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 ↳ PRODUCTS
 ↳ 40.- ELECTRICITY

INTRODUCTION

A stepper motor is a brushless DC electric motor that divides a full rotation into a number of equal steps. The motor's position can then be commanded to move and hold at one of these steps without any feedback sensor (an open-loop controller), as long as the motor is carefully sized to the application in respect to torque and speed.



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

GENERAL DESCRIPTION

The Applications of Stepper Motors "AEL-STMA" has been designed by Edibon for the study of the main operations performed in the industrial field with this type of electrical machines.

The student will learn the operations performed to control the sequence of actions of this type of machines by using several stepper motor controllers (basic and advanced).

Basic stepper motor controller (optional) allows manual poles commutation of the stepper motor to get the rotation of the machine.

Advanced stepper motor controller has installed a PLC that can be programmed by the user. On this way, the PLC can be programmed from scratch to develop the commutation sequence to control the stepper motor, the run investment and the speed.

The AEL-STMA includes the following modules:

- N-ALI02. Domestic Main Power Supply.
- N-ALI03. AC Auxiliary Power Supply.
- EMT19. Stepper Motor.

Additional and recommended modules (at least one these modules must be acquired):

- N-WVPP/B. Stepper Motor Controller (manual control).
- N-WVPP. Stepper Motor Controller (manual control and automatic control).

Expansion learning software:

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

Option A:

This application needs the following racks.

- 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.

SPECIFICATIONS

The application includes the following modules:

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

Supply voltage (Single-Phase): 230 VAC, PH+N+G.

ON-OFF removable key.

Output Voltage Connections:

Two Single-Phase: 230 VAC.

Single-Phase supply hose connecting plug.

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



N-ALI02

- **N-ALI03. AC Auxiliary Power Supply.**

Supply voltage (Single-Phase): 230VAC PH+N+G.

Output voltage:

Single-Phase 24 VAC / 12 VAC.

24 VDC.

0-24VDC through potentiometer.



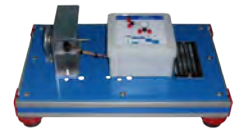
N-ALI03

- **EMT19. Stepper Motor.**

Nominal power: 5 W.

Nominal voltage: 5 VDC.

Nominal current: 1 A.



EMT19

Additional and recommended modules:

- **N-WVPP/B. Stepper Motor Controller (manual control).**

Supply voltage: 220 VAC, single-phase + ground.

DC input + ground connection. ON/OFF switch.

Output contacts: A, A', B, B' with 4 fuses.

Manual control with 4 switches.

Nominal current of the contacts: 2 A.



N-WVPP/B

- **N-WVPP. Stepper Motor Controller (manual control and automatic control).**

Supply voltage: 230 VAC.

Number of inputs: 8 (4 push-buttons + 4 switches).

Number of outputs: 4.

Output type: Relay.

Output capacity: 2 A.

Single-phase: 220 V; 6.3 VA.



N-WVPP

- **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.- Wiring and put into operation of a Stepper motor.
- 2.- Manual control of the step sequence of the Stepper motor (with the N-VVPP/B).
- 3.- Manual control of the Stepper motor shaft position (with the N-VVPP/B).
- 4.- Manual control of the turning speed of the Stepper motor (with the N-VVPP/B).
- 5.- PLC sequence commutation programming of the stepper motor poles (with the N-VVPP).
- 6.- Automatic control of the turning speed of the Stepper motor (with the N-VVPP).
- 7.- PLC programming of the switching sequence of the Stepper motor (with the N-VVPP).
- 8.- PLC programming of the switching speed of the Stepper motor (with the N-VVPP).
- 9.- PLC automation of the Stepper motor motion (with the N-VVPP).

REQUIRED SERVICES

- Electrical supply: three-phase, 380V/50 Hz or 208V/60 Hz., 20 Kw.

