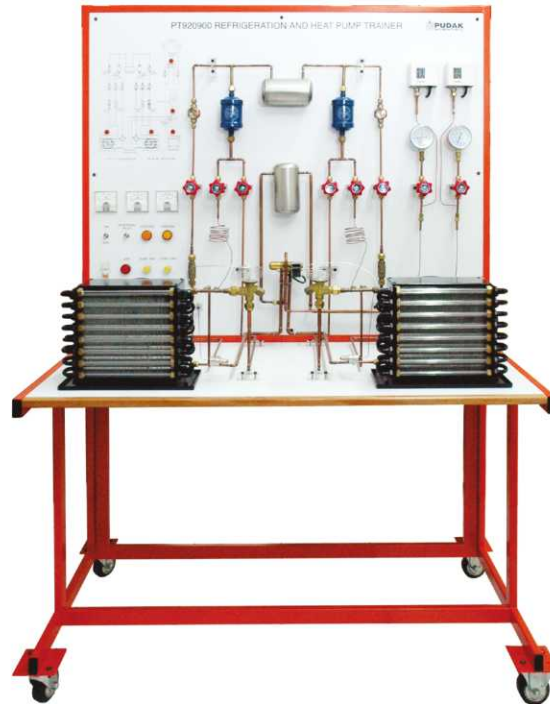


## Features

- The trainer is designed as a teaching aid in basic refrigeration and heat pump system with 4-way reversing valve component.
- The Data Acquisition Module is integrated for an easier data collection and processing of each experiment conducted.
- 4-way reversing valve provide a reversible cycling mode, cooling mode and heating mode.
- Evaporator and condenser are fitted with transparent pipes to enable the student to directly observe the phase transition of the refrigerant.
- The trainer is equipped with an expansion valve and capillary tubes to familiarize the student on different expansion components.
- Evaporator and condenser fans are equipped with variable speed controller to provide the varying air flow rate.
- Frames are made of rectangular steel pipe with 2mm wall thickness to ensure rigidity, finished with powder coated in orange color.
- Complete with comprehensive experiment manual book to guide student step by step in conducting experiments.

# Refrigeration and Heat Pump Trainer with Data Acquisition

PT 920900A



## Covered Topics

- RE02001E Basic Refrigeration System
- RE02002E Heat Pump System with 4-Way Reversing Valve Component
- RE02003E Representation Heat Pump System on P-H Chart
- RE02004E Energy Balance on Heat Pump System
- RE02005E COP (Coefficient of Performance) of Heat Pump System
- RE02006E Comparison of Capillary Tube and Thermostatic Expansion Device

## Specification

- **Compressor**
  - Hermetically reciprocating, R-134A
  - 0.25 HP
  - Input voltage: 220-240VAC, ~ 50Hz
- **Condenser**
  - Finned tube fitted with transparent tubes
  - Fan equipped with variable speed controller
- **Evaporator**
  - Finned tube fitted with transparent tubes
  - Fan equipped with variable speed controller
- **4-way Reversing Valve**
  - Capacity 5kW
- **Expansion Devices**
  - 2 Thermostatic expansion valve, 0.5TR
  - 2 capillary tubes : each 1.3m
- **Refrigerant**
  - R-134A
- **Components:**
  - Suction pressure gauge, 0-8Bar
  - Discharge pressure gauge, 0-34Bar
  - High pressure switch, R-134A
  - Low pressure switch, R-134A
  - Refrigerant receiver
  - Filter Driers, R-134A, 3/8 in
  - Sight Glass, 1/4 in
  - Hand Valves, 1/4 in
- **Digital Thermometer with Thermocouples**
  - Resolution: 1/0.1°C

