



2022

RESEARCH & INDUSTRIAL
PRODUCT CATALOG



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1 INTRODUCTION

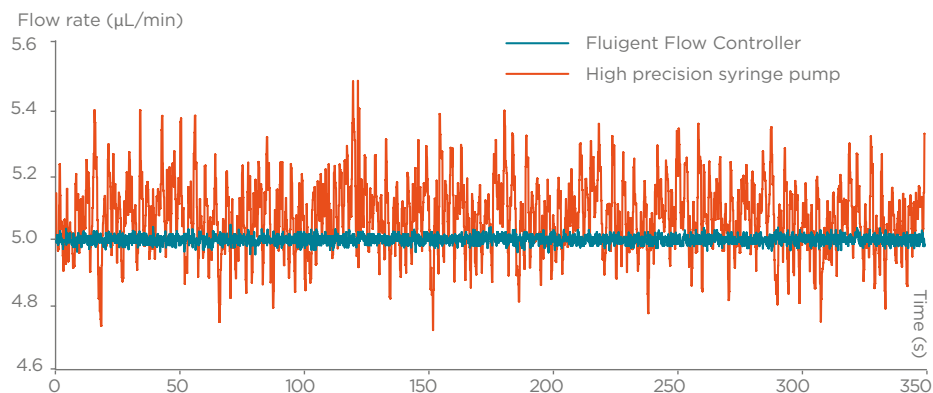
FLOW CONTROL TECHNOLOGIES

Fluigent was the first company to introduce pressure-driven flow control to research in microfluidics.

Pressure-driven flow control has multiple advantages compared to conventional syringe and peristaltic pumps for many applications.

Depending on the field of application, shear stress-related flow requirements can be different. Some studies exclude this parameter and other researchers are trying to reproduce in-vivo shear stress conditions. In both cases, precise, pulseless flow control is critical for repeatable results. Peristaltic and syringe pumps generate pulsatile and unstable flows. **Pressure-driven pumps have been shown to provide superior performance.**

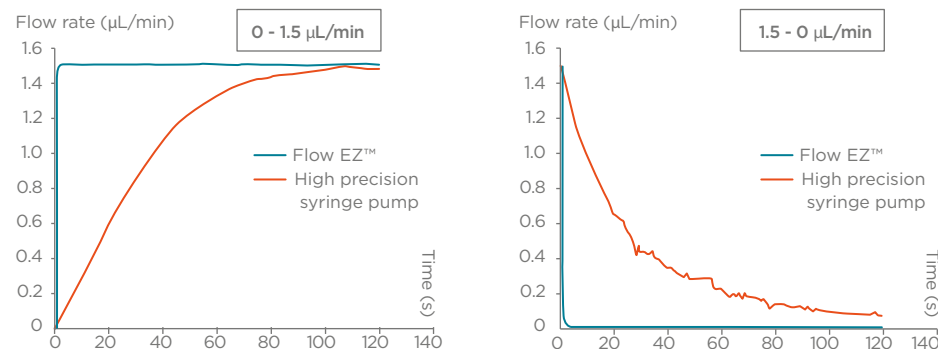
Flow rate profile over the time



The Fluigent Flow Controller used in this experiment is our MFCST[™]-EX, based on the patented FASTAB[™] technology. This technology is the best adapted to manipulating fluid volumes at the sub-microliter scale compared to syringe, peristaltic or piston pumps.

Moreover, in microdroplet generation, **droplet size and frequency** are directly linked to the flow rates of the continuous and dispersed phases. Flow rate stability is critical for having repeatable and monodispersed droplets. **Pressure pumps provide more stable flow** leading to **better experimental data.**

Flow rate response over the time



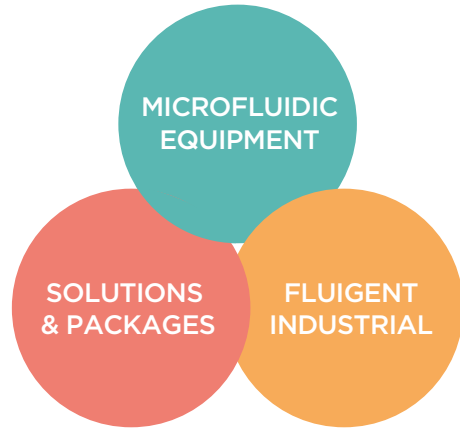
The Fluigent Flow Controller used in this experiment is our LineUp Flow EZ[™]. This component allows you to save experimental time, precious samples and expensive reagents with significantly shorter response times compared to syringe pumps.

Flow controller system comparison

| Features | Fluigent LineUp [™] series | Fluigent MFCST [™] series | Other Pressure-Based Solutions | Syringe Pumps |
|------------------------------|-------------------------------------|------------------------------------|--------------------------------|---------------|
| Free standing (no PC needed) | ✓ | ✗ | ✗ | ~ |
| Modular & stackable | ✓ | ✗ | ✗ | ~ |
| Very short response time | ✓ | ✓ | ~ | ✗ |
| Pulseless flow | ✓ | ✓ | ✓ | ✗ |
| Control & monitor display | ✓ | ✗ | ~ | ~ |
| Compact | ✓ | ✓ | ~ | ✗ |
| Integrated pressure source | ✗ | ✓ | ~ | ✗ |

COMPANY OVERVIEW

Fluigent develops, manufactures, sells and supports innovative fluid handling solutions for a variety of rapidly growing applications where fluid control is critical.



Since 2005 we have delivered more than **3000 Fluigent systems**. These include the MFCSTM-EZ (Microfluidic Flow Control System), the LineUp™ series (Pressure-based flow controllers) and the ESSTM valves (Easy Switch Solutions™).

We strive to provide “Smart Microfluidic” solutions. Our modular system architecture enables our customers to focus on their application.

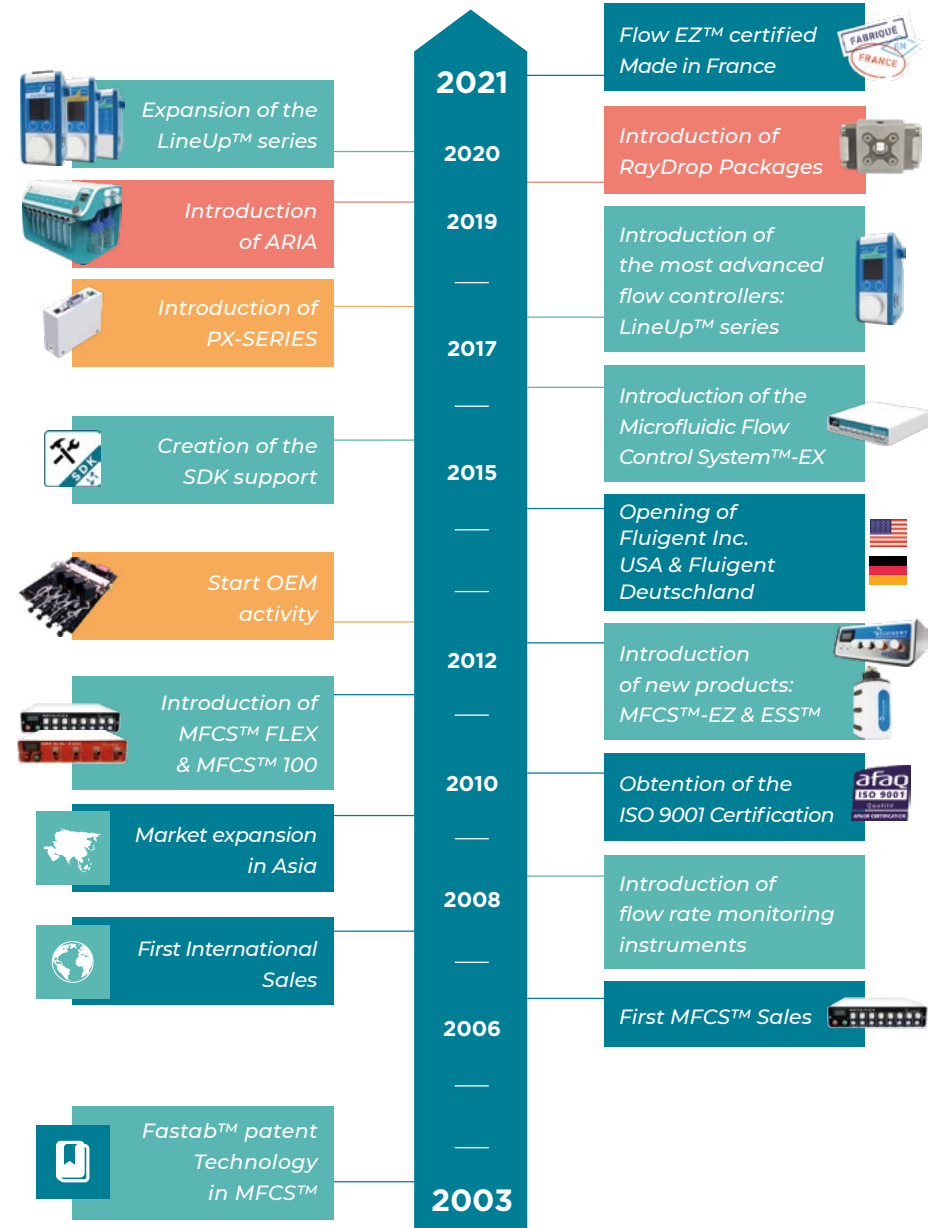
TEAM & FACILITIES



In addition to our Paris area headquarters, we have 2 local subsidiaries to be closer to our customers and provide local service and support: **Fluigent Deutschland GmbH** in Jena, Germany serves Northern and Eastern European customers, and **Fluigent Inc.** near Boston, USA for our customers in the Americas.

HISTORY

Fluigent is the leader in microfluidic control



OUR DISTRIBUTORS



2

MICROFLUIDIC EQUIPMENT

At Fluigent, we strongly believe that local customer and technical support is essential to maintaining customer satisfaction.

Since 2006, we have delivered our instruments to more than 40 countries worldwide thanks to our direct offices in France (Fluigent SAS), the USA (Fluigent Inc.), Germany (Fluigent Deutschland GmbH), and our network of distributors and partners.

Through regular training and support, we help our distributors serve our customers from around the world every day. No matter where you are in the world, Fluigent will be there.

To contact your local Fluigent representative, or if you are interested in partnering with Fluigent for OEM development, distribution, or services, please send us an email at sales@fluigent.com.

LINEUP™ SERIES

The most advanced flow control system



LineUp™ series modules

Our LineUp™ product range is the next generation of microfluidic systems. With the **Flow EZ™** or **Push-Pull** modules one can precisely regulate and control pressure & vacuum, the **LINK** and **LINK COM** modules provide communication to a computer or any external instrument using TTL ports, USB cable or Serial port communication. The **Adapt** is used to connect Flow EZ™ modules with different pressure ranges without the need of additional pressure sources. The **P-SWITCH** allows to multiply the outlets of the system and the **SWITCH EZ** controls microfluidic valves. The entire system can be controlled without a PC using local control and can also be monitored by **Fluigent Software** to extend its capabilities and benefit from automation. Select modules you need and combine them together.

Focus on your experiment with the local control dial

Easily adaptable to any setup

Start within minute: Use with or without a PC

Economical & expandable

FLOW EZ™

Pressure-based flow controller

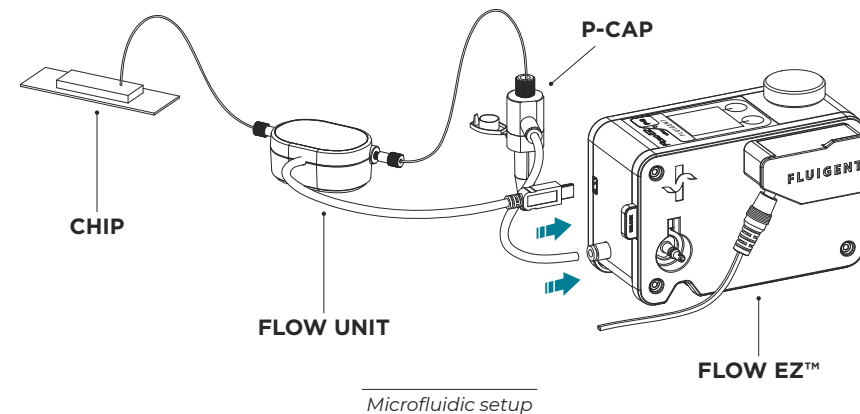


Characteristics

LineUp Flow EZ™

| Range in mbar | Product Number |
|---------------|----------------|
| 0 to 25 | LU-FEZ-0025 |
| 0 to 69 | LU-FEZ-0069 |
| 0 to 345 | LU-FEZ-0345 |
| 0 to 1000 | LU-FEZ-1000 |
| 0 to 2000 | LU-FEZ-2000 |
| 0 to 7000 | LU-FEZ-7000 |
| 0 to -25 | LU-FEZ-N025 |
| 0 to -69 | LU-FEZ-N069 |
| 0 to -345 | LU-FEZ-N345 |
| 0 to -800 | LU-FEZ-N800 |

The **Flow EZ™** is the most advanced flow controller for pressure-based fluid control. It can be combined with a **FLOW UNIT** to control both pressure and flow rate. It can be used without a PC to minimize benchtop space, or connected to the **LINK** to benefit from **Fluigent Software** features such as graph view in real-time, automation and custom integration.



Characteristics

LineUp™ Push-Pull

| Range in mbar | Product Number |
|---------------|----------------|
| -800 to 1000 | ELUPPU1000 |

The **Push-Pull** is the newest version of the Flow EZ™ with the ability to **regulate pressure and vacuum from one unit**. The module controls over the range of **-800 mbar to 1000 mbar**.

PUSH-PULL

Pressure & vacuum control



P-SWITCH

Pneumatic valve controller



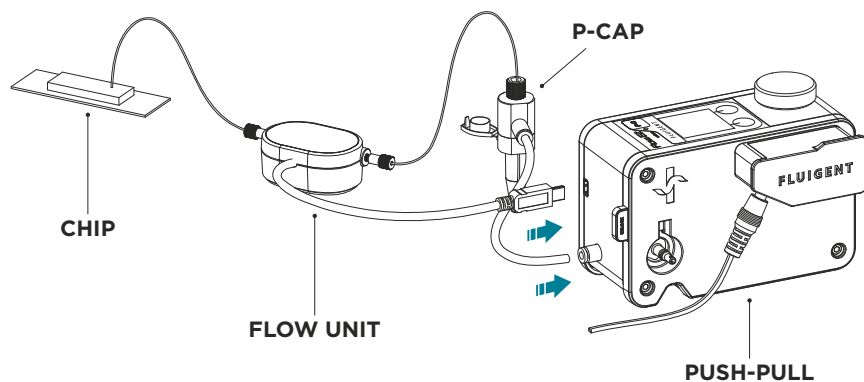
Characteristics

LineUp™ P-SWITCH

| Range in mbar | Product Number |
|---------------|----------------|
| -800 to 2000 | ELUPSW2000 |

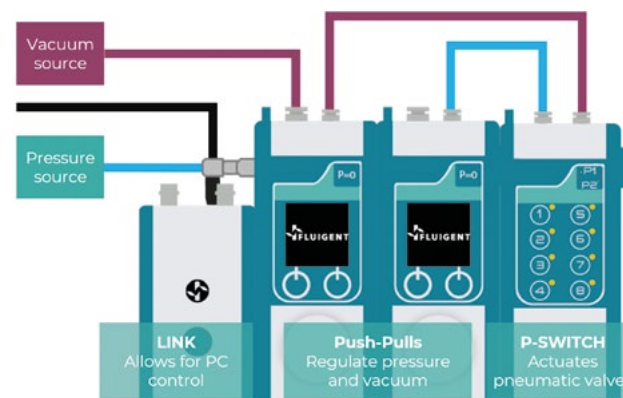
The **P-SWITCH** is a pneumatic valve controller. By providing two regulated pressure / vacuum sources (any vacuum or pressure from **-800 mbar to +2000 mbar**), each module is able to deliver one of the two provided pressure through **8 independent outlets**.

The **Push-Pull** can be combined with a **FLOW UNIT** to control both pressure and flow rate. It can be used without a PC to minimize benchtop space. When connected to a PC with the **LINK** one can benefit from **Fluigent Software** features.



Microfluidic setup

Supplied by the **Flow EZ** modules or other external pressure system, one **P-SWITCH** can pressurize **up to 8 reservoirs**. With a **LINK** and **Fluigent Software**, the module allows for automation behavior and actuation timing of any pneumatic or quake valves.



To learn more about the **P-SWITCH** applications, see the **application note**.

Characteristics

LineUp™ SWITCH EZ

| Valve compatibility | Product Number |
|---------------------------------|----------------|
| M-SWITCH™, L-SWITCH™, 2-SWITCH™ | ELUSEZ |

The **SWITCH EZ** is a module allowing one to control **Fluigent's microfluidic valves**. The module has **6 external connections** and can be combined with other **LineUp™** products to have a complete, compact system for benchtop use.

SWITCH EZ

Microfluidic valve controller



ADAPT

Pressure reducer



Characteristics

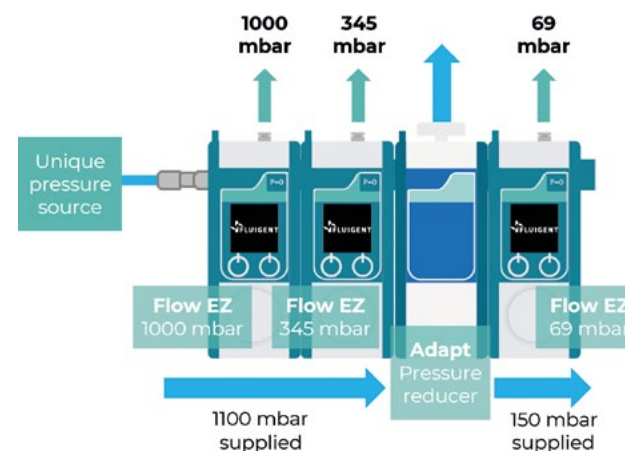
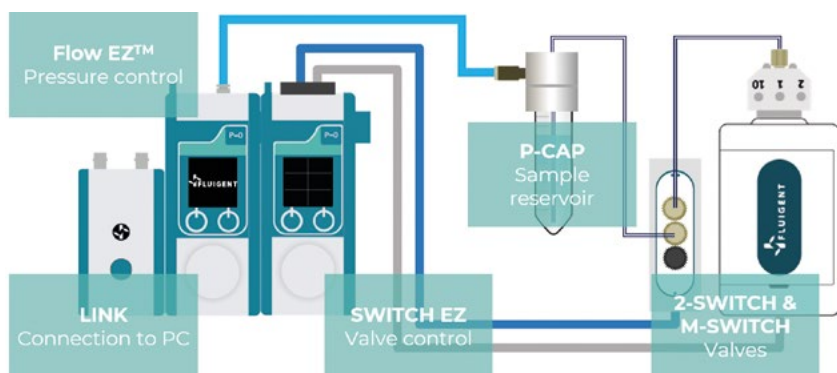
LineUp™ Adapt

| Product Number |
|----------------|
| LU-ADP-0001 |

The **Adapt** is a **pressure reducer**. Placed between two pressure controllers having different input requirements, it allows one to have a system with many **different pressure channel ranges**. It reduces the outgoing pressure supply from the module to its left and provides the required pressure supply to the module on its right.

Connected valves can be **controlled or programmed** either by using the local control directly on the device or by creating a software protocol to automate **valve actuation timing**.

Each **LineUp™ Flow EZ** or **Push-Pull** requires a specific amount of pressure supplied. To build a single LineUp™ system with various pressure range, use the **Adapt** to reduce the pressure supply and meet exact requirements.



| Pressure requirement | Product Number |
|------------------------|----------------|
| 150 mbar | LU-FEZ-0025 |
| | LU-FEZ-0069 |
| 11000 mbar | LU-FEZ-0345 |
| | LU-FEZ-1000 |
| 2100 mbar | LU-FEZ-2000 |
| 71000 mbar | LU-FEZ-7000 |
| | LU-FEZ-N025 |
| | LU-FEZ-N069 |
| -800 mbar | LU-FEZ-N345 |
| | LU-FEZ-N800 |
| 1100 mbar -800 mbar | ELUPPU1000 |

Characteristics

LineUp™ LINK / LINK COM

| Communication | Product Number |
|----------------------------------|----------------------|
| USB port, TTL signal | LU-LNK-0002 (LINK) |
| Serial port (RS-232), TTL signal | ELULNK232 (LINK COM) |



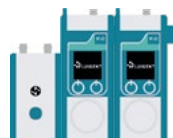
LINK COM

LINK LINK COM

Connection to the PC



LINK



The **LINK** provides communication for all connected **LineUp™ series** modules to a PC for **software control**. Place it at the first position of the chain and connect it to the PC to use Fluigent Software.


Three types of connection and communication are available:




Extended products

| | | |
|--|--|--------------------------------|
| OxyGEN SSFT-OXY | Fluigent Software extends the devices capabilities with features such as pressure / flow rate graph views, control in real time and protocol automation. More information page 46 | Provided |
| LineUp™ Supply Kit LU-SPK-0001 | Power cable and pneumatic tubing to supply the LineUp series modules. Allow for local control without a PC. More information page 49 | Provided in package |
| Chain-to-Chain kit LU-C2C-0001 | Cable to connect data and power transmission between two modules without combining them together. Allows for flexibility and several pressure sources. More information page 49 | Accessory |
| P-CAP series P/N on version | Air-tight metal cap for reservoir pressurization. More information page 33 | Required for liquids |
| FLOW UNIT P/N on flow rate range | The FLOW UNIT is a high-precision flow sensor used for direct flow control. More information page 20 | Required for flow rate control |
| SDK FLUIGENT-SDK | The Software Development Kit provides integration of devices over multiple programming languages More information page 47 | Provided |

See more about LineUp™ series

 Dedicated webpage with additional information about the complete series. Visit www.fluigent.com

[See more](#)

 Fluigent tutorials on Flow EZ™ pressure-based flow controller. Quickly learn how to set and to use. Watch us on YouTube at Fluigent

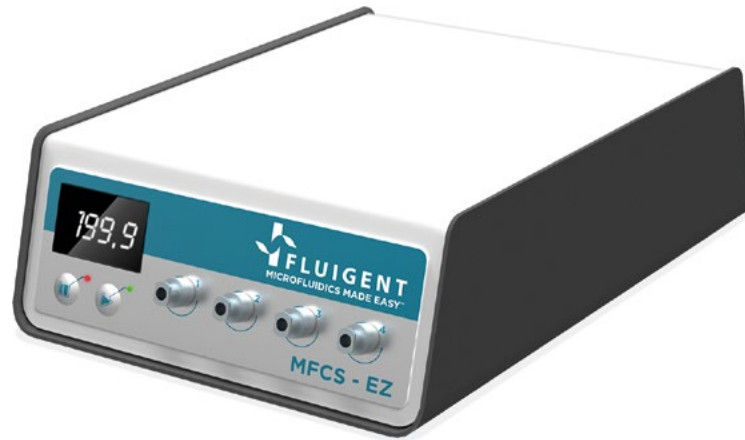
[Tutorials](#)

 Discover the use of LineUp™ series in a number of applications. Visit www.fluigent.com/applications

[Applications](#)

MFCSTTM SERIES

Microfluidic Flow Control System



MFCSTTM

The **MFCSTTM** is a microfluidic flow controller. Either **4 or 8 channels** are available with different pressure ranges for **precision operations** in microfluidic experiments. By using the FASTABTM microfluidic patented technology, the MFCSTTM generates a **constant pressure-driven flow rate** that allows for reliable and repeatable experiments.



Easy to use

*Adaptable:
Independent
pressure channels*

*Reliable and
reproducible results:
Pulseless flow*

*Compact:
Save benchtop space*

Characteristics

| | Range in mbar | Product Number | Range in mbar | Product Number |
|------------------------------|-----------------------------------|----------------|---------------|----------------|
| MFCST TM -EZ | 0 to 345 | EZ-00345001 | 0 to 345 | EX-00345001 |
| | 0 to 1000 | EZ-01000001 | 0 to 1000 | EX-01000001 |
| | 0 to 2000 | EZ-01000002 | 0 to 2000 | EX-01000002 |
| | 0 to 7000 | EZ-07000001 | 0 to 7000 | EX-07000001 |
| | 0 to -345 | EZ-80345001 | 0 to -345 | EX-80345001 |
| | 0 to -800 | EZ-80800001 | 0 to -800 | EX-80800001 |
| | Unit in mbar | Product Number | | |
| MFCST TM -EZ Base | Basic | EZ-11000001 | | |
| | Positive Pressure Source Included | EZ-source-pos | | |
| | Negative Pressure Source Included | EZ-source-neg | | |
| MFCST TM -EX Base | Basic | EX-11000008 | | |
| | Positive Pressure Source Included | EX-source-pos | | |
| | Negative Pressure Source Included | EX-source-neg | | |

MFCSTTM series

Our MFCSTTM series product range is the first generation of microfluidic systems. Along with the MFCSTTM-EZ or MFCSTTM-EX, a **Manifold** can be added to redirect the pressure to multiple fluid reservoirs. The flow generated can be measured with **FLOW UNITS** and the **Flowboard**. The MFCSTTM can also have an integrated pressure source or be coupled with the **FLPG Plus**, an external pressure source (page 30). This system is controlled by **Fluigent Software Solutions**.

 [More product specifications at www.fluigent.com](http://www.fluigent.com)

 [More information on flow control technologies on pages 4-5](#)

Extended products

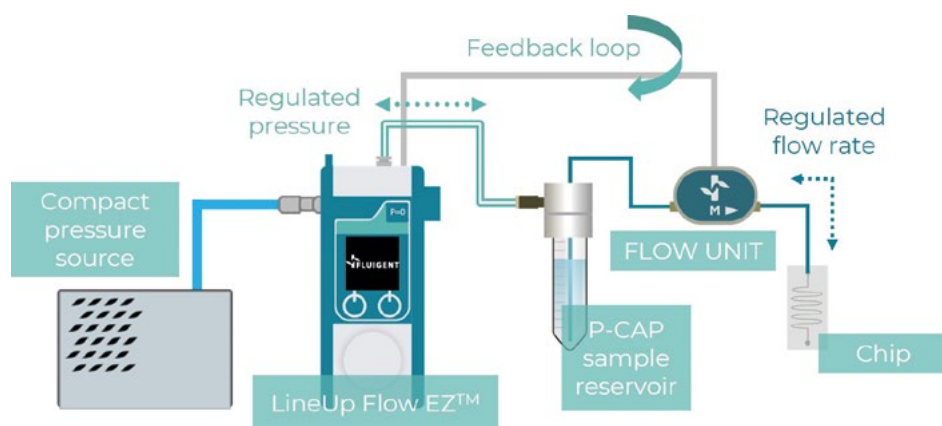
| | | |
|--------------------------------|--|---------------------------------------|
| OxyGEN SSFT-OXY | Fluigent Software extends the devices capabilities with features such as pressure / flow rate graph views, control of real time and protocol automation. More information page 46 | Provided |
| SDK FLUIGENT-SDK | The Fluigent Software Development Kit includes full integration of devices interfaces within LabVIEW, MATLAB and other IDEs. More information page 47 | Provided |
| MFCSTTM KITS | The MFCST TM Low or High Pressure Kits are specially designed to be used with any MFCST TM with any low or high pressure channel. More information page 48 | Required |
| FLOW UNIT | The FLOW UNIT is a high-precision individual flow sensor used for direct flow control. More information page 20 | Required for flow rate control |
| FLOWBOARD FLB | The Flowboard is a hub that communicates between Fluigent Software and up to eight FLOW UNITS. More information page 22 | Required for flow rate control |

FLOW UNIT

Bidirectional flow rate sensor



The **FLOW UNIT** is a **bidirectional flow sensor** compatible with our Software Solutions, our **MFCSTM series**, our **LineUp™ series** or other external control system. The sensor extends the capabilities of Fluigent instruments and allows for **direct control of flow rate**.



