AEL-AD9B
BASIC HEATING CONTROL STATION
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↳PRODUCTS
↳40.- ELECTRICITY

INTRODUCTION

Since the beginning, humans have always needed to control the temperature of environment, from fire discovery to newest heating control of our days. To maximize the comfort and saving energy, the current controls of temperature make easier our lives, allowing to us to forget to warm or cool a room, because all of this is made automatically in most cases. For that, it is used some kinds of sensors which sample the temperature of the environment and compare with a previous value established by user, such as the thermostat. A thermostat is a device which senses the temperature of a system so that the system's temperature is maintained near a desired set point. The thermostat does this by switching heating devices on or off, or regulating the flow of a heat transfer fluid as needed, to maintain the correct temperature.

ISO 9001: Quality Management (for Design, Manufacturing, Commercialization and After-sales service)

European Union Certificate (total safety)

Certificates ISO 14001 and ECO-Management and Audit Scheme (environmental management)

Certificate and Worlddidac Member

The Basic Heating Control Application," AEL-AD9B", has been designed by Edibon to study how a heating control application works. This application allows the students understand the control logic of a thermostat. The AEL-AD9B includes lamps and bells in order to simulate the behavior of an air conditioning system.

The AEL-AD9B includes the following modules:

- N-ALI02. Domestic Main Power Supply.

- N-TIM01. Bell 70 dB Module.

- N-SEL09. Double Luminous Signalling red-green 230 VAC.

- N-MED76. Thermostat for Heating Module.

Expansion learning software:

In addition, Edibon provides expansion learning software(AEL-AD9B/ICAI) to reinforce knowledge about this field.

This software is formed by:

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

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

The application AEL-AD9B can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following racks:

- N-RACK-B.

Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

This application can be mounted on rail.

Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

The application includes the following modules:

• N-ALI02. **Domestic Power Supply.**

    Supply voltage (Single-Phase): 230 VAC, PH+N+G.

    ON-OFF removable key.

    Output Voltage Connections:

        Two Single-Phase: 230 VAC.

    Single-Phase supply hose connecting plug.

    Differential magnetothermal, 2 poles, 25A, 30 mA AC 6 KA.

N-ALI02

• N-TIM01. **Bell 70 dB Module.**

    Nominal voltage: 230 VAC.

    Frequency: 50 Hz.

    Sound pressure level: 70 dB.

    Ground terminal.

N-TIM01

• N-SEL09. **Double Luminous Signalling red-green 230 VAC.**

    Nominal voltage: 230 VAC.

    Red and green luminous warning.

    Power of luminous warning: 5 W.

    Terminals:

        Two Single-Phase terminals (PH+N) to connect the electrical warning.

        Ground terminal.

N-SEL09

• N-MED76. **Thermostat for Heating.**

    Supply voltage: 230 VAC (PH+N)

    Nominal current: 10 A.

    Wheel to change the temperature:

        5°C to 30° regulation.

        Accuracy: 2.5°C.

    Contacts:

        One Normally Close Contact (NC).

    Ground terminal.

N-MED76

• **All necessary cables to realize the practical exercises are included.**

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.- Identification of the elements of the domestic main power supply.

2.- Checking the main power supply.

3.- Checking the relay and the thermostat for heating.

4.- Test with several temperatures and green light.

5.- Test with several temperatures and red light.

6.- Test with several temperatures and the bell.

7.- Test with several temperatures, red light and the bell.

8.- Test with several temperatures, green light and the bell.
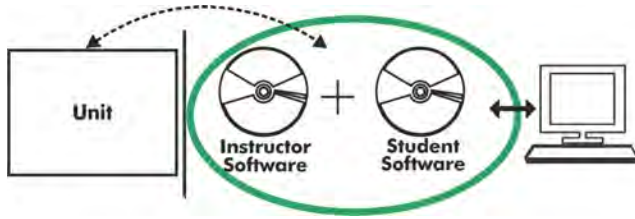
REQUIRED SERVICES

- Electrical supply: three-phase, 380V/50 Hz or 208V/60 Hz, 20 Kw.

