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 ↳ PRODUCTS
 ↳ 40.- ELECTRICITY

INTRODUCTION

The electric motors are devices capable of transforming electrical energy into mechanical energy. The DC permanent magnet motors are very used in industrial installations due to its great robustness, reliability and low cost. The starting current consumed by these motors is very high, being harmful to the machine and the protections. The soft starters aim at reducing these currents close to the nominal values. For this purpose it is very important to know several operations carried out with these electrical machines.



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 Application of DC Permanent Magnet Motors "AEL-DCPMA" is designed for the study of the main operations performed in the industrial field with DC Permanent Magnet Motors.

The student will learn the most important operations of these electrical machines faithfully by using commutators, timers and contactors.

The AEL-DCPMA includes the following modules:

- N-ALI02. Domestic Power Supply.
- N-PUL48. 3 Double Chamber Push-Buttons.
- N-LAM02. Auxiliary Lamps.
- N-CON01. 3-pole Contactor (24 VAC). (3 units)
- N-ALI03. AC Auxiliary Power Supply.
- N-WVCC/M. DC Motor Speed Controller (Intermediate option).
- EMT15. DC Permanent magnet motor.

Additional and recommended measurement instrumentation modules:

- N-MED17. DC Voltmeter (0-200 V).
- N-MED05. DC Ammeter (0-1.5 A).

If the Option A (modules mounted on rack) is chosen, the rack/s required will depend on the optional modules requested by the customer.

Expansion learning software:

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

Option A:

This application needs the following rack:

- 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.

SPECIFICATIONS

The application includes the following modules:

- **N-ALI02. Domestic 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-PUL48. 3 Double Chamber Push-Buttons.**

Two independent chambers.

Nominal voltage: 24 VAC.

Three double chamber push-buttons (green and red).

Contacts:

Three Normally Open Contacts (NO) for green switch.

Three Normally Close Contacts (NC) for red switch.

Ground terminal.



N-PUL48

- **N-LAM02. Auxiliary Lamps.**

Nominal voltage: 24 VAC.

Three lamps (red, yellow and green).

Ground terminal.



N-LAM02

- **N-CON01. 3-pole Contactor (24 VAC). (3 units)**

Nominal voltage for power contacts: 400 VAC.

Nominal voltage for control contacts: 24 VAC.

Nominal voltage for the control coil: 24 VAC.

Contacts:

One three-phase Normally Open Contact (NO) for power circuit.

Three Normally Open Contacts (NO) for control circuit.

Two Normally Close Contacts (NC) for control circuit.

Ground terminal.



N-CON01

Specifications

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

Supply voltage (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-WCC/M. **DC Motor Speed Controller (Intermediate option).**

Supply voltage: 230 VAC.

Variable output voltage: 0-300 VCC.

Fuse: 2 A.



N-WCC/M

- EMT15. **DC Permanent magnet motor.**

Nominal power: 100 W.

Armature voltage: 200 VDC.

Armature current: 0,5 A.

RPM: 3000 r.p.m.



EMT15

Additional and recommended measurement instrumentation modules:

- N-MED17. **DC Voltmeter (0-200 V).**

Measurement range: 0-200 VDC.

Terminals:

Measurement terminals.

Ground terminals.



N-MED17

- N-MED05. **DC Ammeter (1-1, 5 A).**

Measurement range: 0-2 ADC.

Terminals:

Measurement Terminals.

Ground Terminal.

Fuse: 3 A.



N-MED05

- **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.- Speed control of the DC permanent magnet motor. | 4.- Current control of the DC permanent magnet motor. |
| 2.- Turning direction control of the DC permanent magnet motor. | 5.- Turning inversion of the DC permanent magnet motor. |
| 3.- Speed reading of the DC permanent magnet motor. | 6.- Starting of the DC permanent magnet motor. |

REQUIRED SERVICES

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

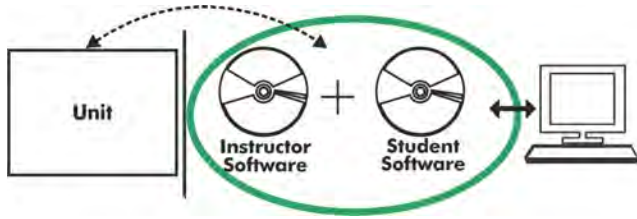
DIMENSIONS AND WEIGHTS

AEL-DCPMA:

- Dimensions: 640 x 320 x 670 mm approx.
(25.19 x 12.59 x 26.37 inches approx.)
- Weight: 25 Kg approx.
(55 pounds approx.)

Optional

AEL-DCPMA/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.

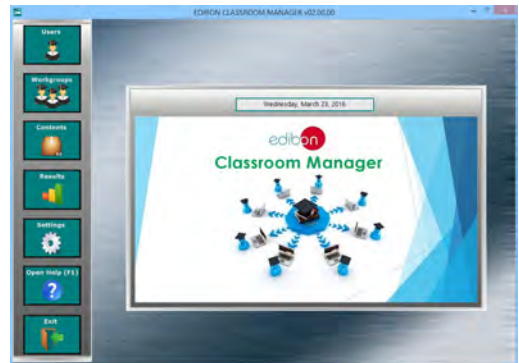
Instructor Software

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

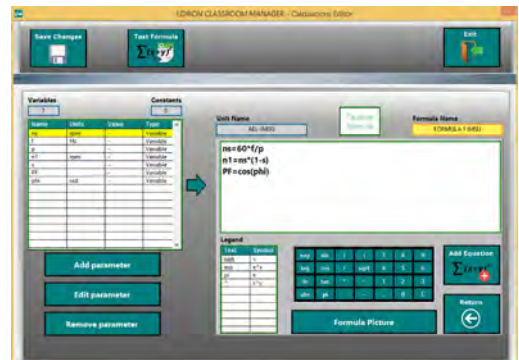
ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual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

Innovative features:

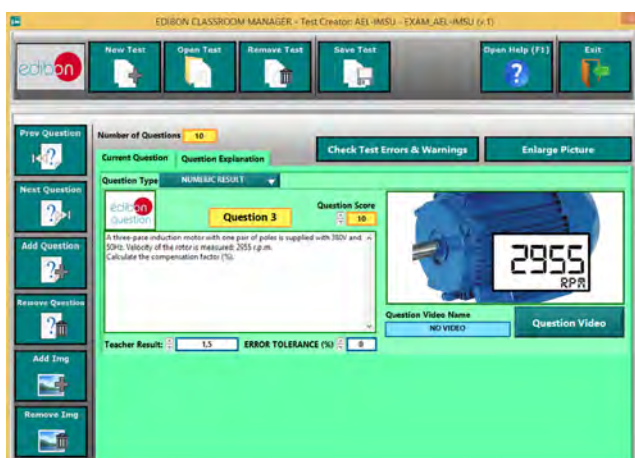
- User Data Base Management.
- Administration and assignment of Workgroup, Task and Training sessions.
- Creation and Integration of Practical Exercises and Multimedia Resources.
- Custom Design of Evaluation Methods.
- Creation and assignment of Formulas & Equations.
- Equation System Solver Engine.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



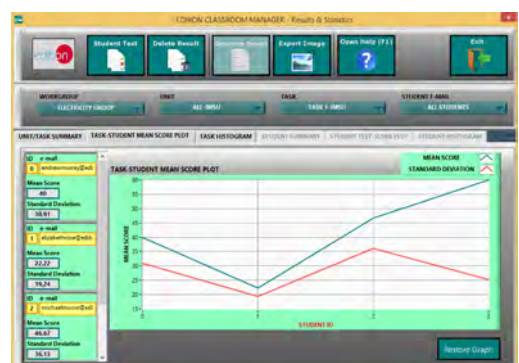
ECM-SOF. EDIBON Classroom Manager (Instructor Software) Application Main Screen



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

