



Computerized Heat Transfer in Natural Convection Apparatus (Product Code: HMTC05)



Features

- Extensive range of Experiments
- Comprehensive teaching manual
- One year warranty
- Esthetically designed and finished Rig.
- High Quality instrumentation
- To Measure the heat transfer co-efficient in natural convection.

Product Description

Convection heat transfer occurs by the movement of fluid particles. If the motion of fluid particles occurs by the variation of density of the fluid due to temperature difference, then the heat transfer process is called free or natural convection. The apparatus consists of a vertical stainless steel tube enclosed in a rectangular duct; front side of the duct is made of transparent section to facilitate visual observation. An electrical heating element embedded in a copper tube acts as the heat source. The surface temperature is measured at different heights using thermocouples. The surface of the tube is polished to minimize radiation losses. A voltmeter and an ammeter enable the determination of wattage dissipated by the heater.



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Product / Component Specification

S.S. Tube	39mm Dia x 500mm Length
Enclosure Size	250 x 250 x 600mm
Variac	2 amps
Digital voltmeter	0-300 volts AC
Digital ammeter	0-5 Amps AC
Digital temperature	0-300 Deg (K Type)
Thermocouple	K type
Insulation Powder	Asbestos powder
Stop watch	Digital

Measurement of Temperatures at different points

Type	"K"
Range	0-300°C
Signal conditioning/transmitter	Standalone
Location	Specimen Surface Temperature
Type	"K"
Range	0-300°C
Signal conditioning/transmitter	Standalone
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Type	"K"
Range	0-300°C
Signal conditioning/transmitter	Standalone
Location	Specimen Surface Temperature
Type	"K"
Range	0-300°C
Signal conditioning/transmitter	Standalone
Location	Ambient temperature

Data Acquisition card

Analog Input	
Differential Channels	12
Resolution	12 bits
Sample Rate	200 Ks/s
Max Voltage	5 V
Number of Ranges	4
Simultaneous Sampling	Yes
On-Board Memory	5120 samples
Analog Output	
Channels	2
Digital I/O	
Input-Only Channels	30
Output-Only Channels	12
Timing	Software
Logic Levels	TTL
Maximum Input Range	0 V - 5V
Maximum Output Range	0 V - 3.3 V
Counter/Timers	
Counters	2
Max Source Frequency	84 MHz
Resolution	12 bits
Logic Levels	TTL
Total DC output Current on all I/O lines	130mA

Measurement of Voltage & Current

Type	Voltage Transducer
Range	0-300V
Signal conditioning/transmitter	Standalone
Type	Current Transducer
Range	0-10Amps
Signal conditioning/transmitter	Standalone