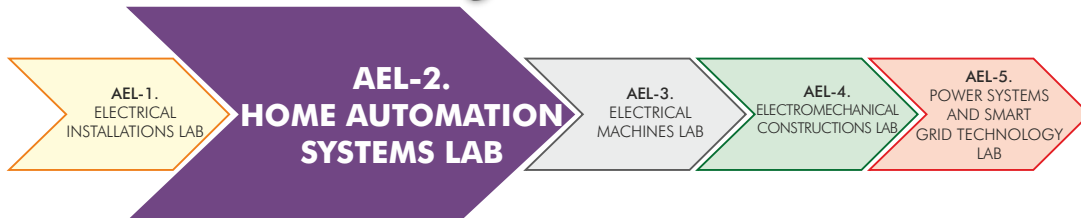




www.edibon.com

↳ PRODUCTS

↳ 40.- ELECTRICITY



Key features:

- ▶ **SCADA Control System.**
- ▶ **Specialized EDIBON Softwares, based on Labview, for:**
 - SCADA Control Software.
 - Data Acquisition Software.
 - Computer Aided Instruction Software.
 - ... and others.
- ▶ **Touch Screens and computers.**
- ▶ **Functional and self contained Electrical Workbench with instrumentation panel with all the required elements to supply power and control in the workbench.**
- ▶ **Intuitive, quick and accurate interaction of the user with the Electrical Workbench.**
- ▶ **Complete and functional training solution for electricity learning purposes.**
- ▶ **Covering all areas of electricity field.**
- ... and others possibilities.



ISO 9000: Quality Management
(for Design, Manufacturing,
Commercialization and After-sales service)



European Union Certificate
(total safety)

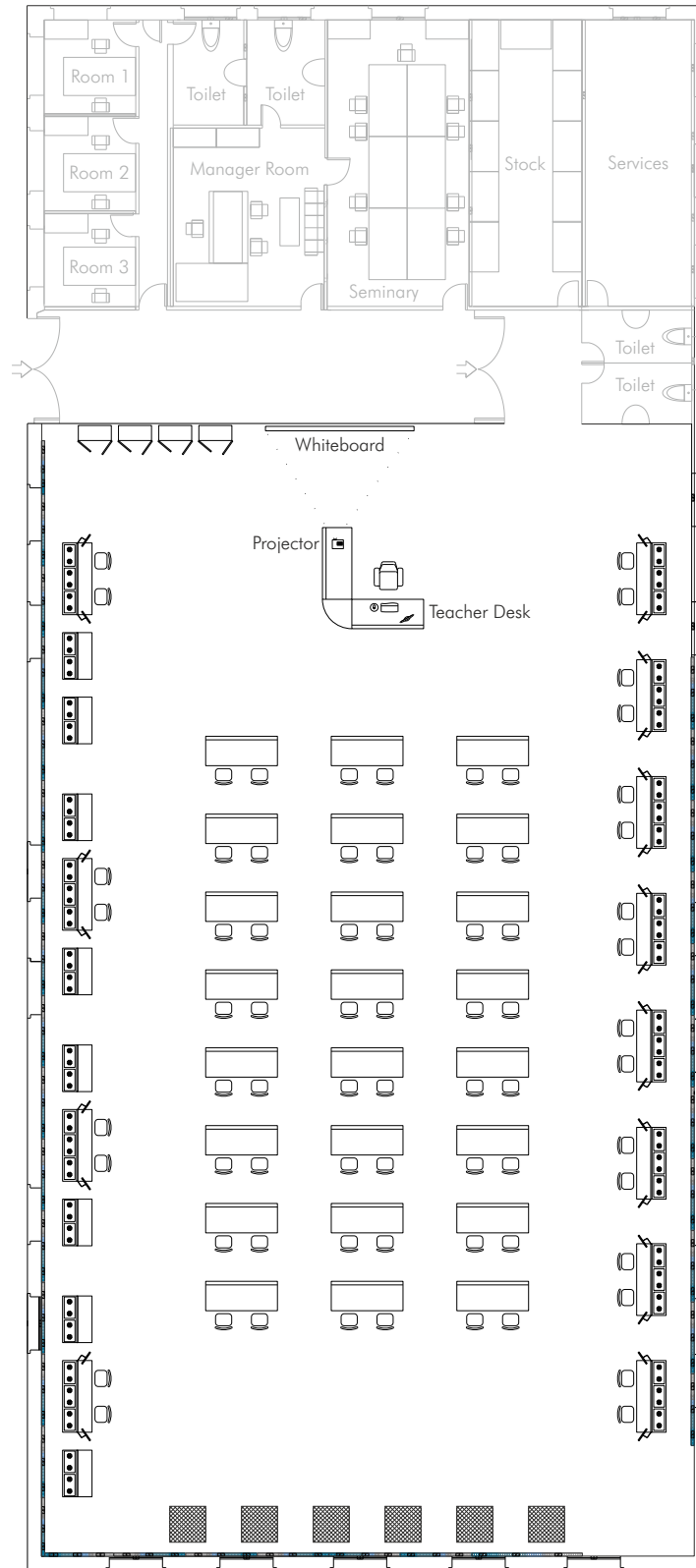







Certificates ISO 14000 and
ECO-Management and Audit Scheme
(environmental management)



Worlddidac Quality Charter
Certificate and
Worlddidac Member

Classroom and Laboratory Lay Out



-  AEL-WTS. Laboratory Workplace Table
-  AEL-WBC. Electrical Workbench (Rail) + 2 x AEL-PC. Two Touchscreen and computers
-  AEL-WBM. Electrical Workbench (Mobile)
-  AEL-MC. Multipurpose Cabinet
-  AEL-WIC. Electrical Installations Cabinet

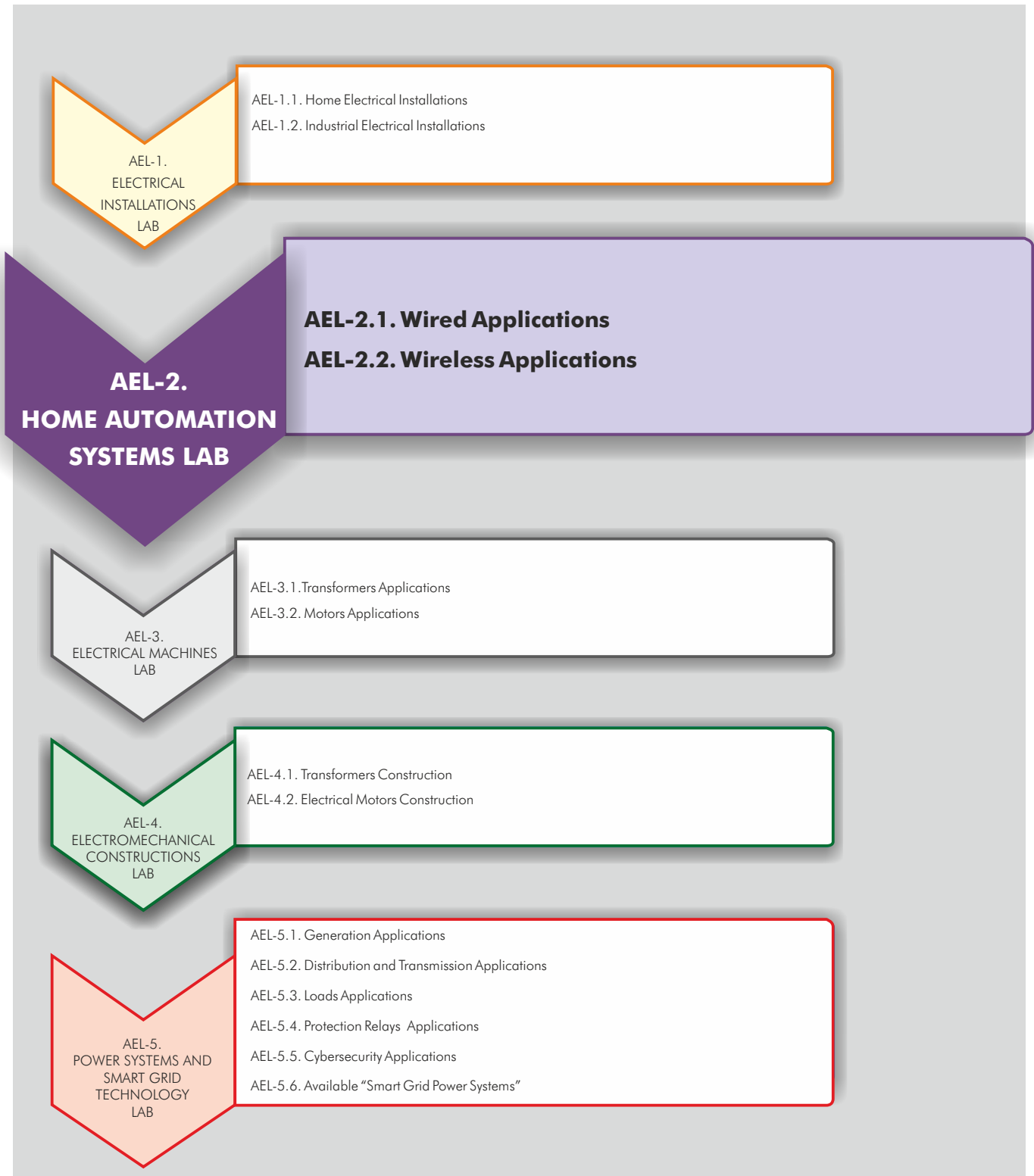
EDIBON, a company with more than 35 years of experience designing and implementing training systems, has a wide variety of applications adapted to XXI century new technologies.

Apart from providing a solid theoretical basis, EDIBON units and applications are aimed at technical professional training, vocational training, for higher education and even applied research, as well as at the improvement in all fields through advanced systems.

The electricity area includes five great groups that cover Electrical Installations, **Home Automation Systems**, Electrical Machines, Electromechanical Constructions, Power Systems and Smart Grid Technology.

All the units have a modular and intuitive design, with real elements used in the industry and technological market.

In this catalogue we will cover "AEL-2. Home Automation Systems Lab."



AEL-2. Home Automation Systems Lab

The AEL-2. Home Automation Systems Lab is formed by:

AEL-WBC. Electrical Workbench (Rail)



AEL-WBR. Electrical Workbench (Rack)



+

Applications
(to be mounted on rail)



AEL-AD33



AEL-AD3A

...



AEL-AD33 + N-RACK-A



AEL-AD3A + N-RACK-A

...

