

AIR-CONDITIONING TRAINER WITH HEAT PUMP

Mod. EPT/EV

CV



THERMOTRONICS

www.elettronicaveneta.com

27C-E-CV-EPT-3

INTRODUCTION

This trainer has been designed specifically for educational aims so that students can delve into the study of the operation of an air/water heat pump and of its components such as cycle-reversing valve and thermostatic expansion valve. Furthermore students can examine the use of an intermediate fluid for the transport of thermal or refrigerating power from the production site to the place of use.

TRAINING PROGRAM

- Plant starting and safety devices intervention checking
- Studying the operation of a heat pump
- Studying the operation of a cycle-reversing valve
- Studying the operation of a thermostatic expansion valve
- ON/OFF control
- Examining the system behaviour versus the variation of:
 - season
 - air flow at condenser/evaporator
 - air flow at air/water exchanger
- Plotting the refrigeration cycle on refrigerant pressure-enthalpy chart
- Data acquisition and calculation of:
 - exchange surfaces
 - heat balances corresponding to evaporator, condenser, compressor
 - refrigerant mass flow
 - ideal and actual E.E.R.
 - ideal and actual C.O.P.
 - volumetric compressor efficiency
 - thermostatic valve superheat
 - heat balances on water side
 - heat balances on air side (optional items: thermohygrometer and anemometer required)

TECHNICAL SPECIFICATIONS

- Steel structure mounted on wheels, painted and treated in the oven
- Colour silk-screen-printed schematic diagram of the two alternative cycles, with warning LEDs
- Hermetic compressor
- Forced-air condenser/evaporator with variable flow settable via potentiometer
- Evaporator/condenser coil
- Liquid receiver, liquid separator
- On-off valves, sight glass, dehydrator filter, check valves
- Thermostatic expansion valve
- Electrically driven cycle-reversing valve
- Valve for plant vacuum, refrigerant charging and recovering
- Pipes connecting the various components painted with different colours
- Heat storage tank for refrigerant/water heat exchange
- Water pump
- Forced-air air/water exchanger with variable flow settable via potentiometer
- Thermostats
- Full set of instruments for data acquisition, including:
 - flowmeters
 - high and low pressure gauges
 - 3 electronic thermometers with Pt100 probes to be inserted in various test points along the hydraulic circuit
 - digital multimeter
- Double pressure switch
- Thermomagnetic - earth leakage control button
- Emergency button

Power supply: 230 Vac 50 Hz single-phase - 1000 VA
(Other voltage and frequency on request)

Dimensions: 180 x 80 x 180 cm

Net weight: 190 kg

SPECIAL VERSION ON DEMAND

Besides offering the characteristics of standard version, this version also includes:

- Fault simulator using switches, or
- Fault simulator operating with keypad and microprocessor enabling the teacher to introduce anomalies and to assess the troubleshooting attempts carried out by students



SUPPLIED WITH

EXPERIMENTAL HANDBOOK



OPTIONAL (REF. ACCESS. AND INSTRUMENTS)

PORTABLE VANE ANEMOMETER
MOD. THAN



PORTABLE THERMOHYGROMETER
WITH REMOVABLE PROBE
MOD. THHY