DATASHEET

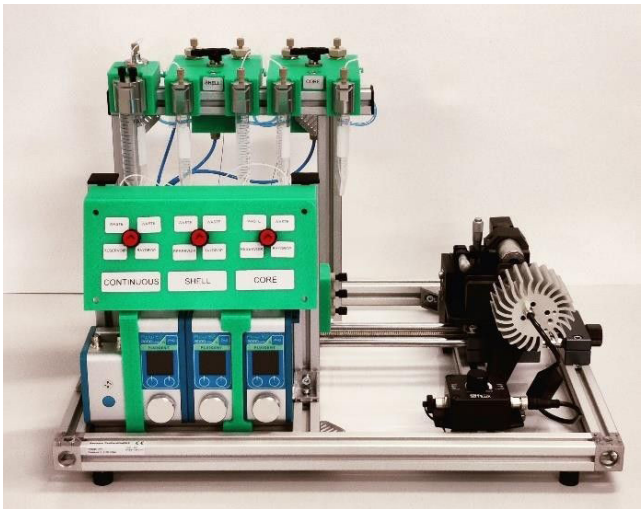
FLUIGENT
SMART MICROFLUIDICS™

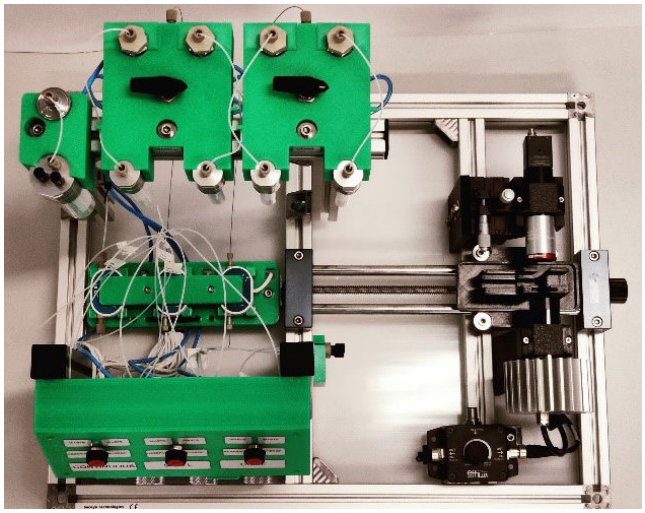
CELL ENCAPSULATION PLATFORM FOR FACS

PRODUCT DESCRIPTION

The cell encapsulation platform for FACS is a fast and easy screening tool for high throughput **encapsulation of complex and individual cells within highly monodisperse double emulsion droplets** using the Raydrop™ by Secoya. It includes a comprehensive flow path with pressure controllers, filters, flowmeters, and valves for an easy start-up, shut-down and cleaning of the system in between tests.

A suitable optical system guarantees the optimum visualisation of the double emulsion production process inside the Raydrop™. The open design of the platform makes it adaptable to a user's needs (injection of a small volume of sample, reagent addition...).

