TECHNICAL DATASHEET

FLUIGENT
SMART MICROFLUIDICS™

P/N [O-OMISC-PTF]

Omi

A ONE OF A KIND INNOVATIVE ORGAN-ON-A-CHIP PLATFORM

Omi is an **automated platform** that helps **control the microphysiological fluidic environment** of organ cells inside microfluidic chips. With multiple protocol functions **(perfusion, recirculation, sampling, and drug delivery)**, the Omi ensures precise shear stress control and supports long-term recirculation. It is compatible with any type of chip to sustain different cell culture types or organ-on-a-chip models (liver, gut, skin, etc.). The platform can be used in biological environments such as in incubator without **power supply needed** (it operates on battery).

Totally compact and transportable, it can be positioned under a microscope to observe in real time cell growth during experiment. The connection to a cloud allows also to monitor Omi remotely on a computer or using a tablet.

KEY FEATURES

PERFORM ANY CUSTOMIZED PROTOCOL
That combine perfusion, recirculation, injection or sampling with any chip design

CONTROL AND MONITOR REMOTELY
Your experiments and data thanks to the web interface and remote tablet.

SAVE TIME AND AUTOMATE PROTOCOLS
With user friendly touch screen interface

AVOID CONTAMINATION DURING THE EXPERIMENTS
Inject or withdraw samples without disconnecting the chip

TRANSPORTABLE AND COMPACT
Platform that easily fits into an incubator

AVOID COMPLEX SET-UPS
With this fully integrated platform

EASY AND INTUITIVE MULTIPLEXING
For double channel chips by connecting two Omis together

EASY TO USE
Device made for beginners or advanced OOC researchers

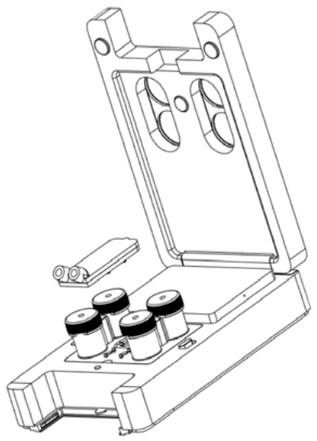
TECHNOLOGY

Omi can perform, **customize and automate** any protocol that includes simple **perfusion**, **recirculation**, **sampling** and **injection**. It can meet the needs of those just starting in the microfluidics field as well as advanced **organ-on-chip** researchers who seek **automation and reproducibility**.

With this **versatile and autonomous** human organ-on-chip platform, users can perform **long term cell culture** under flow to generate **controlled shear stress** conditions. Its **two hour autonomy** battery and **Wifi connectivity** ensures **easy and intuitive monitoring** and smooth **transportation** from an **incubator to a microscope** to perform live cell imaging while maintaining cell perfusion.

Omi can be used in single or dual perfusion mode to perform either single channel perfusion for blood vessel reproduction for example or co culture for liquid/liquid interfaces for gut on chip or blood brain barrier reproduction by synchronizing two Omis with one organ on chip.

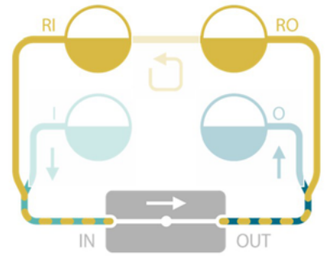
The disposable sterile cartridge **prevents contamination** between experiments and the universal adaptor allows the connection of the platform to **any microfluidic chip design**.



PERFORMANCE

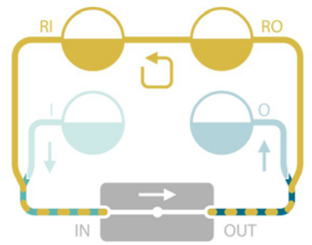
PERFUSION

Omi gives the possibility to perfuse up to 3 mL of many types of liquids such as cell culture media for a long period of time in a controlled and reproducible way. The stability and precision of the perfusion allow control of the shear stress throughout any experiment.



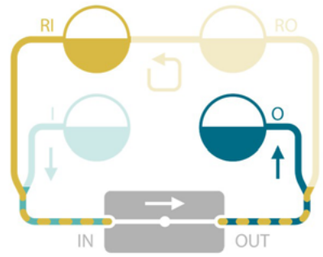
RECIRCULATION

Omi allows a unidirectional recirculation of medium while maintaining a constant flow rate for a long period of time.



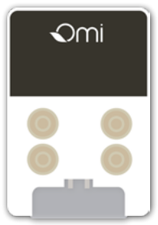
SAMPLING

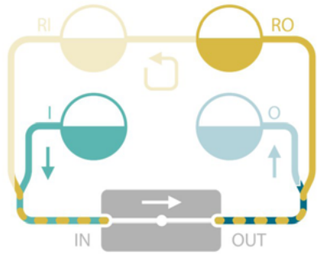
Sample up to 3 mL of soluble factors secreted in the culture medium for analysis or imagery.



INJECTION

Omi allows the injection up to 3 mL of fresh medium during the experiments.





SPECIFICATIONS

OMI DEVICE AND TABLET

PERFORMANCE	
Flow rate control	From 1 µL/min to 1 mL/min *
Maximum pressure	600 mbar maximum
Flow rate precision (below 10 µL/min)	0.5 µL/min
Flow rate precision (above 10 µL/min)	5% mv (measured value)
Fluids reservoir volume	3 mL
Min perfusion / injection / sampling volume	> 0.6 mL**
Min recirculation volume (RI)	2 mL
MECHANICAL SPECIFICATIONS	
Wetted materials	Polycarbonate, medical grade MVQ silicone, EPDM, PEEK, FEP, PPS, FPM, medical grade stainless steel
Dimensions	190 x 120 x 60 (mm)
Weight	694 g
Power supply voltage	24 V DC
Max energy consumption	12 W
Max current requirement	0.5 A
Operating temperatures	15-40 °C
Gas input pressure	Atmospheric pressure
Gas input composition	Dry 2 µm-filtered air, O2/CO2 mix or incubator air

** The flow rate depends on the microfluidic chip and the adaptator.*
*** The Omi has a dead volume of 0.6 mL. For example, perfusing a volume of 1 mL will require an initial volume of 1.6 mL in the fluidic reservoir.*

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TABLET*	
P/N	O-OMI-TAB
Product	Samsung Galaxy Tab S6 Lite 10.4" - 64 Go Ref SM-P610

**Our OMI application can be used on any tablet model but Fluigent does not ensure the same performances as with our tablet.*

Android version must be above version 9.0 (API level 28). A Google account is necessary to access the Google Play Store and access the application. To enable a Bluetooth connection, GPS must be activated (Android requirements) and users must accept to give the following rights to the Omi application (asked upon starting Omi application for the first time):

- Allow to access device location data
- Allow to use photos and videos
- Allow to access user folders

DISPOSABLES

UNIVERSAL ADAPTATOR	
Dimensions	68 x 26 x 19.4 (mm)
Weight	11 g
Materials	Medical grade polycarbonate

CARTRIDGE	
Dimensions	80 x 60 x 36 (mm)
Weight	56 g
Wetted materials	Medical grade polycarbonate and MVQ silicone*
Working Fluid	Water based solutions*, IPA, Ethanol
Cleaning	Isopropanol, 80%/20% v/v water ethanol solution
Channels inner diameter	250 µm

**Check the material compatibility of the used solutions with the wetted materials*

TUBING	
Material	FEP (provided), but other materials possible depending on the connector
ID	250 µm (provided), but other can be used depending on the application
OD	1/16” (provided), but other if used with a compatible ¼-28 flat bottom connector

DETAILED CONTENT

OMI'S PACKAGES

OMI SINGLE CHANNEL PLATFORM [O-OMISC-PTF]		
P/N	**Content**	**Quantity**
O-OMI-SA	OMI Stand alone	1
O-OMI-TAB	OMI tablet	1
O-OMI-CART	Set of 3 Cartridges (sterile package) :	1
O-OMI-LRCC	Set of 3 Low resistance adaptors (sterile package) :	1
O-OMI-HRCC	Set of 3 High resistance adaptors (sterile package) :	1

OMI DOUBLE CHANNEL PLATFORM [O-OMIDC-PTF]		
P/N	**Content**	**Quantity**
O-OMI-SA	OMI Stand alone	2
O-OMI-TAB	OMI tablet	1
O-OMI-CART	Set of 3 Cartridges (sterile package) :	2
O-OMI-LRCC	Set of 3 Low resistance adaptors (sterile package) :	2
O-OMI-HRCC	Set of 3 High resistance adaptors (sterile package) :	2

OMI STAND ALONE [O-OMI-SA]		
P/N	**Content**	**Quantity**
O-OMI-DEV	OMI device	1
O-OMI-AF-CTK	OMI air filter and pneumatic kit	1
O-OMI-CTK	OMI tubing and fitting kit	1
O-OMI-SK **O-OMI-LU**	Power supply kit (socket depends on the region)	1

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KITS

POWER SUPPLY KIT [O-OMI-SK]	
Content	**Quantity**
Power supply (24V 1,75A)	1
Power cable - EUR - Little	1
DC power chord male-male (5.5x2.5mm, 30cm, white, 24AWG)	1

OMI AIR FILTER AND PNEUMATIC KIT [O-OMIAF-CTK]	
Content	**Quantity**
Luer male big tube (white)	3
Luer lock mâle blanc to barb (1.6 mm)	3
Syringe Filters (13 mm 1.2 µm)	3
TYGON (4.8 mm OD 1.6 mm ID)	2 m
Pneumatic tube (4 mm OD)	2 m

OMI TUBING AND FITTING KIT [O-OMI-CTK]	
Content	**Quantity**
FEP tubing (1/16"OD 0.010"ID)	1 m
Tube Cutter	1
Flangeless fitting	8
Additional Omi Gasket	18

CERTIFICATION

The Omi device is CE and RoHS compliant FLUIGENT SA is ISO 9001 certified since 2010

SUPPORT & CONTACT

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