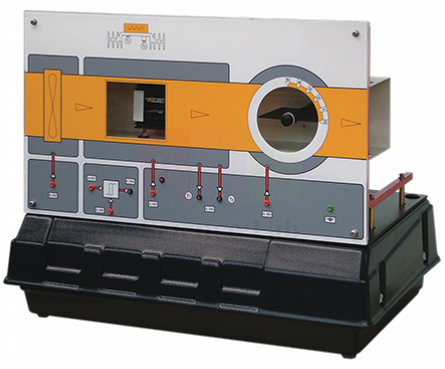
Email : sales@scilabexport.com
Phone: +91-7082934803

Product Name :

Thermal Control Process Apparatus

Product Code :

SLE/ETC/01



Email : sales@scilabexport.com
Phone: +91-7082934803

Description :

Thermal Control Process Apparatus (Product Code: SLE/ETC/01) is a temperature-control process plant used to teach how heater power, air flow and flow restriction combine to hold a process temperature in control engineering laboratories. It models a common industrial process such as an air-conditioning plant, with scaled-down time constants so experiments fit into anormal laboratory session. It is manufactured by **Jain Scientific Equipments Pvt Ltd (ScienceLab)**, an OEM manufacturer, at its own factory in Ambala, India.

Key Details

Parameter	Detail
Process modelled	A common industrial process, such as an air-conditioning plant, where a combination of adjustments controls temperature
Air path	Variable-speed fan forcing air through a duct
Process block	Electrically heated process block inside the duct
Temperature sensors	Two: one in direct thermal contact with the block; one mounted on an insulating spacer to introduce thermal inertia and variable time constants into the loop
Flow restriction	Servo-driven vane mounted after the fan and process block, creating a variable downstream restriction for advanced experiments
Control inputs	Electrical energy to the heater, air flow rate (fan speed) and vane rotation
Time constants	Scaled down for shorter laboratory time
Product code	SLE/ETC/01
Manufacturer	Jain Scientific Equipments Pvt Ltd (ScienceLab) — OEM
Country of origin	India (made in Ambala, Haryana)

What Is the Thermal Control Process Apparatus Used For?

The block settles at a steady temperature when heat gained from the electric heater balances heat lost by convection and conduction to the moving air. The control problem is to keep that process temperature within acceptable limits while conditions change, using heater power, fan speed and vane rotation singly or in combination.

Students can begin with single-loop heater control, then treat fan speed or vane position as a disturbance, and finally explore multi-input strategies. Comparing the two sensors shows clearly how measurement lag — added on purpose by the insulating spacer — makes a loop harder to tune. For universities and colleges sourcing engineering lab equipment, the apparatus turns slow thermal behaviour into experiments that can be completed within one practical.

OEM Manufacturer

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Phone: +91-7082934803