Computerized Heat Transfer in Forced Convection Apparatus (Product Code: HMTC03)



Features

- Extensive range of Experiments
- Comprehensive teaching manual
- Three-year warranty
- Esthetically designed and finished Rig.
- High Quality instrumentation
- To determine the convective heat transfer co-efficient for a horizontal pipe through which air flows under forced convection.
- To find the theoretical heat transfer for the above condition and to compare with the experimental value.

Product Description

The apparatus consists of a blower to supply air. The air from the blower passes through a flow passage, heater and then to the test section. Airflow is measured by an orifice meter placed near the test section. A band heater is placed around the tube, the heater heats the air which is flowing inside the tube and the heat input can be controlled using a Variac provided on the panel. Temperature of the air at the inlet, outlet and surface temperatures of the test specimen are measured using thermocouples and are indicated with the help of a temperature indicator. A bypass valve at the discharge of the blower is provided to conduct the experiments in different Reynolds numbers.

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Product / Component Specification

Blower	300 watts (Make: Hotech or equivalent)
By pass valve	½" gate valve
Main valve	1 ½" gate valve.
Band heater	250watts (40mm ID)
Orifice plate	Brass 25mm
Specimen	Copper (25mm ID, 32mmOD, 400mm length)
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
Water tank	MS powder coated
Measuring tank	1 liters (plastic)
Stop watch	Digital

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 Temperatures at different points

Type Range Signal conditioning/transmitter Location	"K" 0-300°C Standalone Inlet Air Temperature
Type Range Signal conditioning/transmitter Location	"K" 0-300°C Standalone Specimen Temperature
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Type Range Signal conditioning/transmitter Location	"K" 0-300°C Standalone Specimen Temperature
Type Range Signal conditioning/transmitter Location	"K" 0-300°C Standalone Outlet Air temperature

Measurement of Voltage & Current

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

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