



2020

PRODUCT CATALOG



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# INTRODUCTION

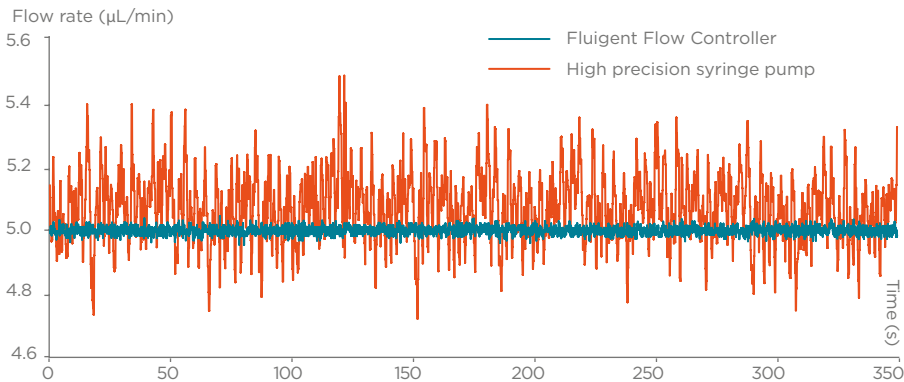
# FLOW CONTROL TECHNOLOGIES

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 and pulseless flow control is critical for repeatable results. While peristaltic pumps and syringe pumps generate pulsatile and unstable flows, **pressure-driven pumps have been shown to perform the best**.

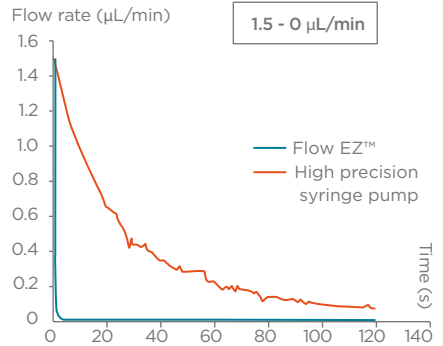
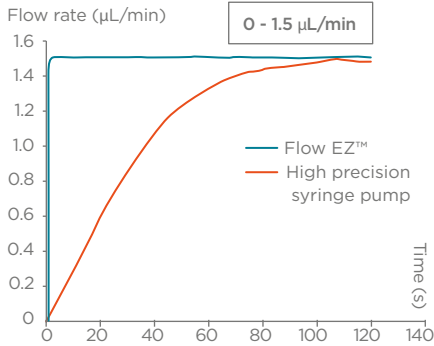
## Flow rate representation over the time



*The Fluigent Flow Controller used in this experiment is our MFCS™-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 a more stable flow profile 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

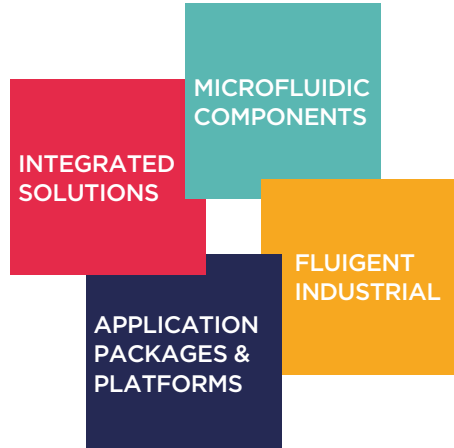
Features	Fluigent Flow EZ™	Fluigent MFCS™	Other Pressure-Based Solutions	Syringe Pumps
Free standing (no PC needed)	✓	×	×	~
Modular & stackable	✓	×	×	~
Very short response time	✓	✓	~	×
Pulseless flow	✓	✓	✓	×
Control & monitor display	✓	×	~	~
Compact	×	✓	~	×
Integrated pressure source	×	✓	~	×

# COMPANY OVERVIEW

Fluigent develops, manufactures, commercializes 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 MFCS™-EZ (Microfluidic Flow Control System), the FRP (Flow Rate Platform) and the ESS™ (Easy Switch Solutions™).

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



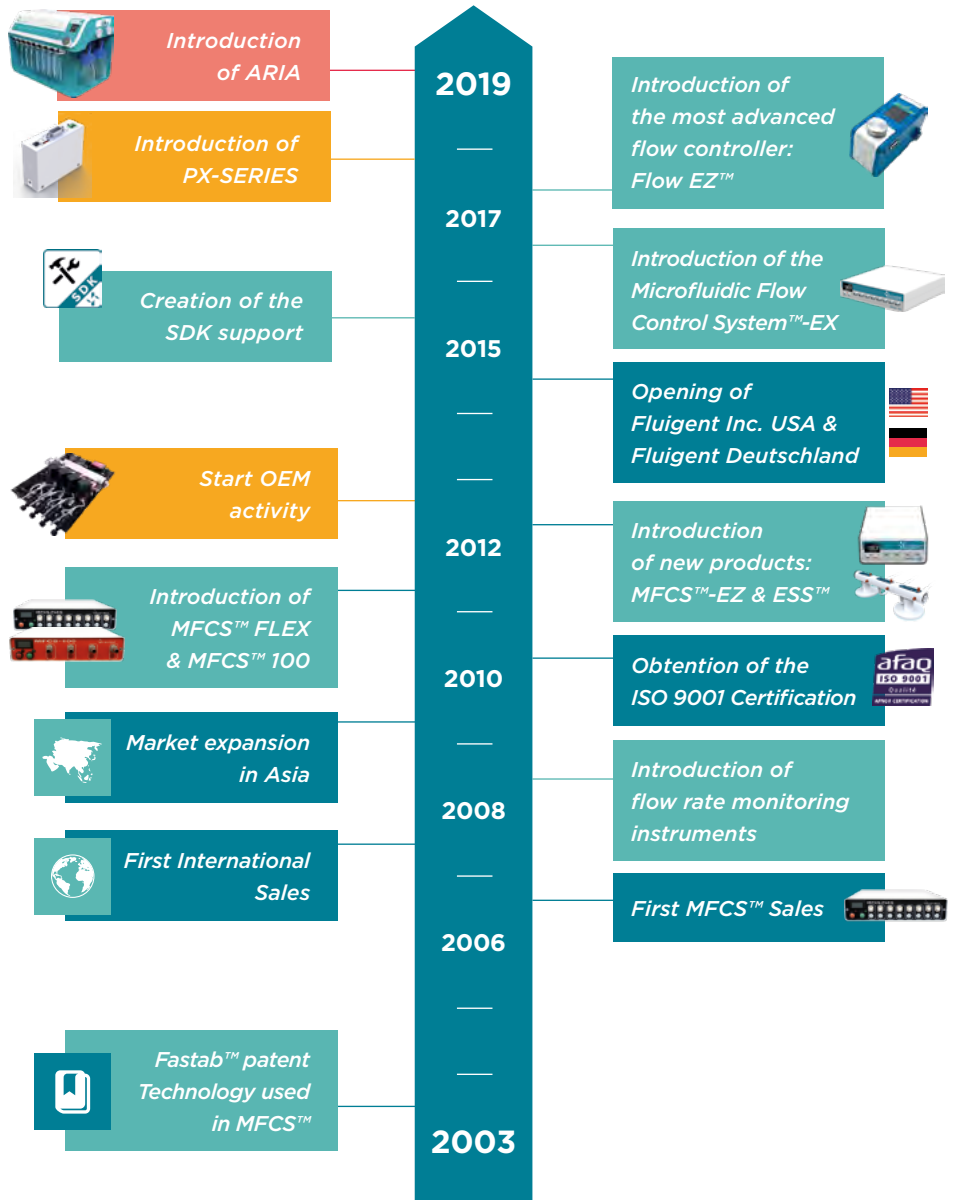
## TEAM & FACILITIES



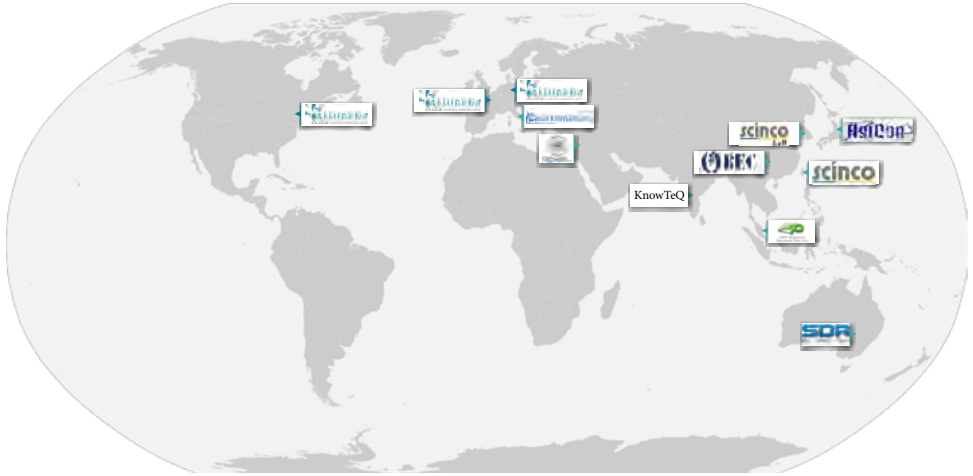
In addition to our Paris area headquarters, we have 2 local subsidiaries to be closer to our customers and provide local service and support: **Fluigent Deutschland GmbH** in Jena, Germany serves Northern and Eastern European customers, and **Fluigent Inc.** near Boston, USA for our customers in the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

