

## LEAFLET for Clotho-2

Dual channel SUP/HFF control station for two Clio or Thalia diaphragm Single-Use-Pump's in parallel.

Product, model name	Clotho-2
Purpose	Dual SUP/ HFF control
Single-Use-Pump size, ml/stroke	80, 100, 140
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-SUBs integrates both SUB, diaphragm Single-Use-Pump (SUP) and Hollow-Fibre-Filter (HFF) - all in one package – irradiated and ready to use.



*Clotho-2 is small and compact fitting all electronics for the two channels inside Hephaestus U2 Stainless Steel cabinet. Even with the 5" touch sensitive display.*

### Specification

When connection to a supply of pressure with sufficient capacity then both channels spec is:

- Stroke frequency, per minute: 0.5 - 20
- Stroke duration, seconds: 1 - 60
- Clio or Thalia M80 diaphragm SUP
- Clio or Thalia M100 diaphragm SUP
- Clio or Thalia M140 diaphragm SUP
- HFF retentate velocity, m/s: 0.1 – 20

### In & Out in front panel

- 24 VDC supply via Buccaneer socket
- Power on/off breaker with LED light
- Supply of pneumatic air via 8 mm hose from pressure supply
- Supply of vacuum via 8 mm hose from vacuum supply
- Dual drive gas pressure via 2 x 8 mm hoses to both Clio SUPs
- RJ45 socket
- USB socket
- Dual M12 multi pin connection to LASER sensor's

Driving the 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 HFFs.

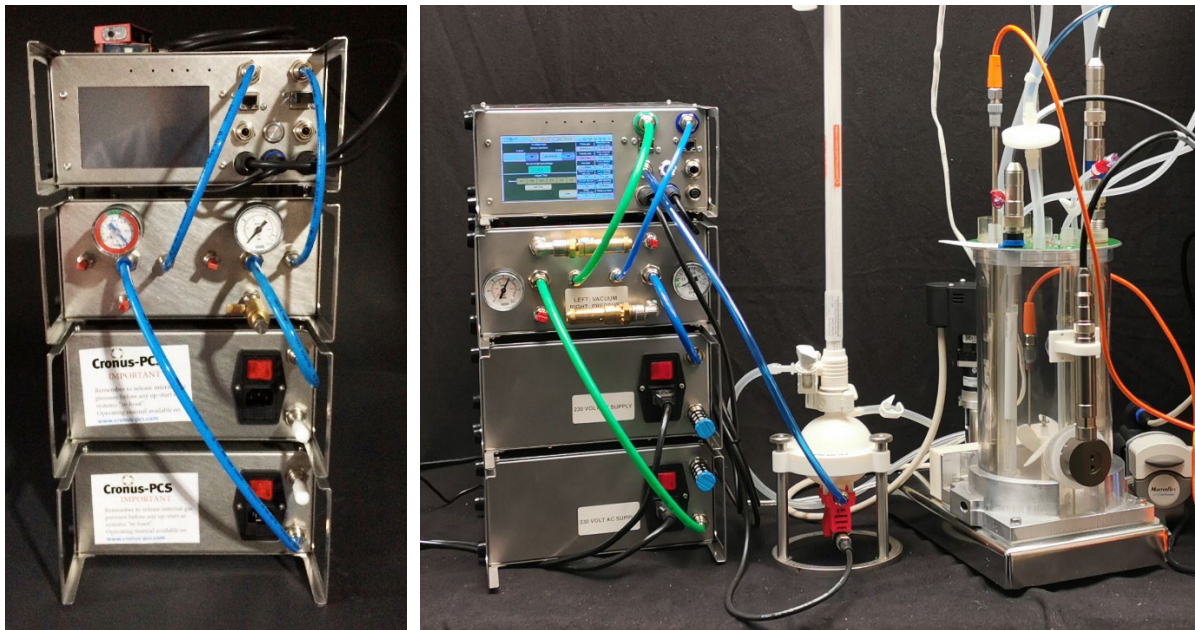
#### Sensors and actuators

- Pressure sensor's inside Clotho
- Vacuum sensor's inside Clotho
- 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
- RJ45 socket for IP/TCP for OPC-UA communication and software upgrades

Suitable supply of pressure and vacuum operating CellMembra or CellRetention P-SUBs build into Hephaestus cabinets are Alagonia's. Check out the Sarpedon reservoir stabilising pressure/vacuum and reduce pulsation.



*Clotho-2 is designed for operation of two CellMembra or 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 the tower of the two Alagonia pumps and Sarpedon reservoir for ease of use and operating 4 x 0.5 litre P-SUBs in parallel.*

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