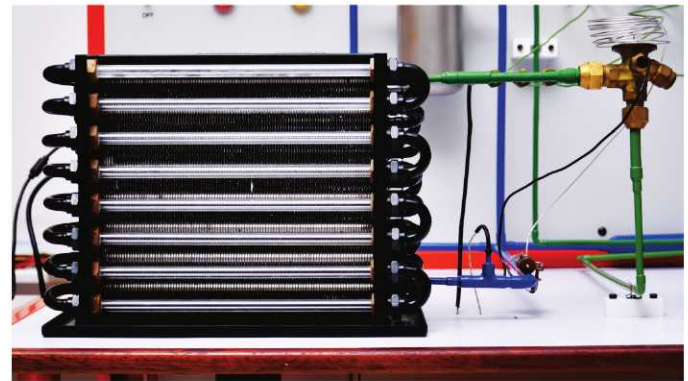
## Training Panel System

### Specification of Data Acquisition Module

- Pressure Sensor**
  - 2 pressure measurement points
  - Measurement range: 0-20 Bar
  - Resolution: 0,1 Bar
- Temperature Sensor**
  - 8 temperature measurement points
  - Type J thermocouple sensor
  - Measurement range: -15 °C - +100 °C
  - Resolution: 0.1 °C
- Power Meter**
  - Electrical Voltage Measurement  
Measurement range: 0-300 Volt AC  
Resolution: 0.1 Volt
  - Electrical Current Measurement  
Measurement range: 0-3 Ampere AC.  
Resolution: 0.1 Ampere
  - Power Supply Measurement  
Measurement range: 0-1000 Watt AC  
Resolution: 0.1 Watt.
- Modules-PC Communication**
  - USB Virtual Comm Port.
  - Data transfer speed: 38400 bps.
- Software Features**
  - Experiment data collection up to 1000 data
  - Sampling frequency: 1 sec/sampling
  - Experiment data is displayed in graph, table, and P-h Chart



Pressure Gauge and Pressure Sensor  
PTE-075-02



Evaporator with Transparent Pipe

### Computer Required

- Computer or Laptop (not included in the trainer package) with the following specifications:**
  - Processor: min. Pentium 4
  - Operating System: min. Windows XP
  - RAM: min. 512 MB
  - 4 GB free disk space

### PT 920900A Refrigeration and Heat Pump Trainer with Data Acquisition consists of

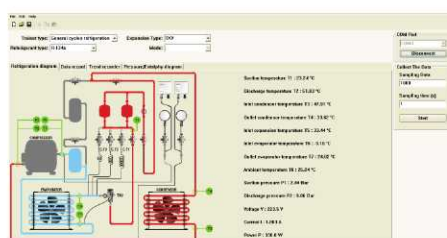
Cat. No.	Description	Qty.
PT 920900A	Refrigeration and Heat Pump Trainer	1 set
GMM 321	Digital Thermometer	1 pc
PHT 281	Thermocouple, Type K	2 pcs
R02S-01E	Experiment Manual Book	1 pc
PTE-075-01	Temperature Sensor Module	1 pc
PTE-075-02	Pressure Sensor Module	1 pc
PTE-075-03	Power Meter Module	1 pc
PTE-075-04	Power Meter Display Module	1 pc
PTE-075-05	Main Board Module	3 pcs
PTE-075-06	USB to Serial Module	1 pc
MLT 300	DVD for Software Installation	1 pc



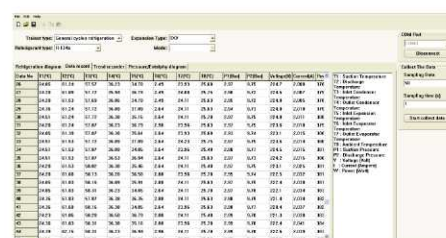
Power Meter Display Module  
PTE-075-03



USB Interface  
PTE-075-06



Real Time Measurement



Data Record Table

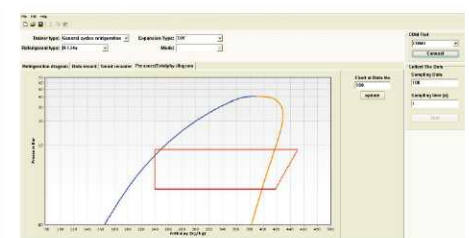


Diagram P-h

Specifications and illustrations are subject to change without prior notice