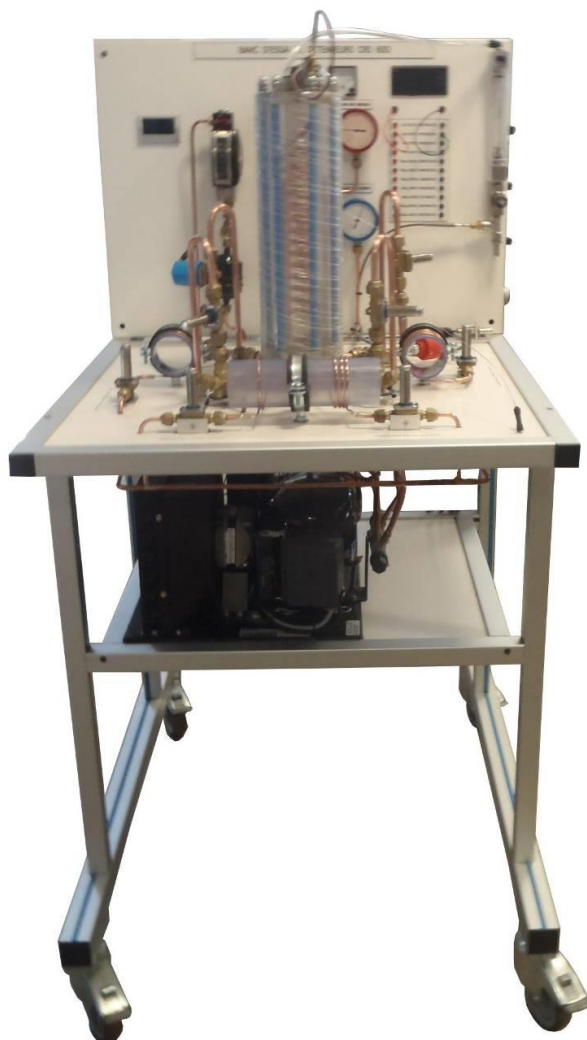


EXPANSION VALVE AND CAPILLARY TUBES TRAINER



Experimental capabilities

- Identification and use of different type of expansion systems :
 - internal equalisation thermostatic
 - external equalisation thermostatic
 - automatic expansion valve
 - Capillary tubes :2 different lengths & 2 different diameters
 - electronic expansion valve
- Study of the influence of the diameter and the length on capillary tubes
- Adjustment of the overheat on the thermostatic expansion valves
- Parameterizing of the electronic expansion valve
- Study of a refrigeration circuit and drawing of the enthalpic cycle

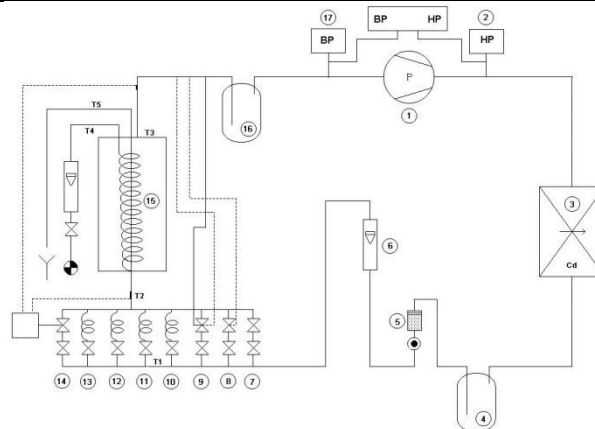
Operating principle

The unit is delivered complete with instrumentation and with technical and instruction manuals. The components are of industrial quality. The operation of the valves is similar to those found in a commercial installation. A variety of parameters may be measured.

The robust design of this device makes it suitable for use in schools. The equipment is set up on an Anodized aluminium frame on casters wheels. This gives it great strength and a flexibility of integration into your premises. The manufacture of this equipment complies with the European standard for machinery manufacturing.

This equipment can be used alone or with other compatible equipment from our range (see last section of this document).

Illustrations



Technical details

This unit is set up on a frame made of aluminum profile with 4 wheels.

It includes an electrical cabinet with main switch and differential circuit breaker.

1. Reciprocating compressor R134a
Refrigeration power around 500 W
2. High pressure gauge and pressure switch
3. Condenser – with air blower
4. Receiver
5. Filter drier and moisture indicator
6. R134a flowmeter, magnetic transmission, needle display, stainless steel body
7. Automatic expansion valve
8. Internal equalisation expansion valve
9. Internal equalisation expansion valve
10. Capillary tube diameter1, Length1
11. Capillary tube diameter1, Length2
12. Capillary tube diameter2, Length1
13. Capillary tube diameter2, Length2
14. Electronic expansion valve

15. Evaporator: glass shell to view the evaporation of R134a, copper coil (water inside), water inlet and outlet, measurement of the water flowrate
16. Suction line accumulator
17. low pressure gauge and pressure switch

Integrated instrumentation:

- Low pressure gauge: -1 to 10bars
- High pressure gauge: -1 to 30bars
- Fluid flowmeter R134a: 40 to 250mL /min
- Water flowmeter (X1): 0.2 1.5 L/min
- Thermocouple temperature sensor T (X11): -20 to +100°C
- Compressor power meter: 0 to 1150W

The temperatures and the power are displayed on a 7" touch screen :

CRD400 - DEMONSTRATION CYCLE FRIGORIFIQUE		
TEMPERATURE EVAPORANT	TEMPERATURE CONDENSANT	TEMPERATURE LIQUIDE EVAPORANT
27.1 °C	78.1 °C	17.1 °C
TEMPERATURE LIQUIDE CONDENSANT	TEMPERATURE LIQUIDE EVAPORANT	TEMPERATURE COMPRESSEUR
40.5 °C	45.2 °C	19.0 °C
17.2 °C	40.4 °C	172 W

CRD600



Services required

- Electrical supply : 230 Vac – 50 Hz – 6 A
- Electrical network : 1 phase(s) + Neutral + Earth.
- Water supply : 1.5 L/min – 1 bars
- Water drain : on the floor
- Dimensions: (LxWxH mm): 1000 x 800 x 1600
- weight (Kg): 75

Note : if the equipment installation is operated by our staff, all supplies and exhaust connections required must stand at less than 2m from the machine

Documentation

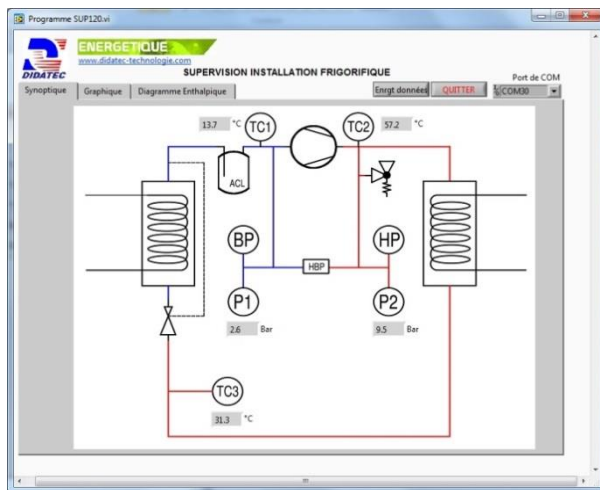
- User's manual
- Pedagogical manual
- Technical documentation of the components
- Lab exercises
- Wiring diagram
- P&ID
- Certificate of conformity CE

Options

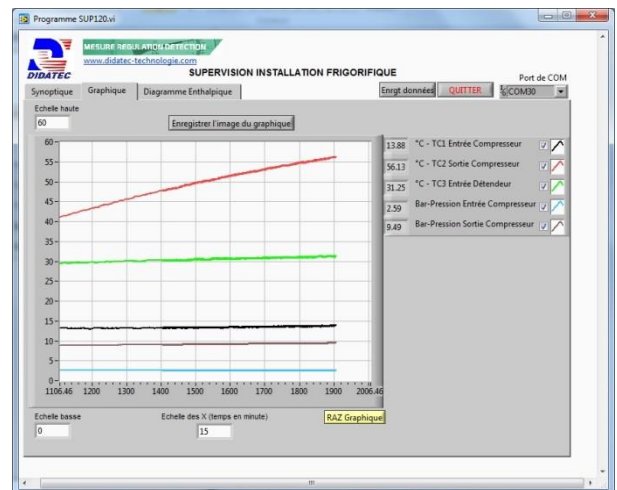
- Data acquisition system and real time drawing of the enthalpic diagram : 3 temperature sensors and 2 pressure sensors (HP and LP)
- Full Data acquisition system and real time drawing of the enthalpic diagram : 11 temperature sensors, 2 pressure sensors (HP and LP), 2 flow sensors (water and frigorific fluid)

- Ref : CRD601

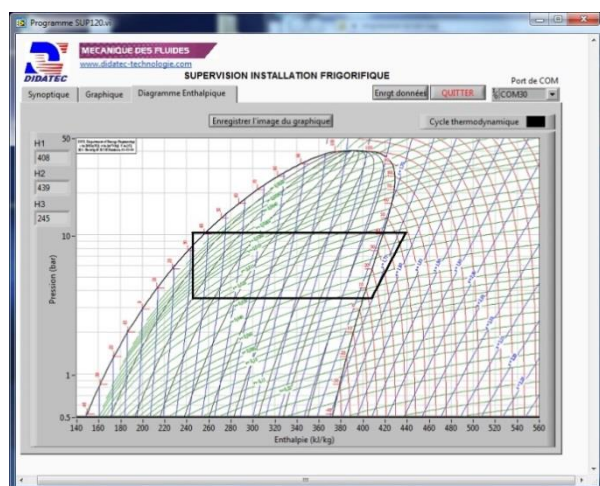
- Ref : CRD602



Schematic diagram with real time display



Real time trend



Real time enthalpic diagram