PC free pressure-based flow control

Characteristics

| FLOW UNIT | XS | S | M | L | XL | | | |
|--------------------------------|-------------------------|---------------------------|--------------------------|----------------------------|-------------------------|----------------------------|--------------------------|---------------------------|
| Product Number | FLU-XS | FLU-S-D | FLU-M-D | FLU-L-D | FLU-XL | | | |
| Sensor Inner Diameter | 25 µm | 150 µm | 430 µm | 1 mm | 1.8 mm | | | |
| Maximum Pressure | 200 bar | 200 bar | 100 bar | 15 bar | 15 bar | | | |
| Wetted Materials | PEEK & Quartz Glass | | | PEEK & Borosilicate Glassz | | | | |
| Calibrated Media | Water | Water | IPA | Water | IPA | Water | IPA | Water |
| Range | 0±1.5 µL /min | 0±7 µL /min | 0±70 µL /min | 0±80 µL /min | 0±500 µL /min | 0±1 mL /min | 0±10 mL /min | 0±5 mL /min |
| Accuracy (measured value) | 10% mv above 75 nL /min | 5% mv above 0.42 µL /min | 20% mv above 4.2 µL /min | 5% mv above 2.4 µL /min | 20% mv above 25 µL /min | 5% mv above 0.04 mL /min | 20% mv above 0.5 mL /min | 5% mv above 0.2 mL /min |
| Repeatability (measured value) | <1% mv above 90 nL /min | 0.5% mv above 0.7 µL /min | 1% mv above 0.7 µL /min | 0.5% mv above 1.4 µL /min | 1% mv above 25 µL /min | 0.5% mv above 0.04 mL /min | 1% mv above 0.5 mL /min | 0.5% mv above 0.2 mL /min |

Measured Values from 5% to 100% of product range in normal conditions

| | | | |
|---|---|--|--|
| <i>High precision: get reliable results</i> | <i>Adaptable: Large range of flow rates</i> | <i>Flexible: Usable with any flow control system</i> | <i>Ease of use: Plug & play and easy combination</i> |
|---|---|--|--|

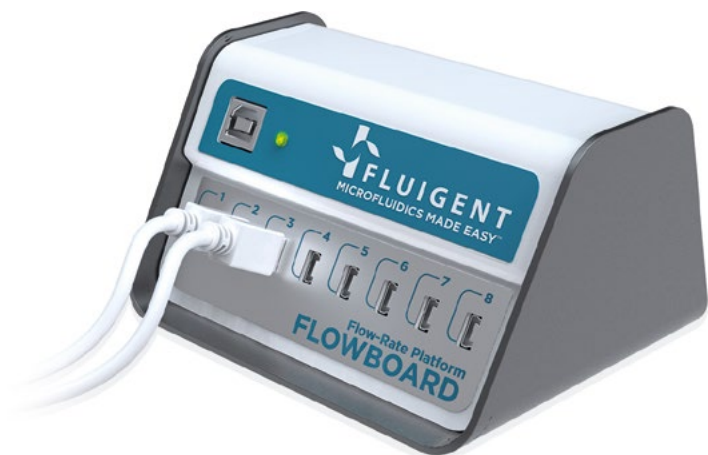
Extended products

| | | |
|--|--|--|
| FLOWBOARD FLB | The Flowboard is a hub that manages communication between Fluigent Software and up to eight FLOW UNITS. | Required with MFCSTM or stand alone |
| FLOW UNIT KITS | Tubing & fitting elements dedicated for each range of FLOW UNIT, allow for fast handling and optimized performance. | Required |
| LineUp™ Push-Pull ELUPPU1000 | Pressure & vacuum controller used to pressurize the sample reservoirs and drive fluids to a microfluidic set-up. Allows for control and monitor in flow rate if combined with a FLOW UNIT. | Required to monitor fluids bidirectionally without a PC |

FLOWBOARD

Flow Rate sensor hub

P/N : FLB



The **Flowboard** is a hub that manages communication between **Fluigent Software** and **up to eight FLOW UNITS**. The **Flow Rate Platform** is designed to be used with any flow control system.

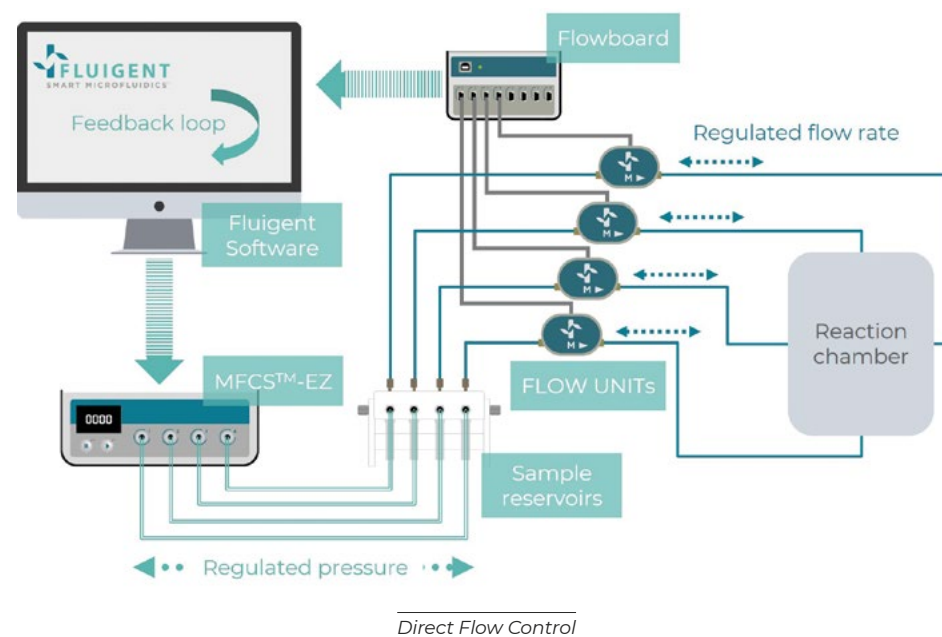
This unique flow rate measurement system provides the **best precision for various flow rate ranges**. Used with any Fluigent pressure system, the **Direct Flow Control algorithm** and Fluigent Software allow for **accurate** and **fast regulation** of the fluids by automatically adjusting pressure to maintain the set flow rate.

Easy to set
and use

Up to
8 flow sensors

Mix range from
nL/min to
mL/min

Adaptable :
work with any
flow controller



Extended products

FLOW UNIT

The FLOW UNIT is a bidirectional flow sensor used for direct flow control.

Required

MFCST™ series

The MFCST™ series products are designed to control pressure. Combined in the set-up with a Flowboard and FLOW UNIT sensors, it allows for direct flow control.

Required for
pressure-based flow
control

PRESSURE UNIT

In-Line Pressure Sensor



The **PRESSURE UNIT** is a stand-alone sensor for **continuous, accurate measurement** of the pressure in a fluidic path. The sensors can detect values over the range of **-1000 mbar** (-15 psi) to **7000 mbar** (100 psi). They are directly connected to a PC via USB, and display measurement in real time with **Fluigent Software** interface. User's can output this value for custom software applications using the **Software Development Kit**.

Compact device: dedicated for benchtop use

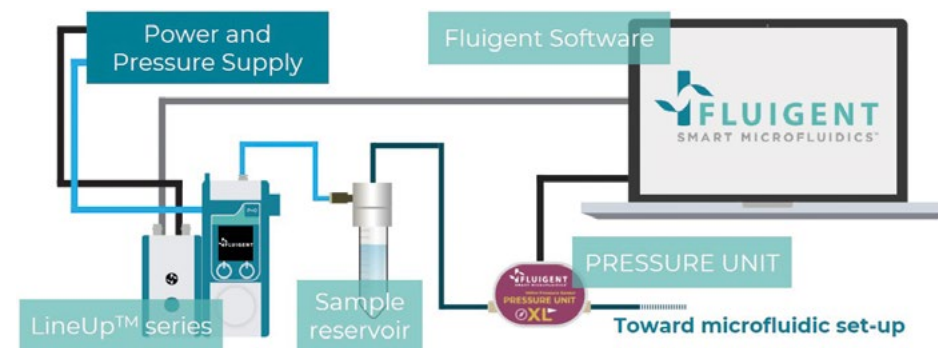
Wide range of detection: from -1000 to 7000 mbar

Ease of use: Operate within a minute

Plug & Play: No hub required, connect it directly to the PC

Characteristics

| PRESSURE UNIT | S | M | L |
|----------------|------------------|--------------------|--------------------|
| Product Number | EIPS345 | EIPS1000 | EIPS7000 |
| Pressure range | -345 to 345 mbar | -1000 to 1000 mbar | -1000 to 7000 mbar |



Microfluidic set-up with in-line pressure detection

Extended products

PRESSURE UNIT KIT EIPSKIT

Tubing & fitting elements dedicated for all range of PRESSURE UNIT, allow for fast handling and optimized performance. **Required**

LineUp™ Push-Pull ELUPPU1000

Pressure & vacuum controller used to pressurize the sample reservoirs and drive the fluids toward microfluidic set-up. The PRESSURE UNIT allows for pressure detection and control anywhere it is placed in the system. **Required to monitor fluids and pressure**

OxyGEN SSFT-OXY

Fluigent Software allows for graphical display in real-time of the measured value by the sensor. **Required**

MICROFLUIDIC VALVES

Easy Switch Solutions™



M-SWITCH™
11-port
10-position

SWITCH EZ
microfluidic valve
controller

L-SWITCH™
6-port
2-position

2-SWITCH™
3-port
2-way

The **ESS™** is a versatile **fluid handling platform** for directing fluid flow. It can be **automated** using Fluigent software or **controlled locally** without the need of a PC. The product line offers **three different valves** for a wide range of applications. One valve controller can be combined with the pressure system and Fluigent Software Solutions or used in stand alone mode.

Economical:
reduce reagent
consumption

Accuracy:
fast valve
actuation and
low internal
volume

Versatility:
Control in real-
time, Automate
and Integrate
as needed

Compact:
dedicated for
benchtop use &
useable without
a PC

2-SWITCH™

P/N: 2SW002

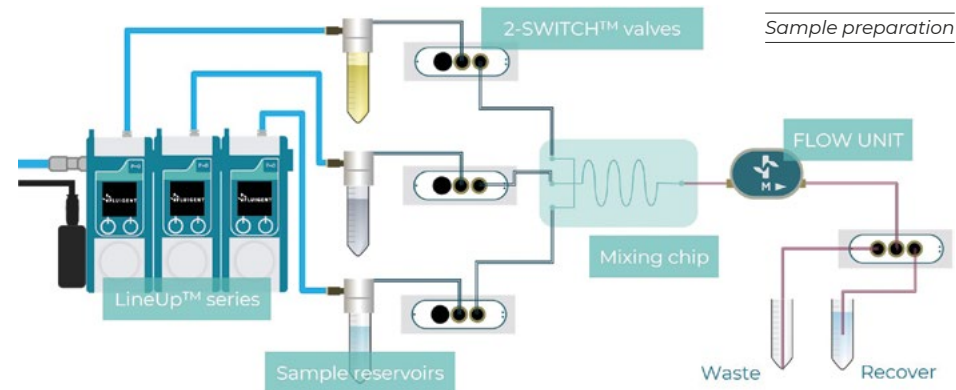
3-port/2-way microfluidic valve



The **2-SWITCH™** is a compact **3-port/2-way bidirectional** microfluidic valve. Using standard connectors it can be integrated to any microfluidic setup. Its unique design allows the combination of multiple units together to save space on your benchtop.

Characteristics

The **2-SWITCH™** may be used as a manually-operated, stand-alone device or controlled by Fluigent Software for long-term experiments. Its versatility makes it ideal for applications where fluid sorting, switching or periodic sampling are required.



Extended products

SWITCH EZ
ELUSEZ

Microfluidic valve controller that can host up to six 2-SWITCH™ and allow for local actuation without a PC or time-based automation if connected to Fluigent Software with a LINK.

Required

2-SWITCH™
KIT
CTQ-KIT-2SW2

Tubing & fitting elements dedicated the 2-SWITCH™, allows for fast handling and optimized performance.

Required

M-SWITCH™

P/N : ESSMSW003

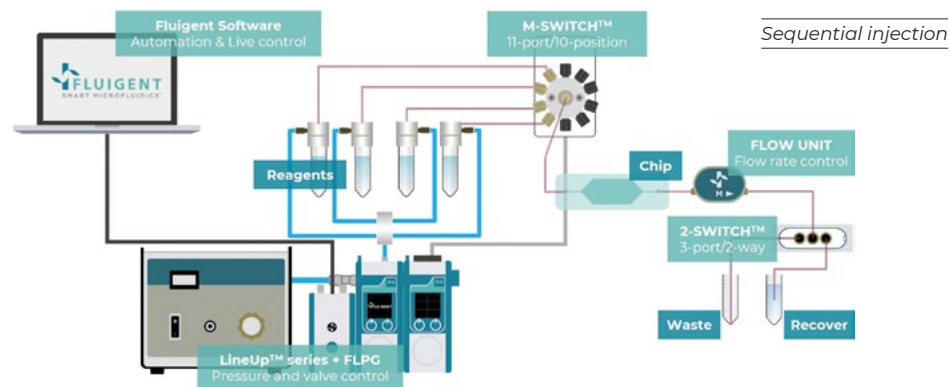
11-port/10-position microfluidic valve



The **M-SWITCH™** is a bidirectional 11-port / 10-way microfluidic valve for injection or selection of **up to 10 different fluids or chips**. The **flow is bidirectional** in the valve, meaning that the device can be used as a **selector** and a **distributor** for either multiplexing or demultiplexing purposes.

Characteristics

The **M-SWITCH™** is compatible with Fluigent's pressure controllers **MFCS™ series** and **LineUp™ series**. It is controlled with **LineUp™ SWITCH EZ** allowing for **local control** without a PC or **automated valve actuation** using Fluigent Software.



Extended products

SWITCH EZ ELUSEZ

Microfluidic valve controller that can host up to three M-SWITCH™ and allow for local actuation without a PC or time-based automation if connected to Fluigent Software with a LINK.

Required

M-SWITCH™ KIT CTQ-KIT-ESSMSW003

Tubing & fitting elements dedicated the M-SWITCH™, allows for fast handling and optimized performance.

Required

PRESSURE MANIFOLD CTQ-MANI

The Pressure Manifold is designed to redirect pressure flow from a single controller into up to 10 reservoirs.

Optional

L-SWITCH™

P/N : LSW001

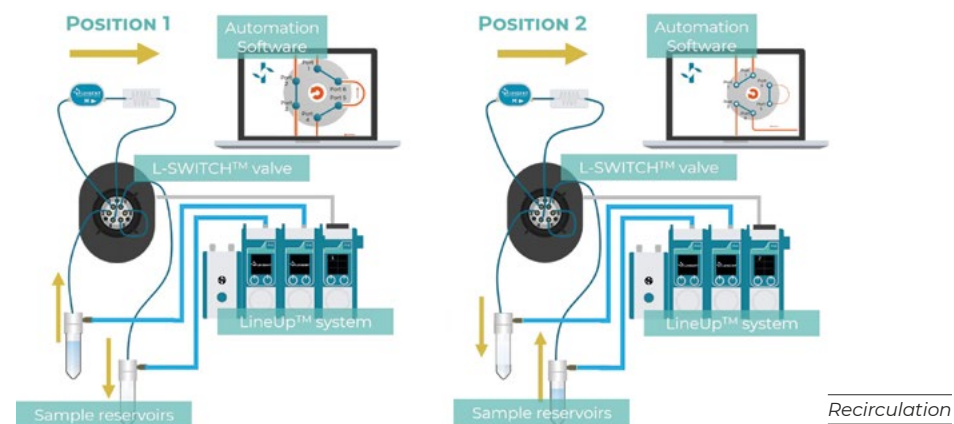
6-port/2-position microfluidic valve



The **L-SWITCH™** is a bidirectional 6-port/2-position valve for **precise sample injection** or switching between different fluids. Its configuration make it ideal for **recirculation** in cell culture.

Characteristics

The **L-SWITCH™** can be used as a useful cell culture tool: a small volume of buffer can be recirculated within a closed loop into the chip for several hours or days. Combined with our **MFCS™-EZ** or **LineUp™ series** it can provide stable flow with a minimal impact on shear stress. The valve also enables one to load and inject a precise volume of fluid. By selecting the position of the **L-SWITCH™** one will choose when to load the fluid then inject it (using a sample loop). Several sample loops are available from 5 µL to 100 µL.



