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**Product Name :**  
Water And Water Turbulent Flow Heat Transfer Unit

**Product Code :**  
LBNY-0005-1020005



#### **Description :**

Water And Water Turbulent Flow Heat Transfer Unit heat exchanger may be connected to give either concurrent or counter-current flow and the two additional pairs of intermediate stream temperatures allow classic heat exchanger temperature profiles to be plotted. The Water And Water Turbulent Flow Heat Transfer Unit includes all the necessary temperature and flow measurements and is suitable for both basic and advance studies. The metal and two fluid stream temperature are measured at inlet and outlet allowing the relationship  $Nu = k Re a Pr^b$  to be developed by evaluating  $k$ ,  $a$  and  $b$ . The Water And Water Turbulent Flow Heat Transfer Unit enables students to study the detailed performance of concentric tube heat exchangers of the type most commonly used in industry. By varying the water velocity and temperature Reynolds Numbers of 4000 to 70000 and Prandtl Numbers of 2.5 to 5 can be achieved.

#### **Experimental Capabilities:**

Determination of surface heat transfer coefficient inside and outside the tube, and of the effect of fluid velocity.  
Determination of heat transfer rate, logarithmic mean temperature difference, overall heat transfer coefficient and 4 point hot and cold stream temperature profiles.  
Determination of the constants in  $Nu = k Re a Pr^b$ .  
Comparison of performance in concurrent and in counter-current flow.  
Investigation of the relationship between Nusselt ( $Nu$ ), Reynolds ( $Re$ ) and Prandtl ( $Pr$ ) Numbers for Reynolds Numbers up to 65000 and for Prandtl Numbers between 2.5 and 5.0.

#### **Technical Specification :**

Panel: High quality glass reinforced plastic having an attractive appearance on which the following are mounted.  
Digital Thermometer: 0.1°C resolution, with multi-way selector switch.

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Cold water flow reversal valves: To establish concurrent and counter-current flow

Pump: Continuous rated to circulate hot water.

Flow Meters:- For hot and cold water.

Heat Exchanger: Concentric tube type with inlet, outlet and two intermediate measuring points plus pipe temperature. Area 0.0288m<sup>2</sup>.

Water Heater: 3kW with electronic control.



**Laboratory Instrument India**