# HISTORY

Fluigent is the leader in microfluidic control



# OUR DISTRIBUTORS



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 S.A), the USA (Fluigent Inc.), Germany (Fluigent Deutschland GmbH), and our network of distributors and partners selected because of our shared values.

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](mailto:sales@fluigent.com)**.

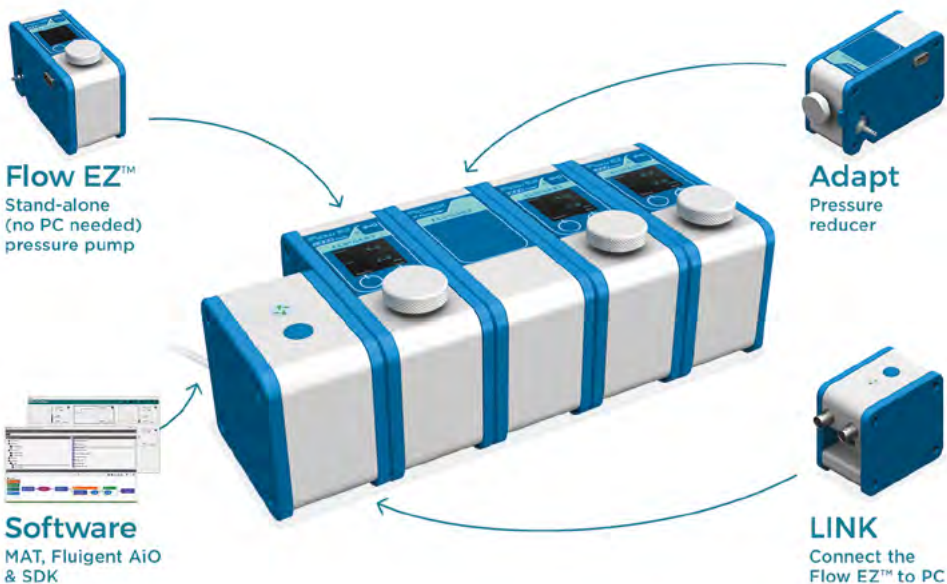


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# MICROFLUIDIC COMPONENTS

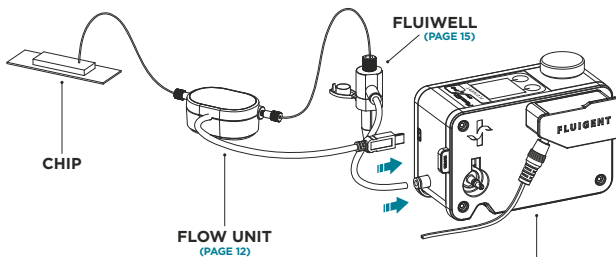
# LineUP™

The most advanced flow controller



## FLOW EZ™

The Flow EZ™ is the most advanced flow controller for pressure based fluid control. It can be combined with a Flow Unit to control pressure and flow. It can be used without a PC.



Microfluidic setup

*Focus on your experiment with the local control dial*

*Easily adaptable to any setup*

*Start within minute:  
Use without a PC*

*Economical  
& expandable*

## 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

## LineUP™ Series

Our LineUp™ product range is the next generation of microfluidic systems. With the **Flow EZ™** module, a **Link** can connect the modules to a computer or any external instrument. The **Adapt** is available to connect Flow EZ™ modules with different pressure ranges without the need of additional pressure sources. The entire system can be controlled and monitored by **Fluigent software**.



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



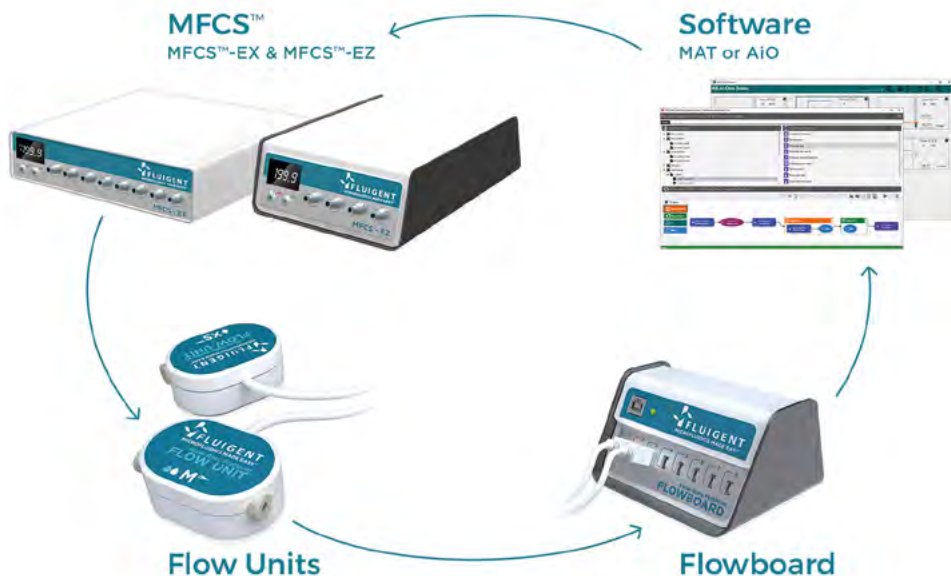
More information on flow control technologies on pages 4-5

## Extended products

<b>LineUP™ SUPPLY KIT</b> LU-SPK-0001	The Flow EZ™ Supply Kit is designed to be used with any Flow EZ™ pressure channel. More information page 28	<i>Provided</i>
<b>MAT</b> SFT-MAT	The Microfluidic Automation Tool allows an easy design of time-based protocols for completely automated experiments. More information page 23	<i>Required for automation</i>
<b>LINK</b> LU-LNK-002	The LINK is designed to connect Flow EZ™ module to a PC. More information page 27	<i>Required for remote control</i>
<b>A-i-O</b> SFT-AIO	The Fluigent All-in-One Software is designed for controlling and measuring pressure and flow rate in real time. More information page 22	<i>Provided</i>
<b>SDK</b> SFT-SDK-LU	The Fluigent Software Development Kit includes full integration of devices interfaces within LabVIEW, MATLAB and other IDEs. More information page 25	<i>Provided</i>
<b>FLOW UNIT</b>	The Flow Unit is a high-precision individual flow sensor used for direct flow control. More information page 14	<i>Required for flow rate control</i>
<b>ADAPT</b> LU-ADP-0001	The ADAPT is designed to combine different ranges of Flow EZ™ together. More information page 27	<i>Required when working with various Flow EZ™ pressure ranges</i>
<b>P-CAP series</b>	The P-Cap is an air-tight metal cap that allows pressurization of standard lab tubes. More information page 16	<i>Required for liquids</i>

# MFCS™ SERIES

## Microfluidic Flow Control System



## MFCS™

The MFCS™ is a modular microfluidic flow controller. 4 or 8 channels are available with different pressure ranges for high precision operations in microfluidic experiments. By using the FASTAB™ microfluidic patented technology, the MFCS™ 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*



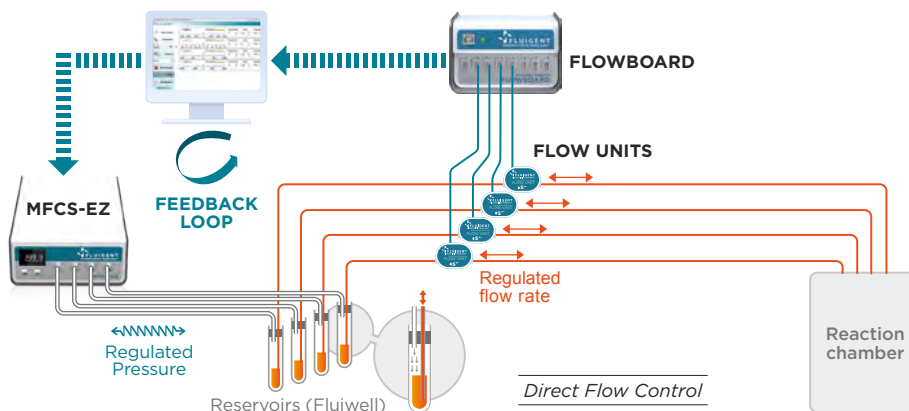
# FLOW UNIT

High-precision individual flow sensors



The Flow Unit is a bidirectional flow sensor compatible with our software, our Flow EZ™ and our MFCS™.