Extended products

SWITCH EZ ELUSEZ

Microfluidic valve controller that can host up to three L-SWITCH™ and allow for local actuation without a PC or time-based automation if connected to Fluigent Software with a LINK.

Required

L-SWITCH™ KIT CTQ-KIT-LSW

Tubing & fitting elements dedicated the L-SWITCH™, allows for fast handling and optimized performance.

Required

FLPG+

Fluigent Low Pressure Generator



The **Fluigent Low Pressure Generator** is the perfect tool for those who need a pressure source with all accessories included and integrated. This tool is adapted to the **LineUp™ series** and **MFCSTM series** or any other microfluidic pressure-based instrument.

Characteristics

The FLPG+ compressor supplies **up to plus 2 bar**. This item contains the pressure source, a manual regulator, and a pressure sensor and display. **Three FLPG models** are available depending on requirements

| FLPG+ model | Product Number |
|---|----------------|
| FLPG+ High Pressure Supply - Up to 8 channels (2 bar) or 16 channels (1 bar) | FLPG003 |
| FLPG+ Silent Pressure Supply - Up to 4 channels (2 bar) or 8 channels (1 bar) | FLPG005 |
| FLPG+ with incubator aspiration option | FLPG004 |

Extended products

MFCSTM series

The MFCSTM series products are designed to control pressure. If the device has no integrated pump, it needs to be supplied by the FLPG+ compressor.

Required for pressure-based flow control

LineUp™ series

The LineUp™ series products are designed to control pressure. The system requires an external pressure source to be supplied.

Required for pressure-based flow control.

COMPACT PRESSURE SOURCE



The **Compact Pressure Source** is the latest addition to the Fluigent Pressure Source family of products. It also exists in an OEM version, called the **RX**. This compact compressor is designed to be used as a **standalone pressure source**. Packaged in a robust steel enclosure, it provides dried and filtered air at up to **2500 mbar** for one or pressure control systems such as the **LineUp™ series**, **MFCSTM series**, **PX-series**, or other instruments which need compressed air to operate.

Product Number

E-AC-RX1-2500

Compact and versatile

Provides condensation-proof and filtered air

Suited for OEM integration

Extended products

LineUp™ series

The LineUp™ series products are designed to control pressure. The system requires an external pressure source to be supplied. The Compact Pressure Source has been especially designed to supply properly the LineUp™ series and reduce global system size.

Required for pressure-based flow control.

VACUUM PUMP

Compact Vacuum Pump



The **Compact Vacuum Pump** generates a vacuum to **supply any negative pressure channel** or perform **aspiration**. The pump is compact and has a **regulation dial** to provide an outstanding ease of.

Product Number
EACVACPUMP

*High flow rate:
up to
7L/min*

*Ease of use
and
compactness*

*Low vibration
and
noise level*

*High
compatibility:
from 0 to
-1000 mbar*

Extended products

MFCST[™] series

The MFCST[™] series products are designed to control pressure and vacuum. If the device has no integrated vacuum pump and negative pressure channels, it can be supplied by the Compact Vacuum Pump

Recommended

Push-Pull

The LineUp[™] Push-Pull is a pressure and vacuum controller. The system requires an external vacuum source to perform aspiration. The Compact Vacuum Pump can supply properly the LineUp[™] series with negative range and Push-Pull.

Recommended

P-CAP SERIES

Air-tight metal cap



The **P-CAP** is an air-tight metal cap that allows for pressurization of standard lab tubes for microfluidic fluid delivery. The reservoirs and caps are available with different **volume sizes** and **pressurization levels**.

*Autoclavable
& Incubator
compatibility*

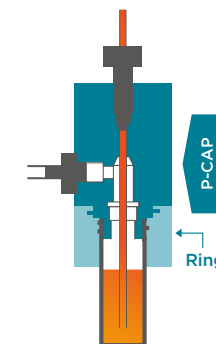
*No contact
between the
sample and the
P-CAP*

*Suitable for
long term
experiments*

*Compatible with
different tube
sizes*

Characteristics

| Name | Max. volume of pressurized liquid | Pressure compatibility | Product Number |
|--|-----------------------------------|--|----------------|
| P-CAP for Eppendorf plastic reservoirs | 1.5 mL and 2 mL | MFCST [™] | P-CAP2-LP |
| | | Flow EZ [™] & MFCST [™] 7 bars | P-CAP2-HP |
| P-CAP for Flacon Tubes | 15 mL | MFCST [™] | P-CAP15-LP |
| | | Flow EZ [™] & MFCST [™] 7 bars | P-CAP15-HP |
| | | MFCST [™] | P-CAP50-LP |
| | 50 mL | Flow EZ [™] & MFCST [™] 7 bars | P-CAP50-HP |



For use with

FLOW EZ[™]

The Flow EZ[™] is the most advanced flow controller. More information page 11

Optional

MFCST[™]

The MFCST[™] series products are designed to control pressure. More information page 18

Optional

FLUIWELL SERIES

Air-tight Derlin cap

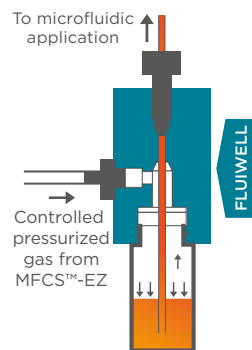


The **Fluowell** is a tool for pressurizing samples inside the vials in order for the fluids to flow through the microfluidic system. The reservoirs and caps are available with different **volume sizes**, **channel numbers**, and **pressurization levels**.

| | | | |
|-----------------------------------|-----------------------------------|---|---|
| <i>Autoclavable compatibility</i> | <i>Compatible with any tubing</i> | <i>Suitable for long term experiments</i> | <i>Compatible with different tube sizes</i> |
|-----------------------------------|-----------------------------------|---|---|

Characteristics

| Name | Max. volume of pressurized liquid | Pressure compatibility | Product Number |
|-------------|-----------------------------------|--------------------------|----------------|
| Fluowell-4C | 0.5 mL | MFCSTM | 14000501 |
| | | Flow EZTM & MFCSTM 7 bar | 24000501 |
| | 2 mL | MFCSTM | 14002001 |
| Fluowell-1C | | Flow EZTM & MFCSTM 7 bar | 24002001 |
| | 15 mL | MFCSTM | 11015001 |
| | | Flow EZTM & MFCSTM 7 bar | 21015001 |
| | 50 mL | MFCSTM | 11050001 |
| | | Flow EZTM & MFCSTM 7 bar | 21050001 |



 Consult our product guide page 92

For use with

FLUIWELL KITS

The Fluowell Kits ensure the air-tightness of the fluid reservoirs.
More information page 54

Required

BOTTLE-CAP SERIES

Air-tight cap for lab bottle



The **Bottle-CAP** series are **air-tight microfluidic adapters** that allows the pressurization of **large volumes of liquid** for microfluidic applications. This cap is compatible with bottles with a **GL-45 thread**. It is compatible with Fluigent's pressure controllers: the **MFCSTM series** and the **LineUpTM series**. The number of outlets for the cap can be customized, with **up to 3 fluidic outlets**, to refill easily or to perfuse different microfluidic chips at the same time.

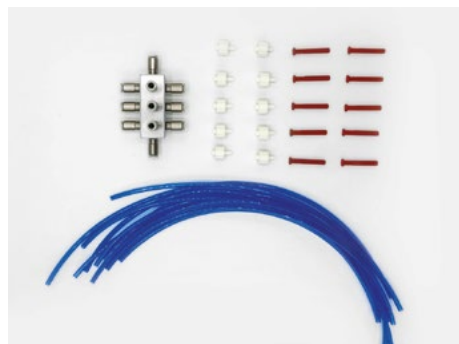
Precaution : Glass laboratory bottles should not be pressurized above 2 bar.

| | | | |
|--|--------------------------------|--------------------------------|--|
| <i>Easy to use and standardized fittings</i> | <i>Incubator compatibility</i> | <i>Robust and autoclavable</i> | <i>Possibility to refill during experiment</i> |
|--|--------------------------------|--------------------------------|--|

Characteristics

| Bottle-CAP model | Tubing & Fitting kit | Number of fluidic port |
|------------------|----------------------|------------------------|
| RES-CAP | CTQ-KIT-BC | 1 fluidic port |
| RES-CAP-PCK | included | 1 fluidic port |
| RES-CAP-3P | included | 2 fluidic ports |
| RES-CAP-4P | included | 3 fluidic ports |

STANDALONE ACCESSORIES



PRESSURE MANIFOLD

(CTQ-MANI)

10-Position Pressure Manifold

The **Pressure Manifold** is designed to redirect pressure flow into **multiple reservoirs**. It allows splitting a gas line into up to 10 lines.

Contents:

- 10 way manifold (x1)
- Luer lock HP (x11)
- Red plug (x10)
- 30 cm high pressure tubing (4 mm OD x 2.5 mm ID) (x10)



BUBBLE TRAP

(CTQ-006BT)

The **Bubble Trap** from Fluigent is a device suitable for aqueous stream flows, to **prevent air bubbles** from entering a microfluidic system. Based on a porous membrane inside the trap, the Bubble Trap prevents high instabilities in the flow rate, high shear stress variation, and damage to the microfluidic system.

Contents:

- Bubble Trap (x1)
- Membrane (x3)
- 1/4-28 Flat-Bottom for 1/16" OD Tubing and ferrule (x2)
- FEP Tubing 1/16" OD x 0.020" (508 µm) ID (1 m)



AIR FLOW REGULATION KIT

(10000001)

A **Regulation Kit** for Pressure Sources consisting of a pressure regulator, an air drier, and pneumatic tubing.

Contents:

- Pressure regulator (x1)
- Air drier (x1)
- 6 mm OD pneumatic tubing (5 m)
- G1/4" – 6 mm OD tube fitting (pressure regulator) (x2)
- G1/8 – 6 mm OD fitting (drier) (x2)



FOOT SWITCH

(FSW001)

The **Foot Switch** is designed to allow **hands-free operations** such as starting/stopping the flow or switching configurations of the **LineUp™ series** or the **MFCs™ series**. This device is directly connected to a computer via a USB port.

Benefits:

- ▶ *Ideal for working under a microscope,*
- ▶ *Hands-free operations*



DIGITAL HIGH SPEED MICROSCOPE

(11MCA01)

Microfluidic experiments often require the visualization of events inside microchannels and thus the need for microscopy. The Fluigent **high-speed camera** is connected with a USB 3.0 cable to a PC where the user can **visualize a microfluidic device** with Pixelink Capture Software.

Benefits:

- ▶ *Monochrome camera 2592 x 2048 (5.3 MP) up to 7092 fps*
- ▶ *Lens (X5) with objective and zoom (6.5X), Coaxial light inlet*
- ▶ *LED and Fiber Optics*



P-CAP SERIES RACK

(P-CAP-RACK)

The **P-CAP rack** is a **compact holder** compatible with any P-CAP size. The versatility of this microfluidic accessory allows to hold **different sizes of pressurized reservoirs**. The rack can be rotated easily if needed.

Benefits:

- ▶ *Autoclavable*
- ▶ *Incubator compatibility*
- ▶ *Convenient setup saving space on the bench*

Extended products :

P-CAP series: Metal air-tight cap for standard lab reservoirs (Recommended)



EDUCATIONAL MICROSCOPE

(OSEDUCMIC)

A **cost-effective microscope** for microfluidics. The LED display enables **several people to observe** at the same time. LCD microscope 50-500x, 2000 (digital) magnification transmitted and reflected light SD card reader USB port.

Benefits:

- ▶ *LCD Microscope display - live view, photo, and video*
- ▶ *Magnification: 50x-500x, 2000x*
- ▶ *Optimal LED illumination with color filters*

RAYDROP

Droplet Generator



RAYDROP SINGLE EMULSION

RAYDROP DOUBLE EMULSION



Characteristics

RayDrop Single Emulsion

| Capillary size | Product Number |
|--------------------------------------|----------------|
| 30 μm - 150 μm | 1DPRD01 |
| 60 μm - 300 μm | ORDRPSE-60-300 |
| 90 μm - 450 μm | ORDRPSE-90-450 |

The **RayDrop** is a microfluidic **droplet generator** composed of three main fully removable parts: two inserts on each side and a center section containing a nozzle and an outlet capillary. There are four standard microfluidic connections, two on the box for the continuous phase, and one on each insert for the dispersed phase entry and the collecting emulsion outlet.

The RayDrop's design allows for **multiple liquid emulsification**, in the same device **without the need for special coatings**.

| | | | |
|--------------------------------------|---------------|-------------------|---------------------|
| One device for multiple applications | Easy cleaning | No coating needed | High monodispersity |
|--------------------------------------|---------------|-------------------|---------------------|

Applications

- ▶ PLGA microparticle
- ▶ Polymer microcapsule
- ▶ Alginate microbeads
- ▶ Liposome Nanoparticle
- ▶ Oil-in-Water droplets
- ▶ Water-in-Oil droplets



Characteristics

RayDrop Double Emulsion

| Capillary size | Product Number |
|---|-------------------|
| 30 μm - 70 μm - 150 μm | ORDRPDE-30-70-150 |

The Fluigent **RayDrop** chip is a patented device for **droplet generation** with most of the **advantages of glass chips** such as resistance to strong chemicals and **compatibility with high pressures** (> 2 bar). Glass chips are a very expensive disposable, are prone to leakage issues and have limited lifetimes as they are very difficult to recover once clogged. The RayDrop device uses **standard fittings** leading to **sealed connections** and its design allows for **easy recovery and cleaning** if clogging occurs.

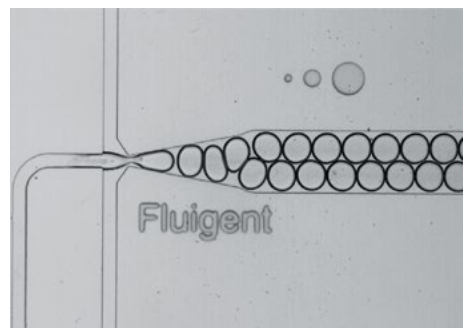
| | | | | |
|---|--|-----------------------------------|---------------------------------|--|
| Perform double emulsions in one single device | Droplet size from 70 μm to 150 μm diameter | Easy-to-clean exchangeable nozzle | High flexibility (w/o/w) o/w/o) | Surface coating-free: No need any surfactant |
|---|--|-----------------------------------|---------------------------------|--|

Applications

- ▶ **Double emulsions** can be produced in only one step in a single device
- ▶ Produce **water-oil-water** and **oil-water-oil** droplets **without any surface coatings** needed.
- ▶ The system does **not need any surfactant** for droplet formation.

