplied by [www.perfusecell.com](http://www.perfusecell.com). The P-SUB integrates the SUB with One-way-Single-Use-Pump (O-SUP) or Alternating-Single-Use-Exchange (A-SUE) and Hollow-Fiber-Filter (HFF) and Single-Use-Sensor - all in one package.



*Clotho-2 is very small and compact. All electronics fits inside Hephaestus U2 Stainless Steel cabinet. Even with the 5" touch sensitive display. Connect easily via Wi-Fi with a PAD from the in front USB.*

### Specification

When connected to a supply of pressure and vacuum with sufficient capacity then spec is:

- Clio-30 diaphragm volume per stroke, ml: 0 - 30
- Clio-100 diaphragm volume per stroke, ml: 0 – 100
- Thalia-30 diaphragm volume per stroke, ml: 0 - 60
- Thalia-100 diaphragm volume per stroke, ml: 0 – 200
- HFF retentate velocity, m/s: 0,1 - +10

### In & Out in front panel

- 24 VDC supply via Buccaneer socket and power on/off breaker with LED light
- Supply of pneumatic air via 6 mm hose from pressure supply
- Supply of vacuum via 6 mm hose from vacuum supply
- Drive gas pressure via 6 mm hose to SUP for each channel
- RJ45 socket and USB socket incl Wi-Fi mini adapter
- Single M12 multi pin connection to Laser sensor for each channel

Driving the Clio SUPs requires drive gas below and above atmospheric pressure. The drive gas is constantly adjusted via a dual set of proportional valves inside Clotho. Which control the pumped liquid broth from each of the SUPs and the velocity of the broth through the CFFs.

#### Sensors and actuators

- Pressure sensors
- Vacuum sensor
- Dual Laser sensor
- Dual proportional valve for positive drive gas pressure
- Dual proportional valve for negative drive gas pressure

#### Communication

- 5" touch sensitive TFT display for programming and info from the built-in webserver
- USB port for USB adapter/Wi-Fi connection
- RJ45 socket for IP/TCP for communication and software upgrades

Suitable supply of pressure and vacuum to Clio and Thalia are Alagonia build into Hephaestus cabinets. Check out the Sarpedon reservoir stabilising pressure/vacuum and pulsation reduction.



*Clotho-2 is designed for operation of two CellMembra or two CellRetention P-SUB's from 0,5 litre up to the here shown 3,2 litre Vessel Volume. Even two Clotho-2 may be connected with two Alagonia pumps and one Sarpedon reservoir for ease of use and operating 4 x CellMembra-mini or CellRetention-mini P-SUBs in parallel.*

**Clotho can of course be driven by in lab installed pneumatic air and vacuum.**