

DL TM08 HEAT PUMP AIR-CONDITIONING SYSTEM SIMULATOR

The simulator allows the study, the performing of experiments and the troubleshooting for the following system:

- Fixed air-conditioner, split type, with air-air heating pump, for cooling and heating the ambient.

These systems are reproduced on the panel, through a colour representation which allows a complete analysis of the fluid circuit, of its components and of the electrical/electronic circuit for control and regulation.

It is possible to simulate the behaviour of components and systems, on the basis of the operating conditions which can be monitored directly on the panel or through Personal Computer by teacher and students.

The Personal Computer constantly keeps under control the simulation in progress and displays its behaviour through analog and digital signals and meters; in this way the student, through measurements and tests, can go on with the troubleshooting.

The fixed air-conditioner, split type, with air-air heating pump, for cooling and heating the ambient is composed of the following main elements:

- Single-phase motor compressor;
- Condenser/evaporator with ventilation through single-phase electric motor ;
- Evaporator/condenser with ventilation through single-phase electric motor ;

- Two expansion thermostatic valves;
- Two single-direction valves for by-pass circuits;
- Monostable electrovalve for inversion of the refrigerating cycle;
- Liquid tank;
- Regulation thermostat;
- Internal fan speed selector;
- Main switch;
- Cooling/heating selector;
- Possibility to simulate the internal and external temperatures;
- Possibility to display the temperature values of the treated air.

DL AM01 AIR CONDITIONING FOR AUTOMOBILES

To cool the external air refrigerating compressor based systems are exclusively used. The compressor, activated by the engine, compresses the refrigerant which consequently warms up; in the condenser the working fluid is cooled until it reaches the liquid phase. The cooling is obtained by giving heat to the exterior in the zone around the compressor. The cooled fluid expands in the expansion valve and in the evaporator and is transformed to gas. The heat necessary for such transformation is subtracted from the entering cool air.

The simulator analyzes all the phases of the refrigeration cycle. In particular:

- Relations between temperature and pressure in the refrigerant
- Operation of the compressor
- Operation of the condenser
- Pressure switches
- Temperature regulation

