



AIR CONDITIONING LABORATORY UNIT A660



Year 1
study

Features

- Digital Temperature display supplied as standard
- High accuracy wet and dry bulb sensors before and after each process to determine air condition.
- All processes fully instrumented to allow energy and mass balances across each process of heating cooling and humidity change.
- Reaches stability rapidly after a change of operating conditions.
- May be upgraded at any time to reduce capital outlay.
- Upgrade options available include:
 1. Re-circulation (A660B),
 2. Computer linking (with software) (AC660A),
 3. PID control and Environmental Chamber (A660C + A660D).

Description

A complete, upgradeable, instrumented air conditioning laboratory unit mounted on a steel frame and castor wheels. Upgrades may be added at any stage in the unit's long life to spread the investment costs. The base unit comprises a variable speed radial acting axial flow fan discharging into a 250mm square duct with steam humidifier, electrical pre-heaters, direct expansion cooling coil/de-humidifier, electrical re-heaters and orifice plate for airflow measurement. Air-cooling is provided by vapour compression refrigeration system with pressure, temperature and refrigerant flow measurement. This allows the construction of a full cycle diagram and the balancing of refrigerant system energy balance against the airside energy transfer. Air condition is recorded before and after each process using precision wet and dry bulb sensors. Instrumentation allows the electrical power to each resistive load to be measured and balanced against the air enthalpy change and mass flow.

Related Laws/Applications

- Refrigeration and air conditioning
- Building services
- Mechanical Engineering
- Marine engineering
- Plant and process engineering
- Food processing
- Chemical engineering
- Mining engineering
- Control engineering

Learning capabilities

- Demonstration of the processes and components used in heating, cooling, humidification, de-humidification of an airstream.
- Measurement of air psychrometric condition before and after humidification, heating, de-humidification / cooling using pairs of precision wet and dry bulb sensors.
- Determination of a heat and mass balance across each process resulting in heating, cooling and humidity change using the instrumentation fitted.
- Construction of a complete refrigeration cycle diagram for the air-cooling plant plus an energy balance between the refrigeration circuit and the change in air enthalpy and its mass flow across the evaporator.
- Investigation of the volumetric efficiency of the refrigeration compressor under varying load.
- Determination of the specific heat capacity of air, by measurement of the change in psychrometric condition across a heating or cooling process.

Technical Specification

- Psychrometric condition measured before and after each process by high precision wet and dry bulb sensors with 0 to 100% RH measurement capability.
- Airflow is adjustable to at least 0.14m³/s.
- Switchable heating up to 4kW.
- Switchable steam injection up to 5kW electrical equivalent.
- Cooling is by a fully instrumented vapour compression cycle with nominally 2kW capacity.

Recommended Ancillaries

- A660B
- A660C
- A660D
- AC660A
- R100

What's in the Box?

- 1 x A660
- 1 x Water measuring cylinder
- Encapsulated charts
- Tool kit
- Instruction manual
- Packing list
- Test sheet
- 2 year spares

You might also like

- A660/415/AC
- A660/415/C
- A660/415/C/AC
- A660/220/AC
- A660/220/C
- A660/220/C/AC
- R100

Weights & Dimensions

- Weight: 165 kg
- Length: 2370mm
- Width: 530mm
- Height: 1260mm
- Length: 3630mm with addition of A660B
- Weight: 224 kg with addition of A660B

Essential Services

- Electrical:
 - 380/415V, 3 Phase, 50Hz, 5 wire system comprising 3 phase, neutral and earth. Line current up to 20A per phase.
 - 208/220V, 3 Phase, 50 or 60Hz. 4 wire system comprising 3 phases and earth. Line current up to 32 Amps per phase.
- Clean water:
 - Up to 10 litres per hour at a minimum 2m head. May be mains or tank source.

Ordering information

To order this product, please call PA Hilton quoting the following codes:
A660/415
A660/220

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COUNTRY OF ORIGIN - UK WARRANTY PERIOD - 5 YEARS