

# ESS™ PLATFORM

## Easy Switch Solutions™

The ESS™ is a unique fluid handling platform enabling automated fluid selections and injections thanks to 3 powerful valves:



### M-SWITCH™

11-port / 10-way bidirectional valve

### 2-SWITCH™

3-port / 2-way bidirectional valve

### L-SWITCH™

6-port / 2-position bidirectional valve

Thanks to its unique features, the ESS™ platform offers key benefits for each of your applications:

#### SIMPLIFY YOUR CHIP DESIGN

##### to create and manage your experiments

Offering the possibility to inject up to 10 different fluids inside the same microchannel, the ESS™ platform provides powerful solutions to simplify your chip design (reduced number of channels, no internal valves required, etc).

#### SAVE TIME BY AUTOMATING

##### most complex experiment

Create and run your own scripts and protocols with our ESS™ Control software and our Script Module and automate up to 4 M-SWITCH™ and/or L-SWITCH™ and 8 2-SWITCH™ in addition to your usual Fluigent systems. Highly synchronize your fluidic set-up with the TTL signal functionality.

#### KEEP THE FULL INTEGRITY OF YOUR SAMPLES

##### even the most sensitive ones

The ESS™ platform offers both biocompatibility and low internal volumes, preserving the integrity of all your samples by limiting bubble generation and reducing cross contamination.

#### REDUCE THE SIZE OF YOUR SET-UP

##### while optimizing the performance of your set-up

Each ESS™ product has been designed to be used close to your chips and other devices. This way, the ESS™ platform avoids unnecessary tubing and decreases your internal volumes, optimizing the performance of the most complex set-up (higher responsiveness, sample preservations, etc).

#### SAVE MONEY

##### by reducing your reagent and sample consumption

While important quantities of samples are lost due to the high internal volume in the usual "switching" devices, the ESS™ platform products optimize your liquid consumption with an internal volume down to 660nL, reducing the global internal volumes of your set-up.

#### CHECK AND MONITOR YOUR EXPERIMENT

##### in real time

Each one of your ESS™ products is displayed inside the ESS™ Control software enabling real-time visualization of valve positions to make the monitoring of your fluidic set-up.

# TECHNICAL SPECIFICATIONS

## M-SWITCH™

11- port / 10-way valve

A bidirectional 11-port / 10-way valve for injection or selection of up to 10 different fluids controlled by our ESS™ Control software

Chemical & biological compatibility (wetted materials: custom polymer RPC 7)

Low internal volume (11.6µL)

No dead volume

Integrated fittings

Software controlled - Full automation

Port-to-port switching time: 280ms

## 2-SWITCH™

3-port / 2-way valve

A bidirectional 3-port / 2-way valve, controlled either by our ESS™ Control software or manually as a stand alone device

Chemical and biological compatibility (wetted materials: teflon)

Low internal volume (12µL)

No dead volume

External fittings

No heating

Use as a stand alone system or software controlled (full automation)

Fast response time: 20ms

Easy identification of the positions thanks to indicator lights

## L-SWITCH™

6-port / 2-position valve

A bidirectional 6-port / 2-position valve for injection or switching different fluids controlled by our ESS™ Control software

Chemical & biological compatibility (wetted materials: PEEK)

Low port-to-port volume (660nL)

No dead volume

External fittings

Software controlled - Full automation

Port-to-port switching time: 100ms

Injection and Switching modes

Compatible with sample injection loop from 5µL to 100µL\*

\*Other volumes available

Whatever your applications, the ESS™ always enables:

- Chip design simplification
- Full set-up automation
- Sequential injections
- Time saving
- Performance optimization
- Space saving
- Highly calibrated volume injection
- TTL synchronization

## SWITCHBOARD

Communication platform

The SWITCHBOARD hosts up to 4 M-SWITCH™ and/or L-SWITCH™ and 8 2-SWITCH™ and provides them power supply. The SWITCHBOARD is also the link between the connected valves and the controlling software ESS™ Control.