<p><b>Reliable results:</b> High precision</p>	<p><b>Adaptable:</b> Large range of flow rates</p>	<p><b>Flexible:</b> Usable with any flow control system</p>	<p><b>Easy combination</b> with other Flow Units</p>
----------------------------------------------------	--------------------------------------------------------	-------------------------------------------------------------	------------------------------------------------------



This setup is made for injecting fluid samples into a chip using a microfluidic pressure pump which generates pressure-driven flow rates. These can be measured with flow rate products such as our Flow Unit. The pressure pump is controlled by Fluigent Software such as the MAT that allows setup automation, or A-i-O, which is ideal for live pressure and flow rate control.

Any number of Flow Units with any flow rate range can be combined. A single hub, the Flowboard, can host up to 8 Flow Units and communicate with Fluigent software.

# Characteristics

Flow Unit	XS	S		M		L		XL
<i>Product Number</i>	FLU-XS	FLU-S-D		FLU-M-D		FLU-L-D		FLU-XL
<i>Sensor Inner Diameter</i>	25 µm	150 µm		430 µm		1 mm		1.8 mm
<i>Maximum Pressure</i>	200 bar	200 bar		100 bar		15 bar		15 bar
<i>Wetted Materials</i>	PEEK & Quartz Glass			PEEK & Borosilicate Glassz				
<i>Calibrated Media</i>	Water	Water	IPA	Water	IPA	Water	IPA	Water
<i>Range</i>	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
<i>Accuracy (measured value)</i>	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
<i>Repeatability (measured value)</i>	<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

## Flow Rate Platform

The Flow Rate Platform (FRP) is designed to be used with any flow control system or stand alone. This unique flow rate measurement system provides the best precision for various flow rate ranges.

This platform includes the **Flow Unit(s)** and its communication hub, the **Flowboard**.



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

## Extended products

<b>FLOWBOARD</b> FLB	The Flowboard is a hub that manages communication between Fluigent Software and up to eight Flow Units. More information page 27	<i>Required with MFCS™ or stand alone</i>
<b>FRP KITS</b>	The FRP Low or High Flow Rate Kit is especially designed to be used with low or high flow rate Flow Units. More information page 29	<i>Required</i>
<b>A-i-O</b> SFT-AIO	The Fluigent All-in-One Software is designed for controlling and measuring pressure and flow rate in real time. More information page 22	<i>Required</i>
<b>MAT</b> SFT-MAT	The Microfluidic Automation Tool allows an easy design of time-based protocols for completely automated experiments. More information page 23	<i>Required for automation</i>

# P-CAP SERIES

## Sample Reservoirs



The P-Cap is an air-tight metal cap that allows pressurization of standard lab tubes for microfluidic fluid delivery.

*Suitable for long term experiments*

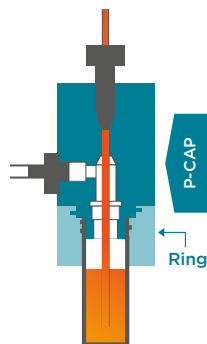
*Compatible with different tube sizes*

*Incubator compatibility*

*Autoclavable*

## Characteristics

Name	Max. volume of pressurized liquid	Pressure compatibility	Product Number
<i>P-CAP for Eppendorf plastic reservoirs</i>	1.5 mL and 2 mL	MFCS™	P-CAP2-LP
		Flow EZ™ & MFCS™ 7 bars	P-CAP2-HP
<i>P-CAP for Flacon Tubes</i>	15 mL	MFCS™	P-CAP15-LP
		Flow EZ™ & MFCS™ 7 bars	P-CAP15-HP
	50 mL	MFCS™	P-CAP50-LP
		Flow EZ™ & MFCS™ 7 bars	P-CAP50-HP
<i>Bottle-Cap</i>	GL45 thread bottles	Flow EZ™ & MFCS™	CTQ-KIT-BC



## For use with

### FLOW EZ™

The Flow EZ™ is the most advanced flow controller. More information page 10

*Optional*

### MFCS™

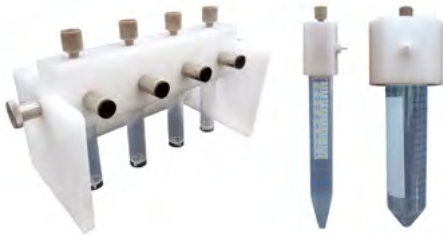
The MFCS™ Series products are designed to control pressure. More information page 12

*Optional*



# FLUIWELL SERIES

## Sample Reservoirs



The Fluiwell is an air-tight plastic cap that allows for pressurization of standard lab tubes for microfluidic fluid delivery.

*Suitable for long term experiments*

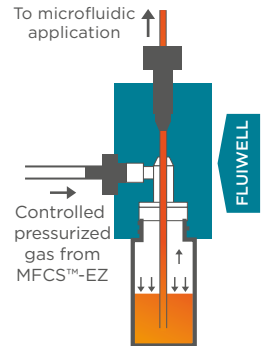
*Flexible: Compatible with any tubing*

*Adaptable: Different tube sizes possible*

*Autoclavable*

## Characteristics

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



Consult our product guide page 48

## Accessories

### FLUIWELL KITS

The Fluiwell Kits ensure the air-tightness of the fluid reservoirs.  
More information page 30

*Required*

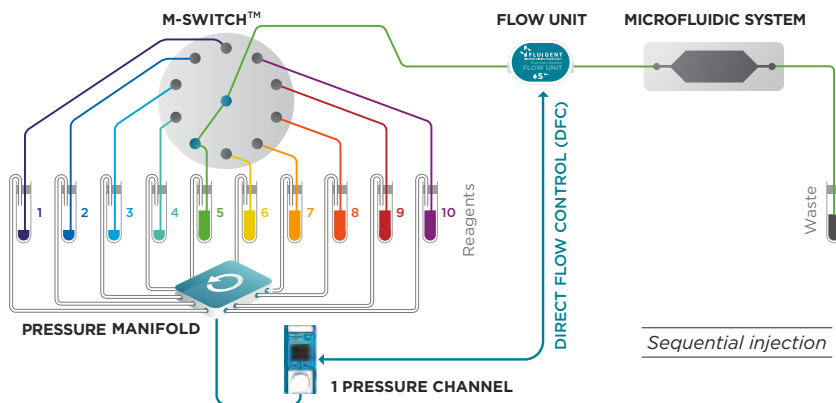
# ESS™

## Easy Switch Solutions™



The ESS™ is a versatile fluid handling platform for directing fluid flow that can be automated using Fluigent software.

<p><b>Economical:</b> Reduce reagent consumption</p>	<p><b>Adaptable:</b> Chemical &amp; biological compatibility</p>	<p><b>Ease of use:</b> Live monitoring and control</p>	<p><b>Compact</b></p>
----------------------------------------------------------	----------------------------------------------------------------------	------------------------------------------------------------	-----------------------



This diagram shows how to use a M-SWITCH™ to perform a sequential injection of up to 10 different reagents inside an on-chip reactor. The reagent flow is controlled by Fluigent control devices (Flow EZ™, Flow Rate platform and manifold), and injected into the chip as selected by the M-SWITCH™. The M-SWITCH™ is controlled by Fluigent Software such as the MAT (for protocol automation) or the ESS™ Control (for live control of valve position). On the diagram, the reagent #5 is being injected.