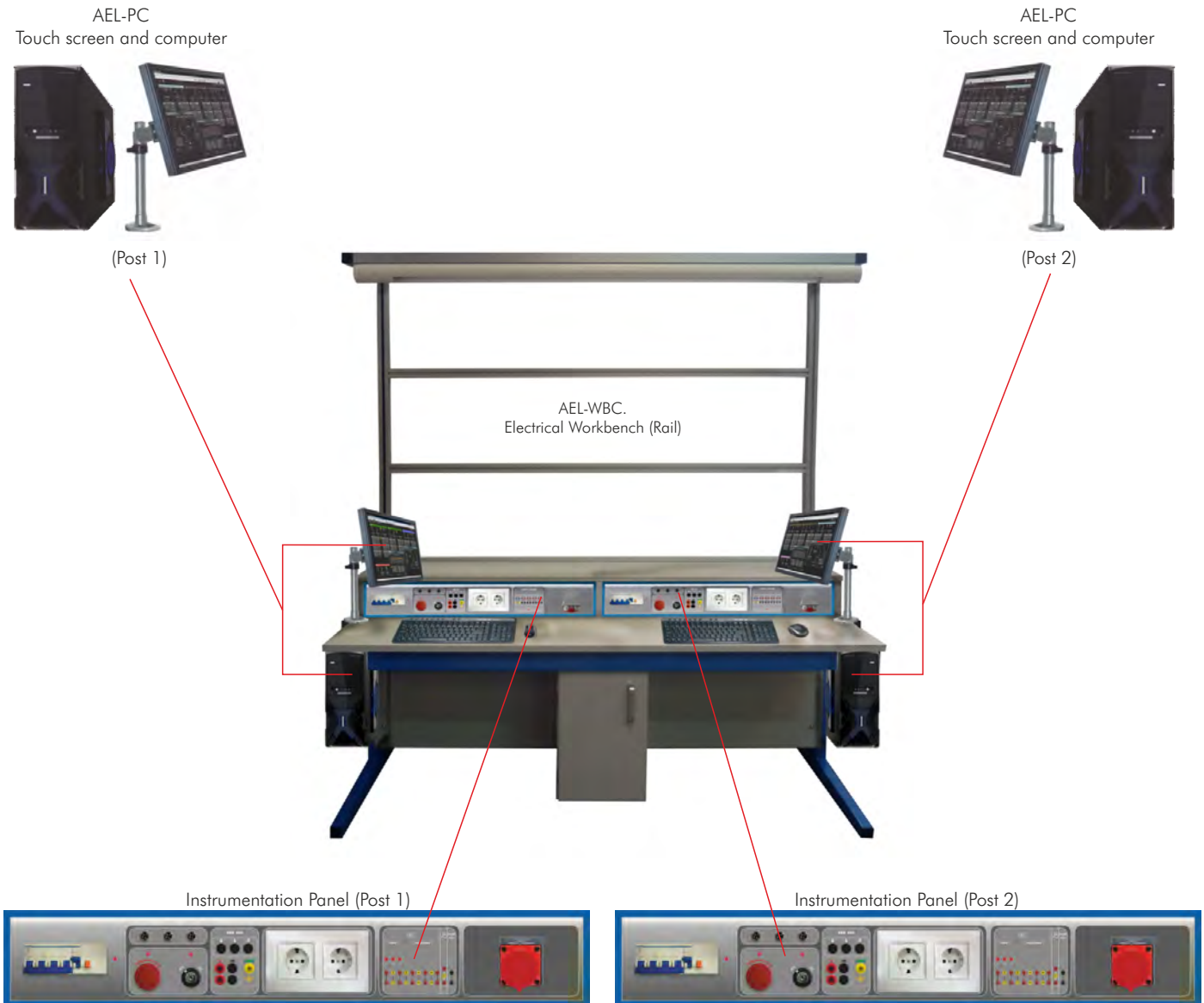
+

Learning Software Packages



Electrical Workbench

GENERAL DESCRIPTION



The Electrical Workbench has been designed to offer the students and teachers the necessary tools to learn and teach about the XXI century technologies.

The Electrical Workbench consists of:

Furniture, itself:

Consists of the frame that allows to locate the applications, lighting fitting, table, supports, etc.

Instrumentation Panel:

The workbench has been designed to be used by one or two students. Each student has access to its own instrumentation panel.

There are two Electrical Workbench versions:

AEL-WBC. Electrical Workbench (Rail).

The AEL-WBC is a workbench designed with rails in order to put and remove all electrical modules free.

AEL-WBR. Electrical Workbench (Rack).

The AEL-WBR is a workbench designed with strong rack in order to fix all electrical modules.

Optional:

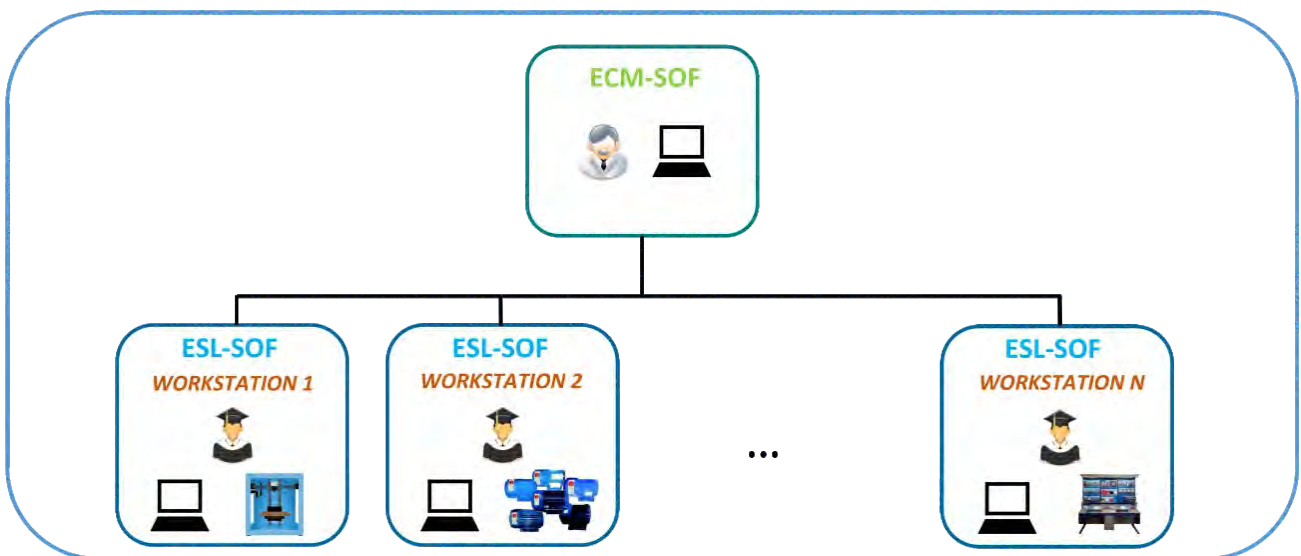
Touch screen and computer (AEL-PC):

The workbench can be supplied with one or two touch screens and computers. Thus, both students and teachers gain quick access to the applications to control them better, obtaining the maximum man-machine interaction.

In summary, technology, quality and aesthetics are combined in this piece of furniture in order to offer the best features for both research and teaching fields.

Learning Software Packages

GENERAL DESCRIPTION



* Contents included for all ECM-SOF and ESL-SOF Workstations.

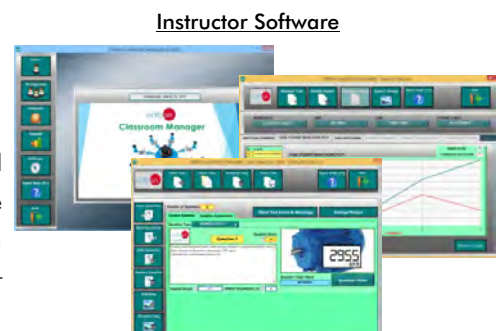
EDIBON has different software packages to provide students the maximum level in training systems.

Example of some Software Screens:

Interactive Computer Aided Instruction Software System

- 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.



Instructor Software

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

ESL 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.

NOTE: Will be necessary acquire a license per student.



Student Software

List of Applications

AEL-2. HOME AUTOMATION SYSTEMS LAB

AEL-2.1. Wired Applications

Applications

Home Automation General Applications

- AEL-AD1A. Robbery Alarm Advanced Application.
- AEL-AD1B. Robbery Alarm Application.
- AEL-AD3A. Fire Alarm Advanced Application.
- AEL-AD3B. Fire Alarm Application.
- AEL-AD15A. Position Control Advanced Application.
- AEL-AD15B. Position Control Application.
- AEL-AD25A. Control Application for Home Electric Service through the telephone.
- AEL-AD22. Flooding Control Application.
- AEL-AD30. Gas and Smoke Detection Application.
- AEL-AD31. Movement and Sound Detection Application.
- AEL-AD40. Remote Control Application Via Telephone.

KNX/EIB Applications

- AEL-KNX1. KNX/EIB Shutter Control Application.
- AEL-KNX2. KNX/EIB Heating Control Application.
- AEL-KNX3. KNX/EIB Security Control Application.
- AEL-KNX4. KNX/EIB Lighting Control Application.
- AEL-KNX5. KNX/EIB Energy Management Application.
- AEL-BCS. Building Automation and Control Networks BacNet Application.
- AEL-DALI. DALI Installations Application.

AEL-2.2. Wireless Applications

Applications

Home Automation General Applications

- AEL-AD28A. Complete Home Automation Application with ZigBee Wireless Protocol.
- AEL-AD28B. Advanced Home Automation Application with ZigBee Wireless Protocol.
- AEL-AD28C. Home Automation Application with ZigBee Wireless Protocol.
- AEL-AD23. Wireless Intrusion Detection Application (RF).

The Home Automation Applications Lab (AEL-2) covers a great variety of applications with the technology most employed nowadays in the field of automation systems. Basically, these are divided into: wiring application and wireless applications.

Wiring Applications: On this area, EDIBON covers applications such as fire alarm systems, cutting edge anti-burglar alarm systems, sensors positioning systems, motion detection systems, etc.

Wireless Applications: On this area, EDIBON includes devices, in which the user can program smart devices, such as motion sensors, temperature sensors, smart relays, etc. so that a smart environment can be created with the latest technology in this field, the ZigBee communication.

On the other hand, it includes automated systems with EIB technology with applications to control lighting systems, heating systems, safety systems, etc.

The complete Home Automation Systems Lab (AEL-2) includes:

- Electrical Workbench.
- Software packages.
- Applications.

Electrical Workbench:

There are two Electrical Workbench versions:

AEL-WBC. Electrical Workbench (Rail).

The AEL-WBC is a workbench designed with rails in order to put and remove all electrical modules free. The frame consists of three levels to get a maximum space for the modules and applications. Besides, the user can put and remove manually all electrical modules and make free configurations to construct different applications.

The advantage of this workbench is that all modules can be put and removed free and quick, so the student can change quickly to other practical exercises.

AEL-WBR. Electrical Workbench (Rack).

The AEL-WBR is a workbench designed with strong rack in order to fix all electrical modules. Each module will be fixed with screws. The frame consists of three racks to support different applications.

The advantage of this workbench is that all applications are perfectly covered to get a homogeneous and strong unit.

The Electrical Workbench is ready to use Specialized EDIBON Softwares, based on Labview, for:

- SCADA Control Software.
- Data Acquisition Software.
- Computer Aided Instruction Software.
- ...others.

It is a complete and functional training solution for electricity learning purposes, with intuitive, quick and accurate interaction of the user with the Electrical Workbench.

It is a functional and self contained Electrical Workbench, with wide working area for several applications, with instrumentation panel including all the required elements to supply power and control in the workbench.

The Electrical Workbench is mainly formed by:

Furniture, itself:

- Formed by the frame that allows to allocate the applications, lighting fitting, table, supports, etc.
- Dimensions: 2000 x 1000 x 1900 mm approx.

Instrumentation Panel:

- 2 x Control and supply panels.
- Three-phase and single-phase power systems.
- Independent Residual Circuit Breaker (RCB).
- Two single-phase sockets.
- Different level control voltages for signals applications.
- Integrated lighting system.

Technical data:

- 1 x Differential Protection, 1 x Emergency Stop Button and 1 x Safety Key.
- Power Terminal Connections: 1 x Three-phase terminals: 380 Vac + N+ GND and 1 x Single-phase terminals: 230 Vac + GND and 2 x Single-phase plugs + 2 x Three-phase plugs.
- Control terminals: 2 x 24 Vac., 2 x (+24) Vdc., 2 x (+12) Vdc., 2 x (-12) Vdc. and 2 x (+5) Vdc.
- Power Supply required: 380 Vac 3PH + N + GND.

Optional:

Touch screen and computer (AEL-PC).

The workbench can be supplied with one or two touch screens and computers.



