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PRODUCTOS  
4.- ELECTRICIDAD

## INTRODUCTION

The students who begin their professional career as electrical installers, assemblers or electrical maintenance technicians require a hands-on learning with equipments that reflect faithfully the electrical installations in which they will work in the future. In the industry switching elements are essential for the control and protection of equipments, so it is important that the student knows about the most common elements of this type.



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)



"Worlddidac Quality Charter" and Platinum Member of Worlddidac

## GENERAL DESCRIPTION

The Wiring Installation Training, Industrial Switching Elements application, "WIT-ISE", has been designed by Edibon for the students formation at a professional-practical level in the field of the installation, wiring and testing of industrial installations based on switching units.

This application provides the future professionals with the knowledge and essential skills on switching elements based installations through the use of time delay and overcurrent relays, contactors, push-buttons, lighting indicator and switches.

To acquire a complete knowledge, the application includes a specific manual in which is explained, at theoretical-practical level, the aspects concerning to the installation procedures and wiring of these installations.

The WIT-ISE application includes the following elements:

- FP-STR. Assembly Frame with Safe Electrical Power Supply.
- FP-KIT-4. Wiring Installation Kit.
- FP-KIT-9. 400 VAC Contactors Kit.
- FP-KIT-10. Tubes and Fittings for Channelling Wiring Kit.
- FP-KIT-56. Industrial Elements Kit 1.
- FP-KIT-58. Fuses Kit.

Required Elements:

- CHER. Tool Box.

Recommended elements:

- MED65. Digital Multimeter.
- FP-KIT-10/B. Rigid Tube Kit.
- FP-KIT-5. Measuring Kit.
- EMT7-E. Asynchronous Three-Phase Motor of Squirrel Cage.
- EMT9-E. Dahlander Three-Phase Motor (two speeds).
- EMT10-E. Asynchronous Three-Phase Motor of Two Independent Speeds.

The WIT-ISE application includes the following elements:

- **FP-STR. Assembly Frame with Safe Electrical Power Supply.**

Aluminum structure:

Three aluminum struts.

Easy assembly of components via hammer head screws.

Possibility of simultaneous work of several students.

Four swiveling casters to facilitate the movement.

Dimensions:

Structure height: 1800 mm.

Useful working height: 1000 mm.

Width: 1500 mm.

Three-Phase connection plug.

Safe electric box:

Differential magnetothermal, 4 poles, 25A, 300mA AC 6KA.

Emergency stop mushroom (230/400V AC).

5-wire hose for connection to frame.

Signal lamp of voltage presence.

- **FP-KIT-4. Wiring Installation Kit.**

100 meters of grey wire of 1.5 mm<sup>2</sup>.

100 meters of brown wire of 1.5 mm<sup>2</sup>.

100 meters of black wire of 1.5 mm<sup>2</sup>.

100 meters of green/yellow wire of de 1.5 mm<sup>2</sup>.

25 meters of screened wire.

- **FP-KIT-9. 400 VAC Contactors Kit.**

5 x Three-pole circuit breakers:

Nominal voltaje of power terminals: 400V AC.

Nominal voltaje of control terminals: 230V AC.

Nominal voltaje coil: 230V AC.

Auxiliary contacts: 3 NO / 2 NC.

- **FP-KIT-10. Tubes and Fittings for Channeling Wiring Kit.**

PVC electrical conduit for wiring installation, 20 m.

7 x Electrical box.

Cable guide.

20 x PMA cable clamp, 20 mm.

## Specifications

- **FP-KIT-56. Industrial Elements Kit 1.**

- 2 x Synchronism relay.
- Current monitoring relay, 24V.
- Red lighting indicator, 22 mm.
- Green lighting indicator, 22 mm.
- Commutator.
- 2 x Push button.

- **FP-KIT-58. Fuses Kit.**

- 10 x 2 A fuse.
- 10 x 10 A fuse.

### Required Elements:

- **CHER. Tool Box.**

- Crimper.
- Tin.
- Meter.
- Insulation tape.
- Heat shrink.
- Voltage tester screwdriver.
- Cross-head screwdriver and flat-head screwdriver.
- Allen keys.
- Soldering iron.
- Rubber hammer.
- Wire terminals and Connection terminals.
- Flanges.
- Wire cutter.
- Screw Clamp Terminals.
- Wire stripper.

### Recommended elements:

- **MED65. Digital Multimeter.**

This module has a digital multimeter of about 3 ½ digits, with double-jack ending cables of about 4 mm to facilitate interconnections.

With this digital multimeter we will be able to measure:

- Voltage.
- Current.
- Resistance.
- Capacitors capacity.
- Temperature.

- **FP-KIT-10/B. Rigid Tube Kit.**

- 20 m PVC Rigid Tube.
- 10 x Threaded connector.
- 5 x Elbow for conducts clamping.

- **FP-KIT-5. Measuring Kit.**

Clamp Meter:

Clamp for alternating/direct current measurements contactless.

The clamp can measure:

Current.

Voltage.

Resistance.

A voltage and continuity tester:

Voltage range: 12-690V AC.

Phases rotating detection in three-phase systems.

Polarity tester.

- **EMT7-E. Asynchronous Three-Phase Motor of Squirrel Cage.**

Nominal power: 370 W.

Nominal voltage: 3x 230/400V AC Δ/Y.

Frequency: 50/60 Hz

Number of poles: 2.

RPM: 2730 r.p.m.

Nominal current: 1,67/ 0,97 A.

- **EMT9-E. Dahlander Three-Phase Motor.**

Nominal power: 370 W.

Nominal voltage: 3x 400V AC.

Frequency: 50/60 Hz.

Number of poles: 4.

RPM: 1400/2800 r.p.m.

Nominal current: 1,2 / 1,55 A.

- **EMT10-E. Asynchronous Three-Phase Motor with Two Independent Speeds.**

Nominal power: 240/370 W.

Nominal voltage: 3x 400V AC.

Frequency: 50/60 Hz.

RPM: 900/1420 r.p.m.

Nominal current: 1,05 / 1,35 A.

- **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.- Learning exercises about wiring techniques such as flat wiring, channel wiring and chamber wiring.
- 2.- Configuration and commissioning of circuits incorporating these technologies.
- 3.- Contactor control with circuit-breaker.
- 4.- Contactor control with inching mode.
- 5.- Contactor control with self-holding
- 6.- Contactor control with two operating locations.
- 7.- Inversion circuit with contactors.
- 8.- Forced sequential connections with main current circuit
- 9.- Interlocking of a contactor control.
- 10.-Contactor controls with a timing relay.
- 11.-Contactor circuits for motors with 2 speeds and 2 separate windings.
- 12.-Dahlander circuit with contactors.
- 13.-Star-delta circuit with contactors.
- 14.-Starter circuit for a slip-ring motor.
- Several other exercises can be done and designed by the user.

### REQUIRED SERVICES

- Electrical supply: three-phase, 380V/50 Hz or 208V/60 Hz, 3 kW.

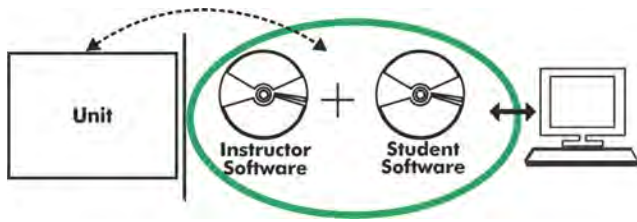
### DIMENSIONS AND WEIGHTS

WIT-ISE:

- Dimensions: 1500 x 400 x 1800 mm approx.  
(78.74 x 15.75 x 78.74 inches approx.)
- Weight: 80 Kg approx.  
(220 pounds approx.)



**WIT-ISE/ICAI. Interactive Computer Aided Instruction Software System:**



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

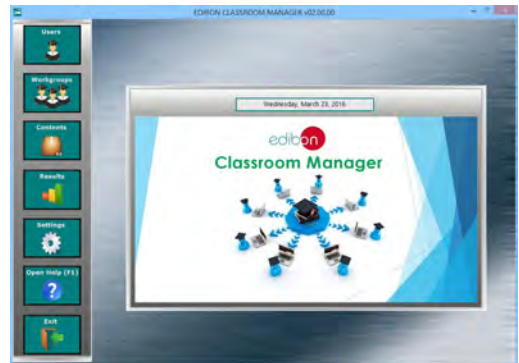
**Instructor Software**

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

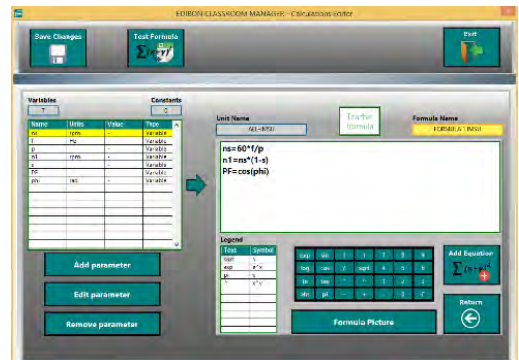
ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual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

Innovative features:

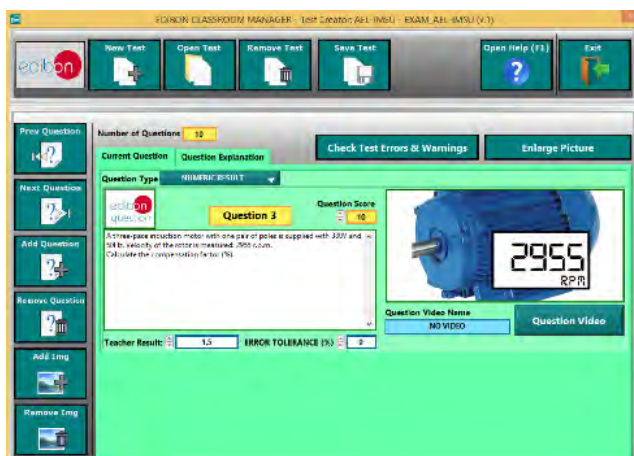
- User Data Base Management.
- Administration and assignment of Workgroup, Task and Training sessions.
- Creation and Integration of Practical Exercises and Multimedia Resources.
- Custom Design of Evaluation Methods.
- Creation and assignment of Formulas & Equations.
- Equation System Solver Engine.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



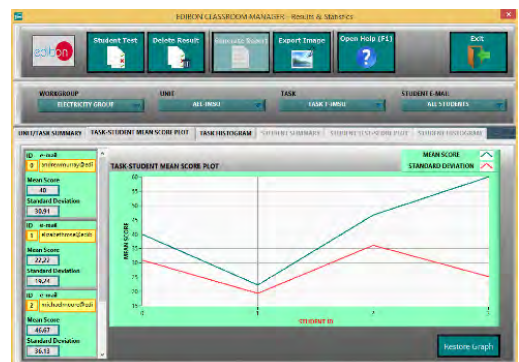
ECM-SOF. EDIBON Classroom Manager (Instructor Software) Application Main Screen



ECAL. EDIBON Calculations Program Package - Formula Editor Screen



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



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

**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:

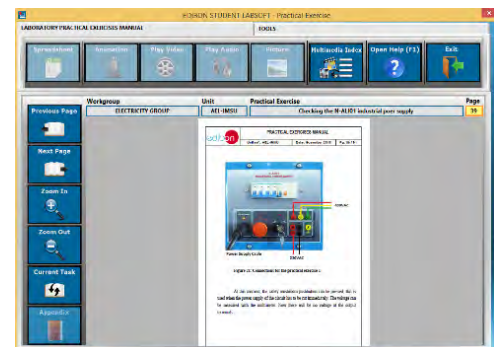
- Student Log-In & Self-Registration.
- Existing Tasks checking & Monitoring.
- Default contents & scheduled tasks available to be used from the first session.
- Practical Exercises accomplishment by following the Manual provided by EDIBON.
- Evaluation Methods to prove your knowledge and progression.
- Test self-correction.
- Calculations computing and plotting.
- Equation System Solver Engine.
- User Monitoring Learning & Printable Reports.
- Multimedia-Supported auxiliary resources.

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

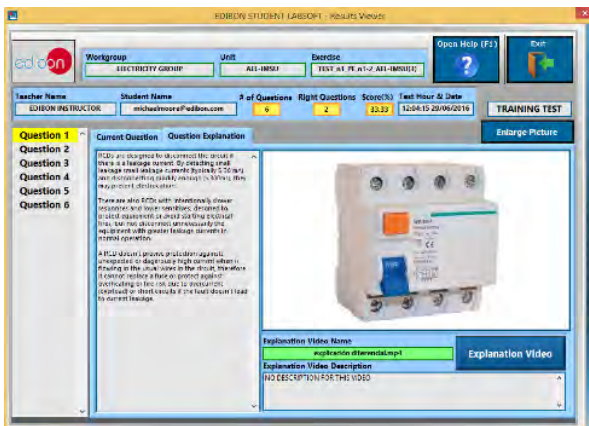
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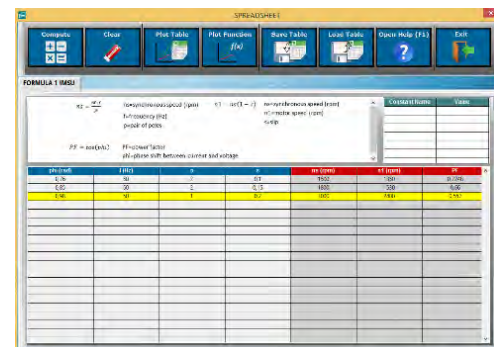
ESL-SOF. EDIBON Student LabSoft (Student Software) Application Main Screen



EPE. EDIBON Practical Exercise Program Package Main Screen



ERS. EDIBON Results & Statistics Program Package - Question Explanation



ECAL. EDIBON Calculations Program Package Main Screen

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



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Edition: ED02/18  
 Date: December/2018

REPRESENTATIVE:

