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Product Name :

Free and Force Convection Apparatus

Product Code :

SLE/MCE/73



Science Lab
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Description :

Free and Force Convection Apparatus (Product Code: SLE/MCE/73) is an air-duct experiment unit used to study natural (free) and forced convection heat transfer from heated surfaces in heat transfer laboratories. Among engineering lab equipment in India it is distinguished by four selectable heating elements of different geometries — a plate, two cylinders and a 23-tube element — tested in a 120 × 120 mm duct with an axial fan. It is made by **Jain Scientific Equipments Pvt Ltd (ScienceLab)**, an OEM manufacturer, at its own factory in Ambala, India.

Specifications

Parameter	Detail
Air duct flow cross-section	120 × 120 mm
Height	Approx. 0.6 m
Heating elements	Four, with different geometries; designed to release heat only at their surface; temperature limitation 90 °C
Tube element	23 tubes; heating power 20 W; heat transfer area 0.001 m²
Cylinder (surface temperature measured)	Heating power 20 W; heat transfer area 0.0112 m²
Plate	Heating power 40 W; heat transfer area 2 × 0.01 m²
Cylinder	Heating power 40 W; heat transfer area 0.0112 m²
Axial fan	Max. flow rate 500 m³/h; max. pressure difference approx. 950 Pa
Sensors	Temperature at the inlet and outlet of the air duct; air velocity for determining airflow rate
Instrumentation	Microprocessor-based, protected in the housing; heating power and flow rate adjusted and displayed via the software
Software	System operation, data acquisition and educational software; PC connection via USB
Measuring range – air velocity	0–10 m/s
Measuring range – temperature	4 × 0–325 °C
Measuring range – heating power	0–50 W
Power consumption	90 W
Dimensions	800 × 600 × 800 mm
Weight	Approx. 30 kg
Power supply options	230 V, 50 Hz, 1 phase; 230 V, 60 Hz, 1 phase; or 120 V, 60 Hz, 1 phase
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