INTRODUCTION

Home automation is the branch of automation applied to houses. Nowadays there are many home automation systems to control some components automatically, manage the energy consumption more efficiently, provide more security against accidents or robbery, etc. In general, home automation helps to make life easier, turning our homes into smart homes.

GENERAL DESCRIPTION

The Advanced Home Automation Application with ZigBee Wireless Protocol, "AEL-AD28B", is a cutting-edge home automation application. It consists of a set of modules designed to cover different areas within the home automation field: safety system and energy management system.

Besides, the AEL-AD28B includes software to develop several control configurations depending on the user's needs.

The AEL-AD28B is a flexible home automation system, that is to say, the user will be able to develop several programs to simulate different real situations.

The versatility of the AEL-AD28B is based, to a great extent, on the Zig-Bee communications protocol. One of the main characteristics of this protocol is the fact that it does not need any control wiring, since all sensors and actuators communicate with each other through radio frequency, behaving as nodes and transmitters.

Finally, the AEL-AD28B includes a set of practical exercises that allow the student to learn the different possibilities that current home automation systems offer from the safety, energy control and home automation points of view.

The AEL-AD28B includes the following modules:

- N-HPM. Home power module.

- N-WMSM. Wireless motion sensor module.

- N-WLSM. Wireless light sensor module.

- N-WISM. Wireless Intrusion sensor.

- N-IOWM. Wireless output module. (6 units).

- N-WSM. Wireless switch module. (4 units).

- N-LAM16. Incandescent lamp.

- N-SEL04. Four pilot lights.

- N-TIM05. Bell + Buzzer.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-AD28B/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-AD28B can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following racks:

- N-RACK-A.

- 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.

The application includes the following modules:

- **N-HPM. Home Power Module.**

    Voltage supply: 230 VAC.

    Residual current circuit breaker (RCCB).

    Power meter.

    Energized circuit LED .

    Output voltage port, 230 VAC.

    Input voltage port, 230 VAC (it can be directly connected to the 230 VAC output).

    Eight supply output ports.

    Ground connection.

    Zmeter, wireless power meter capable of switching the circuit on/off:

        ON/OFF switch.

        3.5 mm jack.

        Two AAA batteries.

        Detection range, 10 m.

        Transmission range: 100 m outdoors and 30 m indoors.

        Channels: 19 (2445 MHz), 20 (2450 MHz), 25 (2475 MHz).

N-HPM

- **N-WMSM. Wireless motion sensor module.**

    ZMOVE: wireless movement detector:

        Infrared detection up to 10 m.

        Horizontal range: 110°.

        Vertical range: 93°.

        Two AA batteries.

        Transmission range: 100 m outdoors and 30 m indoors.

    Ground connection.

N-WMSM

- **N-WLSM. Wireless light sensor module.**

    ZLUM light sensor:

        CR2032 lithium battery.

        Measurement range, 1-65536 lux.

        Transmission range: 100 m outdoors and 30 m indoors.

        16 transmission channels: 2.405-2.480 GHz.

    Ground connection.

N-WLSM

- **N-WISM. Wireless Intrusion Sensor.**

    Sensor ZDOOR:

        Lithium battery CR2032.

        Fixed magnet for mobile part of door/window.

        Sensor for fixed part of Windows/door, it includes pilot light and button.

        Transmission range 100 m outdoor and 30 m indoor.

        16 transmission channels 2.405-2.480 GHz.

N-WISM

• N-IOWM. **Wireless output module. (6 units)**

    Voltage supply: 230 VAC.

    Fuse, 2 A.

    Ground connection.

    Two outputs of 230 VAC.

    Two pilot lights to indicate energized outputs.

    ZLight, wireless module to control the outputs closing/opening:

        Maximum power: 50 W.

        Voltage supply range: 85-263 V.

        Frequency: 50-60 Hz.

        Transmission range: 30 m indoors and 100 m outdors

        16 transmission channels, 2.405-2.480 GHz.

N-IOWM

• N-WSM. **Wireless Switch Module. (4 units)**

    Ground connection

    Wireless switch:

        5 opening/closing command.

        Temperature sensor.

        CR2032 lithium batter.

        Transmission range: 30 m indoors and 100 m outdoors.

        16 channels, 2.405-2.480 GHz.

N-WSM

• N-LAM16. **Incandescent Lamp.**

    Nominal voltage: 230 VAC (PH+N).

    Halogen lamp.

    Power: 60 W.

N-LAM16

• N-SEL04. **Four pilot lights.**

    Voltage supply: 230 VAC.

    Colors: red and green.

    Ground connection.

