SCIENTICO INDIA
Manufacturer & Exporter · Ambala, Haryana, India

PRODUCT DATA SHEET
Catalogue reference for product evaluation

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Heat Conduction and Convection | ThermoFlux – 7106

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

Product Overview

Heat Conduction and Convection ThermoFlux – 7106 is a laboratory apparatus for fundamental experiments on heat conduction and convection using six interchangeable metal cooling fin samples of different materials and lengths. Two long samples (copper, steel; 154 mm, 48.4 cm²) and four short samples (copper, aluminium, brass, steel; 104 mm, 32.6 cm²) are heated at one end by a 30 W heater (temperature limit: 160°C). Six continuously adjustable fans (max. 40 m³/h, 14,400 min^{-1}, 8 W each) provide forced air flow for free and forced convection comparison. Eight temperature sensors cover -100 to 400°C. Flow velocity is measured 0 to 10 m/s. Heating power is controlled 0 to 30 W. Microprocessor-based instrumentation is fully integrated in the housing. Temperatures, heating power, and air velocity are displayed and controlled via software. Optional DAQ software in the National Instruments LabVIEW environment supports PC-based data acquisition on any Windows system. Supplied by SCIENTICO India with an instruction manual.

View this product online: https://scienticoindia.com/product/heat-conduction-and-convection-thermoflux-7106/



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

Technical Specifications

Heat Conduction and Convection ThermoFlux – 7106: Technical Specifications

Parameter	Value
Apparatus Type	Heat conduction and convection trainer using metal cooling fin samples
Total Samples Included	6 (2 long, 4 short)
Long Samples: Materials	Copper, steel
Long Samples: Heat-Dissipating Length	154 mm
Long Samples: Heat Transfer Area	48.4 cm²
Short Samples: Materials	Copper, aluminium, brass, steel
Short Samples: Heat-Dissipating Length	104 mm
Short Samples: Heat Transfer Area	32.6 cm²
Heater: Heating Power	30 W
Heater: Temperature Limitation	160°C
Fans	6 fans, continuously adjustable
Fan: Max. Flow Rate	40 m³/h
Fan: Nominal Speed	14,400 min^{-1}

Parameter	Value
Fan: Power Consumption	8 W
Temperature Measurement Range	8 x -100 to 400°C
Flow Velocity Measurement Range	0 to 10 m/s
Heating Power Measurement Range	0 to 30 W
Temperature Sensors	5 (as stated in specifications)
Instrumentation	Microprocessor-based, integrated in housing
Software	Optional DAQ software (National Instruments LabVIEW environment)
Software Compatibility	Any Windows environment

Technical Data

Heater

Parameter	Value
Heating Power	30 W
Temperature Limitation	160°C

Long Samples (2x)

Parameter	Value
Materials	Copper, steel
Length Dissipating Heat	154 mm
Heat Transfer Area	48.4 cm²

Short Samples (4x)

Parameter	Value
Materials	Copper, aluminium, brass, steel
Length Dissipating Heat	104 mm
Heat Transfer Area	32.6 cm²

Fans (6x)

Parameter	Value
Max. Flow Rate	40 m³/h
Nominal Speed	14,400 min^{-1}
Power Consumption	8 W

Measuring Ranges

Parameter	Range
Flow Velocity	0 to 10 m/s
Temperature	8 x -100 to 400°C
Heating Power	0 to 30 W

Key Features

Key Features

- **Apparatus Type:** heat conduction and convection trainer using metal cooling fin samples
- **Total Samples:** 6 interchangeable metal samples (2 long, 4 short)
- **Long Samples:** copper and steel, 154 mm heat-dissipating length, 48.4 cm² heat transfer area
- **Short Samples:** copper, aluminium, brass, and steel, 104 mm heat-dissipating length, 32.6 cm² heat transfer area
- **Heater Rating:** 30 W, temperature limitation 160°C
- **Fans:** 6 fans, continuously adjustable flow rate
- **Fan: Max. Flow Rate:** 40 m^3/h
- **Fan: Nominal Speed:** 14,400 min^{-1}
- **Fan: Power Consumption:** 8 W
- **Convection Modes:** free convection (still air) and forced convection (flowing air)
- **Temperature Measurement:** 8 x -100 to 400°C
- **Flow Velocity Measurement:** 0 to 10 m/s
- **Heating Power Measurement:** 0 to 30 W
- **Instrumentation:** microprocessor-based, integrated in housing, no additional external devices required
- **Software Display:** temperatures, heating power, and air velocity displayed in software
- **Software:** optional DAQ software, National Instruments LabVIEW environment, Windows compatible

