



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 us to forget about having to warm or cool a room, because all of this is made automatically in most cases. For that, some types of sensor are used, 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 or cooling devices on or off, or regulating the flow of a heat transfer fluid as needed, to maintain the correct temperature.

GENERAL DESCRIPTION

The Heating Control Application, "AEL-AD9A", has been designed by EDIBON to study how a heating control application works. This application allows the students to understand the control logic of a thermostat and it offers the possibility of working with a heating thermostat and with a thermostat for heating and refrigeration. The "AEL-AD9A" application includes lamps and bells to simulate the behavior of an air conditioning system.

The "AEL-AD9A" application includes the following elements:

- N-ALI02. Domestic Main Power Supply Module.
- N-TIM01. Bell 70 dB Module (2 units).
- N-SEL09. Double Luminous Signalling red-green 230 VAC Module (2 units).
- N-MED76. Thermostat for Heating Module.
- N-MED77. Thermostat for Heating and Refrigeration Module.

The application "AEL-AD9A" can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following racks:

- N-RACK-M.

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.

SPECIFICATIONS

The application "AEL-AD9A" includes the following elements:

- **N-ALI02. Domestic Main Power Supply Module.**

Supply voltage (single-phase): 230 VAC, 1PH + N.

ON / OFF removable key.

Output voltage connections:

Two single-phase: 230 VAC.

Single-phase supply hose connecting plug.

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

Emergency stop push button.



N-ALI02

- **N-TIM01. Bell 70 dB Module (2 units).**

Nominal voltage: 230 VAC.

Frequency: 50 Hz.

Sound pressure level: 70 dB.



N-TIM01

- **N-SEL09. Double Luminous Signalling red/green 230 VAC Module (2 units).**

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.



N-SEL09

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

Supply voltage: 230 VAC (PH + N).

Nominal current: 10 A.

Wheel to change the temperature:

Regulation: 5 °C – 30 °C.

Accuracy: 0.25 °C.

Contacts:

One normally close contact (NC).



N-MED76

- **N-MED77. Thermostat for Heating and Refrigeration Module.**

Supply voltage: 230 VAC (PH + N).

Nominal current: 10 A.

Wheel to change the temperature:

Regulation: 5 °C – 30 °C.

Accuracy: 0.25 °C.

Contacts:

One normally open contact (NO).

One normally close contact (NC).

Common point of normally close/open contacts.



N-MED77

- **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. | 7.- Test with several temperatures and red light. |
| 2.- Verification of the operation of the domestic main power supply. | 8.- Test with several temperatures and the bell. |
| 3.- Checking relays. | 9.- Test with several temperatures, red light and the bell. |
| 4.- Checking the thermostat for heating and tests. | 10.- Test with several temperatures, green light and the bell. |
| 5.- Checking the thermostat for heating and refrigeration, and tests. | 11.- Test with different temperatures, red light, green light and the bell. |
| 6.- Test with several temperatures and green light. | |

REQUIRED SERVICES

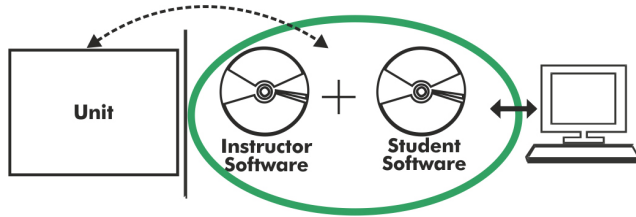
- Electrical supply: single-phase 200 VAC – 240 VAC/50 Hz or 110 VAC – 127 VAC/60 Hz, 1 kW.

DIMENSIONS AND WEIGHTS

- AEL-AD9A:
- Dimensions: 640 x 320 x 670 mm approx.
(25.19 x 12.59 x 26.37 inches approx.)
 - Weight: 30 Kg approx.
(66 pounds approx.)

SIMILAR UNITS AVAILABLE

- | | |
|--|-----------------------------------|
| - AEL-AD9A. Heating Control Application. | <u>Offered in this catalog:</u> |
| - AEL-AD9B. Basic Heating Control Application. | <u>Offered in other catalogs:</u> |

AEL-AD9A/ICAI. Interactive Computer Aided Instruction Software:

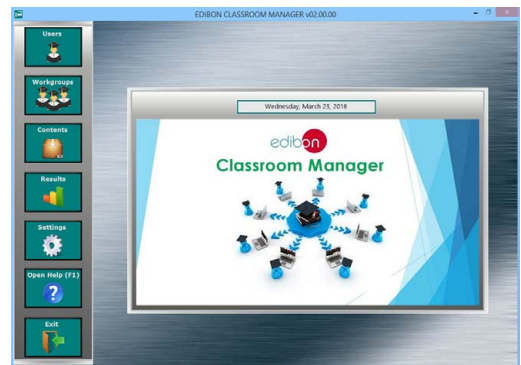
With no physical connection between unit and computer, this complete software package consists of an Instructor Software (EDIBON Classroom Manager -ECM-SOF) totally integrated with the Student Software (EDIBON Student Labsoft -ESL-SOF). Both are interconnected so that the teacher knows at any moment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