N-SEL04

• N-TIM05. **Bell + Buzzer.**

    Voltage supply: 230 VAC.

    Bell sound, 70 dB.

    Buzzer sound, 80 dB.

N-TIM05

• **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.- Control and program the maximum consumption accumulated by the loads.

2.- Program the inputs and outputs of the panel and control them wirelessly.

3.- Design and wiring of a automatic lighting control system.

4.- Design and wiring a burglar alarm using the intrusion and motion sensors with the buzzer.

5.- Design and wiring a temperature control system.

6.- Program the motion sensor to illuminate different zones.

7.- Combine all home electric modules and control them wirelessly.
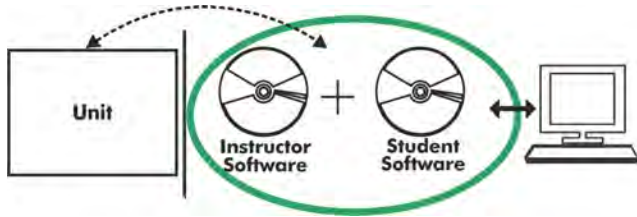
REQUIRED SERVICES

- Electrical supply: single phase, 230 V./50 Hz. or 115 V./60 Hz.

DIMENSIONS AND WEIGHTS

AEL-AD28B:

- Dimensions: 640 x 320 x 920 mm approx.

  (25.19 x 12.59 x 32.22 inches approx.)

- Weight: 60 Kg approx.

  (132 pounds approx.)

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AEL-AD28B/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.
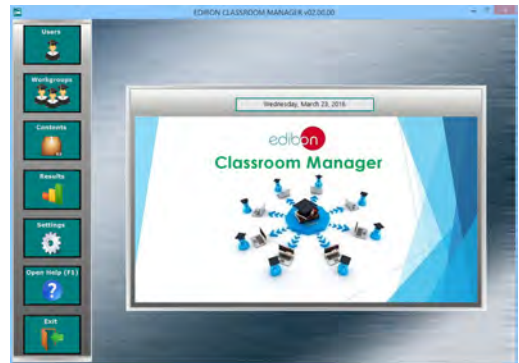
Instructor Software

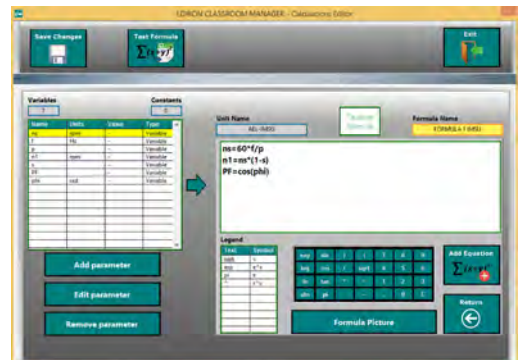- ECM-SOF. **EDIBON Classroom Manager (Instructor Software).**

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.
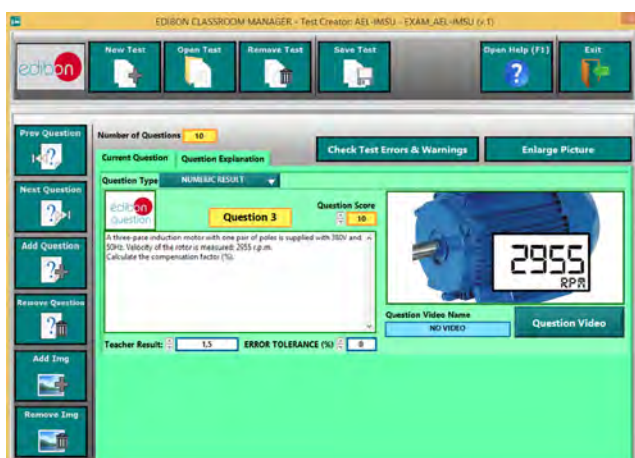
Innovative features:

• **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.
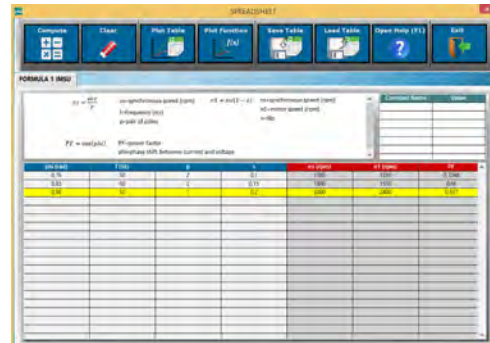
- Multimedia-Supported auxiliary resources.

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.

INTERNATIONAL

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