AEL-AD15A
POSITION CONTROL STATION
Estación de Control de Posición
www.edibon.com

INTRODUCTION

Position control has become one of the most used automatisms nowadays both in industrial processes (for example, an assembly line that counts products on a conveyor belt) and in home automation (for example, a position sensor that activates a lamp only when a person is detected to save energy). Definitely, position sensors have become a fundamental element in manufacture processes, both to improve their efficiency and reduce costs.

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

European Union Certificate (total safety)

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

Certificate and Worlddidac Member

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GENERAL DESCRIPTION

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-AD15A 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.

The application includes the following modules:

• N-ALI02. Domestic Main Power Supply.

    Voltage supply (Single-Phase): 230 VAC, PH+N+G.

    ON-OFF removable key.

    Output Voltage Connections:

        Two Single-Phase: 230 VAC.

        Single-Phase supply wire connecting plug.

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

N-ALI02

• N-ALI03. AC Auxiliary Power Supply.

    Voltage supply (Single-Phase): 230 VAC PH+N+G.

    Output voltage:

        Single-Phase 24 VAC/12 VAC.

        24 VDC.

        0 - 24 VDC through potentiometer.

N-ALI03

• N-LAM16 Halogen Lamp.

    Voltage supply, 230 VAC.

    Power, 60 W.

N-LAM16

• N-SEL03 Three Pilot-Lights.

    Voltage supply, 24 VAC.

    Colors: red, green and yellow.

N-SEL03

• N-SEN04. Inductive Proximity Sensor type PNP.

    Voltage supply, 24 VDC.

    Output voltage, 0-24 VDC.

    It detects metallic bodies.

    1 NO contact.

    PNP output.

    15 mm maximum detection.

    Status and detection leds.

    Input and output terminals.

N-SEN04

Specifications

- N-SEN14. Capacitive Proximity Sensor.

    Voltage supply, 24 VDC.

    Output voltage, 0-24 VDC.

    It detects metallic and non metallic bodies.

    10 mm maximum detection.

    Status and detection leds.

    Fuse 250 mA.

    Input and output terminals.

N-SEN14

- N-SEN29. Inductive Proximity Sensor.

    Voltage supply, 24 VAC.

    Output voltage, 0-24 VDC.

    It detects metallic bodies.

    10 mm maximum detection.

    Fuse 250 mA.

    Input and output terminals.

N-SEN29

- N-SEN26 Presence and Motion Sensor (Wall).

    Voltage supply, 230 VAC.

    One output.

    0 to 180° detection.

    Maximum distance detection 12 m.

    Timing 10 sec.-15 min.

    Luminosity regulation 2-120 lux.

    Terminals.

N-SEN26

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

Cables and Accessories, for normal operation.

Manuals:

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

EXERCISES AND PRACTICAL POSSIBILITIES

1.- Checking and measuring on 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 with the presence sensor.

8.- Real applications of a detection and position control system.

REQUIRED SERVICES

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

DIMENSIONS AND WEIGHTS

AEL-AD15A:

- Dimensions: 640 x 320 x 670 mm approx.

(25.19 x 12.59 x 26.37 inches approx.)

- Weight: 60 Kg approx.

(132 pounds approx.)

AEL-AD15A/ICAI. Interactive Computer Aided Instruction Software System:
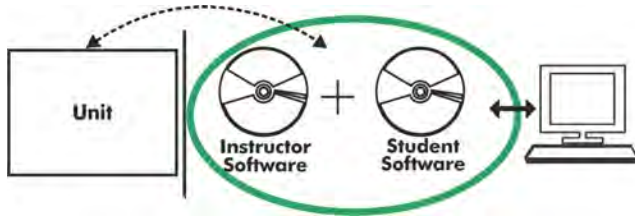
With no physical connection between unit and computer (PC), **this complete software package consists of an Instructor Software (EDIBON Classroom Manager -ECM-SOF) totally integrated with the Student Software (EDIBON Student Labsoft -ESL-SOF).** Both are interconnected so that the teacher knows at any moment what is the theoretical and practical knowledge of the students.
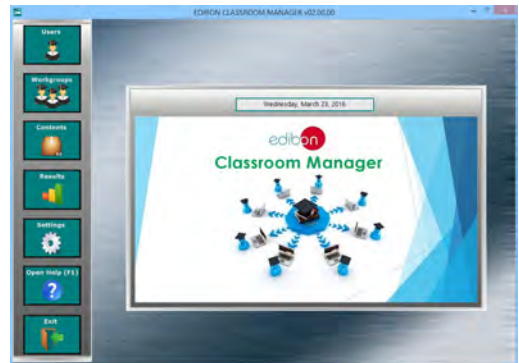
Instructor Software

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

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

Innovative features:

- **User Data Base Management.**

- **Administration and assignment of Workgroup, Task and Training sessions.**

- **Creation and Integration of Practical Exercises and Multimedia Resources.**

- **Custom Design of Evaluation Methods.**

- **Creation and assignment of Formulas & Equations.**

- **Equation System Solver Engine.**

- **Updatable Contents.**

- **Report generation, User Progression Monitoring and Statistics.**

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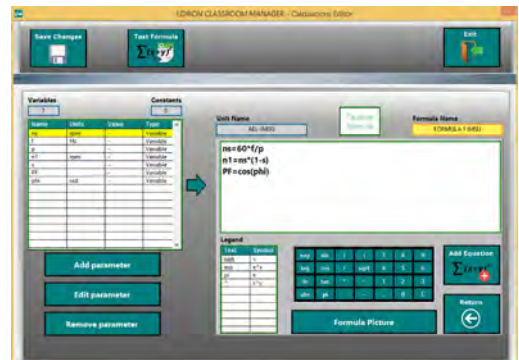
ECAL. EDIBON Calculations Program Package - Formula
Editor Screen
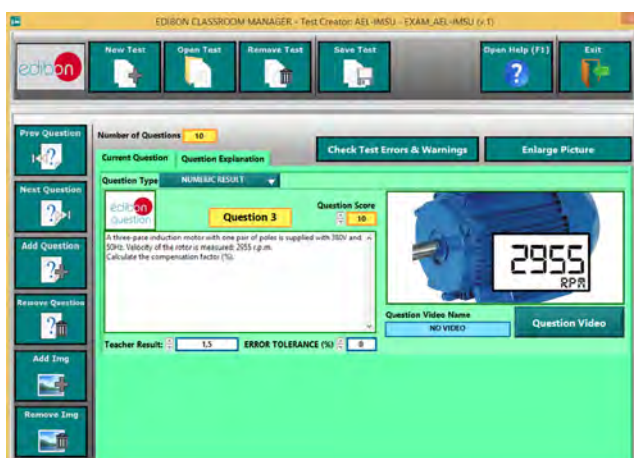
ETTE. EDIBON Training Test & Exam Program Package - Main Screen with
Numeric Result Question

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

Student Software

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

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

Innovative features:

• Student Log-In & Self-Registration.

• Existing Tasks checking & Monitoring.

• Default contents & scheduled tasks available to be used from the first session.

• Practical Exercises accomplishment by following the Manual provided by EDIBON.

• Evaluation Methods to prove your knowledge and progression.

• Test self-correction.

• Calculations computing and plotting.

• Equation System Solver Engine.

• User Monitoring Learning & Printable Reports.

• Multimedia-Supported auxiliary resources.

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

EPE. EDIBON Practical Exercise Program Package Main Screen

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

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

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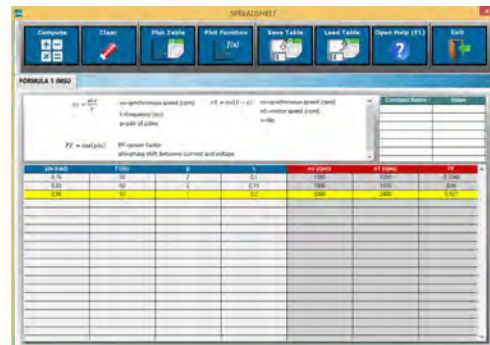
ECAL. EDIBON Calculations Program Package Main Screen

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

REPRESENTATIVE: