



## AIR CONDITIONING LABORATORY UNIT (415V), COMPUTER LINKED

A660/415/AC



Year 1  
study

### Features

- Full Data Acquisition version of A660
- 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. PID control and Environmental Chamber (A660C + A660D).

### Description

A fully data acquisition A660 Air conditioning Laboratory Unit, with all the functionality of the A660 standard unit, but computer linked. Upgrades may be added at any stage in the unit's long life to spread the investment costs. The key parameters of the A660 are captured on the data acquisition system supplied, and viewed and recorded on the software. All connections to the data acquisition system are factory configured so that you do not have to undertake this. Configuration files are supplied with the system to allow quick and easy installation and operation of the data acquisition A660.

## 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
- SCADA Software

## 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

- Data Acquisitioned Parameters:
- 11 x Temperature (Dry, Wet, Refrigerant)
- 4 x Pressure (1 x Duct, 3 x refrigerant)
- 1 x Refrigerant Flow rate
- 2 x Voltage (Mains, fan)
- 1 x Current (Compressor)
- 6 x Logic Control
- 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 0.14m<sup>3</sup>/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
- R100

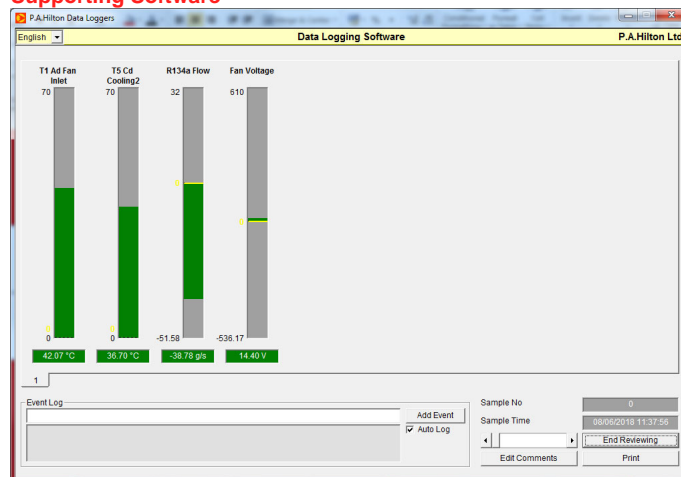
## What's in the Box?

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

## You might also like

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

## Supporting Software



- Hilton HDL Software

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**Minimum System Requirements**

- IBM PC or compatible
- Pentium processor or higher
- 1GB RAM
- Windows XP or later
- VGA monitor resolution at least 1600x 1200 pixels
- USB port
- CD drive

**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.
- Clean water:
  - Up to 10 litres per hour at a minimum 2m head. May be mains or tank source.

**Data logger channel inputs where applicable\***

- Fan Inlet dry °C
- Fan inlet wet °C
- Pre-heat dry °C
- Pre heat wet °C
- Cooling dry °C
- Cooling wet °C
- Reheat dry °C
- Reheat wet °C
- Return dry °C
- Return wet °C
- Fresh dry °C
- Fresh wet °C
- Evap out °C
- Cond In °C
- Cond Out °C
- Compressor Amps
- 1st Reheat 1kW
- 2nd Reheat 1kW
- 1st Preheat 1kW
- 2nd Preheat 1kW
- Evaporator Px
- Condensor in Px
- Humidity with the C only

**Ordering information**

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

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