

# Coaxial Electrospinning & Electropray StartUp Lab Device V2.0



Doxa Microfluidics offers a wide variety of Coaxial Electrospinning and Electropray Lab Equipment for the design and production of Core-Shell and hollow, and plain nanofibers and particles. All the Lab Equipment supplied by Doxa allows clean operation with both Coaxial electrospinning and electropray technique and are built under each customer requirements and needs.

For those scientists and engineers who devotes to develop process design of nanofibers and nanoparticles using Coaxial Electrospinning and Electropray tech with a full control of the process Doxa has designed the StartUp Lab Device V2.0.



# Coaxial Electrospinning & Electrospray

## StartUp Lab Device V2.0



### StartUp Lab Device V2.0. | FEATURES

- ❖ **Stainless Steel, epoxy coated enclosure and Glass:** the unit has been designed to work in a laboratory and research environment, having an excellent flexibility, ease of use and minimum setup time and maintenance. The transparent doors located at the front allow the visualization of the process and ease the access to the cabinet. The only input required to operate the equipment is electricity. The unit is equipped with all security measures, ensuring a safe operation to the user. The machine has two operation modes: safe and normal. In safe mode, the high voltage will turn off and the movable parts will stop at the time the doors are opened to ensure the security of the user. In normal mode, although the doors are opened all the parts will keep in operation. However, the user will be warned about the risk by a flashing red beacon. It also has an emergency stop button and a smoke detector that automatically shut down the equipment in case of hazard.
- ❖ **A flat plate collector:** Stainless Steel (200 mm x 200 mm) isolated by DELRIN® tower is included.
- ❖ **Control digital panel:** a touch screen, located at the front panel, allows the user controlling all the features provided by the equipment. The software includes a user-friendly interface with the option of programming sleep-off mode (timer).



- ❖ **Two High Voltage Power Supplies:** reaching up to 60.000 V of voltage drop from the nozzle to the collector. The device is equipped with two power supplies: one positive (up to +30kV)

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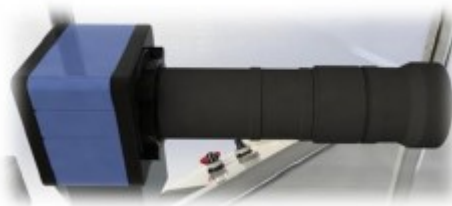
## StartUp Lab Device V2.0

and one negative polarity (up to -30 kV). Which reduces losses of material. The voltages are fully controlled from two knobs located at the front panel, which provide the user a more accurate control of the process.

- **Pumping system:** two syringe-pump base liquid infusion system enables Coaxial Electrospinning and Electropray tech, pumps are driven by stepper motors, allowing a high-resolution control of the flow rate through the nozzle. Syringes from 1 mL to 30 mL can be used. Flow rate can be varied from 14  $\mu\text{L}/\text{h}$  to 1500 mL/h. Pumping system is controlled from touch screen.
- **Tubing fittings and nozzles** of different diameters. Simple and Coaxial injector are supplied to operate in simple or coaxial mode respectively. The coaxial nozzle position (from the tip of the nozzle to the collector surface) is completely adjustable. Different nozzles are available:
  - COAXIAL I: 0,9/0,6 & 1,7/1,4 (AISI 304) (by default)
  - COAXIAL II: 0,9/0,6 & 1,7/1,4 (AISI 316)
  - COAXIAL III: 09/06 & 1.7/1.4 (AISI 304)



- **Taylor Cone Visualization System:** it is formed by a CMOS USB color camera connected to a proper lens array that allows visualizing the Taylor Cone anchored at the tip of the nozzle. Device is provided with a USB output to connect the device to any computer, where the software (provided with the device) to it visualization. Due to the fact that an accurate control on the whole process is essential for the robust and reliable generation of nanofibers and particles, we consider this item indispensable.



