Split Air Conditioner Unit

TACS

Electronic console

PROCESS DIAGRAM AND UNIT ELEMENTS ALLOCATION
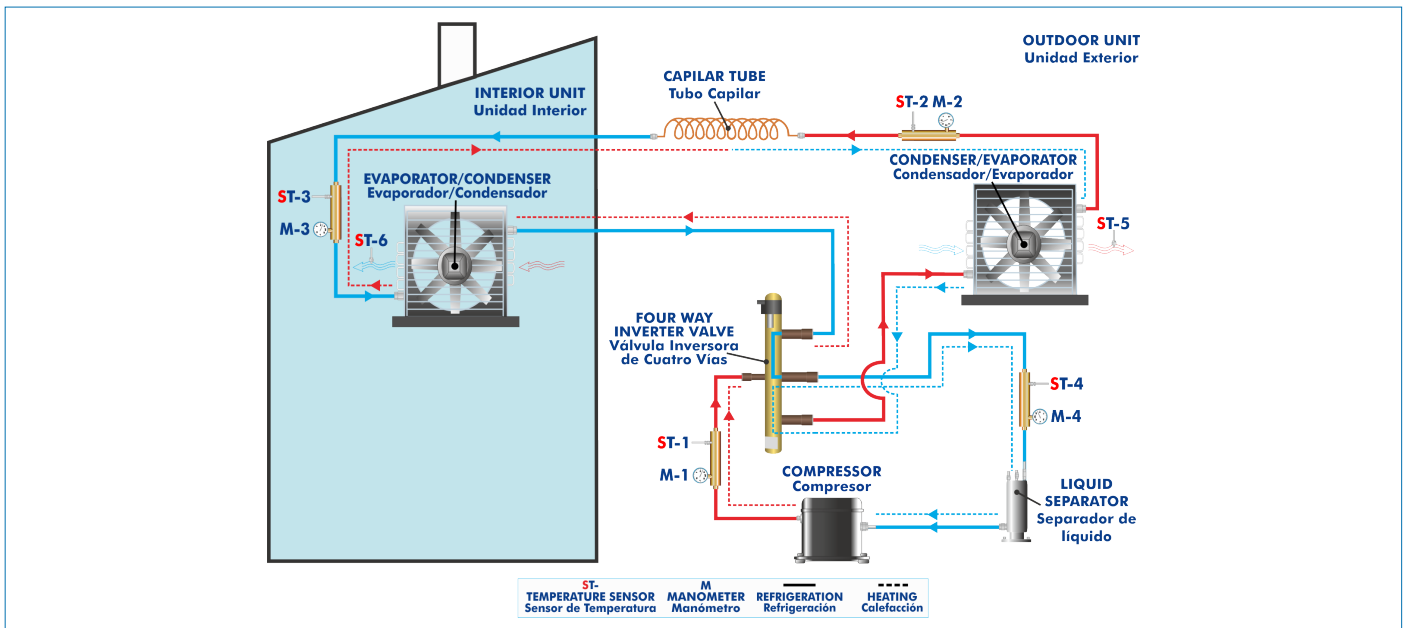
OUTDOOR UNIT
Unidad Exterior

INTERIOR UNIT
Unidad Interior

CAPILAR TUBE
Tubo Capilar

ST-2 M-2

EVAPORATOR/CONDENSER
Evaporador/Condensador

CONDENSER/EVAPORATOR
Condensador/Evaporador

ST-3

M-3

ST-6

ST-5

FOUR WAY
INVERTER VALVE
Válvula Inversora
de Cuatro Vías

ST-4

M-4

ST-1

M-1

COMPRESSOR
Compresor

LIQUID
SEPARATOR
Separador de
líquido

ST-	M		
TEMPERATURE SENSOR	MANOMETER	REFRIGERATION	HEATING
Sensor de Temperatura	Manómetro	Refrigeración	Calefacción

INTRODUCTION

Air conditioners are used to cool, dehumidify and heat rooms.

There are many types of air conditioning systems in the market, among them the air conditioners with air pump function, to cool or heat.

Split system air conditioners consist of an inner unit and an outer unit. In the inner unit there is a heat exchanger with fan, which can work either as evaporator or condenser according to the cooling or heating operation, respectively.

The outer unit includes: a compressor, another heat exchanger, an expansion element and a switching valve that enables the change from cooling to heating mode. This heat exchanger can also work as evaporator (the refrigerant is evaporated by withdrawing heat to the ambient) or condenser (the refrigerant is condensed and heat is transferred to the ambient according to the operation mode).

The Split Air Conditioner Unit, "TACS", designed by EDIBON allows the study of the operation of a split system air conditioner with heat pump function to heat or cool, apart from other operation modes available.

GENERAL DESCRIPTION

The main element of the Split Air Conditioner Unit, "TACS", is a noiseless split system air conditioner mounted in a panel (dividing wall) made of painted steel that simulates a real air conditioning system.

The inner unit with fan is located at the front and the outer unit is located at the back. It includes a rotary compressor, a heat exchanger, a capillary tube for the expansion, a storage tank and a valve to switch the operation mode of the heat pump.

TACS detail

For a better understanding of the cycle, four temperature and pressure measurement points are included, with pressure gauges and temperature sensors, to check the state of the coolant at the four key points of the system: before and after the compression stage and before and after the expansion stage.

The unit can be operated in different modes:

Cooling.

Heating.

Dehumidifying: light cooling.

Ventilation: using only the fan of the inner unit.

Service mode: the user selects the operation of the fan and the desired room temperature with the remote control.

Automatic mode: the user sets a temperature and the service mode is automatically selected till that temperature is reached in function of the real ambient temperature.

The additional functions can be set with the remote control:

Timer for switching on and off (the remaining service time is indicated).

"Sleep" mode: low noise and energy saving.

"Swing" mode: fixed or movable position of the lamella at the air outlet for air distribution.
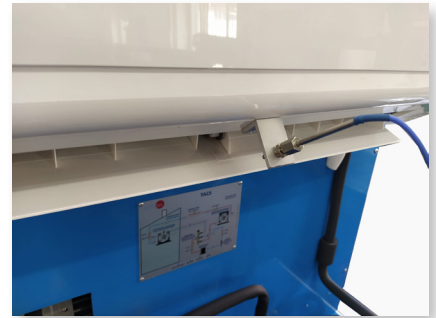
SPECIFICATIONS

Experimental unit for the training of apprentices in the refrigeration area.

Anodized aluminum frame and panels made of painted steel.

The unit includes wheels to facilitate its mobility.

Main metallic elements made of stainless steel.

Diagram in the front panel with distribution of the elements similar to the real one.

Air conditioner:

    Absorbed power: 1 kW approx.

    Cooling capacity: 3.2 kW approx.

    Heating capacity: 3.6 kW approx.

    Maximum air flow rate outdoor unit: 1360 m^3/h approx.

    SEER (cooling): 7.3 A++

    SCOP (heat): 5.7 A+++

    Refrigerant gas: R32.

    Timer: 24 h.

    Battery operated remote control.

Operating modes: heating, cooling, dehumidifying, ventilating, service mode and automatic mode.

Additional functions adjustable with the remote control: sleep, swing and timer.

Four pressure gauges at the four key points of the process, before and after the compression stage and before and after the expansion stage:

    Three high pressure gauges, range: -0.1 – 50 bar.

    One low pressure manometer, range: -0.1 – 35 bar.

Four "J" type temperature sensors at the four key points of the process, before and after the compression stage and before and after the expansion stage.

Two "J" type temperature sensors to measure the ambient temperature, at the outlet of the indoor unit and at the outlet of the outdoor unit.

Cables and accessories, for normal operation.

Manuals: This unit is supplied with the following manuals: Required Services, Assembly and Installation, Starting-up, Safety, Maintenance & Practices Manuals.

EXERCISES AND PRACTICAL POSSIBILITIES

1.- Study of the assembly and operation of a split system air conditioner.

2.- Study of six different operation modes of the air conditioning system:

    Cooling.

    Heating.

    Dehumidifying.

    Ventilating.

    Automatic service.

    Service mode.

3.- Study of the three additional functions:

    "SLEEP" night function.

    "SWING" function.

    24 h switching on/off timer.

