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PRODUCT DATA SHEET
Catalogue reference for product evaluation

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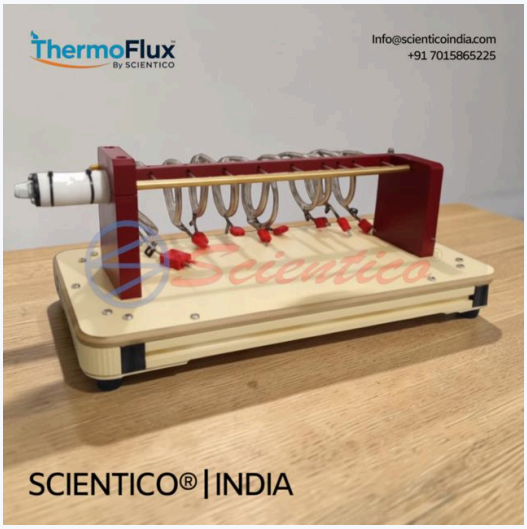
Extended Surface Heat Transfer Module | ThermoFlux - 7049/4

Category: Thermodynamics Lab Equipment · **Country of Origin:** India

Product Overview

The Extended Surface Heat Transfer Module ThermoFlux - 7049/4 is a laboratory module for studying temperature distribution and heat loss along a cylindrical brass pin fin. This extended surface heat transfer module provides a 10 mm diameter, 350 mm long brass rod with 9 thermocouple positions and a 100 W base heater. Students measure the full axial temperature profile, determine the thermal conductivity of the rod material, and calculate combined free convection and radiation heat transfer, comparing all results against analytical fin theory. Operation requires the Heat Transfer Service Unit ThermoFlux - 7049.

View this product online: https://scienticoindia.com/product/extended-surface-heat-transfer-module-thermoflux-7049-4/



Request a model-specific quotation
Include quantity and delivery country.

Technical Specifications

Extended Surface Heat Transfer Module ThermoFlux - 7049/4, Technical Specifications

Parameter	Value
Model	ThermoFlux - 7049/4
Pin Fin Element Shape	Cylindrical pin fin
Pin Fin Material	Brass
Pin Fin Diameter	10 mm
Pin Fin Length	350 mm
Thermocouple Positions	9
Heater Power	100 W
Heat Transfer Modes	Free convection and radiation
Required for Operation	Heat Transfer Service Unit ThermoFlux - 7049
Scope of Delivery	1 experimental module, 1 instruction manual

Technical Data

Cylindrical Pin Fin Element

Parameter	Value
Shape	Cylindrical pin fin

Parameter	Value
Material	Brass
Diameter	10 mm
Length	350 mm
Thermocouple Positions	9

Heater

Parameter	Value
Power Rating	100 W
Location	Base of pin fin element

Key Features

Key Features

- **Pin Fin Element:** Brass, cylindrical, 10 mm diameter, 350 mm length
- **Thermocouple Positions:** 9 positions along the rod length for full axial temperature profile
- **Heater:** 100 W base heater for controlled thermal input
- **Extended Surface Heat Transfer Analysis:** Combined free convection and radiation from fin surface
- **Measurable Parameters:** Axial temperature distribution, thermal conductivity of rod material, combined convective and radiative heat loss
- **Theoretical Comparison:** Measured results compared directly against analytical fin theory predictions
- **Required for Operation:** Heat Transfer Service Unit ThermoFlux - 7049/4

Experiments

- Measure the temperature distribution along an extended surface and compare results with theoretical analysis
- Determine the constant of proportionality (thermal conductivity, k) for the brass rod material
- Calculate the heat transfer from an extended surface due to the combined effects of free convection and radiation heat transfer, and compare results with theoretical predictions

Construction and Design

The Extended Surface Heat Transfer Module ThermoFlux - 7049/4 is built around a single cylindrical brass pin fin, 10 mm in diameter and 350 mm in length, mounted for horizontal or vertical exposure to the surrounding laboratory environment. Nine thermocouple positions are distributed along the rod length, providing a detailed axial temperature profile from the heated base to the fin tip. A 100 W heater is fitted at the base of the pin fin to supply a controlled, steady thermal input.

This extended surface heat transfer module replicates the operating principle of real-world pin fin cooling systems: heat conducts along the brass rod from the base while free convection and radiation simultaneously transfer energy from the outer surface to the surrounding air. The 9-point thermocouple array allows students to construct a complete measured temperature distribution curve. This measured profile is then compared to the distribution predicted by standard analytical fin equations, enabling direct quantitative validation of theory.

The module connects to and is powered through the Heat Transfer Service Unit ThermoFlux - 7049/4, which provides instrumentation, power supply, and data display for the module.

Scope of Delivery

- 1 experimental module
- 1 instruction manual

Required for Operation

- Heat Transfer Service Unit ThermoFlux - 7049

Ordering & Delivery

- Send the product name, quantity, delivery country and destination with your enquiry.
- Production schedule, freight, payment terms and export documents are confirmed in the written quotation.

Frequently Asked Questions

Q1: What is the pin fin element made of and what are its dimensions?
The pin fin element is a cylindrical brass rod, 10 mm in diameter and 350 mm in length. It has 9 thermocouple positions distributed along its length for axial temperature measurement.

Q2: What heat transfer modes does this extended surface heat transfer module investigate?
The module covers combined free convection and radiation from the outer surface of the brass pin fin to the surrounding environment. Conduction along the rod length is also analysed through the measured axial temperature distribution.

Q3: What can students determine from the temperature distribution measurements?
Students can determine the thermal conductivity (k) of the brass rod material and calculate the total heat transfer from the extended surface due to combined free convection and radiation. Both sets of results are compared against theoretical analytical predictions.

Q4: Is additional equipment required to operate the ThermoFlux - 7049/4?
Yes. The Heat Transfer Service Unit ThermoFlux - 7049 is required for operation. It provides the power supply, instrumentation, and display functions necessary to run the module.

Q5: How many temperature measurement points are available along the pin fin?
Nine thermocouple positions are built into the brass rod, providing a detailed axial temperature profile from the heated base to the tip of the 350 mm fin.

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