Software packages:

ICAI. Interactive Computer Aided Instruction Software System:

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 Workgroups, Tasks 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.**

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 catalog. Click on the following link:
www.edibon.com/en/files/equipment/ICAI-ELEC/catalog

Instructor Software



ECM-SOF. EDIBON Classroom Manager Software Application main screen



ECAL. EDIBON Calculations Program Package - Formula Editor Screen



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



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

Student 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

Applications:
**AEL-2.1
Wired Applications**

 Home Automation General Applications

AEL-AD1A. Robbery Alarm Advanced Application.

The Robbery Alarm Advanced Application, "AEL-AD1A", is designed with the aim to show different burglar alarms to the students. This application is composed of the next types of sensors: glass break detector and motion sensors. The application also includes alarms that can be activated by the previous sensors. These alarms are: indoor siren with adjustable volume and three pilot lights. All these alarms can be controlled by a central application, allowing the students to simulate different scenes and understand the operation of these devices.

The AEL-AD1A includes the following modules:

- N-ALI02. Domestic Main Power Supply.
- N-ALI03. AC Auxiliary Power Supply.
- N-DET27. Glass Break Detector.
- N-INT32. Intrusion Switch/Detector with Relay 1000 W.
- N-SEL03. 3-Pilots Lights.
- N-SEL21. Indoor Siren
- N-VAR07. Kit: Burglar Alarm Central + Infrared ele. + battery.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-AD1A/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-AD1A can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following racks:

- N-RACK-A.

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.

Some Practical Possibilities:

- 1.- Checking and measuring on the main power supply.
- 2.- Checking the working of the auxiliary power supply.
- 3.- Using the pilot lights as visual alarms.
- 4.- Using the siren as visual and acoustic alarm.
- 5.- Using the glass break detector to activate alarms.
- 6.- Using the infrared sensors to motion detection and activation of alarms.
- 7.- Manage the working of the alarms with the central station.
- 8.- Simulate real situations and combine the different types of sensors with the alarms.

For more information see **AEL-AD1A** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-AD1A/catalog



AEL-AD1A

Applications:

AEL-2.1
Wired Applications

Home Automation General Applications

AEL-AD1B. Robbery Alarm Application.

The Robbery Alarm Application, "AEL-AD1B", is designed with the aim to show different burglar alarms to the students. This application is composed of the next types of sensors: glass break detector and motion sensors. The application also includes alarms that can be activated by the previous sensors. These alarms are: indoor siren with adjustable volume and three pilot lights. The Burglar Alarm Center, included in the Robbery Alarm Advanced Application, "AEL-AD1A", is not included in this application. With this application the students can simulate different scenes and understand the operation of these devices.

The AEL-AD1B includes the following modules:

- N-ALI02. Domestic main power supply.
- N-ALI03. AC Auxiliary Power Supply.
- N-DET27. Glass Break Detector.
- N-INT32. Intrusion Switch/Detector with Relay 1000 W.
- N-SEL03. Three-Pilots Lights.
- N-SEL21. Indoor Siren.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-AD1B/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-AD1B 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.

Some Practical Possibilities:

- 1.- Checking and measuring of the main power supply.
- 2.- Checking the working of the auxiliary power supply.
- 3.- Checking the operation of the pilot lights.
- 4.- Checking the operation of the siren.
- 5.- Checking the operation of the glass break detector.
- 6.- Checking the operation of the infrared sensors.
- 7.- Simulate real situations and combine the different types of sensors with the alarms.

For more information see **AEL-AD1B** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-AD1B/catalog



AEL-AD1B

Applications:

AEL-2.1
Wired Applications

Home Automation General Applications

AEL-AD3A. Fire Alarm Advanced Application.

The Fire Alarm Advanced Application, "AEL-AD3A", is designed with the aim to study different types of fire alarms. This complete application includes several types of sensors and alarms. The sensors included are a smoke detector, an ionized air detector and a temperature detector. These sensors activate the following alarms, also included: indoor siren, bell type alarm and a water solenoid valve to extinguish the fire. All these devices are controlled by a fire alarm station with battery, just in case the fire damages the electrical system. This application will be used by students to simulate several situations caused by fires and study the operation of each device.

The AEL-AD3A includes the following modules:

- N-ALI02. Domestic Main Power Supply.
- N-ALI03. AC Auxiliary Power Supply.
- N-ALA02. Fire Alarm Station with Battery.
- N-SEL21. Indoor Siren.
- N-SEL17. Fire Alarm Bell + Push-button
- N-DET06. Smoke Detector for domestic control.
- N-DET10. Water Electrovalve.
- N-DET21. Fire detector through ionization.
- N-DET22. Fire thermal detector.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-AD3A/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-AD1B can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following racks:

- N-RACK-A.

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.

Some Practical Possibilities:

- 1.- Checking and measuring the main power supply.
- 2.- Checking the working of the auxiliary power supply.
- 3.- Checking the operation and control of the Fire Alarm Application.
- 4.- Simulate situations in two safety zones managed by the Fire Alarm Application.
- 5.- Checking the operation of the air ionization sensor.
- 6.- Checking the operation of the temperature sensor.
- 7.- Checking the operation of the smoke detector.
- 8.- Checking the operation of the indoor siren.
- 9.- Checking the operation of the bell.
- 10.- Checking the operation of the water solenoid valve.
- 11.- Combine the different types of sensors with the alarms to simulate varied situations.

For more information see **AEL-AD3A** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-AD3A/catalog



AEL-AD3A

Applications:

AEL-2.1
Wired Applications

—————Home Automation General Applications—————

AEL-AD3B. Fire Alarm Application.

The Fire Alarm Application, "AEL-AD3B", is designed with the aim to study different types of fire alarms. This application includes several types of sensors and one alarm. The sensors included are a smoke detector and an ionized air detector. These sensors activate the indoor siren. All of these devices are controlled by a fire alarm station with battery, just in case the fire damages the electrical system. This application will be used by students to simulate several situations caused by fires and study the operation of each device.

The AEL-AD3B includes the following modules:

- N-ALI02. Domestic Main Power Supply.
- N-ALI03. AC Auxiliary Power Supply.
- N-ALA02. Fire Alarm Station with Battery.
- N-SEL21. Indoor Siren.
- N-DET06. Smoke Detector.
- N-DET21. Fire detector through ionization.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-AD3B/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-AD3B 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.

Some Practical Possibilities:

- 1.- Checking and measuring the main power supply.
- 2.- Checking the working of the auxiliary power supply.
- 3.- Checking the operation and control of the Fire Alarm Station.
- 4.- Simulate situations in two safety zones managed by the Fire Alarm Station.
- 5.- Checking the operation of the air ionization sensor.
- 6.- Checking the operation of the smoke detector.
- 7.- Checking the operation of the indoor siren.

For more information see **AEL-AD3B** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-AD3B/catalog



AEL-AD3B

Applications:

AEL-2.1
Wired Applications

—————Home Automation General Applications—————

AEL-AD15A. Position Control Advanced Application.

The Position Control Advanced Application, "AEL-AD15A", is designed to study different types of position sensors and their possible applications. For that purpose, this application includes the following sensors: a PNP type inductive sensor, which works with DC and detects metals in a specific distance range; a capacity proximity sensor, to detect both metals and no metals; other inductive sensor, which works with AC and detects any metal; and finally a presence and movement sensor to detect moving objects. This last type is the most used in automatic lighting, alarms, etc. To check the operation of these sensors, three pilot lights and one halogen lamp are included. All these sensors can be used in several industrial processes, such as water level detection in a tank, or home automation, such as automatic lighting. With this application, the student will acquire some practical ideas about the operation of these devices.

The AEL-AD15A includes the following modules:

- N-ALI02. Domestic Main Power Supply.
- N-ALI03. AC Auxiliary Power Supply.
- N-LAM16. Incandescent Lamp.
- N-SEL03. Three-Pilots Lights.
- N-SEN04. Inductive Proximity Sensor Type PNP.
- N-SEN14. Capacitive Proximity Sensor.
- N-SEN29. Inductive Proximity Sensor.
- N-SEN26. Presence and Movement Sensor (Wall).

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-AD15A/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-AD15B 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.

Some Practical Possibilities:

- 1.-Checking and measuring on of the main power supply.
- 2.-Checking the working of the auxiliary power supply.
- 3.-Checking the operation of the inductive sensor type PNP.
- 4.-Checking the operation of the capacitive sensor.
- 5.-Checking the operation of the AC inductive sensor.
- 6.-Body detection tests with the different types of sensors and materials.
- 7.-Body movement detection tests.
- 8.-Real applications of a detection system.

For more information see **AEL-AD15A** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-AD15A/catalog



AEL-AD15A

Applications:

AEL-2.1
Wired Applications

—————Home Automation General Applications—————

AEL-AD15B. Position Control Application.

The Position Control Application, "AEL-AD15B", is designed to study different types of position sensors and their possible applications. For that propose, this application includes the following sensors: a PNP type inductive sensor, which works with DC and detects metals in a specific distance range; a capacity proximity sensor, to detect both metals and no metals and other inductive sensor, which works with AC and detects any metal. The application also includes three pilot-lights to check the working of these sensors, which can be used in several industrial processes, such as water level detection in a tank, or to control objects in an assembly line, etc. With this application, the student will acquire some practical ideas about the operation of these devices.

The AEL-AD15B includes the following modules:

- N-ALI02. Domestic Main Power Supply.
- N-ALI03. AC Auxiliary Power Supply.
- N-SEL03. Three-Pilots Lights.
- N-SEN04. Cylindrical Inductive Proximity Sensor Type PNP.
- N-SEN14. AC Cylindrical Capacitive Proximity Sensor.
- N-SEN29. AC Cylindrical Inductive Proximity Sensor.
- N-INT14. Two single-pole switches.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-AD15B/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-AD15B 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.

Some Practical Possibilities:

- 1.- Checking and measuring on of the main power supply.
- 2.- Checking the working of the auxiliary power supply.
- 3.- Checking the operation of the inductive sensor type PNP.
- 4.- Checking the operation of the capacitive sensor.
- 5.- Checking the operation of the AC inductive sensor.
- 6.- Body detection tests with the different types of sensors and materials.
- 7.- Real applications of a detection system.

For more information see **AEL-AD15B** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-AD15B/catalog



AEL-AD15B

Applications:

AEL-2.1
Wired Applications

Home Automation General Applications

AEL-AD25A. Control System for Home Electric Services through the Telephone.

The Control System for Home Electric Services through the Telephone, "AEL-AD25A", is a system designed to study some home safety applications. This system includes the most common ones, such as the flooding control, gas leakage detection or intrusion detection. To control all these applications, a remote control central via telephone is also included. It allows the user to access the system remotely and execute actions in emergency situations.

These applications are described below:

- AEL-AD22. Flooding Control Application:

The Flooding Control Application, "AEL-AD22", is designed to know and study the operation of the most common flooding control systems. This application has two parts. On one hand, there is a water tank divided into two parts: one to simulate the flooding and the other one to evacuate water. There is a solenoid valve to exchange the water through a water pump between both parts. On the other hand, the application includes the following elements: two flood detectors, one of them built-in, a pilot lights module that can be activated by sensors and an indoor siren. Therefore, this application allows the student to learn about the operation of flooding control systems.

The AEL-AD22 includes the following modules:

- N-ALI02. Domestic Main Power Supply.
- N-ALI03. AC Auxiliary Power Supply.
- N-DET03. Fitted Power Supply (gas and flooding detector).
- N-DET01. Flooding Detector.
- N-DET04. Fitted Flooding Detector.
- N-SEL03. Three-Pilots Lights.
- N-SEL21. Indoor Siren.