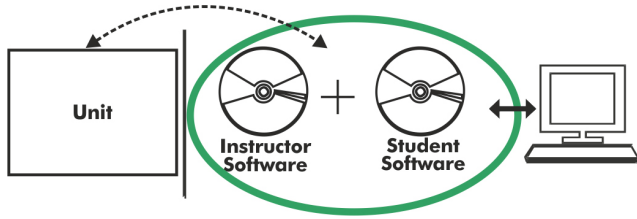4.- Study of the remote control functions.

REQUIRED SERVICES

- Electrical supply: single-phase 200 VAC – 240 VAC/50 Hz or 110 VAC – 127 VAC/60 Hz.

DIMENSIONS AND WEIGHTS

TACS:

    -Dimensions: 1100 x 730 x 1900 mm approx.

               (43.30 x 28.74 x 74.80 inches approx.)

    -Weight: 70 Kg approx.

               (154 pounds approx.)

TACS/ICAI. Interactive Computer Aided Instruction Software:

With no physical connection between unit and computer, **this complete software package consists of an Instructor Software (EDIBON Classroom Manager -ECM-SOF) totally integrated with the Student Software (EDIBON Student Labsoft -ESL-SOF).** Both are interconnected so that the teacher knows at any moment what is the theoretical and practical knowledge of the students.
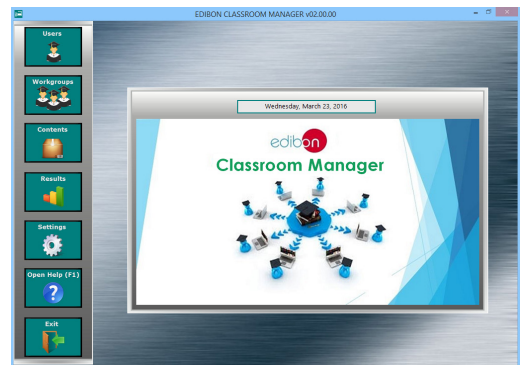
<u>Instructor Software</u>

- ECM-SOF. EDIBON Classroom Manager (Instructor Software).

ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual students, workgroups, units, etc... so the teacher can know in real time the level of understanding of any student in the classroom.

Innovative features:

- User Data Base Management.
- Administration and assignment of Workgroup, Task and Training sessions.
- Creation and Integration of Practical Exercises and Multimedia Resources.
- Custom Design of Evaluation Methods.
- Creation and assignment of Formulas & Equations.
- Equation System Solver Engine.
- Updatable Contents.
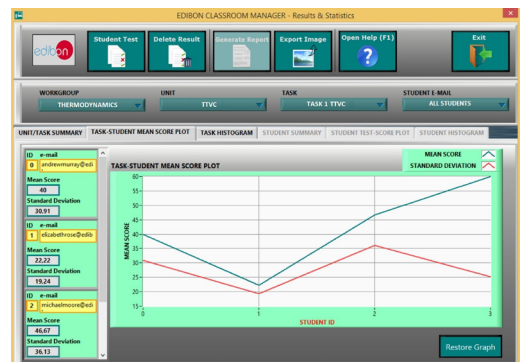- Report generation, User Progression Monitoring and Statistics.

ECM-SOF. EDIBON Classroom Manager (Instructor Software) Application Main Screen
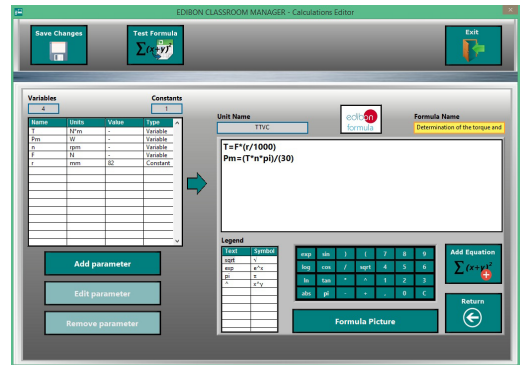
ECAL. EDIBON Calculations Program Package - Formula Editor Screen
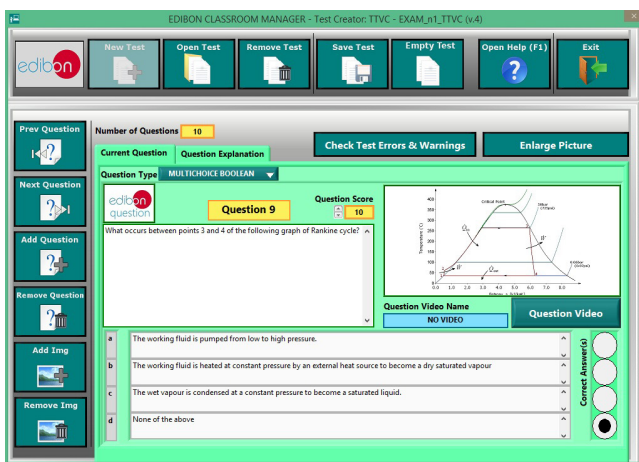
ETTE. EDIBON Training Test & Exam Program Package - Main Screen with Numeric Result Question

ERS. EDIBON Results & Statistics Program Package - Student Scores Histogram

- ESL-SOF. EDIBON Student Labsoft (Student Software).

ESL-SOF is the application addressed to the Students that helps them to understand theoretical concepts by means of practical exercises and to prove their knowledge and progression by performing tests and calculations in addition to Multimedia Resources. Default planned tasks and an Open workgroup are provided by EDIBON to allow the students start working from the first session. Reports and statistics are available to know their progression at any time, as well as explanations for every exercise to reinforce the theoretically acquired technical knowledge.

Innovative features:

- Student Log-In & Self-Registration.
- Existing Tasks checking & Monitoring.
- Default contents & scheduled tasks available to be used from the first session.
- Practical Exercises accomplishment by following the Manual provided by EDIBON.
- Evaluation Methods to prove your knowledge and progression.
- Test self-correction.
- Calculations computing and plotting.
- Equation System Solver Engine.
- User Monitoring Learning & Printable Reports.
- Multimedia-Supported auxiliary resources.

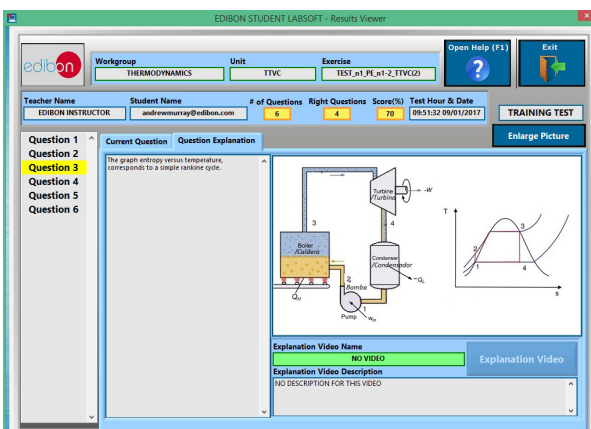For more information see ICAI catalogue. Click on the following link:

https://www.edibon.com/en/interactive-computer-aided-instruction-software/catalog
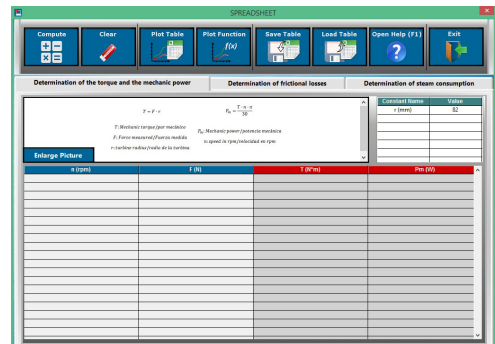

ESL-SOF. EDIBON Student LabSoft (Student Software)
Application Main Screen
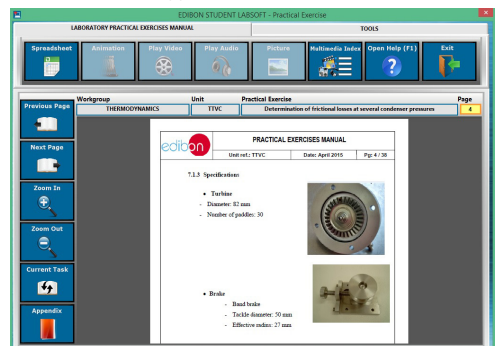
EPE. EDIBON Practical Exercise Program Package Main Screen

ERS. EDIBON Results & Statistics Program Package - Question Explanation

ECAL. EDIBON Calculations Program Package Main Screen

✱ Specifications subject to change without previous notice, due to the convenience of improvement of the product.

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