EZ DROP

Droplet generation chip



Characteristics

| Microfluidic Chips | Product Number |
|--------------------|----------------|
| EZ Drop | DROPKIT01 |

The **EZ Drop** is a PDMS chip dedicated for water-in-oil droplet generation. It comes with the tubing and fittings needed for an experiment. It works with any **LineUp™** pressure channel and **FLOW UNITS** models.

| | | | | |
|-----------------|-------------------------------|---|--|-----------------------------------|
| Up to 10 000 Hz | From 20 µm to 100 µm droplets | 20 µm, 50 µm, and 100 µm markers on the PDMS Droplet Chip | Microscope slide dimensions. Easy connections. | Quality monitoring with a QR code |
|-----------------|-------------------------------|---|--|-----------------------------------|

Contents

- EZ Drop chip, with 3 designs each (x3 chips, 9 designs)
- Tubing (250 ID ; 1/32"OD) (2 m)
- Sleeves (x2)

DROP-SEQ

Drop-Seq microfluidic chip



Characteristics

| Microfluidic Chips | Product Number |
|--------------------|----------------|
| FlowJEM Drop-Seq | ODROPSEQCHIP |

Fluigent has worked with FlowJEM to provide the best microfluidic chips for **Drop-seq**. Drop-sequencing (Drop-seq) developed by the McCarroll lab at Harvard Medical School, is a method designed for the **parallel analysis of mRNA expression** in thousands of individual cells following their **encapsulation in tiny droplets**. These droplets (nanolitre scale) are formed by **precisely combining** aqueous and oil flows in a specially designed microfluidic device (Drop-seq chip). Expression profiling can then be carried out in **tens of thousands of cells in a matter of hours**.

Benefits

- ▶ **Latest Design:** Each Droplet Generation Device is based on the design recommended in the latest McCarroll lab Drop-seq protocol.
- ▶ **Precision Engineered:** Robust Devices durable over a wide range of pressures, temperatures, and flow rates.
- ▶ **26 Droplet Generation Devices Per Chip:** Provides value for money in a chip which lasts. When the life of one device is depleted, simply move onto the next one.
- ▶ **Produces Highly Mono-Dispersed Droplets:** Reliable and consistent generation of droplets of optimal size for Drop-sequencing.
- ▶ **Efficient Production Of Transcript Libraries:** Superior design promotes optimal mixing of component fluids, minimizing bead shearing or premature lysis of cells and mRNA release.

CELL CULTURE CHIPS



BE-FLOW (OOC-FLOW-01)

Most easy-to-use device dedicated to cell culture under flow

BE-Flow is Beonchip's simplest device dedicated to **cell culture under flow**. It allows the performance of long-term **2D or 3D culture** in two independent channels. BE-Flow is compatible with any microfluidic pump system and can be used with a rocker as its fluid reservoirs are situated by the inlets/outlets. This is an optimal device for **vascular research** where shear stress plays a major role in gene expression.



BE-TRANSFLOW (OOC-TRNS-07)

The most versatile cell culture platform

Be-Transflow is Beonchip's most **versatile cell culture platform**. It allows the study of **complex culture configurations** by joining a culture well with a microfluidic channel via a porous membrane. This is the optimal device for **Air Liquid Interface (ALI) culture**, **endothelium/epithelium barrier**, and **crosstalk studies**.

Easy to use

Easy to connect

No unspecific absorption

Impermeability

Cell recovery option

Easy to use

Easy to connect

No unspecific absorption

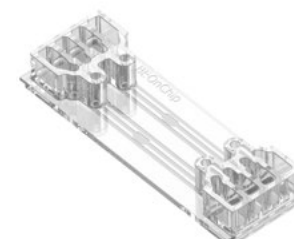
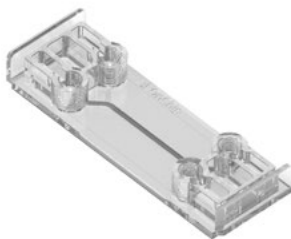
Impermeability

Cell recovery option

BE-DOUBLE FLOW (OOC-DBLE-08)

Explore the interaction between different 2D and 3D cultures

BE-Doubleflow is Beonchip's most advanced device. It consists of two perfusable channels connected via a **porous membrane**. It allows for the investigation of different 2D and 3D cultures in a **biomimetic environment** and controls the efficiency of the interaction by selecting the optimal pore size for your application. This is the optimal device when a **hypoxic environment** is needed for studying the **effect of circulating particles** (bacteria, immune system, circulating tumor cells) and for **endothelium/epithelium barrier** when no ALI is needed or when flux plays a role in both sides of the coculture.



BE-GRADIENT (OOC-GRAD-05)

Designed for the application of electrochemical gradients to 3D cell cultures

BE-Gradient is Beonchip's device for the application of **chemical gradients to 3D cell cultures**. BE-Gradient is compatible with any type of optical microscopy (inverted phase contrast, confocal, fluorescence..). Be-Gradient consists of a central chamber for cell culture and two lateral channels connecting to the central chamber through 3 small micro-channels. The lateral channels are meant to **simulate blood vessels**. 2D culture is also possible for adherent cells not only in the central chamber but also in the lateral channels.

Easy to use

Easy to connect

No unspecific absorption

Cell recovery option

Easy to use

Easy to connect

No unspecific absorption

Cell recovery option

OXYGEN

P/N : SSFT-OXY

Control in real time, Automate protocols and Record experimental data



The new way to get full control of your microfluidic setup.

OxyGEN is a **single interface**, with **plug and play capabilities**, available for **common desktop OS (windows, MacOS, Linux)**, that allows you to **control, monitor and automate** all Fluigent products. It combines in one program all the functions and capabilities of our traditional software: A-i-O, MAT, ESS control and much more.

Through its **intuitive dashboard**, OxyGEN is our new reference tool for **real-time control** and for developing **time based protocols** focusing on **pressures, flow rates, volumes, and valve control** in microfluidic experiments.

Control in real time pressures, flow rates, valves and volumes

Edit and automate long time protocols

Record and export data

Plug & Play connection & Simulated instruments

SDK

P/N : FLUIGENT-SDK

Software Development Kit



Custom your own software application using the SDK to automate and monitor Fluigent devices

Fluigent Software Development Kit (SDK) allows one to fully **integrate Fluigent devices** in a customized application. It has been designed in **several languages**, among the most popular ones in the instrumentation field (LabVIEW, C++, C#.NET, Python, and MATLAB).

The SDK controls all Fluigent pressure and sensor instruments as well as microfluidic valves and advanced regulation loops. One can still use independent SDK for **basic hardware set-ups** or for **specific software requirements**.

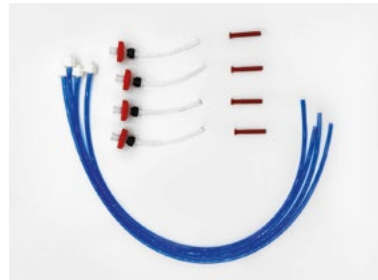
Languages

- ▶ Python (ver. 3.1+ minimum)
- ▶ LabVIEW (ver. 2016+ minimum)
- ▶ MATLAB (ver. R2015a+ minimum)
- ▶ C++ (ver. 11+ minimum)
- ▶ C# (ver. .NET Core 3.1 minimum)

Operating system

- ▶ Windows 10, 8 and 7 (32 Bits, 64 Bits)
- ▶ MacOS
- ▶ Linux

PRESSURE SYSTEM KITS



MFCSTM HIGH PRESSURE KIT

(CTQ-KIT-HP-MFCS)

Tubing and connecting kit designed to be used with any MFCSTM-EZ with the 7 bar pressure range.

Kit contents:

- Transparent pneumatic tubing 4 mm (0.2 m)
- Backflow Filters (x4)
- Blue pneumatic tubing 4 mm (x4)
- Male luer black tubing (x4)



MFCSTM LOW PRESSURE KIT

(CTQ-KIT-LP-MFCS)

Tubing & Fitting Kit compatible with low pressure MFCSTM-EZ – channels from 25 mbar to 2000 mbar ranges and from -800 mbar to -25 mbar ranges.

Kit contents:

- Male White Luer Connector, 1.6 mm (x4)
- Luer Cap (x4)
- Backflow Filters (x4)
- 1x3 mm tubing (2 m)



LineUpTM SUPPLY KIT

(LU-SPK-0002)

The LineUpTM Supply Kit contains all the components to provide power and pressure supply to any LineUpTM series module.

Supply kit contents:

- Power supply 24 V 1,75 A (x1)
- Blue pneumatic tubing 6 mm (x1)
- Female Staubli tubing connector (x1)
- Power cable – EUR – Little (x1)



LineUpTM CHAIN-TO-CHAIN KIT

(LU-C2C-0001)

LineUp series connection cable

The Chain-2-Chain Kit allows to connected LineUpTM series modules together without combining them. The cable allows data and power transmission while the tube allows pressure to flow from one module to the next. Both the cable and the tubing are approximatively 1.8m. One can use different gas to pressurize the reservoirs and use **negative and positive modules at the same time.**



LineUpTM P-SWITCH KIT

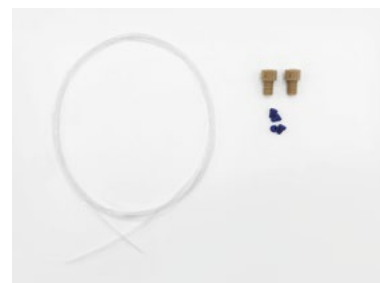
(ELUPSWKIT)

Tubing & fitting kit for the LineUpTM P-SWITCH.

Kit contents:

- Pneumatic tubing 3 mm OD (2 m)
- Transparent tubing 4 mm (1 m)
- Red plug 4 mm (x2)
- Red plug 3 mm (x8)

SENSOR KITS



PRESSURE UNIT KIT

(EIPSKIT)

Tubing & Fitting Kit dedicated for the **PRESSURE UNIT** product line.

Kit contents:

- Flangeless fitting 1/4-28 (2)
- Ferrules (4)
- 1 m x FEP tubing 1/16"OD 0.020"ID (1 m)



FLOW UNIT XS KIT

(CTQ-KIT-LQ-XS)

A kit containing all the tubing and fittings for our **FLOW UNIT XS**.

Kit contents:

- Adapter 10/32 (x2)
- Blue PEEK Tubing 1/32x.010x100ft (LQ) (1 m)
- Sleeves 1/16" -> 1/32" (x2)
- Flowmeter fittings (x2)
- 1/16 - 1/32 tubing connector (x1)
- PEEK Filter XS (x1)



FLOW UNIT S AND M 1/32" KIT

(CTQ-KIT-LQ)

A kit containing all the tubing & fitting elements for the **FLOW UNIT S and M** with **1/32" outer diameter (OD) tubing**.

Kit contents:

- Flowmeter fittings (x2)
- Sleeves 1/16" -> 1/32" (x1)
- Blue PEEK Tubing 1/32x.010x100ft (1 m)
- Red tubing reducer 1/16 - 1/32 (x1)



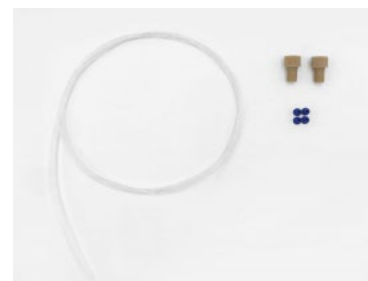
FLOW UNIT S AND M 1/16" KIT

(CTQ-KIT-FU2)

The most recent kit containing all the tubing & fittings for the **FLOW UNIT S and M**. These new fittings allow using **1/16" outer diameter (OD) tubing** with fewer connecting elements, making it the best option for 1/16" tubing.

Kit contents:

- FLOW UNIT S and M Adapter (x2)
- FEP tubing 1/16"OD 0.020"ID (1 m)
- Flangeless fitting 1/4-28 (x2)
- Blue ferrule (x2)



FLOW UNIT L KIT

(CTQ-KIT-HQ)

A kit containing all the tubing and fittings for the **FLOW UNIT L**.

Kit contents:

- FEP Tubing 1/16"OD 0.020"ID (1.00 m)
- Flangeless fitting 1/4-28 (x2)
- Blue Ferrule (x4)



FLOW UNIT XL KIT

(CTQ-KIT-XL)

Kits containing the tubing and fittings to use the **FLOW UNIT XL**.

Kit contents:

- FEP tubing 1/16"OD 0.020"ID (1 m)
- Flangeless fitting 1/4-28 (x2)
- Low-pressure union (x1)
- Tube PEEK (x0.1 m)
- Blue Ferrule (x4)

MICROFLUIDIC VALVE KITS



2-SWITCH™ KIT

(CTQ-KIT-2SW2)

Tubing & fitting kit for the **2-SWITCH™** microfluidic valve.

Kit contents:

- FEP tubing 1/16"OD 0.10"ID (3 m)
- PEEK plug 1/4-28 Black (x2)
- Flangeless fitting 1/4-28 (x6)
- Blue ferrule (x12)
- Connector 4 mm (x1)
- P-Y tube (x1)



M-SWITCH™ KIT

(CTQ-KIT-ESSMSW003)

Kit consisting of tubing & fitting elements for the **M-SWITCH™** microfluidic valve.

Kit contents:

- FEP tubing 1/16"OD 0.10"ID (2.5 m)
- Sleeves 1/16" to 1/32" (x6)
- PEEK plug 1/4-28 Black (x11)
- Flangeless fitting 1/4-28 (x11)
- Blue ferrule (x22)



L-SWITCH™ KIT

(CTQ-KIT-LSW)

Tubing & fitting kit for the **L-SWITCH™** microfluidic valve.

Kit contents:

- 10-32 adapter (x7)
- FEP tubing 1/16"OD 0.020"ID (1 m)
- Acetal blue plug 10-32 (x2)
- 10-32 female – female luer adapter

SAMPLE RESERVOIRS KITS



P-CAP 2 ML KIT

(CTQ-KIT-PCAP2)

Tubing & Fitting Kit for **2mL P-CAP** reservoirs.

Kit contents:

- FEP tubing 1/16"OD 0.020"ID (0.5 m)
- Flangeless fitting 1/4-28 (x2)
- Blue Ferrule (x4)
- Seal P-CAP 2 mL (x1)



P-CAP 15 ML KIT

(CTQ-KIT-PC15)

Tubing & fitting kit for **15 mL P-CAP** reservoir.

Kit contents:

- Tubing FEP 1/16"OD 0.020"ID (m) (1 m)
- Flangeless fitting 1/4-28 (x4)
- Blue Ferrule (x4)
- Seal P-CAP15 (x1)



P-CAP 50 ML KIT

(CTQ-KIT-PC50)

Tubing & fitting kit for **50 ml P-CAP** reservoir.

Kit contents:

- Tube FEP 1/16"OD 0.020"ID (1.50 m)
- Flangeless fitting 1/4-28 (x3)
- Blue Ferrule (x6)
- Seal P-CAP50 (x1)
- Black Cap PEEK 1/4-28 (x2)



FLUIWELL 4C KIT

(CTQ-KIT-F4C)

Tubing & fitting kit for **Fluiwell 4-Channels** (0.5 or 2 mL reservoirs).