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Experiments

- Effect of heat conduction and convection on heat transfer
- Effect of free and forced convection on heat transfer
- Calculate convective heat transfers
- Effect of different materials on heat conduction
- Effect of sample length on heat transfer

Construction and Design

The **Heat Conduction and Convection ThermoFlux – 7106** is built around a heater on which interchangeable metal samples are placed. Each sample is heated at one end. Heat is conducted along the sample length and dissipated to the surrounding air, replicating the behaviour of a cooling fin.

Six interchangeable samples are provided: two long samples (copper and steel) with a heat-dissipating length of 154 mm and a heat transfer area of 48.4 cm², and four short samples (copper, aluminium, brass, and steel) with a heat-dissipating length of 104 mm and a heat transfer area of 32.6 cm². This range of materials and lengths enables direct experimental comparison of **heat conduction and convection** performance across different geometries and thermal conductivities.

Six fans are positioned below the sample. The fans deliver a maximum flow rate of 40 m^3/h at a nominal speed of 14,400 min^{-1}, consuming 8 W each. Fan flow rate is continuously adjustable, conveying air flow evenly around the sample for both free convection (still air) and forced convection (flowing air) experiments. The heater is rated at 30 W with a temperature limitation of 160°C.

Eight temperature sensors cover the range -100 to 400°C. Flow velocity is measured over 0 to 10 m/s. Heating power is controlled and measured over 0 to 30 W. Microprocessor-based instrumentation is fully integrated into the housing, eliminating the need for additional external devices or error-prone wiring. Temperatures, heating power, and air velocity are all displayed via the software interface.

Software (Optional): ThermoFlux – 7106

DAQ software is specially designed in the National Instruments LabVIEW environment to measure and calculate results from the apparatus. The software is optional. When software is used, a set of electronic sensors is included. Heating power and flow velocity of the air flow are adjusted and displayed via the software. The software is compatible with any Windows environment.

Scope of Delivery

- 1 experimental unit
- 1 instruction manual

Optional Accessories

- DAQ software package (ThermoFlux – 7106, National Instruments LabVIEW environment, Windows compatible), supplied with electronic sensors

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

Q: What metal samples are included with the Heat Conduction and Convection ThermoFlux – 7106?
A: Six interchangeable metal samples are included. Two long samples (copper and steel) have a heat-dissipating length of 154 mm and a heat transfer area of 48.4 cm². Four short samples (copper, aluminium, brass, and steel) have a heat-dissipating length of 104 mm and a heat transfer area of 32.6 cm².

Q: How does the unit demonstrate both free and forced convection?
A: Six continuously adjustable fans are positioned below the sample. When the fans are off, the sample dissipates heat to still air, demonstrating free convection. When the fans are on, air flow is conveyed evenly around the sample, demonstrating forced convection. Flow velocity is adjustable and measured over 0 to 10 m/s.

Q: What is the heater specification for this heat conduction and convection apparatus?
A: The heater has a heating power of 30 W and a temperature limitation of 160°C. Heating power is continuously adjustable over 0 to 30 W and is displayed and controlled via the software.

Q: What parameters are measured and displayed by the unit?
A: The unit measures temperature (8 x -100 to 400°C), flow velocity (0 to 10 m/s), and heating power (0 to 30 W). All values are displayed via the software interface. The integrated microprocessor-based instrumentation requires no additional external devices.

Q: Is PC-based data acquisition available for the ThermoFlux – 7106?
A: Yes, as an optional feature. Optional DAQ software developed in the National Instruments LabVIEW environment enables PC-based data acquisition and control of heating power and fan speed. The software is compatible with any Windows environment and is supplied with a set of electronic sensors.

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