- AEL-AD23. Wireless Intrusion detection Application (RF):

The Wireless Intrusion Detection Application (RF), "AEL-AD23", is designed with the aim to understand the operation of a wireless intrusion detection system. For that, this application includes a wireless presence detector that works via infrared radiation, detecting temperature changes, a panic pushbutton to use in emergency situations and a wireless receptor that receives the signals from all sensors. In order to check the operation of these devices, the application also includes a pilot light module and a bell and buzzer module, which can be activated by the sensors. Thus, the user can check different types of intrusion alarms.

The AEL-AD23 includes the following modules:

- N-ALI02. Domestic Main Power Supply.
- N-ALI03. AC Auxiliary Power Supply.
- N-DET13. Wireless Intrusion Detector RF.
- N-DET14. Wireless Panic Push-Button RF.
- N-DET15. Wireless One Channel Receptor RF.
- N-SEL01. Light Signaling Beacons.
- N-TIM05. Bell + Buzzer.

- AEL-AD30. Gas and Smoke Detection Application:

The Gas and Smoke Detection Application, "AEL-AD30", is designed to study the

operation of a gas leak detection and fire prevention system. This application includes two types of sensors. On one hand, there is a gas detector capable to detect explosive and toxic gases, such as natural gas, propane, butane, etc. It can also detect smoke from combustion, so it is a very complete sensor. On the other hand, there is an optic smoke detector, capable to detect visible gases, although it must not be installed close to water heaters to avoid a false positive result. The application also includes a solenoid valve to close the gas circuit in case of leakage. The student can simulate with all of these devices some emergency situations to understand the operation of the main gas detection systems in the market.

The AEL-AD30 includes the following modules:

- N-ALI02. Domestic Main Power Supply.
- N-ALI03. AC Auxiliary Power Supply.
- N-DET02. Gas Detector.
- N-DET03. Fitted Power Supply (gas and flooding detector).
- N-DET36. Smoke Detector.
- N-DET12. Gas electrovalve.

- AEL-AD40. Remote Control Application Via Telephone:

The Remote Control Application Via Telephone, "AEL-AD40", is designed to study the operation of a remote control system via telephone, in other words, for the remote control of sensors, alarms, etc. installed in a house, office, etc. With this application, the user can simulate real situations, such as a flooding, a gas leakage, an intrusion or other accident detected by sensors, which trigger an alarm. In that case, the system cuts off the supply and warns the user. Then, through dialing codes, the user can take decisions on the system. To make this possible, the application includes control module to connect the rest of detection modules to control them, and a telephone to introduce the dialing codes.

The AEL-AD40 includes the following modules:

- N-ALI02. Domestic Main Power Supply.
- N-CTR01. Control Module.
- N-VAR05. Tone Dialing Telephone.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-AD15B/ICAL) 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-AD15B 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.



AEL-AD25A

Applications:

AEL-2.1
Wired Applications

—————Home Automation General Applications—————

AEL-AD25A. Control System for Home Electric Services through the Telephone. (Continuation).

Some Practical Possibilities:

- 1.- Checking and measuring on the main power supply.
- 2.- Checking the working of the auxiliary power supply.
- 3.- Checking the working of pilot-lights by connecting as visual alarms.
- 4.- Checking the working of the built-in power supply.
- 5.- Checking the operation of the flooding detector.
- 6.- Checking the operation of the built-in flood detector.
- 7.- Checking the operation of the siren, used as visual and acoustic alarm.
- 8.- Simulate floods and evacuations with the water tank and the electrovalve.
- 9.- Checking the working of the bell + buzzer module using as acoustic alarm.
- 10.- Checking the working of the light signaling beacons module, using as visual alarm.
- 11.- Checking the working of the wireless emergency pushbutton.
- 12.- Use of the alarms with the wireless intrusion detector.
- 13.- Control of gas electrovalve through the smoke sensor.
- 14.- Real applications of a gas leakages control system.
- 15.- Configuration of the Control Module.
- 16.- Control of the flooding detector through the Control Module.
- 17.- Control of the gas detector through the Control Module.
- 18.- Control of the motion detector through the Control Module.

For more information see **AEL-AD25A** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-AD25A/catalog



AEL-AD25A

Applications:

AEL-2.1
Wired Applications

—————Home Automation General Applications—————

AEL-AD22. Flooding Control Application.

The Flooding Control Application, "AEL-AD22", is designed to know and study the operation of the most common flooding control systems. This application has two parts. On one hand, there is a water tank divided into two parts: one to simulate the flooding and the other one to evacuate water. There is a solenoid valve to exchange the water through a water pump between both parts. On the other hand, the application includes the following elements: two flood detectors, one of them built-in, a pilot light module that can be activated by sensors and an indoor siren. Therefore, this application allows the student to learn about the operation of flooding control systems.

The AEL-AD22 includes the following modules:

- N-ALI02. Domestic Main Power Supply.
- N-ALI03. AC Auxiliary Power Supply.
- N-DET03. Fitted Power Supply (gas and flooding detector).
- N-DET01. Flooding Detector.
- N-DET04. Fitted Flooding Detector.
- N-SEL03. Three-Pilots Lights.
- N-SEL21. Indoor Siren.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-AD22/ICA1) 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-AD22 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.

Some Practical Possibilities:

- 1.- Checking and measuring on the main power supply.
- 2.- Checking the working of the auxiliary power supply.
- 3.- Checking the working of pilot-lights by connecting as visual alarms.
- 4.- Checking the working of the built-in power supply.
- 5.- Checking the operation of the flooding detector.
- 6.- Checking the operation of the built-in flood detector.
- 7.- Checking the operation of the siren, used as visual and acoustic alarm.
- 8.- Simulate floods and evacuations with the water tank and the electrovalve.



AEL-AD22

For more information see **AEL-AD22** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-AD22/catalog

Applications:

AEL-2.1
Wired Applications

Home Automation General Applications

AEL-AD30. Gas and Smoke Detection Application.

The Gas and Smoke Detection Application, "AEL-AD30", is designed to study the operation of a gas leak detection and fire prevention system. This application includes two types of sensors. On one hand, there is a gas detector capable to detect explosive and toxic gases, such as natural gas, propane, butane, etc. It can also detect smoke from combustion, so it is a very complete sensor. On the other hand, there is an optic smoke detector, capable to detect visible gases, although it must not be installed close to water heaters to avoid a false positive result. The application also includes a solenoid valve to close the gas circuit in case of leakage. The student can simulate with all of these devices some emergency situations to understand the operation of the main gas detection systems in the market.

The AEL-AD30 includes the following modules:

- N-ALI02. Domestic Main Power Supply.
- N-ALI03. AC Auxiliary Power Supply.
- N-DET02. Gas Detector.
- N-DET03. Fitted Power Supply (gas and flooding detector).
- N-DET36. Smoke Detector.
- N-DET12. Gas electrovalve.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-AD30/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-AD30 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.

Some Practical Possibilities:

- 1.- Checking and measuring on the main power supply.
- 2.- Checking the working of the auxiliary power supply.
- 3.- Checking the working of the built-in power supply module.
- 4.- Control of gas electrovalve through the smoke sensor.
- 5.- Smoke detection tests with the smoke sensor.
- 6.- Real applications of a gas leakages control system.

For more information see **AEL-AD30** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-AD30/catalog



AEL-AD30

Applications:

AEL-2.1
Wired Applications

—————Home Automation General Applications—————

AEL-AD31. Movement and Sound Detection Application.

The Movement and Sound Detection Application, "AEL-AD31", is an application designed to understand the operation of the most common intrusion detector. The intrusion detector of this application consists of a device made up of magnets, which can be located in windows or doors. So when it detects the opening of a window or door, it sends an alarm signal. It can also send the alarm signal when it detects sound above a threshold. To check the operation of this device, the application includes a bell, two halogen lamps, two switches with light, two incandescent lamps and two pushbuttons with light. In other words, the sensor can be connected to any of these elements to simulate real situations, so the student can understand its operation.

The AEL-AD31 includes the following modules:

- N-ALI02. Domestic Main Power Supply.
- N-INT15. Two Switches with Light.
- N-LAM08. Two Lamp-holders + Incandescent Lamps
- N-INT31. Intrusion Detector from 40 to 300 W.
- N-LAM10. Two Halogen Lamps.
- N-PUL22. Two Pushbuttons with Light.
- N-TIM05. Bell + Buzzer.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-AD31/ICA) 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-AD31 can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following racks:

- N-RACK-A.

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.

Some Practical Possibilities:

- 1.- Movement and sound detection controlled through switches.
- 2.- Movement and sound detection controlled through push-buttons.
- 3.- Testing of the intrusion sensor.
- 4.- Simulate an intrusion through the intrusion detector and the bell + buzzer module.

For more information see **AEL-AD31** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-AD31/catalog



AEL-AD31

Applications:

AEL-2.1
Wired Applications

—————Home Automation General Applications—————

AEL-AD40. Remote Control Application Via Telephone.

The Remote Control Application Via Telephone, "AEL-AD40", is designed to study the operation of a remote control system via telephone, in other words, for the remote control of sensors, alarms, etc. installed in a house, office, etc. With this application, the user can simulate real situations, such as a flooding, a gas leakage, an intrusion or other accident detected by sensors, which trigger an alarm. In that case, the system cuts off the supply and warns the user. Then, through dialing codes, the user can take decisions on the system. To make this possible, the application includes a control module to connect the rest of detection modules to control them, and a telephone to introduce the dialing codes.

The AEL-AD40 includes the following modules:

- N-ALI02. Domestic Main Power Supply.
- N-CTR01. Control Module.
- N-VAR05. Tones Dialing Telephone.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-AD40/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-AD40 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.

Some Practical Possibilities:

- 1.- Checking and measuring on the main power supply.
- 2.- Configuration of the Control Module.
- 3.- Control the simulation of the flooding detector through the Control Module.
- 4.- Control the simulation of the gas detector through the Control Module.
- 5.- Control the simulation of the motion detector through the Control Module.

For more information see **AEL-AD40** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-AD40/catalog



AEL-AD40

Applications:

AEL-2.1

Wired Applications

KNX/EIB Applications

AEL-KNX1. KNX/EIB Shutter Control Application.

The KNX/EIB Shutter Control Application "AEL-KNX1", has been designed by Edibon to show the users the working of shutter control, intended to improve the energy efficiency and the comfort of their occupants. Blind and shutter control can be done manually through switches or automatically with a constant close loop control with which the shutter and blind position is automatically adapted. These two methods allow us to get energy savings whenever the KNX devices are programmed properly.

The purpose of the AEL-KNX1 is to give the students a complete practical and theoretical learning in the installations and programming of the most important KNX elements focused in blind and shutter control systems, characteristic of sensors, actuators, etc.

KNX shutter actuators are responsible for carrying interior blinds or curtains at the appropriate level dynamically to obtain or avoid direct solar radiation through shading depending on temperature in each season.

KNX Weather Station is able to measure different variables useful in establishing energy efficiency actions and control strategies. Knowing precisely the outside temperature, if it is day or night, automatic summer/winter adaption, if it's raining, wind speed, solar azimuth and the level of external brightness is very useful for efficient programming blinds and internal blinds motorized in a building.

KNX Room Controllers are responsible for providing user control of blinds and shutters, with its keypads and displays representing states with the position of the blind and monitoring all the variables sent by the weather station.

Thanks to these three control elements can be established control policies, based on automatic controls and simultaneously give all control to the user if they want to change before specific situations.

To take a maximum experience with the KNX/EIB Shutter Control Application is very recommendable to acquire the rest of the KNX offered by Edibon: AEL-KNX2, AEL-KNX3, AEL-KNX4 and AEL-KNX5. The combination of all these applications allow the student to design a complete intelligent bus system implemented by a KNX System.

