

Lab-Scale Electrospinning Machine (Electroris)

Electroris is a lab-scale electrospinning machine designed to prepare polymeric, carbon, and ceramic nanofibers with a diameter range of 50 nm to several microns. There are two models available: The Standard model and the Dual Pump model (Side by Side Electroris).

The Standard model is equipped with a single syringe pump, making it suitable for straightforward electrospinning applications. In contrast, the Dual Pump model features two syringe pumps positioned on either side of the rotating collector drum. This configuration allows for the simultaneous electrospinning of two different materials, enabling the production of composite nanofibers.

For example, polymeric materials can be electrospun from one side while delivering additives, such as medications, from the other. This versatility makes the Dual Pump model particularly well-suited for pharmaceutical, medicinal, and biological applications.

Both models are designed with a metallic body and include a syringe pump, spinneret system, collector system, and high-voltage power supply. The machines are equipped with a touchscreen panel for controlling various electrospinning parameters, including injection rate, electrospinning distance, collector drum speed, working temperature, and operational time. Additionally, Electroris incorporates advanced safety features to ensure user safety when handling high-voltage power supplies and chemical solvents.



Main Features

- Advanced safety features
- Easy operation and maintenance
- Reliable performance
- Modular design
- 4.3- touch screen HMI panel
- Emergency stop button to halt the machine in any unexpected situation

General Features

Chassis: Metallic body with three doors for easy access

Input power: 100-240 V AC/50-60 Hz

Ventilation: A programmable fan adjustable by HMI panel

Heating system: Adjustable from ambient temperature up to 45°C through the HMI panel

Heater: 1000W, 4A

Safety: Voltage cut-off in case of door opening

Dimensions (L×W×H):

- **Standard:** 88 × 76 × 87 cm
- **Dual pump:** 131 × 80 × 96 cm

Weight: Standard: 110 kg; **Dual pump:** 160 kg

Spinneret

Number of syringes:

- **Standard:** 1 or 2;
- **Dual pump:** Up to 4 syringes

Configuration: Horizontal (No need for hose)

Scanning rate: 0-30 mm/s

Scanning range: 0-30 cm

Syringe pump injection rate: 10 µl/h to 500 ml/h

Usable syringe size: 1-25 mm (Inner Diameter)

Accessories (Optional): Co-axial nozzle with tube

Collector

Type: Rotating drum (wire, cylinder, mandrel, and disk collectors are optional)

Material: Stainless steel

Rotation speed: 300-3000 rpm

Spinning distance: 5-20 cm

Size:

- Cylinder: 8(∅) cm × 30(L) cm
- Plate: 25(L) cm × 25 (W) cm
- Wire (Optional): 8(∅) cm × 25(L) cm
- Disk (Optional): Diameter: about 20 cm
- Mandrel (Optional): Length: 25 cm; Diameter: 2, 4, 6, 8 and 10 mm
- Negative Collector: Attachable to negative high voltage power supply up to -35 kV (Optional)

High voltage power supply

Model: HV35P OV

Max. output voltage: 35 kV

Power: 25 Watt

Voltage monitoring: Digital, Accuracy: 0.1 kV

Body: Durable metal casing

Two high-voltage power supplies are installed for the dual pump series

Control

Type: PLC

HMI: 4.3" touch screen

- Start and end position of the nozzle(s)
- The injection rate of a syringe pump(s)
- Electrospinning distance(s)
- Electrospinning time
- ON/OFF timer for ventilation fan
- Drum ON/OFF switch (RPM controller) in standard series, and RPM control from HMI in dual pump series
- Temperature control
- Humidity indicator (Dual pump series)
- Alarm after completing the desired injection volume or running out the solution in the syringe (after the operation of the syringe pump switch)



Single pump electrospinning machine



Dual pump electrospinning machine