This type of microfluidic path can be very useful for sample preparation, cell analysis, fluorescent labelling and drug screening.

## Characteristics

Name	Characteristics	Product Number
<b>2-SWITCH™</b>	3 port / 2-way bidirectional valve	2SW001
<b>L-SWITCH™</b>	6 port / 2-positions bidirectional valve	LSW001
<b>M-SWITCH™</b>	11 port / 10-way bidirectional valve	MSW002



## ESS™ Platform

Our ESS™ Platform includes three complementary types of bidirectional valves (the **2-SWITCH™**, the **L-SWITCH™** and the **M-SWITCH™**), as well as a unique communication hub, the **SWITCHBOARD**.

This system can be controlled by **Fluigent software** or using the **SDK**.

The different valves can be used for many different protocols. For **sorting**, the 2-SWITCH™ is recommended whereas for **recirculation**, it is better to use a L-SWITCH™. However, for **sequential injections**, the M-SWITCH™ is the most suitable product.



Discover all applications at [www.fluigent.com](http://www.fluigent.com)



Consult our product guide page 48

## Accessories

### ESS™ CONTROL SFT-ESS

The ESS™ Control Software enables live monitoring of valve positions.  
More information page 24

*Provided*

### SWITCHBOARD SWB002

The SwitchBoard is a communication hub between the connected valves and the PC.  
It also powers the valves.  
More information page 27

*Required*

### MAT SFT-MAT

The Microfluidic Automation Tool allows an easy design of time-based protocols for completely automated experiments.  
More information page 23

*Required for automation*

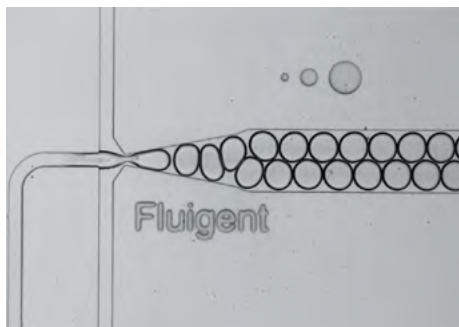
### PRESSURE MANIFOLD CTQ-MANI

The Pressure Manifold is designed to redirect pressure flow into multiple reservoirs.

*Optional*

# dSURF

## Quality Surfactant



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

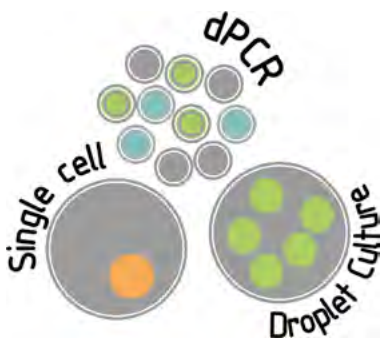
dSURF is a high-performance fluorosurfactant dedicated to microdroplet generation. It allows high-quality droplet formation and long-term stability in conditions such as dPCR and cell culture experiments.

*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
<i>dSurf</i> 3x4mL	2% formula	DR-RE-SU-12
<i>dSurf</i> 30mL	2% formula	DR-RE-SU-30



## dOIL

**dOIL** is a pure fluorinated oil (3M™ Novec™ 7500 Engineered Fluid) in which our dSURF emulsion stabilizer 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 27

*Optional*

### DROPLET PACK

Droppack

The Droplet Starter Pack is designed for microfluidic droplet experiments.  
More information page 42

*Optional*

### DROPLET KIT

Dropkit01

The Droplet Kit is designed to be used with the droplet starter pack.  
More information page 28

*Optional*

# A-i-O

## All-in-One Software

SFT-AIO



The Fluigent **All-in-One** Software is designed for controlling and measuring pressure and flow rate in real time, needing only one click. It is a direct flow control which does not require any adjustments of parameters or coefficients.



AIO Software

*Easy to use:  
Intuitive and  
ergonomic user  
interface*

*Live monitoring  
and control*

*P&Q configuration  
shortcuts*

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

## Compatible Products

### FLOW EZ™

The Flow EZ™ is the most advanced flow controller.  
More information page 10

### MFCS™

The MFCS™ series products are designed to control pressure.  
More information page 12

### FLOW UNIT

The Flow Unit is a high-precision individual flow sensor used for direct flow control.  
More information page 14

# MAT

## Microfluidic Automation Tool

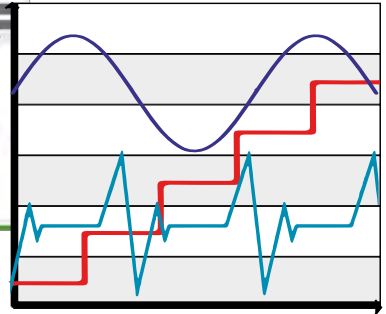
SFT-MAT



The Fluigent Microfluidic Automation Tool is a unique program for developing and running time-based experiments. It allows one to easily create protocols for completely automated experiments.



MAT Software



## Compatible Products

### FLOW EZ™

The Flow EZ™ is the most advanced flow controller.  
More information page 10

### MFCS™

The MFCS™ series products are designed to control pressure.  
More information page 12

### FLOW UNIT

The Flow Unit is a high-precision individual flow sensor used for direct flow control.  
More information page 14

### ESS™ PLATFORM

Our ESS™ Platform includes three types of bidirectional valves as well as a unique communication hub.  
More information page 18

*Easy to use:  
Drag and drop  
interface*

*Adapted to short and  
long protocols*

*Complete  
integration  
to your setup*

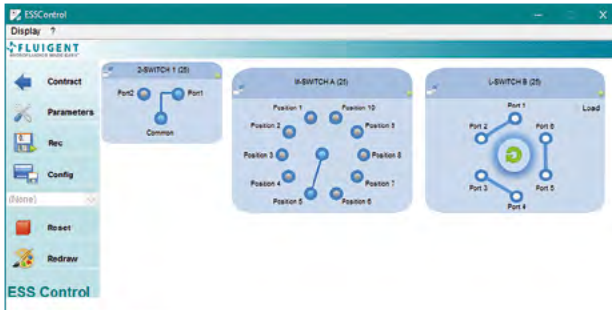
# ESS™ CONTROL

Easy Switch Solutions™ Control

SFT-ESS



ESS™ Control allows to visualize and control ESS™ valve position in real time.



ESS™ Control Software

*Full setup  
automation*

*Dynamic  
display*

*Easy control of  
Fluigent valve  
positions*

## Compatible Products

ESS™  
PLATFORM

Our ESS™ Platform includes three complementary types of bidirectional valves as well as a unique communication hub. More information page 19



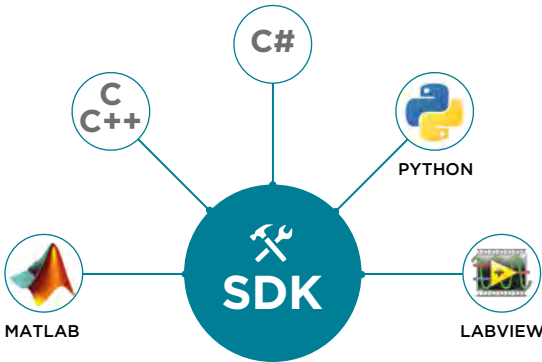
# SDK

## Software Development Kit

SFT-SDK-LU



The Fluigent Software Development Kit includes full integration of devices interfaces within LabVIEW, MATLAB and other IDEs.



*Ease transition  
to OEM*

*Save  
application  
development time*

*Adaptable  
to any setup*

## Compatible Products

### FLOW EZ™

The Flow EZ™ is the most advanced flow controller.  
More information page 10

### ESS™ PLATFORM

Our ESS™ Platform includes three complementary types of bidirectional valves as well as a unique communication hub.  
More information page 18

### MFCs™

The MFCs™ Series products are designed to control pressure.  
More information page 12

# PRODUCT ACCESSORIES



## BUBBLE TRAP KIT (CTQ-006BT)

The Bubble Trap Kit is designed to remove gas bubbles present in a liquid sample at a flow rate up to 5mL/min.

The Bubble Trap Kit contains:

- Fluigent Bubble Trap
- 2 disposable membranes
- 2 Fitting 1/4-28 Flat Bottom for 1/16" OD Tubing
- 2 Ferrules
- FEP Tubing 1/16" OD x 0.020 ID
- Compatible with 1/32" OD with sleeves on demand

▶ *Cost effective solution*

▶ *No vacuum line needed*



## FLPG PLUS (FLPG005)

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 Flow EZ™ and MFCS™ or any other microfluidic pressure based instrument.

Specifications:

- Dimensions: 25cm x 26cm x 15cm
- Power supply: 24V
- Maximum outlet pressure: 2.3bar

▶ *No vibration*

▶ *No maintenance*

▶ *Low noise level*



## FOOT SWITCH (FSW001)

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

▶ *Ideal for working under a microscope*

▶ *Hands-free operations*



## LINK (LU-LNK-0002)

The LINK is designed to connect the Flow EZ™ module to a PC and is compatible with Fluigent Software.

- ▶ *Connection between Flow EZ™ and PC*
- ▶ *TTL connectors*



## ADAPT (LU-ADP-0001)

The ADAPT module is designed to allow one to combined different pressure ranges of the Flow EZ™ together.

- ▶ *Connection between multiple Flow EZ™*
- ▶ *Compact*



## SWITCHBOARD (SWB002)

The SwitchBoard is a communication hub between the connected valves and the PC. It also powers the valves.

- ▶ *Single USB connection to the PC*
- ▶ *TTL connectors*



## FLOWBOARD (FLB)

The Flowboard is a hub managing the communication between Fluigent Software and up to eight Flow Units and provides them power. This product is only required for flow rate control with MFCS™.

- ▶ *Single USB connexion to the PC*
- ▶ *Compatible with Fluigent Software*



## dOIL (DR-RE-SU-A1)

dOIL is a pure Novec™ fluorinated oil in which our dSurf emulsion stabilizer is diluted.

- ▶ *Low viscosity*
- ▶ *Reduced drop to drop transfer of organic compounds*

# TUBING & FITTING KITS



## **DROPLET KIT** (Dropkit01)

The Droplet Kit is designed to be used with the droplet starter pack, with any flow control system and Flow Unit models.

- 3 x EZ Drop chips with 3 patterns each
- 2 m Tubing (250 ID; 1/32" OD)
- 2 x Sleeves



## **LineUP™ SUPPLY KIT** (LU-SPK-0001)

The LineUp™ Supply Kit is required powering one, or up to 16 Flow EZ™ pressure channels.

- Power supply (24VDC)
- Power supply to Sub-D adaptor
- Pneumatic inlet tubing
- Pneumatic inlet smart connector
- B9 Power stand alone adaptor

## MFCS™ KITS



### **MFCS™-EZ Low Pressure Kit** (CTQ-KIT-LP-MFCS)

The MFCS™-EZ Low Pressure Kit is designed to be used with any MFCS™-EZ with low-pressure channel from 25 mbar to 2000 mbar ranges and from -800mbar to -25 mbar ranges.

- MFCS-LP Male Luer Connector, 1.6mm (x4)
- MFCS-LP White Cap (x4)
- MFCS-LP Black flow Filters (x4)
- Tygon Tubing (2 m) OD: 3 mm, ID: 1 mm

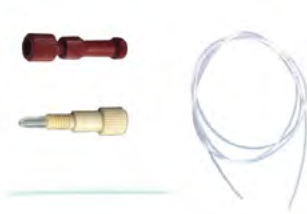


### **MFCS™-EZ High Pressure Kit** (CTQ-KIT-HP-MFCS)

The MFCS™-EZ High Pressure Kit is designed to be used with any MFCS™-EZ with high-pressure channels, especially the 7 bar pressure range.

- MFCS-HP Red Plug (x4)
- MFCS-HP Black flow Filters (x4)
- High Pressure Tubing (4x40 cm) OD: 4 mm , ID: 2.5 mm

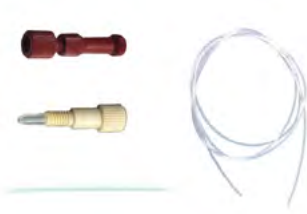
## FRP KITS



### FRP Low Flow Rate Kit XS (CTQ-KIT-LQ-XS)

The Kit is for use with low flow rate Flow Units XS.

- Adaptor PEEK 1/16" to 1/32" OD Tubing (x1)
- 2µm PEEK filter (x1)
- 10-32 Coned fitting for 1/16" OD Tubing (x2)
- LQ Flow Unit Connector for 1/32" OD Tubing (x2)
- Green sleeve 1/16" OD , 0.33" ID x 1.6" (x1)
- Blue PEEK Tubing 1/32" OD x 0.010" (254µm) ID x 1 m



### FRP Low Flow Rate Kit (CTQ-KIT-LQ)

The Kit is for use with low flow rate Flow Units S, and M.

- Adaptor PEEK 1/16" to 1/32" OD Tubing (x1)
- LQ Flow Unit Connector for 1/32" OD Tubing (x2)
- Green sleeve 1/16" OD , 0.33" ID x 1.6" (x1)
- Blue PEEK Tubing 1/32" OD x 0.010" (254µm) ID x 1 m



### FRP High Flow Rate Kit (CTQ-KIT-HQ)

The Kit is for use with high flow rate Flow Unit L.

- HQ Flow Unit Connector 1/4-28 Flat-Bottom for 1/16" OD Tubing (x2)
- Ferrule for HQ Flow Unit (x4)
- FEP Tubing 1/16" OD x 0.020" (508µm) ID x 1m



### FRP High Flow Rate XL Kit (CTQ-KIT-XL)

The Kit XL is for use with high flow rate Flow Unit XL.

- HQ Connector 1/4-28 Flat-Bottom for 1/16" OD Tubing (x2)
- Ferrule for HQ Flow Unit (x4)
- FEP Tubing 1/16" OD x 0.020" (508µm) ID x 1m
- Union Tezfel™ with 0.030 thru hole (x1)
- PEEK Tubing Natural 1/16" OD x 0.055" ID (10cm)

## ESS™ KITS



### ESS™ 2-SWITCH™ Kit (CTQ-KIT-2SW2)

The new 2-SWITCH™ Kit is tubing and fitting kit dedicated for the new 2-SWITCH™

- **x2** 1/4-28 Flat-Bottom black plug
- **2m** FEP Tubing 1/16" OD x .01" (254µm) ID
- **x6** 1/4-28 Flat-Bottom for 1/16" OD fitting
- **x6** Additional flangless ferrule for 1/16" OD
- **x1** Pneumatic T connector 4mm
- **x1** Pneumatic Y-connector tygon



### ESS™ M-SWITCH™ Kit (CTQ-KIT-MSW)

The ESS™ M-SWITCH™ Kit is a replacement tubing and fitting kit.

- M-SWITCH™ Plug (x10)
- M-SWITCH™ Ferrule 1/16" (x20)
- FEP Tubing 1/16" OD x 0.01" ID (1m)



### ESS™ L-SWITCH™ Kit (CTQ-KIT-LSW)

The ESS™ L-SWITCH™ Kit is a replacement tubing and fitting kit.

- L-SWITCH™ Plug Delrin®-10-32 Coned Blue (x2)
- L-SWITCH™ 10-32 to Female Luer Connector (x2)
- FEP Tubing 1/16" OD x 0.020" (508µm) ID x 1m
- L-SWITCH™ Fitting 10-32 Coned, for 1/16" OD Tubing

## FLUIWELL KITS



### Fluiwell-1C15 Kit (CTQ-KIT-F1C15)

The Fluiwell-1C15 Kit is designed for use with the Fluiwell-1C, with 15mL Grenier Tube.

- Fluiwell Fitting 10-32 Coned, for 1/16" OD Tubing (x2)
- Fluiwell-4C Seals (x1)
- FEP Tubing 1/16" OD x 0.020" (508µm) ID x 1m



### Fluiwell-1C50 Kit (CTQ-KIT-F1C50)

The Fluiwell-1C50 Kit is designed for use with the Fluiwell-1C, with 50mL Falcon Tubes.

- Fluiwell Fitting 10-32 Coned, for 1/16" OD Tubing (x2)
- Fluiwell-4C Seals (x1)
- FEP Tubing 1/16" OD x 0.020" (508µm) ID x 1m



### Fluiwell-4C Kit (CTQ-KIT-F4C)

The Fluiwell-4C Kit is designed for use with the Fluiwell-4C.

- Fluiwell Fitting 10-32 Coned, for 1/16" OD Tubing (x4)
- Fluiwell-4C Seals (x4)
- FEP Tubing 1/16" OD x 0.020" (508µm) ID x 1m

3  
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# FLUIGENT INDUSTRIAL

# FLUIGENT INDUSTRIAL

Original Equipment Manufacturer



For integration into manufactured systems, Fluigent has developed a wide range of OEM products for flow control and flow handling in microfluidic and nanofluidic applications.

*In house design  
and assembly*

*Easy to use and  
to integrate*

*Economical*

*Modular*

## OEM PRODUCT LINE

All **microfluidic instruments** developed by Fluigent are **available as OEM components**. They can **easily be integrated** in more complex instruments. All our OEM products and solutions come with a **Software Development Kit (SDK)** for system control interface.

We offer a complete OEM product line with our standard OEM to best suit industrial needs:

- Pressure controllers with the P-OEM and the PRC100
- Flow rate sensing
- Fluid switching solutions
- Accessories
- Interfaces, Software and Integration tools



## PX-SERIES



The newest member of our industrial line, the PX-Series, is the most versatile industrial pressure controller. It is available for three pressure ranges including positive or negative. It also has RS232 and a USB ports ensuring its compatibility with any system.

Range in mbar	Product Name
1000	PX-1
2000	PX-2
-800	PX-V

*Adapted to industrial uses*

*High-quality pressure control*

*Unmatched price for the best performance*



## P-OEM

The P-OEM is able to host up to 8 independent channels of controlled pressure and thus, makes it a very compact solution for multiplexed fluid management. Its patented technology has been field-proven for almost 15 years.

► *Same pressure ranges available as the Flow EZ™*

*Adapted to industrial uses*

*High-qualified pressure control*

*Compact solution*

**4**  
**—**

# **INTEGRATED SOLUTIONS**

# CUSTOM SOLUTIONS

Customized products using  
Fluigent proprietary technologies



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

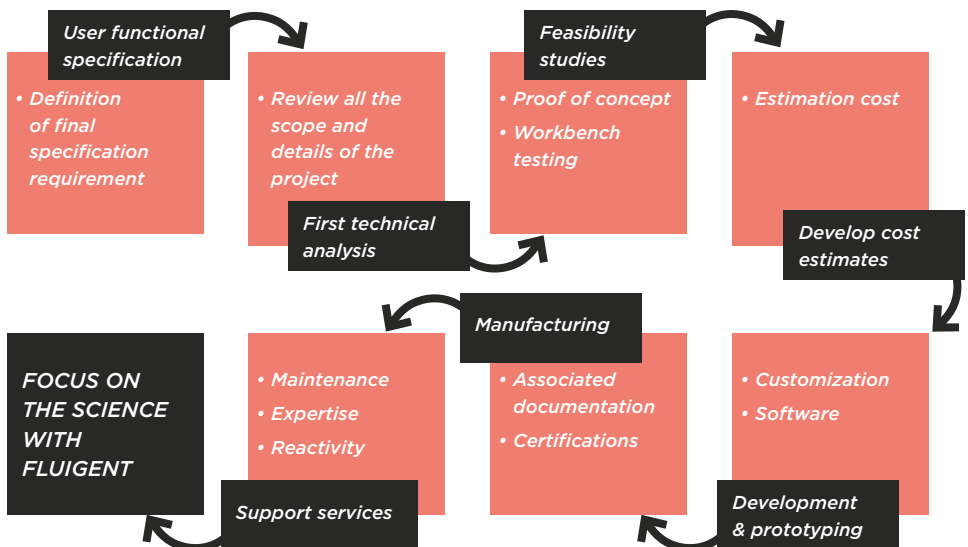
*In house design  
and assembly*

*Easy to use and  
to integrate*

*Fits your  
needs*

*Modular*

## Development Process



# ARIA

*Unique solution for 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.



*Easy to use:  
protocol  
automation*

*Easy to handle:  
intuitive user  
interface*

*Intelligent  
software adapted  
to any application*

*Compatible  
with biological  
applications*

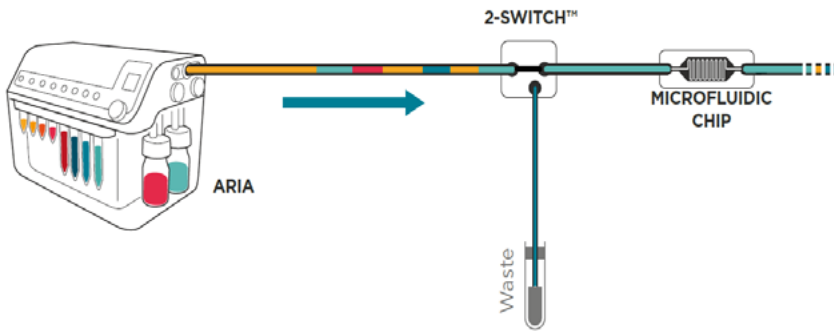
Reagents can be delivered to a perfusion chamber, microfluidic device, or other system for imaging or analysis. Up to 10 unique solutions can be delivered at precise times for faster and more reproducible results.

## Characteristics

Name	Product Number
<i>Aria</i>	CB-SY-AR-01
<i>Aria Full Service</i>	CTQ-KIT-LO-01
<i>Aria tubing kit</i>	CTQ-KIT-AR
<i>Aria 2-Switch tubing kit</i>	2SW-KIT-AR
<i>Aria Kit Adaptor 2mL</i>	ADP-KIT-AR
<i>Aria Warranty</i>	WAR-AR-01
<i>Aria Installation</i>	FAS-Inst



## 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.

## 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*

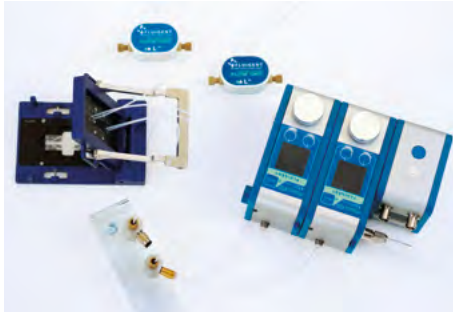
*Program stops flow and incubation*

**5**  
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# **APPLICATION PACKAGES & PLATFORMS**

# OOAC

## Organ-on-a-chip



Fluidigent has partnered with Micronit to offer a versatile fully integrated organ-on-a-chip kit which reproduces numerous characteristics of the *in vivo* environment cells.

*Compact System*

*Mimic physiological conditions*

*Save time: Protocol automation*

*Independent monitoring for each flow chamber*

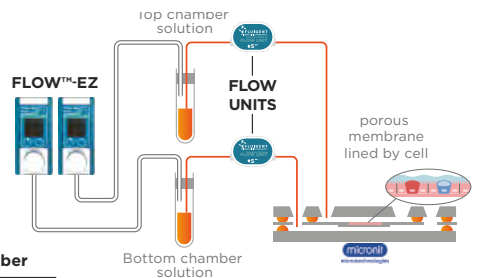
## Characteristics

The Fluidigent/Micronit **organ-on-a-chip kit** focuses on modeling the main biochemical and biophysical features of the **native environment of cells** in order to induce their growth and differentiation as functional tissues. Air-liquid interface, flow induced shear stress, mechanical stimulation, biochemical gradient, cell-cell coculture have been reported to significantly **improve the functionality of *in vitro* models**. All these parameters are controlled by the system.

The Organ-on-a-chip kit is composed of multiple microfluidic components:

- Flow EZ™ (page 10)
- Fluiwell (page 17)
- Flow Units (page 14)

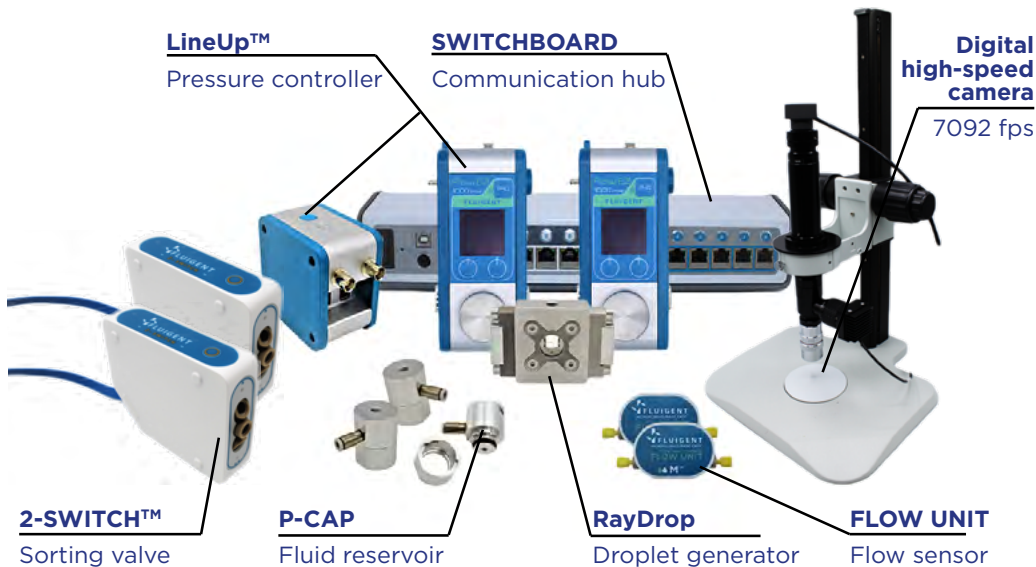
A Micronit chip is included.



Name	Characteristics	Product Number
<i>Chip older</i>	Fluid Connect PRO OOC	MNT - 00750
<i>Insert OOC</i>	Fluidic connect PRO Insert OOC	MNT-00749
<i>Top/Bottom Layers</i>	4-Pack Top and Bottom OOC Layers	MNT-00739
<i>Membrane Layer</i>	12-Pack OOC Membrane Layers	MNT-00738

# PLGA MICROPARTICLE PRODUCTION STATION

Microfluidics solution to generate PLGA microparticles



Download the application note [www.fluigent.com](http://www.fluigent.com)

## Characteristics

Package / Product	Product Number	Connector & tubing kits
Standard	1DPPL01	1DPPLC1
Automation	1DPPL02	1DPPLC2
Full	1DPPL03	
RayDrop	1DPRD01	1DPRDC1
Digital High-Speed Microscope 7092 FPS	11MCA01	

Particle monodispersity ~ 2%

Continuous / In-line production

Ethyl acetate as solvent: Biocompatibility

Semi-automated priming protocol



# RayDrop Microfluidic Chip

The RayDrop is a patented technology for droplet generation, resistant to strong chemicals and compatible with high pressures (>2 bar). The device uses standard fittings leading to sealed connections and its design allows for easy cleaning.



It can produce water-in-oil and oil-in-water droplets without any surface coating. The system is designed for easy recovery and cleaning.

**Droplet size:  
40µm to 130µm**

**Water-in-oil /  
Oil-in-water  
without surfactant**

**Easy recovery /  
cleaning**

**Standard  
connections**

## Packages contents

<b>Flow EZ™</b>	Two 2 bar pressure based flow controllers More information page 10	Standard pack Automation pack Full pack
<b>LINK</b>	Monitor your setup with Fluigent software More information page 27	Standard pack Automation pack Full pack
<b>FLOW UNIT</b>	High-precision flow sensors (M and L) More information page 14	Standard pack Automation pack Full pack
<b>P-CAP</b>	Air-tight metal caps (1 for 50 mL, 2 for 15 mL) More information page 16	Standard pack Automation pack Full pack
<b>RayDrop</b>	Microfluidic device for droplet generation More information above on this page	Standard pack Automation pack Full pack
<b>A-i-O</b>	Software to monitor and control in real time More information page 22	Standard pack Automation pack Full pack
<b>MAT</b>	Software to automate your protocol More information page 23	Automation pack Full pack
<b>2-SWITCH™</b>	Bidirectional valve for directing fluid flow More information pages 18-19	Automation pack Full pack
<b>SWITCHBOARD</b>	Communication hub between valves and PC More information page 27	Automation pack Full pack
<b>Digital high-speed Camera</b>	Observe and record results with high-resolution and frame rates up to 7092 fps	Full pack

# DROPLET STARTER PACK

Get started within minutes

DropPack

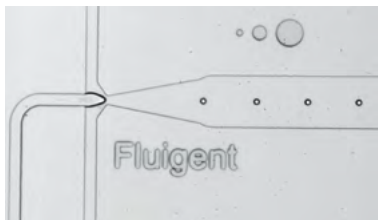


The Droplet Starter Pack is designed for microfluidic droplets experiments. It includes the EZ Drop chips, and liquid handling solution accessories.

## Characteristics

The Droplet Starter Pack includes:

- 2 Flow EZ™ for pressure-driven injection (page 10)
- 2 Flow Units for flow rate control (page 14)
- 2 P-Cap 2 mL (page 16)
- 1 Droplet Kit (page 28)
- All tubing fitting and accessories (page 28)



*Highly monodispersed droplets*

*Most simple droplet generation kit*

*Economic : Cost effective solution*

## Extended Products

### DROPLET KIT

Dropkit01

The Droplet Kit is designed to be used with the droplet starter pack.

More information page 28

*Provided*

### dSURF

dSURF is a high-performance fluorosurfactant dedicated to microdroplet generation.

More information page 20

*Required*

### dOIL

DR-RE-SU-A1

dOIL is a fluorinated oil in which our dSurf emulsion stabilizer is diluted.

More information page 21

*Required*

### Digital High-Speed Camera

Observe and record your results with high resolution and frame rate.

*Required*

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**OTHERS**

# TIPS

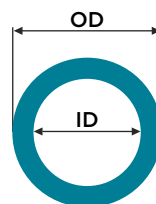
*Working in a microfluidic environment almost automatically means using fittings and tubing to connect your microfluidic device or your Lab-on-a-chip to the various elements of your microfluidic circuit.*

- *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.

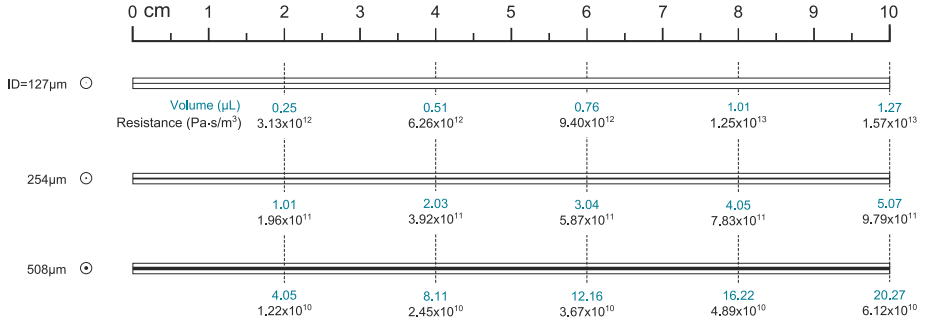
In order to get a clean interface and prevent any clogging or collapsing of the fluidic path, all tubing should be cut with specifically designed cutters.

## 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



※ values for illustrative purpose only

### OD (OUTER DIAMETER) IDENTIFICATION

● 1/16" (1.6mm)

● 1/32" (0.8mm)

### UNIT CONVERSIONS

1 bar = 14.5psi

1 mbar =  $1.45 \times 10^{-2}$ psi

1 inch = 2.54cm

1 psi =  $6.90 \times 10^{-2}$ bar

1 psi = 68.95mbar

1 cm = 0.39inch

# CUSTOMER SUPPORT & SERVICES

Service & Technical Support from Fluigent-certified experts

At Fluigent, we understand that a non-functioning system means time lost in the lab. **The Fluigent 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*