In addition, this application requires the ETS latest generation KNX software to program different scenes, import of KNX projects, setting of sensors and actuators, etc.

The AEL-KNX1 includes the following modules:

- N-KNX34. KNX/EIB USB Programming Interface Module
- N-KNX18. KNX/EIB Power Supply Module.

- N-KNX14. KNX/EIB Light Sensor Module.
- N-KNX24. KNX/EIB Shutter/Blind Actuator Module.
- N-KNX20. KNX/EIB Push-Button Module.

Additional and recommended modules:

- N-KNX23. KNX/EIB Shutter Motor Module.
- N-KNX21. KNX/EIB Room Controller Module.
- N-KNX30. KNX/EIB Touch Panel Module.
- N-KNX25. KNX/EIB Single Line Extending Bus Module.
- N-KNX2. KNX/EIB Additional Power Supply Module.
- N-KNX32. KNX/EIB Weather Station Module.

Required programming software:

- ETS. KNX Engineering Tool Software.

Additional applications:

- AEL-KNX2. KNX/EIB Heating Control Application.
- AEL-KNX3. KNX/EIB Security Control Application.
- AEL-KNX4. KNX/EIB Lighting Control Application.
- AEL-KNX5. KNX/EIB Energy Management Application.
- AEL-BCS. Building Automation and Control Networks BacNet Application.
- AEL-DALI. DALI Installations Application.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-KNX1/ICA1) 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-KNX1 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.



Applications:

AEL-2.1
Wired Applications

KNX/EIB Applications

AEL-KNX1. KNX/EIB Shutter Control Application. (Continuation)

Some Practical Possibilities:

14.- Programming of lighting regulation control.

1.- Study of the fundamentals of a KNX/EIB installation BUS.

For more information see **AEL-KNX1** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/

[AEL-KNX1/catalog](#)



AEL-KNX1

2.- Programming of on-off smart switches to demonstrate KNX/EIB switching operations.

3.- Programming of switching for lights control.

4.- Study of preparation and installation methods of a KNX/EIB project.

5.- Utilization of conventional switches in a KNX/EIB project.

6.- Programming of the control of shutter and curtains.

7.- Programming the 3 way switching equivalent circuit.

Some practical possibilities with additional and recommended modules:

8.- Programming the touch panel according to different scenes.

9.- Checking all parameters in the touch panel.

10.- Centralized control of the main configurations in the touch panel.

11.- Extending a bus system through a single-line topology.

12.- Manual control over the main actuators.

13.- Study of the weather conditions control against disturbances variables.

Applications:

AEL-2.1

Wired Applications

KNX/EIB Applications

AEL-KNX2. KNX/EIB Heating Control Application.

The KNX/EIB Heating Control Application, "AEL-KNX2", has been designed by Edibon to show the users the most important KNX elements used in the most advanced heating control installations. Temperature control is carried out through temperature sensors and actuators that enable/disable the boiler with a constant integrated close loop control.

The purpose of the AEL-KNX2 is to give the students a complete practical and theoretical learning in the installations and programming of the most important KNX elements focused in heating control systems, characteristic of sensors, actuators, study of energy consumption with these heating control systems, etc.

To take a maximum experience with the KNX/EIB Heating Control Application is very recommendable to acquire the rest of the KNX offered by Edibon: AEL-KNX1, AEL-KNX3, AEL-KNX4 and AEL-KNX5. The combination of all these applications allows the student to design a complete intelligent bus system implemented by a KNX System.

In addition, this application requires the ETS latest generation KNX software to program different scenes, import of KNX projects, setting of sensors and actuators, etc.

The AEL-KNX2 includes the following modules:

- N-KNX34. KNX/EIB USB Programming Interface Module.
- N-KNX18. KNX/EIB Power Supply Module.
- N-KNX29. KNX/EIB Temperature Sensor Module.
- N-KNX1. KNX/EIB Heating Actuator Module.

Additional and recommended modules:

- N-KNX31. KNX/EIB Valve Actuator Module.
- N-KNX30. KNX/EIB Touch Panel Module.
- N-KNX25. KNX/EIB Single Line Extending Bus Module.
- N-KNX2. KNX/EIB Additional Power Supply Module.

- N-KNX32. KNX/EIB Weather Station Module.

- N-KNX17. KNX/EIB Movement Sensor Module.

Required programming software:

- ETS. KNX Engineering Tool Software.

Additional applications:

- AEL-KNX1. KNX/EIB Shutter Control Application.
- AEL-KNX3. KNX/EIB Security Control Application.
- AEL-KNX4. KNX/EIB Lighting Control Application.
- AEL-KNX5. KNX/EIB Energy Management Application.
- AEL-BCS. Building Automation and Control Networks BacNet Application.
- AEL-DALI. DALI Installations Application.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-KNX2/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-KNX2 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.



AEL-KNX2

Applications:

AEL-2.1
Wired Applications

KNX/EIB Applications

AEL-KNX2. KNX/EIB Heating Control Application. (Continuation)

Some Practical Possibilities:

- 1.- Study of the fundamental of a KNX/EIB installation BUS.
- 2.- Programming of temperature sensor and actuators through ETS software for room temperature control.
- 3.- Study of temperature control against disturbances variables.
- 4.- Study of preparation and installation methods of a KNX/EIB project.
- 5.- Study how the instruction is transferred to adequate the temperature.

13.- Manual control over the main actuators.

14.- Study of the weather conditions control against disturbances variables.

For more information see **AEL-KNX2** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/

[AEL-KNX2/catalog](http://www.edibon.com/en/files/equipment/AEL-KNX2/catalog)



AEL-KNX2

Some practical possibilities with additional and recommended modules:

- 6.- Observe the operation of the valve against control instruction.
- 7.- Checking the heat regulation.
- 8.- Presence control for the appropriate operation of heating controller.
- 9.- Programming the touch panel according to different scenes.
- 10.- Checking all parameters in the touch panel.
- 11.- Centralized control of the main configurations in the touch panel.
- 12.- Extending a bus system through a single-line topology.

Applications:

AEL-2.1

Wired Applications

KNX/EIB Applications

AEL-KNX3. KNX/EIB Security Control Application.

The KNX/EIB Security Control Application, "AEL-KNX3", has been designed by Edibon to show the users the most important KNX elements used in security alarm control systems with KNX technology.

The purpose of the AEL-KNX3 is to give the students a complete theoretical-practical learning in the installations and programming of the most important KNX elements focused in security alarm control devices, characteristic of sensors, actuators, etc.

To take a maximum experience with the KNX/EIB Security Control Application is very recommendable to acquire the rest of the KNX offered by Edibon: AEL-KNX1, AEL-KNX2, AEL-KNX4 and AEL-KNX5. The combination of all these applications allows the student to design a complete intelligent bus system implemented by a KNX System.

In addition, this application requires the ETS latest generation KNX software to program different scenes, import of KNX projects, setting of sensors and actuators, etc.

The AEL-KNX3 includes the following modules:

- N-KNX34. KNX/EIB USB Programming Interface Module.
- N-KNX18. KNX/EIB Power Supply Module.
- N-KNX5. KNX/EIB Binary Output Module.
- N-KNX4. KNX/EIB Binary Input Module.

Additional and recommended modules:

- N-KNX12. KNX/EIB Fire/Smoke Module.
- N-KNX13. KNX/EIB Flooding Sensor Module.
- N-KNX3. KNX/EIB Barrier Sensor Module.
- N-KNX17. KNX/EIB Movement Sensor Module.
- N-KNX26. KNX/EIB Siren Module.
- N-KNX6. KNX/EIB Bolt Switch Module.
- N-KNX7. KNX/EIB Broken Glass Module.
- N-KNX33. KNX/EIB Window/Door Contact Module.
- N-KNX19. KNX/EIB Proximity Sensor Module.
- N-KNX15. KNX/EIB Magnetic Card Reader Module.

- N-KNX11. KNX/EIB Fingerprint Reader Module.
- N-KNX30. KNX/EIB Touch Panel Module.
- N-KNX35. KNX/EIB Infrared Transmitter/Receiver Module.
- N-KNX25. KNX/EIB Single Line Extending Bus Module.
- N-KNX2. KNX/EIB Additional Power Supply Module.

Required programming software:

- ETS. KNX Engineering Tool Software.

Additional applications:

- AEL-KNX1. KNX/EIB Shutter Control Application.
- AEL-KNX2. KNX/EIB Heating Control Application.
- AEL-KNX4. KNX/EIB Lighting Control Application.
- AEL-KNX5. KNX/EIB Energy Management Application.
- AEL-BCS. Building Automation and Control Networks BacNet Application.
- AEL-DALI. DALI Installations Application.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-KNX3/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-KNX3 can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following racks:

- N-RACK-A.

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.



AEL-KNX3

Applications:

AEL-2.1

Wired Applications

KNX/EIB Applications

AEL-KNX3. KNX/EIB Security Control Application. (Continuation)

Some Practical Possibilities:

- 1.- Study of the fundamental of a KNX/EIB installation BUS.
- 2.- Programming of on-off smart switches to demonstrate KNX/EIB switching operations.
- 3.- Programming of switching security system control.
- 4.- Study of preparation and installation methods of a KNX/EIB project.
- 5.- Utilization of conventional switches in an EIB project.
- 6.- Programming the 3 way switching equivalent circuit.
- 7.- Make complex logics with binary inputs and outputs.
- 8.- Make a wide security network with several units with binary inputs and outputs.

Some practical possibilities with additional and recommended modules:

- 9.- Programming the touch panel according to different scenes.
- 10.- Extending a bus system through a single-line topology.
- 11.- Programming of several alarms to protect the system.
- 12.- Programming of fire sensor for alert fire in the room.
- 13.- Programming of smoke detector for a complete protection against fire.
- 14.- Programming of flooding protection.
- 15.- Study of the operation of an infrared barrier security.
- 16.- Study of protection against intruders with a movement sensor.
- 17.- Verify the state of a room with the touch panel.
- 18.- Programming of the siren alarm to inform of an event.
- 19.- Programming of the complete entrance protection with door and bolt sensor.
- 20.- Notification of a broken glass.

21.- Checking the window state.

22.- Programming of proximity sensor for distance protection.

23.- Use of magnetic card for control access.

24.- Programming of the magnetic reader for card recognition.

25.- Programming of the fingerprint recognition.

26.- Centralized control of the main configurations in the touch panel.

27.- Extending a bus system through a single-line topology.

28.- Manual control over the main actuators.

For more information see **AEL-KNX3** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-KNX3/catalog



AEL-KNX3

Applications:

AEL-2.1

Wired Applications

KNX/EIB Applications

AEL-KNX4. KNX/EIB Lighting Control Application.

The KNX/EIB Lighting Control Application, "AEL-KNX4", has been designed by EDIBON to show the students the most important KNX elements used in the most advanced lighting control installations. Lighting control can be done through two methods: switching on and off the lights according to the sun light intensity or with a constant close loop control with which the light intensity is automatically adapted. These two methods allow to get energy savings whenever the KNX devices are programmed properly.

The purpose of the AEL-KNX4 is to give the students a complete practical and theoretical training in the installations and programming of the most important KNX elements focused in lighting control systems, characteristic of sensors, actuators, comparison of energy consumption with different lighting control systems and the conventional lighting elements, etc.

To take a maximum experience with the KNX/EIB Lighting Control Application is very recommendable to acquire the rest of the KNX offered by Edibon, AEL-KNX1, AEL-KNX2, AEL-KNX3 and AEL-KNX5. The combination of all these applications allows the student to design a complete intelligent bus system implemented by a KNX System.

In addition, this application requires the ETS latest generation KNX software to program different scenes, import of KNX projects, setting of sensors and actuators, etc.

The AEL-KNX4 includes the following modules:

- N-KNX34. KNX/EIB USB Programming Interface Module.
- N-KNX18. KNX/EIB Power Supply Module.
- N-KNX14. KNX/EIB Light Sensor Module.
- N-KNX28. KNX/EIB Switch Actuator Module.
- N-KNX8. KNX/EIB Dimming Actuator Module.
- N-KNX16. KNX/EIB Manual Switches Module.
- N-LAM08. 2 Lamps - holders + Incandescent Lamps 40 W.
- N-LAM32. 1 Led Lamp.

Additional and recommended modules:

- N-KNX17. KNX/EIB Movement Sensor Module.
- N-KNX27. KNX/EIB Staircase Sensor Module.

- N-KNX22. KNX/EIB Scene Controller Module.
- N-KNX10. KNX/EIB Energy Meter Module.
- N-KNX30. KNX/EIB Touch Panel Module.
- N-KNX25. KNX/EIB Single Line Extending Bus Module.
- N-KNX2. KNX/EIB Additional Power Supply Module.

Required programming software:

- ETS. KNX Engineering Tool Software.

Additional applications:

- AEL-KNX1. KNX/EIB Shutter Control Application.
- AEL-KNX2. KNX/EIB Heating Control Application.
- AEL-KNX3. KNX/EIB Security Control Application.
- AEL-KNX5. KNX/EIB Energy Management Application.
- AEL-BCS. Building Automation and Control Networks BacNet Application.
- AEL-DALI. DALI Installations Application.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-KNX4/ICA1) 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-KNX4 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.



AEL-KNX4

Applications:

AEL-2.1
Wired Applications

KNX/EIB Applications

AEL-KNX4. KNX/EIB Lighting Control Application. (Continuation)

Some Practical Possibilities:

- 1.- Study of the fundamental of a KNX/EIB installation BUS.
- 2.- Programming of on-off smart switches to demonstrate KNX/EIB switching operations.
- 3.- Programming of switching and dimmers for lights control.
- 4.- Study of preparation and installation methods of a KNX/EIB project.
- 5.- Utilization of conventional switches in an EIB project.
- 6.- Programming the 3 way switching equivalent circuit.
- 7.- Regulate the brightness.
- 8.- Study of the brightness control.
- 9.- Manual control over the actuators.

Some practical possibilities with additional and recommended modules:

- 10.- Programming the presence control for lighting efficient operation.
- 11.- Programming of staircase lighting timers.
- 12.- Programming of several light scene control.
- 13.- Check the consumption against different types of lights.
- 14.- Programming the touch panel according to different scenes.

15.- Checking all parameters in the touch panel.

16.- Extending a bus system through a single-line topology.

For more information see **AEL-KNX4** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-KNX4/catalog



AEL-KNX4

Applications:

AEL-2.1

Wired Applications

KNX/EIB Applications

AEL-KNX5. KNX/EIB Energy Management Application.

The KNX/EIB Energy Management Application, "AEL-KNX5", has been designed by Edibon to show the students the most important KNX elements used in the most advanced energy management systems.

The purpose of the AEL-KNX5 is to give the students a complete practical and theoretical learning in the installations and programming of the most important KNX elements focused in the efficient usage of the resources, the optimization of the control of different parameters, etc.

To take a maximum experience with the KNX/EIB Energy Management Application is very recommendable to acquire the rest of the KNX offered by Edibon, AEL-KNX1, AEL-KNX2, AEL-KNX3 and AEL-KNX4. The combination of all these applications allows the student to design a complete intelligent bus system implemented by a KNX System.

In addition, this application requires the ETS latest generation KNX software to program different scenes, import of KNX projects, setting of sensors and actuators, etc.

The AEL-KNX5 includes the following modules:

- N-KNX34. KNX/EIB USB Programming Interface Module.
- N-KNX18. KNX/EIB Power Supply Module.
- N-KNX9. KNX/EIB Electronic Control Module.
- N-KNX8. KNX/EIB Dimming Actuator Module.
- N-KNX10. KNX/EIB Energy Meter Module.
- N-KNX21. KNX/EIB Room Controller Module.

Additional and recommended modules:

- N-KNX30. KNX/EIB Touch Panel Module.
- N-KNX25. KNX/EIB Single Line Extending Bus Module.
- N-KNX2. KNX/EIB Additional Power Supply Module.
- N-KNX29. KNX/EIB Temperature Sensor Module.
- N-KNX17. KNX/EIB Movement Sensor Module.

- N-KNX14. KNX/EIB Light Sensor Module.
- N-KNX28. KNX/EIB Switch Actuator Module.
- N-KNX4. KNX/EIB Binary Input Module.
- N-KNX5. KNX/EIB Binary Output Module.
- N-LAM08. 2 Lamps - holders + Incandescent Lamps 40 W.
- N-LAM32. 1 Led Lamp.

Additional applications:

- AEL-KNX1. KNX/EIB Shutter Control Application.
- AEL-KNX2. KNX/EIB Heating Control Application.
- AEL-KNX3. KNX/EIB Security Control Application.
- AEL-KNX4. KNX/EIB Lighting Control Application.
- AEL-BCS. Building Automation and Control Networks BacNet Application
- AEL-DALI. DALI Installations Application.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-KNX5/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-KNX5 can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following racks:

- N-RACK-A.

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.



Applications:

AEL-2.1

Wired Applications

KNX/EIB Applications

AEL-KNX5. KNX/EIB Energy Management Application. (Continuation)

Some Practical Possibilities:

1.- Study of the fundamental of a KNX/EIB installation BUS.

2.- Programming of on-off smart switches to demonstrate KNX/EIB switching operations.

3.- Programming of switching and dimmers for complete control.

4.- Study of preparation and installation methods of a KNX/EIB project.

5.- Utilization of conventional switches in an EIB project.

6.- Programming the 3 way switching equivalent circuit.

7.- Automatic regulation of consumption according to the required conditions.

8.- Centralized control with an electronic control module.

9.- Comparison of switching and dimming control consumption according to the required conditions.

10.- Visualize the instantaneous energy consumption.

Some practical possibilities with additional and recommended modules:

11.- Presence control for an efficient operation.

12.- Study of the brightness control.

13.- Visualize the brightness control with a LED or an incandescent lamp.

14.- Switching and dimming the brightness.

15.- Compare the efficient of a LED and incandescent lamp.

16.- Compare the efficient of modern installations with the older ones.

17.- Make complex logics with binary inputs and outputs.

18.- Programming the touch panel according to different scenes.

19.- Checking all parameters in the touch panel.

20.- Centralized control of the main charges in the touch panel.

21.- Extending a bus system through a single-line topology.

For more information see **AEL-KNX5** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-KNX5/catalog



AEL-KNX5

Applications:

AEL-2.1
Wired Applications

KNX/EIB Applications

AEL-BCS. Building Automation and Control Networks BacNet Application.

The Building Automation and Control Networks BacNet Application, "AEL-BCS", is conceived in such a way to integrate cognitive and hands-on learning into an overall concept linking together theory and practice and thus allowing specific targeting of handling skills. On this way, the BacNet System shows the students the most important applications and functions used with this standard protocol.

This system gives the students a complete practical and theoretical learning in the installations and programming of the most important BacNet elements.

The AEL-BCS includes the following module:

- N-BAC1. BacNet-KNX Gateway Module.

Additional applications:

- AEL-KNX1. KNX/EIB Shutter Control Application.
- AEL-KNX2. KNX/EIB Heating Control Application.
- AEL-KNX3. KNX Security Control Application.
- AEL-KNX4. KNX/EIB Lighting Control Application.
- AEL-KNX5. KNX/EIB Energy Management Application.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-BCS/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-BCS 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.

Some Practical Possibilities:

- 1.- Study of fundamentals of BacNet installations.
- 2.- Programming BacNet devices.
- 3.- Configuration of directions for KNX devices recognition.
- 4.- Commissioning and testing of BacNet-KNX installation.

For more information see **AEL-BCS** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-BCS/catalog



AEL-BCS

Applications:

AEL-2.1
Wired Applications

KNX/EIB Applications

AEL-DALI. DALI Installations Application.

The DALI Installations Application, "AEL-DALI", is designed by Edibon to study the most important subjects related to DALI technology, giving special hands-on training on this field.

The AEL-DALI consists of different modules to study the functionality of the most important components in the field of the DALI control systems. These components are, for example the DALI controller, external buttons, DALI-Controlled brightness and motion sensor. With this modules can be studied energy saving schedules, energy efficiency, lighting automation, on-off functions and discharge lamps using DALI control. In addition to these modules, a network analyzer is optionally provided to study energy savings by comparing DALI technology with conventional lighting installations.

The DALI controller module can be programmed by the user to get the following functions: automatic and semi-automatic motion sensing, regulation of constant light output, scene setting, push-button function, on-off function, staircase function (timer function), addressing capabilities.

The DALI Installations Application provides simplified wiring and high level control (flexibility) for an easy and hands-on learning.

The AEL-DALI includes the following modules:

- N-ALI02. Domestic Main Power Supply.
- N-DAC. DALI Controller Module.
- N-LED1. LED Lamps Module.
- N-MSE1. DALI Motion sensor Module.
- N-PUS1. DALI Push-buttons Module.
- N-SFU1. Staircase Module.
- N-LAM10. Two Halogen Lamps.

Additional and recommended modules:

- N-MED60. Network Analyzer.
- N-TCP1. DALI Touch Control Panel Module.
- N-DKG. DALI-KNX Gateway.

This application can be extended with the following applications:

- AEL-KNX1. KNX/EIB Shutter Control Application.
- AEL-KNX2. KNX/EIB Heating Control Application.
- AEL-KNX3. KNX Security Control Application.
- AEL-KNX4. KNX/EIB Lighting Control Application.
- AEL-KNX5. KNX/EIB Energy Management Application.
- AEL-BCS. Building Automation and Control Networks BacNet Application.

Expansion learning software:

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

Option A:

This application needs the following racks:

- N-RACK-M. (2 units)

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.

Some Practical Possibilities:

- 1.- Connection of automatic and semi-automatic motion sensor to the main controller.
- 2.- Programming and regulation of constant light output.
- 3.- Scene setting.
- 4.- Testing the push-button function
- 5.- Testing of on-off lights function
- 6.- Staircase function (timer function)
- 7.- System analysis software
- 8.- Addressing capabilities.
- 9.- Comparison conventional lighting energy consumption and DALI lighting systems.

For more information see **AEL-DALI** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-DALI/catalog



AEL-DALI

Applications:

AEL-2.2
Wireless Applications

—————Home Automation General Applications—————

AEL-AD28A. Complete Home Automation Application with ZigBee Wireless Protocol.

The Complete Home Automation Application with ZigBee Wireless Protocol, "AEL-AD28A", is a cutting-edge home automation application.

It consists of a set of modules designed to cover different areas within the home automation field: emergency simulation system, safety system and energy management system.

Besides, the AEL-AD28A includes software to develop several control configurations depending on the user's needs. Different virtual scenes, including sensors, actuators, energy meters, control relays, etc., can be developed with the software.

The AEL-AD28A is a flexible home automation application, that is to say, the user will be able to develop several programs to simulate different real situations: emergency states, safety conditions and smart energy management. The versatility of the AEL-AD28A 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-AD28A 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-AD28A 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. (8 units)
- N-WSM. Wireless switch module. (4 units)
- N-LAM16. Incandescent lamp.
- N-SEL04. Four pilot lights.
- N-TIM05. Bell + Buzzer.
- N-WLDM. Wireless leak detector module.
- N-WSDM. Wireless smoke detector module.
- N-DET12. Gas electro-valve.
- N-DET10. Water electrovalve.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-AD28A/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-AD28A can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following racks:

- N-RACK-A. (2 units).