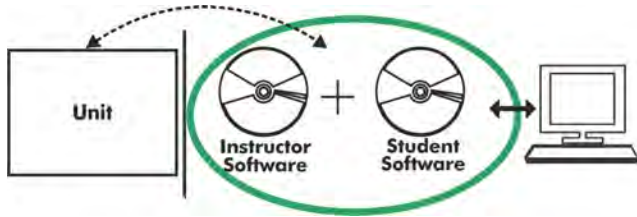
DIMENSIONS AND WEIGHTS

AEL-STMA:

- Dimensions: 640 x 320 x 320 mm approx.
(25.19 x 12.59 x 12,59 inches approx.)
- Weight: 50 Kg approx.
(110 pounds approx.)

Optional

AEL-STMA/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.

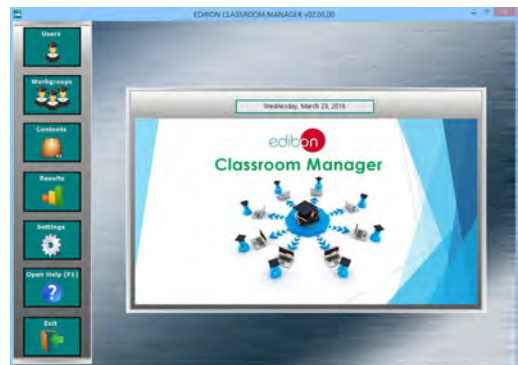
Instructor Software

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

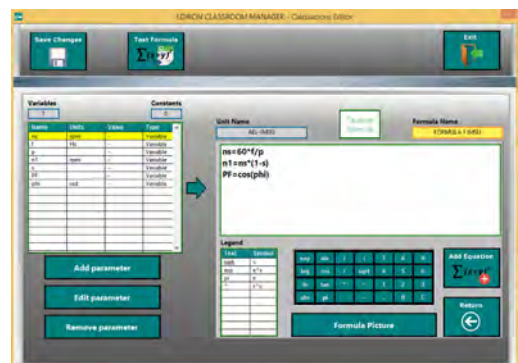
ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual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

Innovative features:

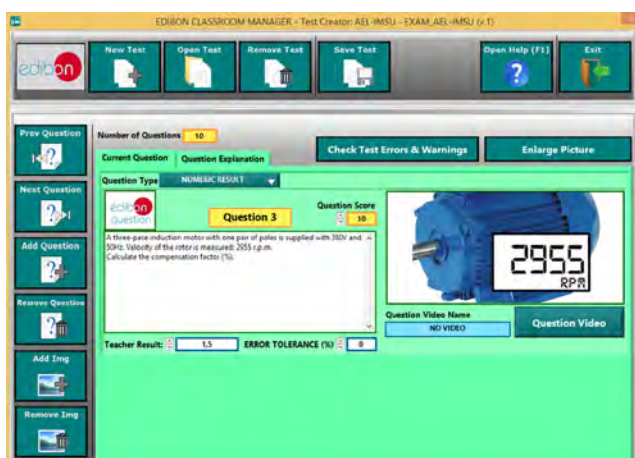
- User Data Base Management.
- Administration and assignment of Workgroup, Task and Training sessions.
- Creation and Integration of Practical Exercises and Multimedia Resources.
- Custom Design of Evaluation Methods.
- Creation and assignment of Formulas & Equations.
- Equation System Solver Engine.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

Optional
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:

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



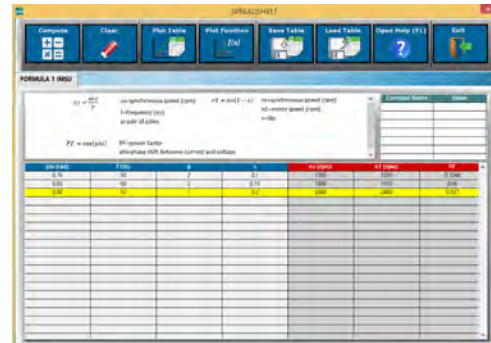
ESL-SOF. EDIBON Student LabSoft (Student Software)
Application Main Screen



EPE. EDIBON Practical Exercise Program Package Main Screen



ERS. EDIBON Results & Statistics Program Package - Question Explanation



ECAL. EDIBON Calculations Program Package Main Screen

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



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REPRESENTATIVE:

