



# *Refrigeration and Air Conditioning Control and Fault Simulator*

## *814a*



- *Demonstrates both Cooling and Heating Modes in Normal Operation*
- *Demonstrates 21 Common Faults and Effects on the System*
- *17 Functions and System Components*
- *Room Temperature and Humidity Potentiometers*
- *Compact Case - Easy to Store and Carry*
- *Instruction Manual Contains Course Notes, Instruction Notes and Student Example Worksheets*
- *Two year Warranty*



## ***Introduction***

The Refrigeration and Air Conditioning Control and Fault Simulator, Model 814a, enables the study and operation of various components as applied to the refrigeration plant used in air conditioning systems. Both cooling and heating modes (Reverse cycle operation can be studied).

## ***Description***

Designed for single phase operation the demonstration case is divided into two main boards: -

- a) Mimic Diagram with room temperature and humidity potentiometers
- b) Control board with programmable controller and normal Run/Fault switches

The Mimic diagram is split into two sections:-

- 1) Cooling Mode
- 2) Heating Mode

The following main functions and components are simulated:-

- Refrigeration/Cooling
- Heating/Heat Pump
- Compressor
- Crankcase Heater
- High Pressure Switch
- Reversing Valve
- Condensing Unit
- Non return Valve (outdoor use)
- Expansion Device (outdoor use)
- Reversible Filter drier
- Sight Glass (Heating)
- Non Return Valve (indoor use)
- Expansion Device (indoor use)
- Evaporator
- Low pressure Switch
- Suction Line Accumulator
- Defrost Facility

The following Normal operation and Fault conditions can be simulated:

<b>Cooling Mode</b>	<b>Heating Mode</b>
Normal operation	Normal operation
High Pressure Switch – high pressure fault	
Low Pressure Switch – low pressure fault	Low Pressure Switch – low pressure fault
Compressor - failed	Compressor - failed
Indoor fan - failed	Indoor fan - failed
Outdoor fan - failed	Outdoor fan - failed
Crankcase Heater - failed	Crankcase Heater - failed
Reversing Valve - failed	Reversing Valve - failed
Drier - blocked	Drier - blocked
Expansion device - failed	Expansion device - failed
Air flow – low	Air flow – low
Non return Valve – blocked/seized	Non return Valve – blocked/seized



## Specification

### Detailed

Refrigeration and Air Conditioning Control and Fault Simulator in compact case. Both cooling and heating modes (Reverse cycle operation can be studied).

Designed for single phase operation the demonstration case is divided into two main boards:-

a) Mimic Diagram with Cooling and Heating sections and room temperature and humidity potentiometers.

b) Control board with programmable controller and normal Run/Fault switches and indicator lamps.

The following main functions and components are simulated:-

Refrigeration/Cooling  
 Heating/Heat Pump  
 Compressor  
 Crankcase Heater  
 High Pressure Switch  
 Reversing Valve  
 Condensing Unit  
 Non return Valve (outdoor use)  
 Expansion Device (outdoor use)  
 Reversible Filter drier  
 Sight Glass (Heating)  
 Non Return Valve (indoor use)  
 Expansion Device (indoor use)  
 Evaporator  
 Low pressure Switch  
 Suction Line Accumulator  
 Defrost Facility

Up to 21 faults in cooling and heating modes can be simulated

### Operating Manual

A comprehensive operating manual includes:

- Notes on theory and principles
- Instructor's guide notes
- Student test papers and sample answers
- Electrical wiring diagram.

## Dimensions

Height 16 cm    Depth 33 cm  
 Width 47 cm    Weight 8kg

## Services Required

### Electrical

Either: A: 2.5 Amp. 220-240 Volts, Single Phase, 50Hz (With earth/ground).

OR

B: 5Amp. 110 -120 Volts, Single Phase, 60Hz (With earth/ground).

## Ordering Information

**Order as:** Refrigeration and Air Conditioning Control and Fault Simulator **814a**

### Electrical Specification

Either: A: 220-240 Volts, Single Phase 50Hz (With earth/ground).

OR

B: 110 -120 Volts, Single Phase 60Hz (With earth/ground).

## Language

Either: English, Spanish or French

## Shipping Specification

Net Weight: 8kg  
 Gross Weight: 20kg.  
 Packing Case Dimensions: 57 x 43 x 36 cm  
 Packing Case Volume: 0.088m<sup>3</sup>

## Also Available on Request

- Further detailed specification
- Additional copies of instruction manual
- Recommended list of spares for 5 years operation

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