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.

Some 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 an automatic lighting control system.
- 4.- Design and wiring a burglar alarm using the intrusion and motion sensors with the buzzer.
- 5.- Design a temperature control system.
- 6.- Design and wiring a gas leakages control system and a fire alarm.
- 7.- Fire simulation to activate the water solenoid valve through the wireless smoke detector module.
- 8.- Combine all home electric modules and control them wirelessly.

For more information see **AEL-AD28A** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-AD28A/catalog



AEL-AD28A

Applications:

AEL-2.2
Wireless Applications

—————Home Automation General Applications—————

AEL-AD28B. Advanced Home Automation Application with ZigBee Wireless Protocol.

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-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.

Some 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.

For more information see **AEL-AD28B** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-AD28B/catalog



AEL-AD28B

Applications:

AEL-2.2
Wireless Applications

Home Automation General Applications

AEL-AD28C. Home Automation Application with ZigBee Wireless Protocol.

The Home Automation Application with ZigBee Wireless Protocol, "AEL-AD28C", is a home automation application, which is composed by a set of modules that cover different areas of home automation field, such as, wireless control of lighting, energy management or wireless intrusion sensor.

Besides, the AEL-AD28C includes software to develop several control configurations depending on the user's needs.

It is a flexible home automation application, that is to say, the user will be able to develop several configurations to simulate different real situations.

The versatility of the AEL-AD28C 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-AD28C includes a set of practical exercises, which allows the student to learn the different possibilities that current home automation systems offer.

The AEL-AD28C includes the following modules:

- N-HPM. Home Power Module.
- N-IOWM. Wireless output module (4 units).
- N-WISM. Wireless Intrusion Sensor.
- N-WSM. Wireless Switch Module.
- N-LAM16. Incandescent Lamp (2 units).
- N-SEL04. Four pilot lights.
- N-TIM05. Bell + Buzzer.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-AD28C/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-AD28C can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following racks:

- N-RACK-A.

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.

Some Practical Possibilities:

- 1.-Programming the maximum consumed energy.
- 2.- Lights remote control.
- 3.- Bell and buzzer remote control.
- 4.- Programming the lights switching on/off.
- 5.-Simulation of a typical home automation system.
- 6.- Programming the bell and buzzer together with the red and green pilot lights.

For more information see **AEL-AD28C** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-AD28C/catalog



AEL-AD28C

Applications:

AEL-2.2
Wireless Applications

Home Automation General Applications

AEL-AD23. Wireless Intrusion Detection Application (RF).

The Wireless Intrusion Detection Application (RF), "AEL-AD23", is designed with the aim to understand the operation of a wireless intrusion detection system. For that, this application includes a wireless presence detector that works via infrared radiation, detecting temperature changes, a panic pushbutton to use in emergency situations and a wireless receptor that receives the signals from all sensors. In order to check the operation of these devices, the application also includes a pilot light module and a bell and buzzer module, which can be activated by the sensors. Thus, the user can check different types of intrusion alarms.

The AEL-AD23 includes the following modules:

- N-ALI02. Domestic Main Power Supply.
- N-ALI03. AC Auxiliary Power Supply.
- N-DET13. Wireless Intrusion Detector RF.
- N-DET14. Wireless Panic Push-Button RF.
- N-DET15. Wireless One Channel

Receptor RF.

- N-SEL01. Light Signaling Beacons.
- N-TIM05. Bell + Buzzer.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-AD23/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-AD23 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.

Some Practical Possibilities:

- 1.- Checking and measuring on the main power supply.
- 2.- Checking the working of the auxiliary power supply.
- 3.- Checking the working of the bell + buzzer module using as acoustic alarm.
- 4.- Checking the working of the light signaling beacons module, using as visual alarm.
- 5.- Checking the working of the wireless emergency pushbutton.
- 6.- Use of the alarms with the wireless intrusion detector.
- 7.- Real application of a wireless intrusion detection system.

For more information see **AEL-AD23** catalog.

Click on the following link:

www.edibon.com/en/files/equipment/AEL-AD23/catalog



AEL-AD23

ALL Advanced Electrical Laboratories (AEL-LABS)

AEL-1. ELECTRICAL INSTALLATIONS LAB

| AEL-1.1. Home Electrical Installations | AEL-1.2. Industrial Electrical Installations |
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| <p style="text-align: center;"><u>Applications</u></p> <p style="text-align: center;">Lighting and Control Applications</p> <ul style="list-style-type: none"> • AEL-AD13. Entry Phone Application. • AEL-AD14. Audio and Video Entry Phone Application. • AEL-AD6A. Luminosity Control Application. • AEL-AD6B. Basic Luminosity Control Application. • AEL-AD24. Position Switches Application. • AEL-AD5. Lighting Application with Timer Switch. • AEL-AI13-E. Electrotechnics Application focused on Lighting. • AEL-AE4. Differential Automatic Switches Application. <p style="text-align: center;">Climatization Applications</p> <ul style="list-style-type: none"> • AEL-AD9A. Heating Control Application. • AEL-AD9B. Basic Heating Control Application. | <p style="text-align: center;"><u>Applications</u></p> <p style="text-align: center;">Industrial Control Engineering Applications</p> <ul style="list-style-type: none"> • AEL-CM1. Logical Control Operations Application. • AEL-CM2. Application of Manual Starters and Velocity Commutators with Asynchronous Motors. • AEL-CM3. Automatic Control Operations II Application. • AEL-CM4. Automatic Control Operations with Contactors and Sensors IV Application. • AEL-MED. Industrial Installations Monitoring Application. <p style="text-align: center;">Fault Applications</p> <ul style="list-style-type: none"> • AEL-AD33. Single-Phase Installations Faults Application. • AEL-AD33T. Three-phase Installations Faults Application. <p style="text-align: center;">Relays Applications</p> <ul style="list-style-type: none"> • AEL-PRTS. Protective Relaying Application. • AEL-AE5. Protection Relays Control Application. <p style="text-align: center;">Loads Applications</p> <ul style="list-style-type: none"> • AEL-AI13-A. Electrotechnics Application Focused on RLC Circuits. |
| <div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p>See catalog of: AEL-1. Electrical Installations Lab www.edibon.com/en/files/equipment/AEL-1/catalog</p> </div> | |

AEL-2. HOME AUTOMATION APPLICATIONS LAB

| AEL-2.1. Wired Applications | AEL-2.2. Wireless Applications |
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| <p style="text-align: center;"><u>Applications</u></p> <p style="text-align: center;">Home Automation General Applications</p> <ul style="list-style-type: none"> • AEL-AD1A. Robbery Alarm Advanced Application. • AEL-AD1B. Robbery Alarm Application. • AEL-AD3A. Fire Alarm Advanced Application. • AEL-AD3B. Fire Alarm Application. • AEL-AD15A. Position Control Advanced Application. • AEL-AD15B. Position Control Application. • AEL-AD25A. Control Application for Home Electric Service through the telephone. • AEL-AD22. Flooding Control Application. • AEL-AD30. Gas and Smoke Detection Application. • AEL-AD31. Movement and Sound Detection Application. • AEL-AD40. Remote Control Application Via Telephone. <p style="text-align: center;">KNX/EIB Applications</p> <ul style="list-style-type: none"> • AEL-KNX1. KNX/EIB Shutter Control Application. • AEL-KNX2. KNX/EIB Heating Control Application. • AEL-KNX3. KNX/EIB Security Control Application. • AEL-KNX4. KNX/EIB Lighting Control Application. • AEL-KNX5. KNX/EIB Energy Management Application. • AEL-BCS. Building Automation and Control Networks BacNet Application. • AEL-DALI. DALI Installations Application. | <p style="text-align: center;"><u>Applications</u></p> <p style="text-align: center;">Home Automation General Applications</p> <ul style="list-style-type: none"> • AEL-AD28A. Complete Home Automation Application with ZigBee Wireless Protocol. • AEL-AD28B. Advanced Home Automation Application with ZigBee Wireless Protocol. • AEL-AD28C. Home Automation Application with ZigBee Wireless Protocol. • AEL-AD23. Wireless Intrusion Detection Application (RF). |

AEL-3. ELECTRICAL MACHINES LAB

AEL-3.1.

Transformers Applications

Applications

- AEL-SPTT. Single-Phase Transformer Application.
- AEL-TPTT. Three-Phase Transformer Application.
- AEL-AI13-D. Modular Application for Electrotecnics (Transformers).

AEL-3.2.

Motors Applications

Applications

AC Electrical Motors Applications

- AEL-EEEM. Energy Efficiency in Electrical Motors Application.
- AEL-EMSS. Electrical Machines Soft Starters Application.
- AEL-EMCF. Application Electrical Machines Control through Frequency Contoller.
- AEL-AI13. Modular Application for Electrotecnics (RLC Circuits, Electrostatics, Motors, Transformers, Lighting).
- AEL-AI13-C. Modular Application for Electrotecnics (Motors).
- AEL-EMRP. Electrical Machines Relays Protection Application.
- AEL-SERIN/CA-1k. Computer Controlled Advanced Industrial Servo systems Application- 1 kW (for AC Motors).
- AEL-MMRT. Motor Management Relays Application.
- AEL-PRTS. Industrial Protective Relaying Training Application.
- AEL-ACEMT. AC Electrical Motors Application.
 - Option 1 (EMT7): Study of Three-Phase Asynchronous Motor of Squirrel cage.
 - Option 2 (EMT8): Study of Three-Phase Asynchronous Motor of wound rotor.
 - Option 3 (EMT9): Study of Three-Phase Dahlander Motor.
 - Option 4 (EMT10): Study of Asynchronous three-phase motor of two independent speeds.
 - Option 5 (EMT11): Study of Asynchronous single-phase motor with starting capacitor.
 - Option 6 (EMT12): Study of Universal Motor.
 - Option 7 (EMT16): Study of Asynchronous single-phase motor with starting and running capacitor.
 - Option 8 (EMT20): Study of Asynchronous single-phase motor with split phase.
 - Option 9 (EMT21): Study of Three-Phase Reluctance Motor.
- AEL-ACINA. Application of AC Three-Phase Induction Motor of Squirrel Cage.
- AEL-ACDHA. Application of AC Dahlander Three-Phase Induction Motor.
- AEL-ACWRA. Application of AC Three-Phase Induction Motor of Wound Rotor.
- AEL-ACLA. Application of AC Linear Motor Operations.
- AEL-ACRLA. Application of AC Three-Phase Reluctance Motor.
- AEL-ACSPA. Application of Asynchronous Single-Phase Motor with Split Phase.
- AEL-AI12. Modular Application (AC Motors).
- AEL-IMSU. General Application of AC Induction Motor.
- AEL-ACEMA. AC Electrical Motors Applications.
 - Option 1 (EMT7): Study of Three-Phase Asynchronous Motor of Squirrel cage.
 - Option 2 (EMT8): Study of Three-Phase Asynchronous Motor of wound rotor.
 - Option 3 (EMT9): Study of Three-Phase Dahlander Motor.
 - Option 4 (EMT10): Study of Asynchronous three-phase motor of two independent speeds.
 - Option 5 (EMT11): Study of Asynchronous single-phase motor with starting capacitor.
 - Option 6 (EMT12): Study of Universal Motor.
 - Option 7 (EMT16): Study of Asynchronous single-phase motor with starting and running capacitor.
 - Option 8 (EMT20): Study of Asynchronous single-phase motor with split phase.
 - Option 9 (EMT21): Study of Three-Phase Reluctance Motor.
- AEL-EEA. Alternator Study Application.
- AEL-EGMG24. Motor-Generator Group.