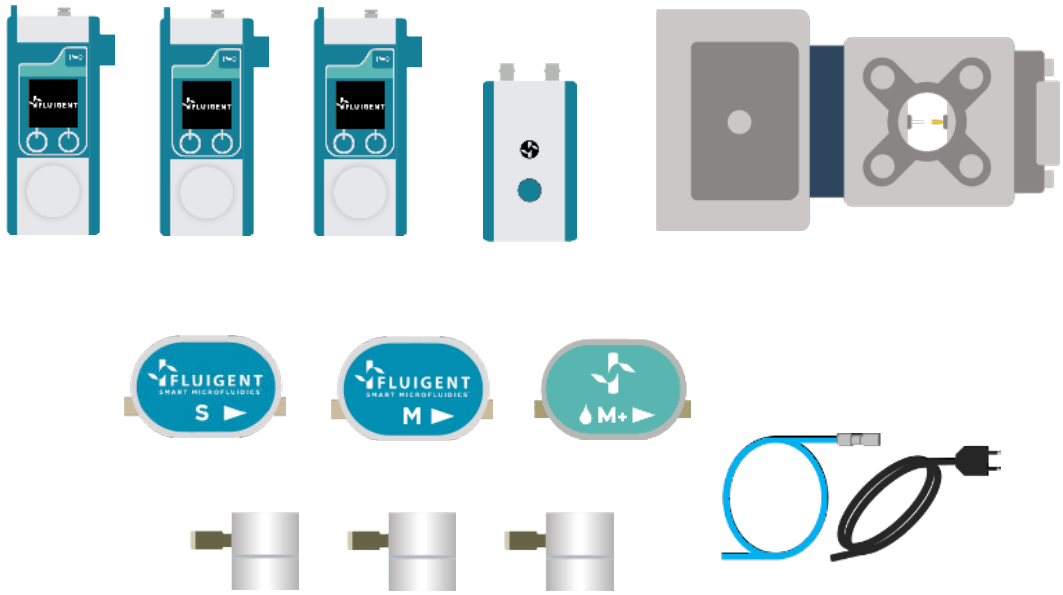




PLATFORM DESCRIPTION

- Raydrop Double emulsion
- 3 pressure controllers (0-7 bars)
- 5 reservoirs
- 3 flowmeters
- Complete and pre-connected flow path
- Complete optical system
- L-Switch (optional, for small sample platform).

» Designed for use in fume hoods, special designed cabinets, and gloveboxes.
» Maximum operating condition can be limited depending on the fluid couple used.
» The platform is adapted for the production of small water-oil-water double emulsions (<90 µm) for cell encapsulation.



In the following, we present different platforms with different emulsification devices to target **different droplet size ranges**:

- Platform S
- Platform S+
- Platform M
- Platform M+

PLATFORM S

P.N: [O-FACS1-PTF]

PRODUCT DESCRIPTION

Description	Product	Part Number
Double emulsion production device	RayDrop Double Emulsion 30-70-45	O-DE-RDRPC05-EUP
Fluid handling system	• 1*Link module	LU-LNK-0002
	• 3*Flow EZ 7 bars for all 3 phases	LU-FEZ-7000
Reservoirs	• Continuous phase: ◊ 1*50mL Pcap with 50mL Falcon tube ◊ Tubing: 500 µm	P-CAP50-HP-PCK
	• Shell Phase: ◊ 2*15 mL Pcap with 15 mL Falcon tube ◊ Tubing: 125 µm	P-CAP15-HP-PCK
	• Core Phase: ◊ 2*15 mL Pcap with 15 mL Falcon tube ◊ Tubing: 125 µm	P-CAP15-HP-PCK
Flow meters	• Continuous phase: 1*Flow unit L	FLU-L-D
	• Shell Phase: 1* Flow unit M	FLU-M-D
	• Core Phase: 1*Flow unit M	FLU-M-D
Tubing and fittings	• Tubing: ◊ OD: 1/16 and 1/32 OD ◊ ID: 250 µm & 500 µm ◊ Materials: PFA • Manual valves: ◊ 3*4 way valves ◊ 2*2 way valves • Filters: ◊ 2 µm filter for continuous phase ◊ 2 µm filters for dispersed phases	N/A

**Formulation dependent*

PLATFORM S

P.N: [O-FACS1-PTF]

FLUIDIC TECHNICAL SPECIFICATIONS

	Range
Continuous Phase	• 0±1mL/min
Shell Phase	• 0±80µL/min (H20) • 0±500µL/min (IPA)
Core Phase	• 0±80µL/min (H20) • 0±500µL/min (IPA)
Droplet size	• 25-45 µm

MECHANICAL SPECIFICATIONS

	Description
Unit dimensions	• 61 x 46 x 43cm3 (L x W x H)
Weight	• 15 kg without the protective hood • 22.5 kg with the protective hood
Wetted materials	• Platform: PEEK, PFA, PCTFE, PTFE, SS316L, GLASS • Sealing: FFKM

OPTICAL SYSTEM SPECIFICATIONS

Description
• Light source
• Microscope objective (10x)
• Specific colour camera (up to 400 fps, 1µs integration time)
• XYZ translation stages

PLATFORM S+

P.N: [O-FACS2-PTF]

PRODUCT DESCRIPTION

Description	Product	Part Number
Double emulsion production device	RayDrop Double Emulsion 30-70-60	O-DE-RDRPC06-EUP
Fluid handling system	• 1*Link module	LU-LNK-0002
	• 3*Flow EZ 7 bars for all 3 phases	LU-FEZ-7000
Reservoirs	• Continuous phase: ◊ 1*50mL Pcap with 50mL Falcon tube ◊ Tubing: 500 µm	P-CAP50-HP-PCK
	• Shell Phase: ◊ 2*15 mL Pcap with 15 mL Falcon tube ◊ Tubing: 125 µm	P-CAP15-HP-PCK
	• Core Phase: ◊ 2*15 mL Pcap with 15 mL Falcon tube ◊ Tubing: 125 µm	P-CAP15-HP-PCK
Flow meters	• Continuous phase: 1*Flow unit L	FLU-L-D
	• Shell Phase: 1* Flow unit M	FLU-M-D
	• Core Phase: 1*Flow unit M	FLU-M-D
Tubing and fittings	• Tubing: ◊ OD: 1/16 and 1/32 OD ◊ ID: 250 µm & 500 µm ◊ Materials: PFA • Manual valves: ◊ 3*4 way valves ◊ 2*2 way valves • Filters: ◊ 2 µm filter for continuous phase ◊ 2 µm filters for dispersed phases	N/A

**Formulation dependent*

PLATFORM S+

P.N: [O-FACS2-PTF]

FLUIDIC TECHNICAL SPECIFICATIONS

	Range
Continuous Phase	• 0±2mL/min
Shell Phase	• 0±80µL/min (H20) • 0±500µL/min (IPA)
Core Phase	• 0±80µL/min (H2O) • 0±500µL/min (IPA)
Droplet size	• 45-60 µm

MECHANICAL SPECIFICATIONS

	Description
Unit dimensions	• 61 x 46 x 43cm3 (L x W x H)
Weight	• 15 kg without the protective hood • 22.5 kg with the protective hood
Wetted materials	• Platform: PEEK, PFA, PCTFE, PTFE, SS316L, GLASS • Sealing: FFKM

OPTICAL SYSTEM SPECIFICATIONS

Description
• Light source
• Microscope objective (10x)
• Specific colour camera (up to 400 fps, 1µs integration time)
• XYZ translation stages

PLATFORM M

P.N: [O-FACS3-PTF]

PRODUCT DESCRIPTION

Description	Product	Part Number
Double emulsion production device	RayDrop Double Emulsion 60-120-60	O-DE-RDRPC07-EUP
Fluid handling system	• 1*Link module	LU-LNK-0002
	• 3*Flow EZ 7 bars for all 3 phases	LU-FEZ-7000
Reservoirs	• Continuous phase: ◊ 1*50mL Pcap with 50mL Falcon tube ◊ Tubing: 500 µm	P-CAP50-HP-PCK
	• Shell Phase: ◊ 2*15 mL Pcap with 15 mL Falcon tube ◊ Tubing: 125 µm	P-CAP15-HP-PCK
	• Core Phase: ◊ 2*15 mL Pcap with 15 mL Falcon tube ◊ Tubing: 125 µm	P-CAP15-HP-PCK
Flow meters	• Continuous phase: 1*Flow unit L	FLU-L-D
	• Shell Phase: 1* Flow unit M	FLU-M-D
	• Core Phase: 1*Flow unit M	FLU-M-D
Tubing and fittings	• Tubing: ◊ OD: 1/16 and 1/32 OD ◊ ID: 250 µm & 500 µm ◊ Materials: PFA • Manual valves: ◊ 3*4 way valves ◊ 2*2 way valves • Filters: ◊ 2 µm filter for continuous phase ◊ 2 µm filters for dispersed phases	N/A

**Formulation dependent*

PLATFORM M

P.N: [O-FACS3-PTF]

FLUIDIC TECHNICAL SPECIFICATIONS

	Range
Continuous Phase	• 0±2mL/min
Shell Phase	• 0±80µL/min (H20) • 0±500µL/min (IPA)
Core Phase	• 0±80µL/min (H20) • 0±500µL/min (IPA)
Droplet size	• 50-60 µm

MECHANICAL SPECIFICATIONS

	Description
Unit dimensions	• 61 x 46 x 43cm3 (L x W x H)
Weight	• 15 kg without the protective hood • 22.5 kg with the protective hood
Wetted materials	• Platform: PEEK, PFA, PCTFE, PTFE, SS316L, GLASS • Sealing: FFKM

OPTICAL SYSTEM SPECIFICATIONS

Description
• Light source
• Microscope objective (5x)
• Specific colour camera (up to 400 fps, 1µs integration time)
• XYZ translation stages

PLATFORM M+

P.N: [O-FACS4-PTF]

