

## ORBITAL SHAKING INCUBATOR

**elte Vertical Orbital Shaking Incubators** are used for mixing the solutions at low speeds for an extended period of time. The instrument is specially designed for a range of applications such as cell culture, washing procedures, protein production, general chemical mixing, solubility studies, bacterial suspensions, fermentation, etc. in pharmaceutical and biotechnological organisations. There are two types of orbital shaking incubators viz. with refrigeration and without refrigeration.

### Salient Features:

The outer body has a robust construction of 1 mm thick mild steel with epoxy powder coating whereas the inner chamber is made of corrosion resistant 1 mm thick Stainless Steel 304 Grade. An ergonomic outer door with lock and key is provided in order to prevent unauthorized access. There is also a provision of an inner transparent door with latches for easy display of materials kept inside the incubator. Sturdy high grip anti vibration feet are fixed at the bottom for preventing walking of the unit. Drain condensate outlet also available in order to drain of condensed water from the bottom of the chamber. Magnetic door gasket ensures complete sealing of the main door.



The orbital shaker eccentric bearing mechanism, which ensures smooth, stable and low noise operation, is mounted inside the chamber. The platform can accommodate flasks of various capacities i.e. from 100 ml to 2000 ml. The speed and time can be set with the help of soft touch keypad on a separate 16 x 1 LCD Display. There are 10 user programmable memory. Depending upon models the max speed is upto 300 RPM whereas the max. timer will be upto 9999 mins or infinite. Speed accuracy is  $\pm 5$  RPM. User defined smooth acceleration and deceleration of the shaker is available from 12 to 510 secs. Auto restart in case of power failure for the remaining time period. Audio alarm after timer elapses. Maintenance free heavy duty low noise motors and drives are the core part of this unit. Flasks can be easily replaced at the user end.

The shaking incubator runs on standard 230 V AC Single Phase 50 Hz power supply. A MCB is present for better electrical safety. Microcontroller based graphic LCD display is provided for easy visibility of internal temperature from a distance. The control panel is placed at an easily accessible height for operation. The controller has an accuracy of  $0.5^{\circ}\text{C}$  and a readability & temperature increments of  $0.1^{\circ}\text{C}$ . Audio as well as visual alarms are indicated whenever there is large variation in set temperature, sensor failure, door kept open, etc. Interior chamber LED lighting gets activated automatically when the door is opened and turns off when the door is closed. The User Interface is password protected in order to prevent parameter tampering.

Eco-friendly refrigeration system comprises of a low noise highly efficient heavy duty hermetically sealed compressor. The powerful refrigeration system works in tandem with the heating system to ensure temperature stability even in high external ambient conditions. It uses an environmentally friendly HFC refrigerant gas R-134 A which is CFC and HCFC free. The high-density PUF insulation helps to maintain the interior temperature even when there is ambient temperature variation. PT 100 sensor is used for accurate temperature feedback of the inner chamber. Safety thermostat is available in order to prevent overheating. Maintenance free blower fans enable forced air circulation in order to achieve uniform temperature distribution and maintain vital operational temperature between  $5^{\circ}\text{C}$  to  $60^{\circ}\text{C}$  inside the chamber. The blower fans turn off when the door is opened to avoid loss of chilled air blowing out of the unit. Provision of hot line reduces the condensation on the outer door openings.

In the Non Refrigerated Orbital Shaking Incubator the operating temperature range is from ambient  $+ 5^{\circ}\text{C}$  to  $60^{\circ}\text{C}$ . All the other features are same.

Multiple tier shakers also available.

## Technical Specification :

Model No.	ESI-125	ESI-125R	ESI-200 (2Tier)	ESI-200R (2Tier)	ESI-300R
Temperature	5°C Above Ambient to 60°C	5°C to 60°C	5°C Above Ambient to 60°C	5°C to 60°C	5°C to 60°C
Inner Size (mm) (WxDxH)	550x470 x460	550x470x460	550x470x800	550x470x800	800x625x600
Accuracy	± 0.5°C	± 0.5°C	± 0.5°C	± 0.5°C	± 0.5°C
Platform Size	430mm x 430mm	430mm x 430mm	450mm x 450mm x 2Nos	450mm x 450mm x 2Nos	700mm x 550mm
Number of Blowers	Axial Fan 2 nos	Axial Fan 2 nos	Axial Fan 2 nos	Axial Fan 2 nos	Axial Fan 2 nos
Platform & Chamber MOC	Stainless Steel-304	Stainless Steel-304	Stainless Steel-304	Stainless Steel-304	Stainless Steel-304
R P M	20 to 350	20 to 350	20 to 250	20 to 250	20 to 250

## Platform Accommodation Capacity:

MODEL NO.	100ml	250ml	500ml	1000ml	2000ml
ESI-125	36	25	16	9	4
ESI-200 (2 Tier)	72	50	32	18	8
ESI-125R	36	25	16	9	4
ESI-200R (2 Tier)	72	50	32	18	8

## Optional Features:

- Manufacturing as per CE standards.
- GMP Models also available (Outer SS 304 1 mm thick & Inner SS 304 1 mm thick)
- Stainless Steel shelves are provided
- Provision of UV Light in addition to LED Light
- Auto/ Manual Defrost system.
- Glass door
- Battery Backup for display for 10 Hours along with Power Failure Alarm.
- 8/4 Channel temperature data scanner with sensors, interfacing RS 232 to RS 485 or USB Port.
- 21 CFR Part 11 Compliant Software for Data Management.
- Mobile alert via GSM incase of system malfunction.
- IQ, OQ, PQ, DQ, calibration, validation and traceability documentation can be provided as per FDA protocols.



## Calibration:

All models are calibrated with the help of master calibrator which is certified for its accuracy by Electronic Regional Test Laboratory Mumbai.

Orbital Shaking Incubators can also be manufactured as per user-customised specification.