Kit contents:

- Adaptor 10-32 (x4)
- FEP Tubing 1/16"OD 0.020"ID (m) (2 m)
- Fluiwell 4-Channels seals (x4)



FLUIWELL 15 ML KIT

(CTQ-KIT-F1C15)

Tubing & fitting kit for **Fluiwell-1C 15 mL** reservoir.

Kit contents:

- Adaptor 10-32 (x2)
- Tubing FEP 1/16"OD 0.020"ID (1 m)
- Seal Fluiwell 1C-15 mL (x1)



FLUIWELL 50 ML KIT

(CTQ-KIT-F1C50)

Tubing & fitting kit for **Fluiwell 1C-50 mL** reservoirs.

Kit contents:

- Adaptor 10-32 (x2)
- Tubing FEP 1/16"OD 0.020"ID (m) (FLUIWELL) (1 m)
- Seals Fluiwell 1C-50 mL (x1)



BOTTLE-CAP KIT

(CTQ-KIT-BC)

A kit containing tubing and fittings for the **Bottle-CAP 2 ports**.

Kit contents:

- FEP tubing 1/16"OD 0.020"ID (1 m)
- Nut 1ml/mn (L, XL) + blue ferrule (x2)
- Male Luer lock (white) to barb 1.6 mm (x1)
- Blue Ferrule alone (x2)
- Black Male Luer tubing (x1)

R&D SOLUTIONS TUBING & FITTING KITS

ARIA SINGLE OUTPUT KIT

(2SW-KIT-AR)

Tubing Kit for external **2-SWITCH™** addition for the **Aria** device.

Kit contents:

- Flangeless fitting 1/4-28 (x6)
- FEP tubing 1/16"OD 0.10"ID (2 m)
- Blue ferrule (x12)
- Adaptor 10-32 (x2)
- RJ45 female coupler (x1)
- Flat RJ45 flat cable (x1)



ARIA REPLACEMENT TUBING KIT

(CTQ-KIT-AR)

Pre-cut set of tubing to replace internal tubing of **Aria** device.



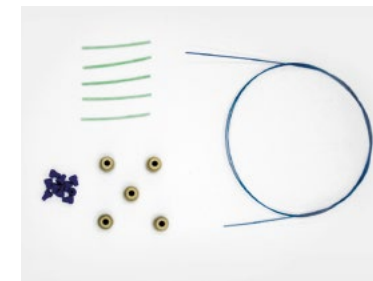
DROP-SEQ KIT

(ODROPSEQCTQ)

Tubing & fitting kit for the **Drop-Seq** microfluidic chip.

Kit contents:

- Sleeves 1/16" to 1/32" (x5)
- Flangeless fitting 1/4-28 (x5)
- 1/32x.010x100ft (LQ) PEEK tubing (2 m)
- Blue ferrule (x10)





DOUBLE EMULSION STATION KIT

(O-DE-STD-CTK)

A kit containing tubing, fitting, plug, and ferrule elements required for the **Double Emulsion Production Station**.

Kit contents:

- 1/32 PEEK tubing with 250 µm inner diameter (ID) (1 m)
- 1/32 PEEK tubing with 150 µm inner diameter (ID) (2 m)
- FEP tubing 1/16"OD 0.10"ID (1 m)
- FEP tubing 1/16"OD 0.20"ID (1 m)
- Sleeves 1/16" → 1/32" (x16)
- PEEK plug 1/4-28 Black (x4)
- Flangeless fitting 1/4-28 (x5)
- Blue ferrule (x10)
- Inline filter (x3)
- 1/16 union (x4)
- 10-32 Adapter (x10)
- Tube cutter (x1)
- RayDrop support (x1)
- Lateral rails (x4)



LIPOSOME NANOPARTICLE PRODUCTION STATION KIT

(O-MIX-LIPO-CTK)

A kit containing tubing, fitting, plug, and ferrule elements required for the **Double Emulsion Production Station**.

Kit contents:

- 1/32 PEEK tubing with 250 µm inner diameter (ID) (1 m)
- 1/32 PEEK tubing with 150 µm inner diameter (ID) (2 m)
- FEP tubing 1/16"OD 0.10"ID (1 m)
- FEP tubing 1/16"OD 0.20"ID (1 m)
- Sleeves 1/16" → 1/32" (x16)
- PEEK plug 1/4-28 Black (x4)
- Flangeless fitting 1/4-28 (x5)
- Blue ferrule (x10)
- Inline filter (x3)
- 1/16 union (x 4)
- 10-32 Adapter (x10)
- Tube cutter (x1)
- RayDrop support (x1)
- Lateral rails (x4)



PLGA MICROPARTICLE PRODUCTION STATION KITS: STANDARD PACKAGE

(IDPPLC1)

A kit containing tubing, fitting, plug, and ferrule elements required for the **PLGA Microparticle Production Station**.

Standard package contents:

- Raydrop connector and tubing kit (x1)
- 1/32 PEEK tubing with 250 µm inner diameter (ID) (1 m)
- FEP tubing 1/16"OD 0.10"ID (3 m)
- transparent tube 4 mm (1 m)
- Sleeves 1/16" → 1/32" (x6)
- PEEK plug 1/4-28 Black (x2)
- Nut 1ml/mn (L, XL) + blue ferrule (x8)
- Blue ferrule alone (x4)
- Fluidic T (x1)
- T connector 4 mm (x1)
- Flowmeter connector (x 4)
- Tube cutter (x1)
- Raydrop support (x1)
- Lateral rails (x4)



PLGA MICROPARTICLE PRODUCTION STATION KIT: AUTOMATION PACKAGE

(IDPPLC2)

A kit containing tubing, fitting, plug, and ferrule elements required for the **PLGA Microparticle Production Station**.

Automation package contents:

- Raydrop connector and tubing kit (x1)
- 1/32 PEEK tubing with 250 µm inner diameter (ID) (1 m)
- FEP tubing 1/16"OD 0.10"ID (3 m)
- Transparent tube 4 mm (1 m)
- Sleeves 1/16" → 1/32" (x6)
- PEEK plug 1/4-28 Black (x2)
- Nut 1ml/mn (L, XL) + blue ferrule (x15)
- Blue ferrule alone (x5)
- T connector 4mm (x1)
- Flowmeter connector (x 4)
- Tube cutter (x1)
- Raydrop support (x1)
- Lateral rails (x4)



ALGINATE MICROBEADS PRODUCTION STATION KIT

(O-SE-ALG-CTK)

A kit containing tubing, fitting, plug, and ferrule elements required for the **Alginate Microbead Production Station**.

Kit contents:

- 1/32 PEEK tubing with 250 µm inner diameter (ID) (0.5 m)
- 1/32 PEEK tubing with 150 µm inner diameter (ID) (1 m)
- FEP tubing 1/16"OD 0.10"ID (0.5 m)
- FEP tubing 1/16"OD 0.20"ID (0.4 m)
- Sleeves 1/16" → 1/32" (x6)
- 1/16 Union (x3)
- PEEK plug 1/4-28 Black (x3)
- Flangeless fitting 1/4-28 (x4)
- Blue ferrule alone (x8)
- Tube cutter (x1)
- RayDrop support (x1)
- Lateral rails (x4)



RAYDROP SINGLE EMULSION KIT

(IDPRDC1)

A kit containing tubing, fitting, plug, and ferrule elements required for using the **RayDrop Single Emulsion**.

Kit contents:

- 1/32 PEEK tubing with 150 µm inner diameter (ID) (0.2 m)
- FEP tubing 1/16"OD 0.10"ID (2 m)
- FEP tubing 1/16"OD 0.020"ID (0.1 m)
- Sleeves 1/16" → 1/32" (x2)
- 1/16 Union (x3)
- PEEK plug 1/4-28 Black (x3)
- Flangeless fitting 1/4-28 (x4)
- Blue ferrule (x8)
- Tube cutter (x1)
- RayDrop support (x1)
- Lateral rails (x4)

SOLUTIONS & PACKAGES

ARIA

Unique solution for automating perfusion imaging studies. **You do the science, Aria does the rest**

ARIA is a compact instrument to **automate multiple fluid perfusions**. It allows the user to set up a **custom time schedule** for exposing cells, nucleic acids, etc. to antibodies, chromophores, test compounds, or other liquids.



Reagents can be delivered to a perfusion chamber, microfluidic device, or other system for imaging or analysis. **Up to 10 unique solutions** can be delivered at precise times for **faster** and more **reproducible results**.

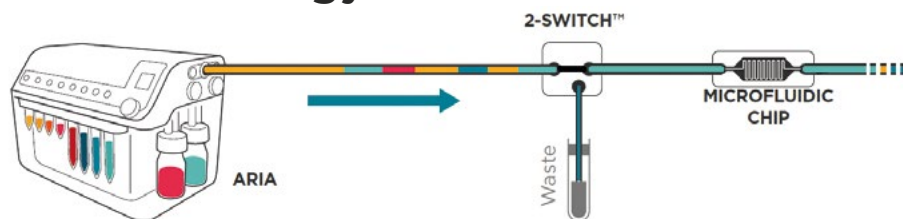
*Easy to use:
protocol
automation*

*Easy to handle:
intuitive user
interface*

*Intelligent software
adapted to any
application*

*Compatible
with biological
applications*

ARIA Technology



Stop flow, stable perfusion and sequential injections are all functions controlled by ARIA. These functions can be combined using the Aria software to automate protocols such as live cell based assays, micro dosing, cell perfusion, immunolabeling, periodic injections or calcium imaging.

Characteristics

| Product & Service | Product Number | Contents |
|--|----------------|---|
| Aria L (40 μ L – 1 mL/min) single output | OAR-L-01 | Aria 2-SWITCH™ + FLOW UNIT L |
| Aria L (40 μ L – 1 mL/min) single output + Installation + 1 Year extra warranty | OAR-L-02 | Aria 2-SWITCH™ + FLOW UNIT L + Installation + 1 year Warranty |
| Aria M (3.2 μ L – 80 μ L) single output | OAR-M-01 | Aria 2-SWITCH™ + FLOW UNIT M |
| Aria M (3.2 μ L – 80 μ L) single output + Installation + 1 Year extra warranty | OAR-M-02 | Aria 2-SWITCH™ + FLOW UNIT M + Installation + 1 year Warranty |
| Aria L (40 μ L – 1 mL/min) serial output | OAR-L-MSW-01 | Aria M-SWITCH™ + FLOW UNIT L |
| Aria L (40 μ L – 1 mL/min) serial output + Installation + 1 Year extra warranty | OAR-L-MSW-02 | Aria M-SWITCH™ + FLOW UNIT L + Installation + 1 year Warranty |
| Aria M (3.2 μ L – 80 μ L) serial output | OAR-M-MSW-01 | Aria M-SWITCH™ + FLOW UNIT M |
| Aria M (3.2 μ L – 80 μ L) serial output + Installation + 1 Year extra warranty | OAR-M-MSW-02 | Aria M-SWITCH™ + FLOW UNIT M + Installation + 1 year Warranty |
| Aria Single Output Kit | 2SW-KIT-AR | Flangeless fitting 1/4-28 (x6) + Ferrule bleue (x12) + Tube FEP (2 m) + F 120 x2 |
| Aria Serial Output Kit | MSW-KIT-AR | Flangeless fitting 1/4-28 (x15) + Ferrule bleue (x30) + Tube FEP (4 m) + Plug noir 1/4-28 ref P309 (x15) + F 120 (x2) |
| Aria Replacement Tubing Kit | CTQ-KIT-AR | Aria internal replacement tubing kit |

Focus on the science, not on the setup



Aria Automation Software provides quick and easy navigation to control the experiment and walk away while the experiment is running.

*Create custom
injection/
perfusion
sequences*

*Set injection
parameters
based on time
or volume*

*Set the desired
flow rate value
for each
injection*

*Program
stops flow
and
incubation*

ORGAN-ON-A-CHIP

The science of flow control for Organ-On-A-Chip applications



Organ on chip study is an emerging field that brings substantial benefits compared to conventional cell culture. In many labs, considerable effort is put in choosing the right chip design, but the impact of flow control is still undetermined. It is our intent to create awareness on **the importance of flow** and its effects on one's studies.

- 1 LineUp™ – Flow Controller
- 2 FLOW UNIT – Flow Rate Sensor
- 3 P-CAPs – Sample Reservoirs
- 4 BE-FLOW – Microfluidic Chip

Characteristics

| Perfusion Pack | Product Number |
|----------------------|----------------|
| Starter Pack | OOC-ST-001 |
| High Throughput Pack | OOC-HT-001 |

PARTICLE & CELL SORTING PACKAGE

Microfluidic size cell sorting



The microfluidic **cell sorting package** allows sorting cells or particles according to their size using inertial and Dean drag forces. Fluigent has joined with microfluidic ChipShop to provide a solution with **well-designed microfluidic devices** and **excellent flow control** for sorting experiments.

- 1 FLOW UNIT – Flow rate sensor
- 2 LINK – Connect to the PC
- 3 Flow EZ (2 bar) – Flow controller
- 4 P-CAP – Sample reservoir
- 5 ChipShop sorting chip

Product Number
ESORT-PCK01



| | | | |
|------------|------------------------------------|---|---|
| Label-free | High throughput: up to 3 mL/min | Passive sorting: does not require additional external source | Up to 8 cells/ particles sizes sorted per experiment |
|------------|------------------------------------|---|---|

DROP-SEQ PACKAGE



The **Drop-Seq protocol**, is a high throughput method that enables the **sequencing of the mRNA** from a large number of cells. With this method it is possible to create a **gene expression map of the cell**, or even distinguish cell populations within a tissue. For optimized Drop-Seq experiments in Next-Generation Sequencing. The Fluigent **Drop-Seq Package** allows better **reproducibility** and control of both single cell and bead **encapsulation**.

- 1 LINK – PC control
- 2 Flow EZ – Flow controllers
- 3 P-CAP – Sample reservoirs
- 4 FLOW UNITS – flow rate sensors
- 5 Drop-Seq - microfluidic chip

Product Number
ODROPSEQFPCK

Package contents

- LineUp FLOW EZ™ (x3)
- LineUp™ LINK (x1)
- FLOW UNIT M (x2)
- FLOW UNIT L (x1)
- P-CAP 15 mL (x1)
- P-CAP 2 mL (x2)
- Drop-Seq device FlowJEM PDMS Microfluidic Devices (x1)
- Fluigent Software
- LineUp™ Supply Kit (x1)
- Tubing & Fitting Kits

*Gain time:
less than 1 minute to
obtain droplets*

*Avoid losing cells
or beads
during transition time*

*Better control:
avoid problems such
as the backflow*

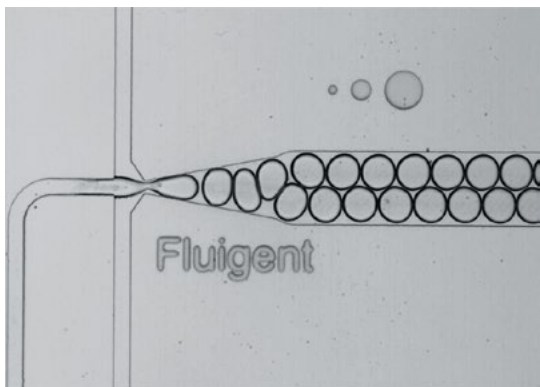
Drop-Seq chip



Chip allowing for parallel analysis of mRNA expression in thousands of individual cells following their encapsulation in tiny droplets. These nanodroplets are formed by precisely combining aqueous and oil flows in a specially designed microfluidic device. Expression profiling can then be carried out in tens of thousands of cells in a matter of hours.