DC Electrical Motors Applications

- AEL-DCENT. DC Electrical Motors Applications.
 - Option 1 (EMT1): Study of DC Machine with independent excitation.
 - Option 2 (EMT2): Study of DC Machine with Series excitation.
 - Option 3 (EMT3): Study of DC Machine with shunt excitation.
 - Option 4 (EMT4): Study of DC Machine with Compound excitation.
 - Option 5 (EMT5): Study of all types of DC Machines.
- AEL-DCSHT. DC Shunt Excitation Motor Application.
- AEL-DCSEA. Application of DC Series Motor.
- AEL-DCSHA. Application of DC Shunt Motor.
- AEL-DCCOA. Application of DC Compound Motor.
- AEL-DCSPA. Application of DC Separately Excited Motor.
- AEL-DCGEA. Application of DC Generator.
- AEL-DCPMA. Application of DC Permanent Magnet Motor.
- AEL-DCBRA. Application of DC Brushless Motor.
- AEL-DCEMA. DC Electrical Motors Applications.
 - Option 1 (EMT1): Study of DC Machine with independent excitation.
 - Option 2 (EMT2): Study of DC Machine with Series excitation.
 - Option 3 (EMT3): Study of DC Machine with shunt excitation.
 - Option 4 (EMT4): Study of DC Machine with Compound excitation.
 - Option 5 (EMT5): Study of all types of DC Machines.
 - Option 6 (EMT15): Study of Permanent Magnet DC Motor.
 - Option 7 (EMT1): Study of DC Generator.
- AEL-UMA. Application of Universal Motor.
- AEL-STMA. Application of Stepper Motor.

Electrical Motors Faults Applications

- AEL-ESAM. Faults Simulation Application in Electrical Motors.
- AEL-ESAT. Faults Simulation Application in Transformers.

See catalogue of: **AEL-3. Electrical Machines Lab**
www.edibon.com/en/files/equipment/AEL-3/catalog

AEL-4. ELECTROMECHANICAL CONSTRUCTIONS LAB

| <p style="text-align: center;">AEL-4.1. Electrical Machines Construction</p> | <p style="text-align: center;">AEL-4.2. Electrical Motors Construction</p> |
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| <p style="text-align: center;"><u>Applications</u></p> <p style="text-align: center;">Dissectible and Configurable Electrical Motors Application</p> <ul style="list-style-type: none"> • AEL-EMT-KIT. Advanced Dissectible and Configurable Electrical Machines. <p style="text-align: center;">Wiring & Construction of Motors, Generators and Transformers</p> <ul style="list-style-type: none"> • AEL-MGTC. Motors, Generators and Transformers Construction Application. • AEL-TPTC. Three-Phase Transformer Construction Kit. <p style="text-align: center;">Disassembly Motors</p> <ul style="list-style-type: none"> • AEL-DMG-KIT. Disassembly Motors-Generators Kit. • AEL-DIM-KIT. 4 Disassembly Induction Motors Kit. | <p style="text-align: center;"><u>Applications</u></p> <p style="text-align: center;">Cut Away Electrical Motors</p> <ul style="list-style-type: none"> • EMT1-S. Cut away DC independent excitation motor-generator. • EMT2-S. Cut away DC series excitation motor-generator. • EMT3-S. Cut away DC shunt excitation motor-generator. • EMT4-S. Cut away DC compound excitation motor-generator. • EMT5-S. Cut away DC shunt-series compound excitation motor. • EMT6-S. Cut away AC synchronous three-phase motor alternator. • EMT7-S. Cut away asynchronous three-phase motor of squirrel cage. • EMT8-S. Cut away asynchronous three-phase motor with wound rotor. • EMT9-S. Cut away Dahlander three-phase motor. • EMT10-S. Cut away asynchronous three-phase motor of two independent speeds. • EMT11-S. Cut away asynchronous single-phase motor with starting capacitor. • EMT12-S. Cut away universal motor. • EMT14-S. Cut away repulsion motor, single-phase with short circuited brushes. • EMT15-S. Cut away DC permanent magnet motor. • EMT16-S. Cut away asynchronous single-phase motor with starting and running capacitor. • EMT17-S. Cut away asynchronous three-phase motor of squirrel cage with "Y" connection. • EMT18-S. Cut away DC Brushless motor. • EMT19-S. Cut away stepper motor. • EMT20-S. Cut away asynchronous single-phase motor with split phase. • EMT21-S. Cut away three-phase reluctance motor. • EMT22-S. Cut away single-phase shaded pole motor. <p style="text-align: center;">Transparent and Functional Electrical Motors</p> <ul style="list-style-type: none"> • AEL-FTM. Transparent and Functional Motors Application • AEL-EMT1-T. Transparent and functional DC independent excitation motor-generator. • AEL-EMT2-T. Transparent and functional DC series excitation motor-generator. • AEL-EMT3-T. Transparent and functional DC shunt excitation motor-generator. • AEL-EMT4-T. Transparent and functional DC compound excitation motor-generator. • AEL-EMT5-T. Transparent and functional DC shunt-series compound excitation motor-generator. • AEL-EMT6-T. Transparent and functional AC synchronous three-phase motor alternator. • AEL-EMT7-T. Transparent and functional asynchronous three-phase motor of squirrel cage. • AEL-EMT8-T. Transparent and functional asynchronous three-phase motor with wound rotor. • AEL-EMT9-T. Transparent and functional Dahlander three-phase motor. • AEL-EMT10-T. Transparent and functional asynchronous three-phase motor of two independent speeds. • AEL-EMT11-T. Transparent and functional asynchronous single-phase motor with starting capacitor. • AEL-EMT12-T. Transparent and functional universal motor. • AEL-EMT14-T. Transparent and functional repulsion motor, single-phase with short circuited brushes. • AEL-EMT16-T. Transparent and functional asynchronous single-phase motor with starting and running capacitor. • AEL-EMT17-T. Transparent and functional asynchronous three-phase motor of squirrel cage with "Y" connection. • AEL-EMT20-T. Transparent and functional asynchronous single-phase motor with split phase. • AEL-EMT21-T. Transparent and functional three-phase reluctance motor. • AEL-EMT22-T. Transparent and functional single-phase shaded pole motor. |

See catalog of: **AEL-4. Electromechanical Constructions Lab**
www.edibon.com/en/files/equipment/AEL-4/catalog

AEL-5. POWER SYSTEMS AND SMART GRID TECHNOLOGY LAB

**AEL-5.1.
Generation Applications**

Applications

Basic Synchronization Applications

- AEL-MOSC. Manual Operations of Synchronization Circuits.

Advanced Synchronization Applications

- AEL-EESD. Advanced Digital Synchronization Application.

Wind Energy

- AEL-WPP. Wind Power Plants with Double Feed Induction Generator.
- AEL-WPT. Wind Power Application with Permanent Magnets Synchronous Generator.
- AEL-WPPI. Wind Power Plants with Induction Generator.

Photovoltaic Energy

- AEL-PHVG. Photovoltaic Application with Connection to Grid.

Fuel Cell Energy

- AEL-FCLL. Fuel Cell Energy Application.

Power Plants

- AEL-EPP. Energy Power Plants Application.
- AEL-HPPP. Hydroelectric Power Plants Application with Pelton Turbine.
- AEL-MEPD. Marine Electrical Power Distribution System.
- TDEGC. Computer Controlled Diesel Engine Electricity Generator.

Basic Smart Grid Power Systems

- AEL-BSG. Basic Smart Grid Application.
- AEL-BSGC. Basic Smart Grid Application, with SCADA.

Microgrid Series

- AEL-MGR. Micro-Grids Power System Series.

**AEL-5.2.
Distribution and Transmission Applications**

Applications

Distribution and Transmission Applications

- AEL-AE1A. Aerial Line Model.
- AEL-TI-01. Analysis of Three-phase Power Lines.
- AEL-TI-02. Distribution Transformer with Motor Regulation.
- AEL-TI-03. Arc suppression Coil.
- AEL-TI-04. Underground Transmission lines.
- AEL-TI-05. Parallel and Series Transmission Lines.
- AEL-TI-06. Analysis of flow power on Transmission Lines.
- AEL-TI-07. Transmission Systems with Synchronous Generator.
- AEL-SST-01. Basic Operations in Switching Transmission Substation Application.
- AEL-SST-02. Switching Substation Protection Application.
- AEL-HVDC. High Voltage DC Transmission Lines.

**AEL-5.3.
Loads Applications**

Applications

Basic Load Controller Applications

- AEL-MRPC. Manual Reactive Power Compensation.
- AEL-ARPC. Automatic Reactive Power Compensation.
- AEL-EECFP. Advanced Power Factor Compensation.
- AEL-APFC. Single-phase Automatic Power Factor Compensation.
- AEL-DLT. Dynamic Loads Application.

Advanced Loads Control

- AEL-FUSG. Final User Smart Grid Application.
- AEL-FUSG-M. Final User Smart Grid-Smart Meter Application.
- AEL-FUSG-E. Final User Smart Grid-Smart Energy Application.
- AEL-FUSG-N. Final User Smart Grid-Net Metering Application.

**AEL-5.4.
Protection Relays Applications**

Applications

Fundamental Concepts

- AEL-CTFP. Current Transformer Fundamentals for Protections Devices.
- AEL-VTFP. Voltage Transformer Fundamentals for Protections Devices.

Protection Applications Relays

- ERP. Protection Relays Test Application.
- ERP-CBM. Cybersecurity Module.

Protection Systems for Generators

- AEL-GPRE. Generator Protection Relay Application.

Protection Systems for Transmission and Distribution Lines

- AEL-TPT-01. Overcurrent Time Protection Relay for Lines.
- AEL-TPT-02. Directional Overcurrent Protection Relay for Transmission Lines.
- AEL-TPT-03. Overvoltage and Undervoltage Protection Relay.
- AEL-TPT-04. Directional Power Protection Relay.
- AEL-TPT-05. Earth-Fault Voltage Protection Relay.
- AEL-TPT-06. Parallel Transmission Lines Protection Relay.
- AEL-TPT-07. High Speed Distance Protection Relay.

**AEL-5.5
Cybersecurity Applications**

Applications

- ERP-CBM. Cybersecurity Module.

**AEL-5.6.
Available "Smart Grid Power Systems"**

Applications

- APS12. Advanced Mechanical, Electrical and Smart Grid Power Systems (Utilities).
- AEL-MPSS-01. Modular Smart Grid Power Systems Simulator, with Automatic Control Generation, Transmission Line, Loads and Protection Relays, with SCADA.
- AEL-MPSS-02. Modular Smart Grid Power Systems Simulator, with Automatic Control Generation, Transmission Line and Loads, with SCADA.
- AEL-MPSS-03. Modular Smart Grid Power Systems Simulator, with Manual Control Generation, Transmission Line, Loads and Protection Relays, with SCADA.
- AEL-MPSS-04. Modular Smart Grid Power Systems Simulator, with Manual Control Generation, Transmission Line and Loads, with SCADA.
- AEL-CPSS-01S. Smart Grid Power Systems Application, with Automatic Control Generation, Transmission Line and Loads.
- AEL-CPSS-02S. Smart Micro-Grids Power Systems Application, with Automatic Control Generation and Loads.
- AEL-CPSS-03S. Smart Grid Power Systems Application with Two Parallel Generators, Two Distribution Lines and Loads, with SCADA.

See catalog of: **AEL-5. Power Systems and Smart Grid Technology Lab**
www.edibon.com/en/files/equipment/AEL-5/catalog

*Specifications subject to change without previous notice, due to the convenience of improvements of the product.



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