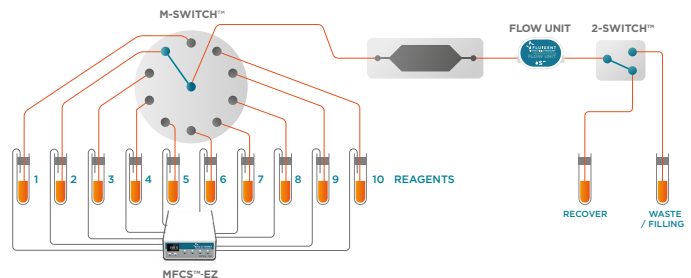


# SOME APPLICATIONS FOR THE ESS™ PLATFORM

## SEQUENTIAL INJECTIONS

Up to 10 liquids are injected sequentially inside the 1-channel chip by the M-SWITCH™. The samples at the outlet are then sorted by the 2-SWITCH™. All steps can be automated by the ESS™ control software.

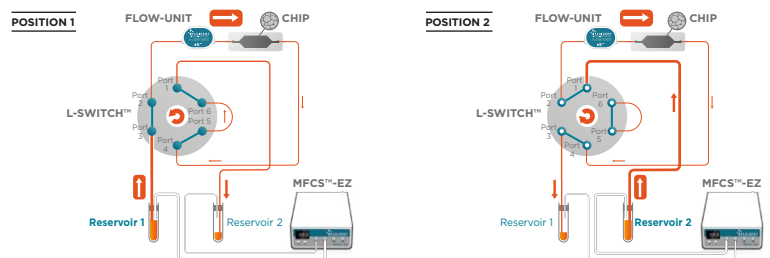
- ➔ Cell analysis
- ➔ Drug testing
- ➔ Calibration curve, etc
- ➔ Cell lysis and DNA extraction for PCR or NGS (Next Generation Sequencing) analysis



## FLUID RECIRCULATION

A small volume of buffer is recirculated within a close loop into the chip for several days via the L-SWITCH™ from the first reservoir to the second and the other way round, keeping the same direction in the chip by changing the position of the L-SWITCH™.

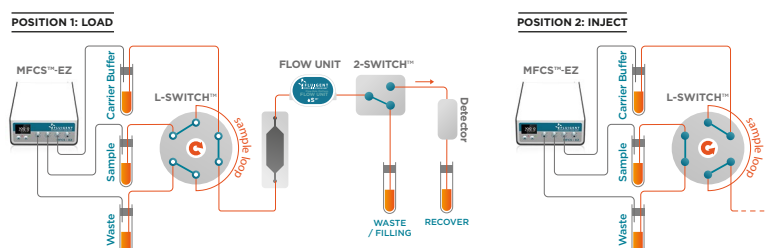
- ➔ Cell Culture
- ➔ Shear-stress Control



## CONTROLLED VOLUME INJECTION

The sample is "loaded" into the sample loop connected to the L-SWITCH™ while the carrier buffer is injected directly into the chip. When the L-SWITCH™ is switched the controlled volume included in the sample loop is "injected" into the chip with the carrier buffer. The sample is then sorted by the 2-SWITCH™ at the outlet. All steps can be automated by the ESS™ Control software.

- ➔ Cell culture
- ➔ PCR



### HEADQUARTERS

FLUIGENT SA  
1, mail du professeur Mathé, 94800 Villejuif, FRANCE  
contact@fluigent.com || +33 1 77 01 82 68

### IN NORTHEASTERN EUROPE

FLUIGENT DEUTSCHLAND GmbH  
Carl-Zeiss-Platz 3, D-07743 Jena, DEUTSCHLAND  
kontakt@fluigent.de || +49 3641 277 652

### IN NORTH AMERICA

FLUIGENT INC.  
600 Suffolk Street, M2D2 Lowell, MA 01854, USA  
fluigentinc@fluigent.com || +1 978 934 5283