SURFACTANT

dSURF, Quality Surfactant



dSURF is a high-performance fluorosurfactant for microdroplet generation.

It allows for **high-quality droplet formation** and **long-term stability** in conditions such as dPCR and cell culture experiments.

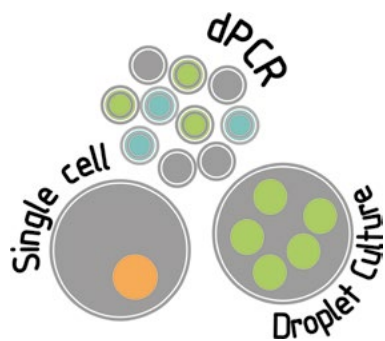
This experiment was realized by using the dSURF and the Droplet Starter Pack that contains our Fluigent microfluidic chip, the EZ Drop.

Biocompatible with mammal cell, yeast and bacterias

High-performance fluorosurfactant

Reliable Results: high droplet stability

Broad range of dye compatibility



dSURF Biological Applications

dSURF is a **high-performance fluorosurfactant** dedicated to microdroplet generation. Be sure to get reliable results! dSURF being a non-ionic fluorosurfactant, it reduces droplet cross-talk and fits properly with any biological application such as dPCR and cell culture.

dSURF is adaptable to most droplet microfluidic applications. It comes in a 2% formula that can be diluted with our fluorinated oil, **dOIL**, to suit all application requirements. For dPCR experiments, dSURF has demonstrated excellent compatibility with FAM™, HEX™, VIC® and EvaGreen® dyes.

Characteristics

| Name | Characteristics | Product Number |
|------------------------|-----------------|----------------|
| dSurf 3x4 mL | 2% formula | DR-RE-SU-12 |
| dSurf 30 mL | 2% formula | DR-RE-SU-30 |
| Honey dSurf 5 g | 100% formula | ODSURF5G |



dOIL

dOIL is a pure fluorinated oil (3M™ Novec™ 7500 Engineered Fluid) in which our dSURF surfactant is diluted.

Fluorinated oils have shown several advantages compared to other carrier fluids such as mineral oils. They show **better PDMS compatibility** due to minimum swelling. They are also more **adapted to biochemical experiments** due to low organic compound transfer drop to drop, and they have shown better biocompatibility in **long term in droplet cell culture experiments**.

dSURF is a new generation of fluorosurfactant providing highly **reliable droplet production** and stability even under PCR amplification conditions. Combined with the **droplet pack**, our **biocompatible** emulsion stabilizer also enables the generation of monodispersed droplet of any size.



Reagents

dOIL
DR-RE-SU-A1

dOIL is pure Novec™ fluorinated oil in which our dSURF emulsion stabilizer is diluted.
More information page 67

Optional

DROPLET STARTER PACKAGE
DROPPACK-01

The Droplet Starter Pack is designed for microfluidic droplet experiments.
More information page 76

Optional

EZ DROP
DROPKIT01

The Droplet Kit is designed to be used with the droplet starter pack.
More information page 42

Optional

ALGINATE MICROBEADS PRODUCTION STATION



The Fluigent **Alginate beads production station** is a complete system for producing **outstanding monodispersed** Alginates beads with the flexibility to change **particle sizes** production in hundreds of milliseconds without interrupting the production. Its performance result from the combination of Fluigent's **LineUp™** microfluidic pumps and the **RayDrop** droplet generator, a breakthrough technology for **high-quality particles and beads production**.

- 1 Flow EZ™ pressure controllers
- 2 SWITCH EZ valve controller
- 3 LINK for software control
- 4 FLOW UNITs flow sensors
- 5 RayDrop droplet generator
- 6 2-SWITCH™ microfluidic valves
- 7 P-CAP sample reservoirs
- 8 Digital High-Speed Microscope

Product Number

O-SE-ALG-PCK

Package contents

- LineUp Flow EZ™ 2 bar (x2)
- LineUp™ supply kit (x1)
- LineUp™ LINK (x1)
- FLOW UNIT M (x2)
- P-CAP 15 mL (x3)
- 2-SWITCH™ (x2)
- LineUp™ SWITCH EZ (x1)
- RayDrop Single Emulsion (x1)
- Tubing & fitting kit (x1)

Continuous
production

High
Monodispersity
(2%)

High
flexibility
on alginate
beads size

Ease
of use

High
reproducibility

Performance

| Feature | Extrusion Method | Fluigent Microfluidic Method |
|---------------------------------|------------------|------------------------------|
| Particle size distribution | Up to 50% | ~2% |
| Reproducibility | Low | High |
| Live particle size control | No | Precise |
| Continuous (in-line) production | No | Yes |

LIPOSOME NANOPARTICLE PRODUCTION STATION



The Fluigent **Liposome Nanoparticle Production Station** is a complete system for **precise and long-term production of liposomes** with high flexibility in terms of the liposome size range. Its performance results from the combination of Fluigent's **LineUp™** microfluidic pumps and the **RayDrop** device, a breakthrough technology for high-quality particles production.

- 1 Flow EZ™ pressure controllers
- 2 SWITCH EZ valve controller
- 3 LINK for software control
- 4 FLOW UNITs flow sensors
- 5 RayDrop droplet generator
- 6 2-SWITCH™ microfluidic valves
- 7 P-CAP sample reservoirs
- 8 Digital High-Speed Microscope

Product Number

O-MIX-LIPO-PCK

Package contents

- LineUp Flow EZ™ 2 bar (x2)
- LineUp™ supply kit (x1)
- LineUp™ LINK (x1)
- FLOW UNIT M (x1)
- FLOW UNIT L (x1)
- P-CAP 15 mL (x3)
- 2-SWITCH™ (x2)
- LineUp™ SWITCH EZ (x1)
- RayDrop Single Emulsion (x1)
- Tubing & fitting kit (x1)

Continuous / In-line production

High flexibility in liposome nanoparticle size

High reproducibility

Full control on liposome nanoparticle size

Performance

| Feature | Extrusion Method | Fluigent Microfluidic Method |
|---------------------------------|------------------|------------------------------|
| Particle size distribution | Up to 50% | ~2% |
| Reproducibility | Low | High |
| Live particle size control | No | Precise |
| Continuous (in-line) production | No | Yes |

PLGA MICROPARTICLE PRODUCTION STATION



- 1 Flow EZ™ pressure controllers
- 2 SWITCH EZ valve controller
- 3 LINK for software control
- 4 FLOW UNITS flow sensors
- 5 RayDrop droplet generator
- 6 2-SWITCH™ microfluidic valves
- 7 P-CAP sample reservoirs
- 8 Digital High-Speed Microscope

The PLGA microparticle production station is a **robust, high-performance** solution to **generate polymer microparticles** in a **homogenous and fully controlled manner**. The performance brought by the **RayDrop droplet generator**, with the combination of polylactic-co-glycolic acid as an encapsulation polymer and ethyl acetate as a solvent provides a **biocompatible solution** lowering both hazard risk and precipitation time. Suitable for **biological applications**, the RayDrop, and its station offer a **semi-automated** solution for one of the most successful drug delivery systems in laboratories and clinics. To solve the current problems of the PLGA microparticles synthesis, droplet-based microfluidics appears to be a powerful tool. Droplet control and generation allow **highly monodispersed and continuous production** as compared to batch emulsion methods.

Characteristics

| Package | Description |
|--------------------|-----------------|
| Standard package | 1DPPL01 |
| Automation package | O-SE-PLGAAP-PCK |

Package contents

| Content | Description | Package |
|---------------------------|--|--|
| Flow EZ™ | Two 2 bar pressure-based flow controllers | Standard Package Automation Package |
| LINK | Monitor and automate the setup with Fluigent Software | Standard Package Automation Package |
| FLOW UNITS | Two high precision flow sensors (M and L range) | Standard Package Automation Package |
| P-CAPs | Air-tight caps for sample reservoirs (one of 50 mL, two of 15 mL) | Standard Package Automation Package |
| RayDrop | Single emulsion droplet generator | Standard Package Automation Package |
| Fluigent Software | Software to control in real time and automate instruments | Standard Package Automation Package |
| 2-SWITCH™ | Two bidirectional valves | Automation Package |
| SWITCH EZ | Microfluidic valves controller | Automation Package |
| Tubing & Fitting Kit | Dedicated tubing & fitting elements to set up the system | Standard Package Automation Package |
| Digital High-Speed Camera | Observe and record results with high resolution and rates up to 7092 fps | Optional |

| | | |
|---|--|--|
| <i>Particle monodispersity ~2%</i> | <i>Particle size control and encapsulation performance</i> | <i>System recovery and cleaning</i> |
| <i>Biocompatibility: Ethyl acetate as solvent</i> | <i>Continuous / In-line production</i> | <i>Semi-automated priming protocol</i> |

DOUBLE EMULSION PRODUCTION STATION



The **Fluigent Double Emulsion Production Station** is a complete system for producing outstanding **monodispersed double emulsions in one single device**. Its performance results from the combination of Fluigent's **LineUp™** microfluidic pumps and the **RayDrop** device, a breakthrough technology for **high monodispersed and stable double emulsion**.

- 1 Flow EZ™ pressure controllers
- 2 SWITCH EZ valve controller
- 3 LINK for software control
- 4 FLOW UNITs flow sensors
- 5 RayDrop droplet generator
- 6 2-SWITCH™ microfluidic valves
- 7 P-CAP sample reservoirs
- 8 Digital High-Speed Microscope

Product Number

O-DE-STD-PCK

Package contents

- LineUp Flow EZ™ 2 bar (x3)
- LineUp™ supply kit (x1)
- LineUp™ LINK (x1)
- FLOW UNIT M (x2)
- FLOW UNIT L (x1)
- 15 mL P-CAP (x1)
- 50 mL P-CAP (x2)
- 2-SWITCH™ (x2)
- LineUp™ SWITCH EZ (x1)
- RayDrop Double Emulsion (x1)
- Tubing & Fitting kit (x1)

| | | |
|-----------------------------------|---|--|
| <i>High monodispersity (2%)</i> | <i>Double emulsion size: 70 µm – 150 µm</i> | <i>High Frequency: 5 000 Hz</i> |
| <i>Adjustable shell thickness</i> | <i>No surface coating</i> | <i>w/o/w and o/w/o double emulsion</i> |

Performance

| Feature | Batch method | Fluigent microfluidic method |
|---------------------------------|---|-----------------------------------|
| Process | Multiple step process | Direct double emulsion production |
| Homogeneity | Random distribution of single and double emulsion | High homogeneity |
| Particle size distribution | More than 50% | ~2% |
| Reproducibility | Low | High |
| Live particle size control | No | Precise |
| Continuous / In-line production | No | Yes |

DROPLET STARTER PACKAGE

Ideal for biologists and chemists



The **Droplet Package** is designed for all who want to start with **microfluidic droplets experiments**. It includes the **EZ Drop** chips and fully adapted liquid handling solution and accessories.

- 1 LineUp™ pressure-based flow controllers
- 2 LINK for Software control
- 3 High precision flow sensors
- 4 Sample reservoirs
- 5 Droplet generation chips

Highly monodisperse droplets

Most simple droplet generation kit

Cost-effective solution

Package contents

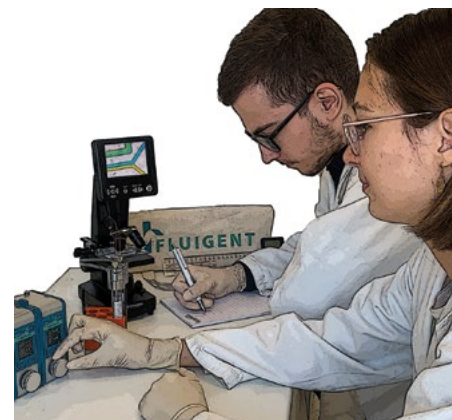
- Flow EZ™ 2 bar (x2)
- LineUp™ supply kit (x1)
- LINK (x1)
- FLOW UNIT S (x2)
- P-CAP 2 mL (x2)
- EZ Drop chip (x1)
- Tubing & fitting kits

Product Number

DROPPACK-01

EDUCATIONAL PACKAGES

Complete microfluidic setup for starting experiment



The **Fluigent Educational Packages** provide a **broad introduction to microfluidics** and its applications by familiarizing the user with general **microfluidic principles** and microfluidic systems. These **ready-to-teach packages** are specifically handy for professors and teachers.

Flexible offer with 4 packages available

Up to 4 hours of practical work with solutions

A handbook for an overview on microfluidics

FIRST LEVEL: CO-FLOW

(SEDUC-COFLOW)

A beginner package to discover microfluidics by experimenting visually a pillar concept of microfluidics: laminar flows.

1 hour guided experiments. Suited for: biologists, (bio)engineers, chemists, but also for high schools with scientific programs.

Package contents:

- LineUp™ supply kit
- Flow EZ 1000 mbar (x2)
- PCAP 15 mL (x2)
- Co-Flow chip (x3)
- Tubing & fitting kit
- Microscope with SD memory card
- Dye solutions
- Printed Handbook
- Exp. Leaflet Co-Flow
- Accessories bag (tubing cutter, pen, notebook, counter, ruler ...)

FIRST LEVEL: RESISTANCE

(SEDUC-RESIST)

Master and take advantage of one powerful tool for optimizing your microfluidic experiments: hydrodynamic resistance. 1 hour guided experiments:

- Perform resistance measurements on the microfluidics system
- Theoretical calculations related to the experiments

Package contents:

- LineUp™ supply kit
- Flow EZ 1000 mbar
- PCAP 15 mL
- FLOW UNIT M
- Tubing & fitting kit
- Dye solutions
- Printed Handbook
- Exp. Leaflet Resistance
- Accessories bag (tubing cutter, pen, notebook, counter, ruler ...)

SECOND LEVEL: CO-FLOW & RESISTANCE

(SEDUC-RESITCOFL)

Co-flow and Resistance in one package for a first overview on microfluidics.

2 hours guided experiments. Suited for: (bio)engineers, physicists, chemists.

Package contents:

- LineUp™ supply kit
- Flow EZ 1000 mbar (x2)
- FLOW UNIT M
- PCAP 15 mL (x2)
- Co-Flow chip (x3)
- Tubing & fitting kit
- Microscope with SD memory card
- Dye solutions
- Printed Handbook
- Exp. Leaflet Co-Flow
- Exp. Leaflet Resistance
- Accessories bag (tubing cutter, pen, notebook, counter, ruler ...)