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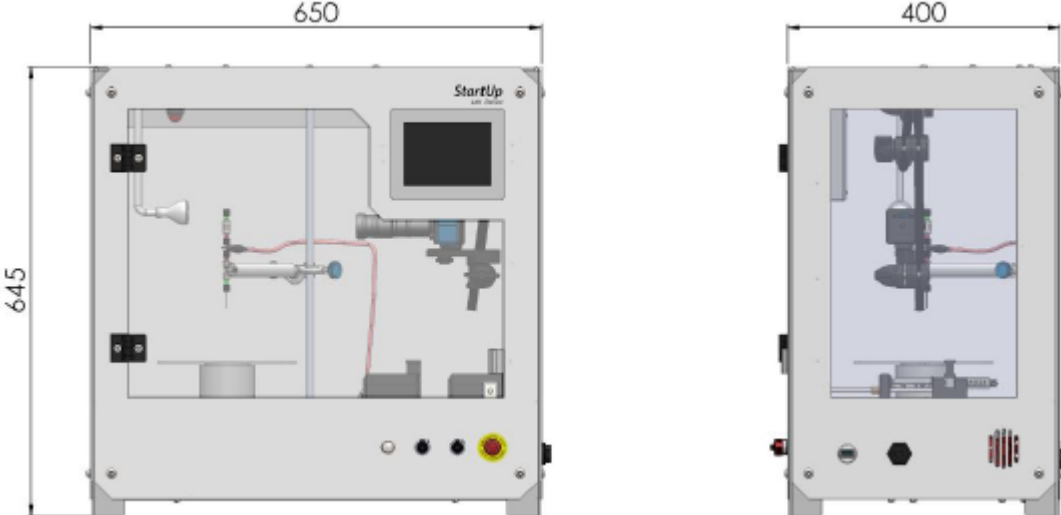


- ✿ **Warranty and after sales service:** one year from the delivery date. Doxa commits to repay in 48 working hours following the reception of notice (by email or phone) of requirement for repair or technical assistance from the user.
- ✿ **Installation and training course:** if the customer needs it, Doxa's personnel may travel to customer's facilities to complete the equipment installation and give a training course to show the end-user how the equipment works, during the training some electrospinning and electropray experiments would be performed. In addition, Doxa also offers a full training course (2-3 days long) where the fundamentals basics of electrospinning and electropray techniques and the application of the Coaxial technique to microencapsulate will be performed.
- ✿ **User manual:** the equipment is supplied with a complete user guide that can be looked up by the final user in case of need.

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## StartUp Lab Device V2.0. | DIMENSIONS AND PHOTO GALLERY



Front View	Side View	HV Potentiometers
Inside View	Pumping System	Visualization System
Coaxial Injector	Touch Screen	Camera Connection

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### StartUp Lab Device V2.0. | GENERAL INFORMATION

ENCLOSURE MATERIAL	Steel (epoxy coating) and laminated glass.
Total weight	65 kg
Dimensions (LxWxH)	650 x 400 x 645 mm
Power supply	210-230 V; 50-60 Hz
Power consumption (max)	< 350 W
Operation interface	PROFACE Touch screen 5,7"
Warranty	1 year
HIGH VOLTAGE	
Polarization	Double polarization (+ and -)
Voltage range	-30 kV to + 30 kV
Maximum power	15 W
Adjustment voltage	Potentiometers 1,5 kV/ rev
SYRINGE PUMP	
Number of units	2
Syringe size	1 mL to 30 mL
Flow rate	14 $\mu$ mL/h to 1500 mL/h.
INJECTORS	
Type	Coaxial (x1)
Diameter of the outer needle (OD/ID)	1,7/ 1,4 mm
Diameter of the inner needle (OD/ID)	0,9/ 0,6 mm
Material of needle	Stainless Steel (AISI 304)
Material of body	PEEK
Distance injector – collector	Up to 250 mm
Distance injector- collector adjustment method	Manual
COLLECTOR	
Type	Flat plate
Material	Stainless Steel
Dimensions	200 x 200 mm
TAYLOR CONE VISUALIZATION SYSTEM	
Camera	CMOS USB – color camera and visualization SW
Focus method	Manual

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Position adjusted method	Manual
Illumination	LED
SAFE AND SECURITY	
<ul style="list-style-type: none"><li>▪ Integrated extractor hood: fume hood exhaust fan allows an efficient ventilation of the cabinet. Extraction flow rate: up to 150 m<sup>3</sup>/h</li><li>▪ Normal and SAFE operation modes.</li></ul>	<ul style="list-style-type: none"><li>▪ Red beacon to warn that high voltages are ON</li><li>▪ Protection to peaks of voltage and current.</li><li>▪ Emergency stop button.</li></ul>

*Note: pictures along the document may differ from reality.*