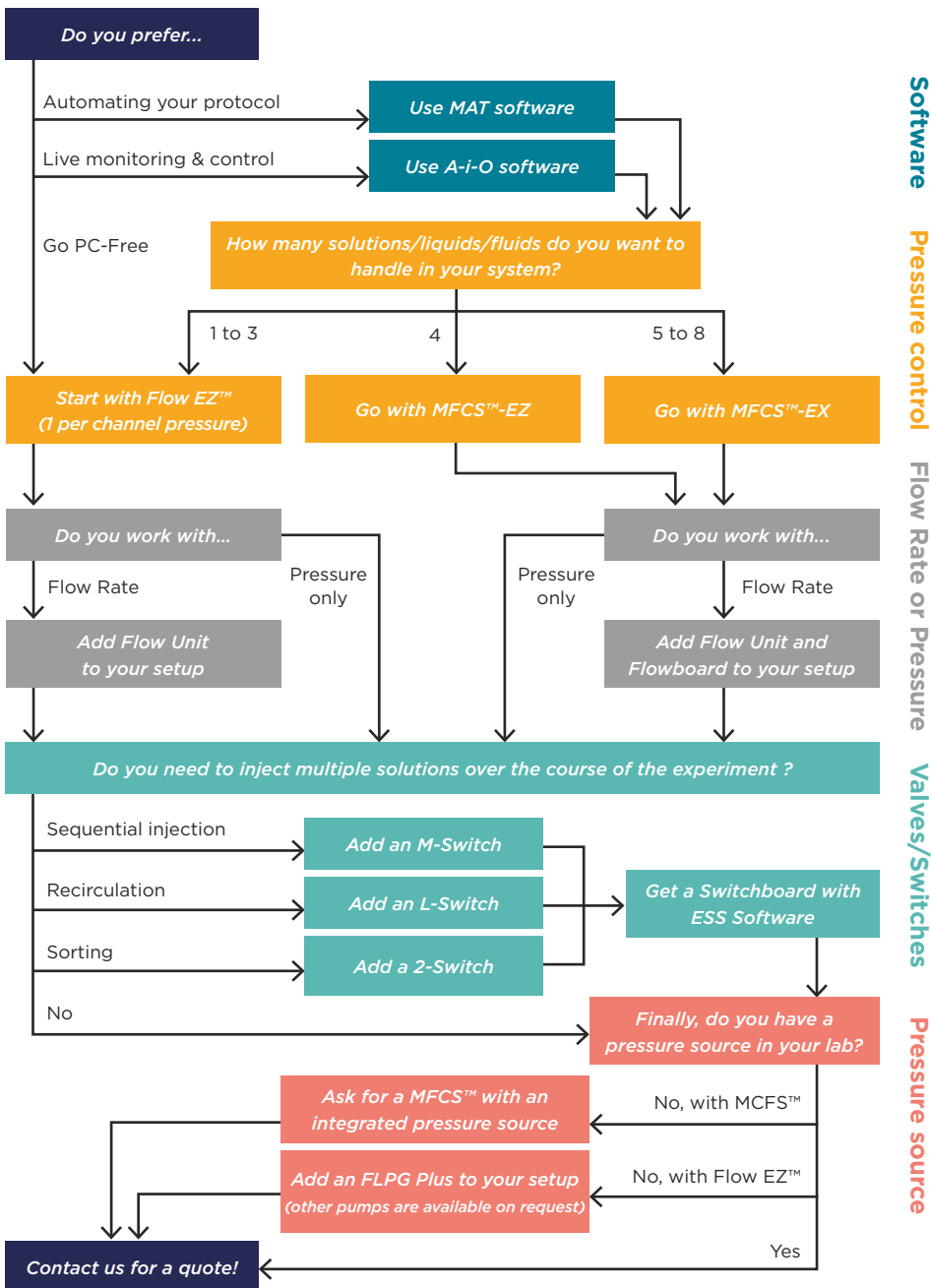
*Customer  
satisfaction  
oriented*

# REFERENCE GUIDE

Product Number	Product Name	Page	Notes
<b>Microfluidic Components – Pressure Pumps</b>			
<a href="#">LU-FEZ-0025</a>	LineUp Flow EZ™ 25 mbar	10-11	
<a href="#">LU-FEZ-0069</a>	LineUp Flow EZ™ 69 mbar	10-11	
<a href="#">LU-FEZ-0345</a>	LineUp Flow EZ™ 345 mbar	10-11	
<a href="#">LU-FEZ-1000</a>	LineUp Flow EZ™ 1000 mbar	10-11	
<a href="#">LU-FEZ-2000</a>	LineUp Flow EZ™ 2000 mbar	10-11	
<a href="#">LU-FEZ-7000</a>	LineUp Flow EZ™ 7000 mbar	10-11	
<a href="#">LU-FEZ-NO25</a>	LineUp Flow EZ™ -25 mbar	10-11	
<a href="#">LU-FEZ-NO69</a>	LineUp Flow EZ™ -69 mbar	10-11	
<a href="#">LU-FEZ-N345</a>	LineUp Flow EZ™ -345 mbar	10-11	
<a href="#">LU-FEZ-N800</a>	LineUp Flow EZ™ -800 mbar	10-11	
<a href="#">EZ-00345001</a>	MFCS™ - EZ 345 mbar	12-13	
<a href="#">EZ-01000001</a>	MFCS™ - EZ 1000 mbar	12-13	
<a href="#">EZ-01000002</a>	MFCS™ - EZ 2000 mbar	12-13	
<a href="#">EZ-07000001</a>	MFCS™ - EZ 7000 mbar	12-13	
<a href="#">EZ-80345001</a>	MFCS™ - EZ -345 mbar	12-13	
<a href="#">EZ-80800001</a>	MFCS™ - EZ -800mbar	12-13	
<a href="#">EX-00345001</a>	MFCS™ - EX 345 mbar	12-13	
<a href="#">EX-01000001</a>	MFCS™ - EX 1000 mbar	12-13	
<a href="#">EX-01000002</a>	MFCS™ - EX 2000 mbar	12-13	
<a href="#">EX-07000001</a>	MFCS™ - EX 7000 mbar	12-13	
<a href="#">EX-80345001</a>	MFCS™ - EX -345 mbar	12-13	
<a href="#">EX-80800001</a>	MFCS™ - EX -800 mbar	12-13	
<b>Microfluidic Components – Flow Rate Products</b>			
<a href="#">FLU-XS</a>	Flow Unit XS	14-15	
<a href="#">FLU-S-D</a>	Flow Unit S	14-15	
<a href="#">FLU-M-D</a>	Flow Unit M	14-15	
<a href="#">FLU-L-D</a>	Flow Unit L	14-15	
<a href="#">FLU-XL</a>	Flow Unit XL	14-15	
<b>Microfluidic Components – Sample Reservoirs</b>			
<a href="#">P-CAP2-LP</a>	P-CAP 1.5 mL & 2 mL MFCS™	16	
<a href="#">P-CAP2-HP</a>	P-CAP 1.5 mL & 2 mL Flow EZ™ & MFCS™ 7 bar	16	
<a href="#">P-CAP15-LP</a>	P-CAP 15 mL MFCS™	16	
<a href="#">P-CAP15-HP</a>	P-CAP 15 mL Flow EZ™ & MFCS™ 7bar	16	
<a href="#">P-CAP50-LP</a>	P-CAP 50 mL MFCS™	16	
<a href="#">P-CAP50-HP</a>	P-CAP 50 mL Flow EZ™ & MFCS™ 7bar	16	
<a href="#">Res-CAP</a>	Bottle-Cap	16	
<b>Microfluidic Components – Sample Reservoirs</b>			
<a href="#">14000501</a>	Fluiwell-4C 0.5 mL MFCS™	17	
<a href="#">24000501</a>	Fluiwell-4C 0.5 mL Flow EZ™ & MFCS™ 7bar	17	
<a href="#">14002001</a>	Fluiwell-4C 2 mL MFCS™	17	
<a href="#">24002001</a>	Fluiwell-4C 2 mL Flow EZ™ & MFCS™ 7bar	17	

<i>11015001</i>	Fluiwell-1C 15 mL MFCS™	17
<i>21015001</i>	Fluiwell-1C 15 mL Flow EZ™ & MFCS™ 7bar	17
<i>11050001</i>	Fluiwell-1C 50 mL MFCS™	17
<i>21050001</i>	Fluiwell-1C 50 mL Flow EZ™ & MFCS™ 7bar	17
<b>Microfluidic Components - Microfluidic Valves</b>		
<i>2SW001</i>	2-SWITCH	18-19
<i>LSW001</i>	L-SWITCH	18-19
<i>MSW002</i>	M-SWITCH	18-19
<b>Microfluidic Components - Surfactant</b>		
<i>DR-RE-SU-12</i>	dSURF 3x4 mL	20-21
<i>DR-RE-SU-30</i>	dSURF 30 mL	20-21
<b>Microfluidic Components - Software Solutions</b>		
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<i>SFT-ESS</i>	ESS™	24
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