DIMENSIONS AND WEIGHTS

AEL-AD9B:

- Dimensions: 640 x 320 x 320 mm approx.

    (25.19 x 12.59 x 12.59 inches approx.)

- Weight: 60 Kg approx.

    (132 pounds approx.)

AEL-AD9B/ICAI. Interactive Computer Aided Instruction Software System:

With no physical connection between unit and computer (PC), **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.
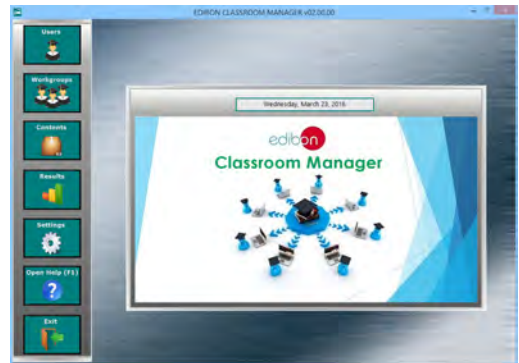
Instructor Software

- 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
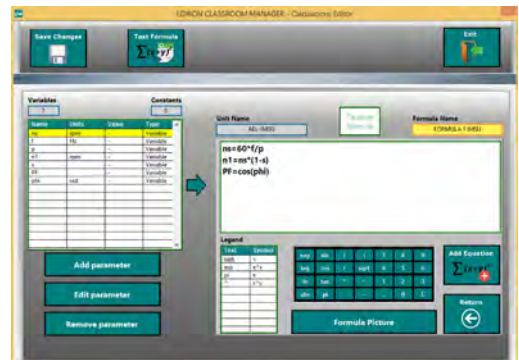
ECAL. EDIBON Calculations Program Package - Formula
Editor Screen
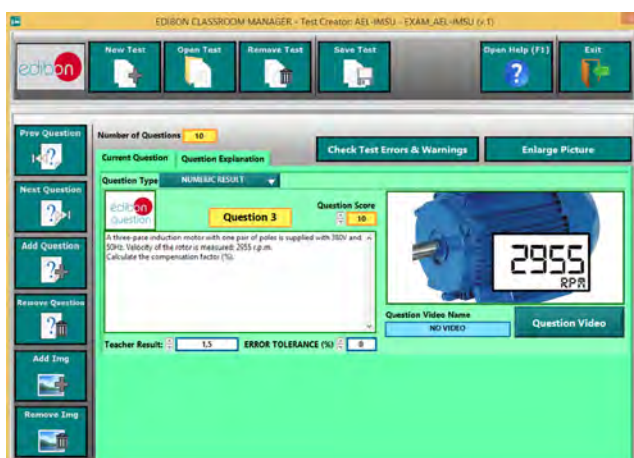
ETTE. EDIBON Training Test & Exam Program Package - Main Screen with
Numeric Result Question

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

Student Software

- 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.

ESL-SOF. EDIBON Student LabSoft (Student Software)
Application Main Screen

EPE. EDIBON Practical Exercise Program Package Main Screen

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

www.edibon.com/en/files/expansion/ICAI/catalog

ERS. EDIBON Results & Statistics Program Package - Question Explanation
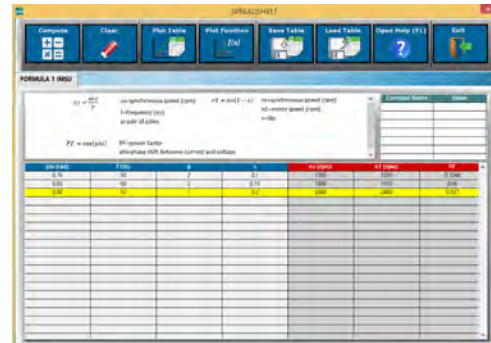
ECAL. EDIBON Calculations Program Package Main Screen

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

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