FULL COURSE: CO-FLOW, RESISTANCE & DROPLETS

(SEDUC-DROPLET)

Get the most complete overview, with experiments pushed to real-world applications: droplet generation.

4 hours guided experiments. Suited for: (bio)engineers, chemical engineering, physicists, biologists and researchers.

Package contents:

- LineUp™ supply kit
- Flow EZ 1000 mbar (x2)
- LINK
- FLOW UNIT M (x2)
- PCAP 15 mL (x2)
- Co-Flow chip (x3)
- EZ Drop chip (x3)
- dSurf 2% 12mL
- dOil 120mL
- Microbeads bottle
- Fluigent Software
- Tubing & fitting kit
- Microscope with SD memory card
- Dye solutions
- Printed Handbook
- Exp. Leaflet Co-Flow
- Exp. Leaflet Resistance
- Exp. Leaflet Droplet
- Accessories bag (tubing cutter, pen, notebook, counter, ruler ...)

4

FLUIGENT INDUSTRIAL

INTRODUCTION

For **integration** into **manufactured systems**, Fluigent has developed a wide range of **OEM products & services**. These are dedicated for **flow control** and **fluid handling** in microfluidic and nanofluidic applications. Equipments can easily be integrated into more complex instruments due to their compact design and **Software Development Kit**.

Fluigent complete OEM product & service line offers :

STANDARD OEM EQUIPMENTS

(fluid management solutions, pressure control and generation, switching solutions, flow-rate measurement, ...)

SEMI-CUSTOMIZED PRODUCTS

from Fluigent proprietary technologies (specific development from mechanical to fluidic, electronic and software, component integration, specific settings, ...)

CUSTOM INTEGRATION

(Any pressure / flow rate configuration, dedicated PCB, software integration)

PX SERIES

Pressure-based flow controller for industry



The **PX-series**, is the most versatile industrial pressure controller. It is **fast and stable** thanks to our field proven, patented FASTAB™ technology.

The PX-series is **designed for OEM integration in industrial environments**. Its RS232 and USB ports ensure its communication with any system. The series presents **3 versions** regarding pressure range requirements.

| | | | |
|--------------------------------------|--|-------------------------------------|----------------------------|
| <i>High-Quality Pressure Control</i> | <i>Unmatched Price-Performance Ratio</i> | <i>Designed for OEM Integration</i> | <i>Patented technology</i> |
|--------------------------------------|--|-------------------------------------|----------------------------|

Characteristics

| PX model | Range in mbar | P/N |
|----------|---------------|----------|
| PX-345 | 0 to 345 | ICPX3451 |
| PX-1 | 0 to 1000 | ICPX11 |
| PX-2 | 0 to 2000 | ICPX21 |
| PX-V1 | 0 to -600 | ICPXV1 |
| PX-V2 | 0 to -750 | ICPXV2 |

RX

Compact pressure source for integration



The **RX** is designed to be seamlessly integrated into OEM systems or used as a **standalone pressure source**. Packaged in a robust steel enclosure, it provides dried and filtered air at **up to 2500 mbar** for one or multiple pressure control module(s) such as the **PX-series** or other instruments which need compressed air to operate.

Compact & versatile

Condensation-proof and filtered air

Designed for OEM Integration

Characteristics

| Model | P/N |
|-------|--------|
| RX | ISRX21 |

OEM MICROFLUIDIC MODULES



The **OEM Microfluidic modules** are a range of products for **flow control** and **fluid handling** in microfluidic and nanofluidic applications. Dedicated for industrial microfluidic applications they can economically replace conventional syringe pumps or peristaltic pumps.

The multi-channel design is **highly compact**, ranging from **1 to 8 channels** for the OEM microfluidic modules. As fluids are not in contact with the instrument, there is no routine cleaning and cross-contamination is drastically reduced. **Positive or Negative pressure ranges** can be applied independently on different channels of the same module.

The optional advanced multi-channel **Flow-Rate Control Module Software** combined with the Flow Sensor Unit device makes it possible to have **full control of flow rates** in any coupled multi-channel configuration, while keeping the benefits of pressure actuation. Switching solutions can also be integrated to extend the **fluid management capabilities**. OEM versions of the **2-SWITCH** (3-port/2-way) and **M-SWITCH** (11-port/10-position) are **available for integration**.

Highly customizable through numerous options

Adapted to industrial usage

Quality and application expertise

Compact solution

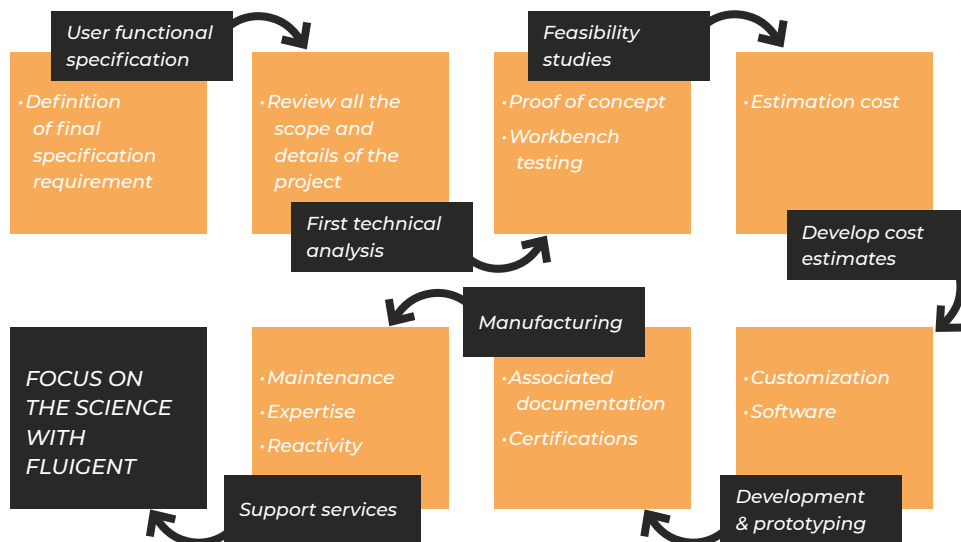
CUSTOM SOLUTIONS



Fluigent can assist with the design and manufacture **customized platforms** for specific applications and needs, thanks to detailed product design and application engineering capabilities.

- ▶ Pioneers in innovative flow control solutions
- ▶ From product customization to specific solution development
- ▶ High Performance and Robustness
- ▶ Flexibility and compactness
- ▶ In house design and assembly
- ▶ Quality standard certification
- ▶ Broad range of applications
- ▶ Customer needs focused
- ▶ Highly experienced customer service

Development Process



TIPS

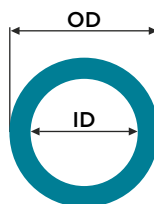
Working in a microfluidic environment almost automatically means using fittings and tubing to connect your microfluidic device or your Lab-on-a-chip to the various elements of your microfluidic circuit.

- Tubing enables you to connect the various elements of your microfluidic circuit.
- Fittings enable you to attach, adapt or adjust the tubing to these elements, ensuring tight connections.

Tubing and sleeves are defined by their diameter, length and material.

Diameter

Inner diameter (often abbreviated as "ID") is diameter through which the fluid flows. The inner section times the length of the tubing gives you the internal volume of the tubing. The inner diameter plays a significant role in the fluidic resistance to flow brought by the tubing. The smaller the diameter is, the more resistant the tubing will be.



Length

Usually the tubing is made as short as possible to have smaller internal volumes. It is also a parameter that contributes to the resistance of the tubing.

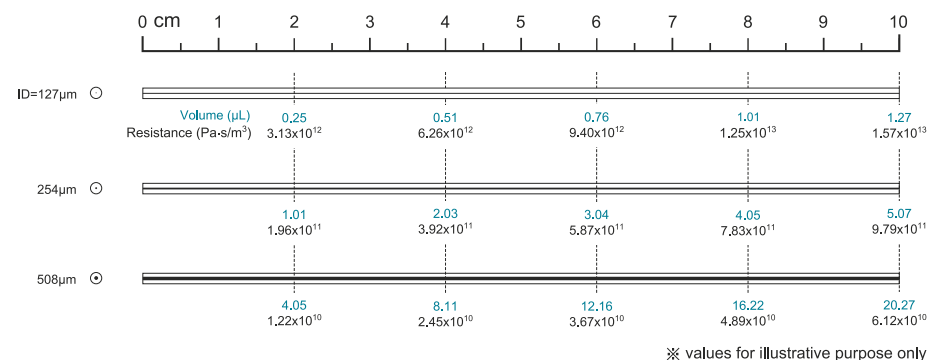
In order to get a clean interface and prevent any clogging or collapsing of the fluidic path, all tubing should be cut with specifically designed cutters.

Materials

A wide range of materials are available for the same ID/OD combination. The material should be selected according to the nature of the reagents flowing through the tubing. Be careful to check the chemical compatibility of the tubing before installing it in your application. Some of the most common materials for microfluidic tubing include:

- **PEEK (Polyetheretherketone):** very good chemical resistance and biocompatibility, low non-specific adsorption. Rigid and opaque. For low and high pressure applications. Very small internal diameters available.
- **FEP (Fluorinated ethylene-propylene):** does not react with most chemicals and is biocompatible. Flexible and transparent. Mostly for low-pressure applications (no higher than 7 bar).

Place your tubing on the page for a quick reference



OD (OUTER DIAMETER) IDENTIFICATION

● 1/16"
(1.6 mm)

● 1/32"
(0.8 mm)

UNIT CONVERSIONS

1 bar = 14.5 psi

1 mbar = 1.45×10^{-2} psi

1 inch = 2.54 cm

1 psi = 6.90×10^{-2} bar

1 psi = 68.95 mbar

1 cm = 0.39 inch

CUSTOMER SUPPORT & SERVICE

Service & Technical Support from Fluigent-certified experts

At Fluigent, we understand that a non-functioning system means time lost in the lab. **Our customer support team is dedicated to performing timely, cost effective repairs.** Our application experts are available to advise you on any questions you may have on the use of our products and how to adapt them to different experimental designs.

Dedicated
Fluigent-certified team
& trained partners

Diagnosis through
remote session
or on-site visit

Customer
satisfaction
oriented

REFERENCE GUIDE

| Product Number | Product Name | Page | Notes |
|--|---|------|-------|
| Microfluidic Equipment - Pressure Systems | | | |
| LU-FEZ-0025 | LineUp Flow EZ™ 25 mbar | 11 | |
| LU-FEZ-0069 | LineUp Flow EZ™ 25 mbar | 11 | |
| LU-FEZ-0345 | LineUp Flow EZ™ 25 mbar | 11 | |
| LU-FEZ-1000 | LineUp Flow EZ™ 25 mbar | 11 | |
| LU-FEZ-2000 | LineUp Flow EZ™ 25 mbar | 11 | |
| LU-FEZ-7000 | LineUp Flow EZ™ 25 mbar | 11 | |
| LU-FEZ-N025 | LineUp Flow EZ™ 25 mbar | 11 | |
| LU-FEZ-N069 | LineUp Flow EZ™ 25 mbar | 11 | |
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| LU-ADP-0001 | LineUp™ Adapt | 15 | |
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| ELULNK232 | LineUp™ LINK COM | 16 | |
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| EZ-01000001 | MFCST™-EZ 1000 mbar | 18 | |
| EZ-01000002 | MFCST™-EZ 2000 mbar | 18 | |
| EZ-07000001 | MFCST™-EZ 7000 mbar | 18 | |
| EZ-80345001 | MFCST™-EZ -345 mbar | 18 | |
| EZ-80800001 | MFCST™-EZ -800 mbar | 18 | |
| EX-00345001 | MFCST™-EX 345 mbar | 18 | |
| EX-01000001 | MFCST™-EX 1000 mbar | 18 | |
| EX-01000002 | MFCST™-EX 2000 mbar | 18 | |
| EX-07000001 | MFCST™-EX 7000 mbar | 18 | |
| EX-80345001 | MFCST™-EX -345 mbar | 18 | |
| EX-80800001 | MFCST™-EX -800 mbar | 18 | |
| EZ-11000001 | MFCST™-EZ Basic Base | 18 | |
| EZ-source-pos | MFCST™-EZ Positive Pressure Source Included | 18 | |
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| EX-11000008 | MFCST™-EX Basic Base | 18 | |
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| Product Number | Product Name | Page | Notes |
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| FLU-M-D | FLOW UNIT M | 20 | |
| FLU-L-D | FLOW UNIT L | 20 | |
| FLU-XL | FLOW UNIT XL | 20 | |
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| P-CAP15-LP | P-CAP 15 mL Low Pressure | 33 | |
| P-CAP15-HP | P-CAP 15 mL High Pressure | 33 | |
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| P-CAP50-HP | P-CAP 50 mL High Pressure | 33 | |
| 14000501 | Fluiwell 0.5 mL Low Pressure | 34 | |
| 24000501 | Fluiwell 0.5 mL High Pressure | 34 | |
| 14002001 | Fluiwell 2 mL Low Pressure | 34 | |
| 24002001 | Fluiwell 2 mL High Pressure | 34 | |
| 11015001 | Fluiwell 15 mL Low Pressure | 34 | |
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| ISRX21 | RX Pressure Source | 82 | |

PRODUCT GUIDE

| Do you prefer... |
|-------------------------------------|
| Automating your protocol |
| Live monitoring & control |
| Customize & develop own application |
| Go PC-Free |

| Software |
|---------------------|
| Use OxyGEN software |
| Use OxyGEN software |
| Use the SDK |

| How many solutions/ liquids/fluids do you want to handle in your system? |
|--|
| 5 to 8 |
| 4 |
| 1 to 3 |
| I want to extend freely |
| 9 to 32 |

| Pressure system |
|------------------------|
| Go with MFCST™-EX |
| Go with MFCST™-EZ |
| Go with LineUp™ series |
| (Use LineUp™ P-SWITCH) |

| Valves |
|------------------|
| Add a SWITCH EZ |
| Add an M-SWITCH™ |
| Add an L-SWITCH™ |
| Add a 2-SWITCH™ |
| Add a P-SWITCH |

| Do you need to switch between multiple solutions over the course of the experiment? |
|---|
| Sequential injection or Multiple distribution |
| Recirculation or Sample injection |
| Sorting or Fluid redirection |
| Pneumatic or Quake valve actuation |

| Sensors |
|----------------------|
| Add FLOW UNIT |
| No additional sensor |
| Add PRESSURE UNIT |

| Do you work with: |
|-----------------------------|
| Flow rate |
| Pressure only |
| Extended pressure detection |

| Do you have a pressure source in your laboratory? |
|---|
| No, with MFCST™ series |
| No, with LineUp™ series |
| Yes |

| Pressure source |
|---|
| Ask for integrated pressure source |
| Add an independent FLPG+ or Compact Pressure Source |

REQUEST A QUOTE
or
VISIT OUR WEBSHOP



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