PRODUCT DESCRIPTION

Description	Product	Part Number
Double emulsion production device	RayDrop Double Emulsion 60-120-90	O-DE-RDRPC08-EUP
Fluid handling system	• 1*Link module	LU-LNK-0002
	• 3*Flow EZ 7 bars for all 3 phases	LU-FEZ-7000
Reservoirs	• Continuous phase: ◊ 1*50mL Pcap with 50mL Falcon tube ◊ Tubing: 500 µm	P-CAP50-HP-PCK
	• Shell Phase: ◊ 2*15 mL Pcap with 15 mL Falcon tube ◊ Tubing: 125 µm	P-CAP15-HP-PCK
	• Core Phase: ◊ 2*15 mL Pcap with 15 mL Falcon tube ◊ Tubing: 125 µm	P-CAP15-HP-PCK
Flow meters	• Continuous phase: 1*Flow unit L	FLU-L-D
	• Shell Phase: 1* Flow unit M	FLU-M-D
	• Core Phase: 1*Flow unit M	FLU-M-D
Tubing and fittings	• Tubing: ◊ OD: 1/16 and 1/32 OD ◊ ID: 250 µm & 500 µm ◊ Materials: PFA • Manual valves: ◊ 3*4 way valves ◊ 2*2 way valves • Filters: ◊ 2 µm filter for continuous phase ◊ 2 µm filters for dispersed phases	N/A

**Formulation dependent*

PLATFORM M+

P.N: [O-FACS4-PTF]

FLUIDIC TECHNICAL SPECIFICATIONS

	Range
Continuous Phase	• 0±2mL/min
Shell Phase	• 0±80µL/min (H20) • 0±500µL/min (IPA)
Core Phase	• 0±80µL/min (H20) • 0±500µL/min (IPA)
Droplet size	• 70-90 µm

MECHANICAL SPECIFICATIONS

	Description
Unit dimensions	• 61 x 46 x 43cm3 (L x W x H)
Weight	• 15 kg without the protective hood • 22.5 kg with the protective hood
Wetted materials	• Platform: PEEK, PFA, PCTFE, PTFE, SS316L, GLASS • Sealing: FFKM

OPTICAL SYSTEM SPECIFICATIONS

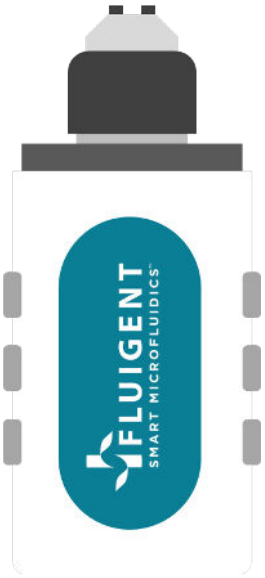
Description
• Light source
• Microscope objective (5x)
• Specific colour camera (up to 400 fps, 1µs integration time)
• XYZ translation stages

OPTIONAL:
INJECTION LOOP

P.N: [O-FACS-INJ-LOOP]

6-Port/2-Position BiDirectional Injection

The Injection loop™ is a bidirectional 6-port / 2 position valve for injection of low volumes of biological materials. It is ideal to inject rare samples as it closes them up to the microfluidic chip which reduces the dead volume, and avoids contamination of the platform's fluidic path.



Benefits

Compact
Save bench space

Ease of use
Operate within a minute

Automation
MAT to write protocols

No dead volume
Get accurate results

PRODUCT DESCRIPTION

Description	Product	Part Number
Injection valve	L-switch bidirectional injection valve	LSW001
Microfluidic valve controller	LineUp Switch EZ	ELUSEZ
Chain to chain cable	LineUp Chain to chain kit	LU-C2C-0001
Tubing and fittings	• Tubing: ◊ OD: 1/16 and 1/32 inches ◊ ID: 125 µm & 500 µm ◊ Materials: FEP and PEEK ◊ 8* green sleeves ◊ 2* 200 µL sample loop ◊ 1* 100µL sample loop ◊ 1* 50µL sample loop • Connectors: ◊ 2* tubing/fitting assembly ◊ 2* connectors XP235 with blue ferrules ◊ 6 * fittings F333-NX • Needle: ◊ 22s gauge Hamilton syringe needle	FLU-L-D

L-switch performance	
Internal volume	660 nL
Sample loop volume	50µL, 100µL, 200 µL
Dead volume	None
Switching time	100 ms
Maximum Pressure	7 bar (100 psi)
Hardware specifications	
Dimensions	7x9x15 cm3
Weight	475 g
Fittings	Flangeless (1/16'' OD)
Port communication	RJ45
Power supply	RJ45
Software compatibility	Oxygen

Technology

The L-SWITCH™ is a 6-port / 2-position injection valve: Peripheral ports (numbered from 1 to 6) can alternatively be connected the right F or the left neighbor. The L-SWITCH™ is actuated by a motor that drives a rotor – where the fluidic path is engraved – against a stator – hosting the fluidic ports.

Position 1

Position 2