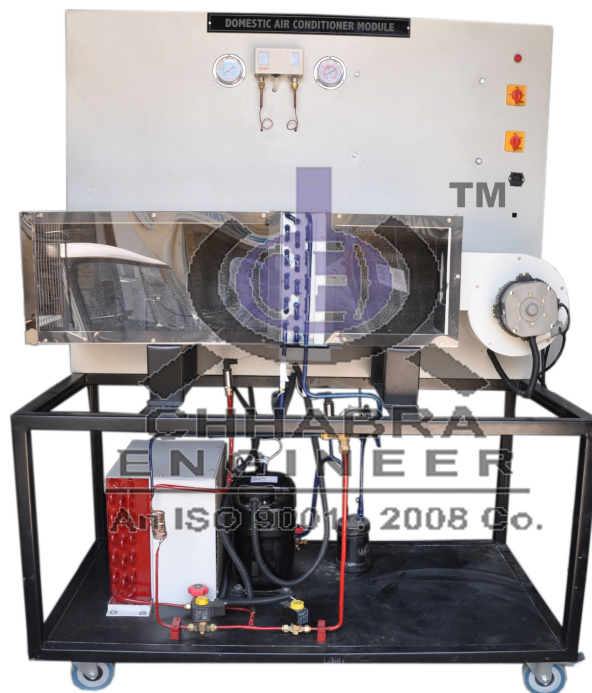


**Product Name :** " DOMESTIC AIR CONDITIONER MODULE "  
**Product Code :** " R.A.C 18 "

DEMO



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**Description :**

## **DOMESTIC AIR CONDITIONER MODULE:-**

**AIM:-**

**Familiarisation with an air conditioning system for room cooling and its main components**

- Familiarisation with various expansion elements:  
Operation with capillary tubes

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Operation with expansion valve

- Functioning of an evaporator

## **INTRODUCTION:-**

Air conditioners and refrigerators work the same way. Instead of cooling just the small, insulated space inside of a refrigerator, an air conditioner cools a room, a whole house, or an entire business.

Air conditioners use chemicals that easily convert from a gas to a liquid and back again. This chemical is used to transfer heat from the air inside of a home to the outside air.

The machine has three main parts. They are a compressor, a condenser and an evaporator. The compressor and condenser are usually located on the outside air portion of the air conditioner. The evaporator is located on the inside the house, sometimes as part of a furnace. That's the part that heats your house.

The working fluid arrives at the compressor as a cool, low-pressure gas. The compressor squeezes the fluid. This packs the molecule of the fluid closer together. The closer the molecules are together, the higher its energy and its temperature.

The working fluid leaves the compressor as a hot, high pressure gas and flows into the condenser. If you looked at the air conditioner part outside a house, look for the part that has metal fins all around. The fins act just like a radiator in a car and helps the heat go away, or dissipate, more quickly.

When the working fluid leaves the condenser, its temperature is much cooler and it has changed from a gas to a liquid under high pressure. The liquid goes into the evaporator through a very tiny, narrow hole. On the other side, the liquid's pressure drops. When it does it begins to evaporate into a gas.

As the liquid changes to gas and evaporates, it extracts heat from the air around it. The heat in the air is needed to separate the molecules of the fluid from a liquid to a gas. The evaporator also has metal fins to help in exchange the thermal energy with the surrounding air.

By the time the working fluid leaves the evaporator, it is a cool, low pressure gas. It then returns to the compressor to begin its trip all over again.

Connected to the evaporator is a fan that circulates the air inside the house to blow across the evaporator fins. Hot air is lighter than cold air, so the hot air in the room rises to the top of a room.

There is a vent there where air is sucked into the air conditioner and goes down ducts. The hot air is used to cool the gas in the evaporator. As the heat is removed from the air, the air is cooled. It is then blown into the house through other ducts usually at the floor level.

This continues over and over and over until the room reaches the temperature you want the room cooled to. The thermostat senses that the temperature has reached the right setting and turns off the air conditioner. As the room warms up, the thermostat turns the air conditioner back on until the room reaches the temperature.

## **TECHNICAL SPECIFICATION:-**

The experimental set-up is arranged on a clearly laid out board, which is mounted on the basic unit. The pipe connection between the basic unit and the additional module is via self-locking Schrader valves.

### **Specification**

1. Additional module with model of a simple air conditioning system.

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2. Ventilation duct, cross-section 136x136mm.
  3. Expansion element selectable using solenoid valves: expansion valve and capillary tubes 1m.
  4. Radial fan with regulating flap.
  5. Lamellar evaporator with drip tray.
  6. Determination of airflow rate by velocity measurement with Pitot tube.
  7. 2 temperature sensors, 1 differential pressure transducer.