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

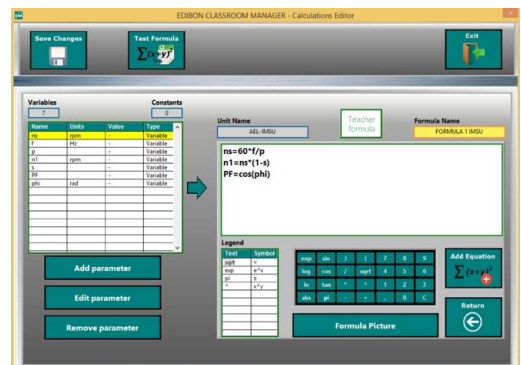
ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual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

Innovative features:

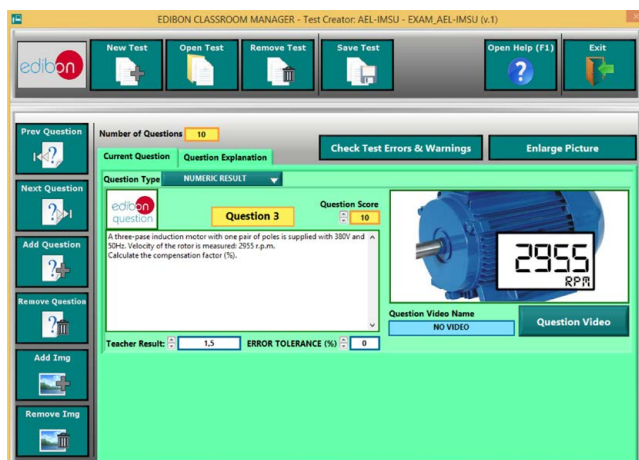
- User Data Base Management.
- Administration and assignment of Workgroup, Task and Training sessions.
- Creation and Integration of Practical Exercises and Multimedia Resources.
- Custom Design of Evaluation Methods.
- Creation and assignment of Formulas & Equations.
- Equation System Solver Engine.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



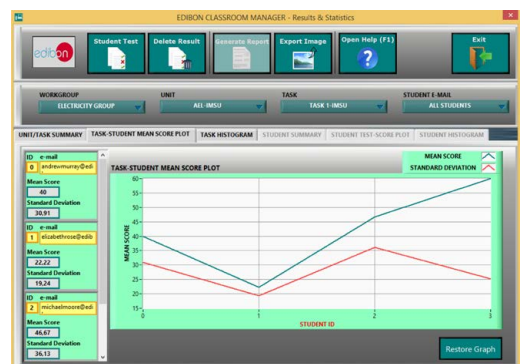
ECM-SOF. EDIBON Classroom Manager (Instructor Software) Application Main Screen



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

- **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:

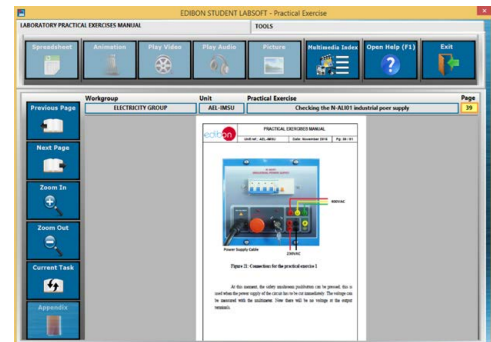
- **Student Log-In & Self-Registration.**
- **Existing Tasks checking & Monitoring.**
- **Default contents & scheduled tasks available to be used from the first session.**
- **Practical Exercises accomplishment by following the Manual provided by EDIBON.**
- **Evaluation Methods to prove your knowledge 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:

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



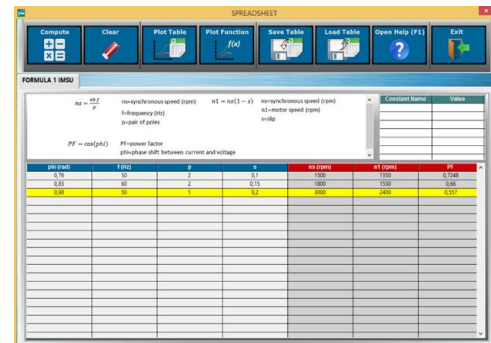
ESL-SOF. EDIBON Student LabSoft (Student Software)
Application Main Screen



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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REPRESENTATIVE: