



Electrical Machines



FREC



EMT7

www.edibon.com
 ↳ PRODUCTS
 ↳ 40.- ELECTRICITY

INTRODUCTION

The reasons for use frequency controllers instead of conventional methods are the multiple possibilities that allow the frequency controllers such as smooth starting, smooth acceleration and deceleration time, stopping methods, reversal of motor, power factor improvement and costs saving.



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 AEL-EMCF Electrical Machines Control through Frequency Controller trainer has been designed by Edibon to instruct in managing of frequency controllers for the control of three phase induction electrical machines.

This trainer offers the possibility to study the commissioning of the frequency controller by programming basic functions such as the adjusting of the rotation direction parameter, starting/stopping functions, the frequency commutation parameter, programming the nominal voltage, nominal current, nominal frequency, etc. Besides, the user can study the operational performance, measuring power and RMS and realize different experiments with loads through to the Eddy Current Brake.

The AEL-EMCF includes the following modules:

- N-ALI01. Industrial Power Supply
- N-WCA. Advanced AC Motor Speed Controller.
- N-WCC/M. DC Motor Speed Controller.
- FRECP. Eddy Current Brake.
- EMT7. Asynchronous Three-Phase Motor of Squirrel Cage.

Optional learning software:

In addition, Edibon provides optional software (AEL-EMCF/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-EMCF 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.

SPECIFICATIONS

The trainer includes the following modules:

- **N-ALI01. Industrial Main Power Supply**

Supply voltage: 400 VAC, 3PH+N+G.

ON-OFF removable key.

Output voltage connections:

Three-Phase + Neutral: 400 VAC.

Single-Phase: 230 VAC.

Three-Phase supply hose with IP44 3PN+E 32A 400V connecting plug.

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



N-ALI01

- **N-WCA. Advanced AC Motors speed controller**

Supply voltage: 230 VAC.

Supply voltage: 230 VAC.

Nominal power: 0,75 kW.

PWM output voltage connections:

Three-Phases: 230 VAC.

Digital inputs control panel: 5 configurable digital inputs.

Analog inputs control panel:

0-10V analog input for speed control.

4-20mA analog input for speed control.

10K, potentiometer for the induction motor control speed.

2 relay outputs for alarms configuration: 2 outputs NO/NC.

50 mA, 2 transistor outputs for alarms configuration.

Setting and visualization display of the machine parameters.



N-WCA

- **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

- **FRECP. Eddy Current Brake**

Maximum supply voltage: 60 VCC.

Nominal current: 1,67 A.

Maximum current: 1,8 A.

Maximum braking torque: 1,4 Nm.



FRECP

Specifications

- **EMT7. Asynchronous three-phase motor of squirrel cage**

Nominal power: 370 W.

Nominal voltage: 3x 230/400 VAC Δ/Y .

Frequency: 50/60 Hz.

Number of poles: 2.

Speed: 2730 r.p.m.

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



EMT7

- **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 the Asynchronous Three-Phase Motor of Squirrel Cage.
- 2.- Adjusting the necessary values in the frequency controller to put in operation the induction motor.
- 3.- Adjusting the rotation direction.
- 4.- Adjusting the start function.
- 5.- Adjusting the frequency commutation, nominal voltage, nominal current, nominal frequency, etc.
- 6.- Study the operational performance in the frequency controller.
- 7.- Measuring power and RMS.
- 8.- Realize different experiments with loads.
- 9.- U/f function optimization.
- 10.- Study of acceleration and deceleration ramps.
- 11.- Study of stopping methods of a motor.
- 12.- Study of power factor and efficient improvement.

REQUIRED SERVICES

- Electrical supply: single phase, 220 V./50 Hz. or 110 V./60 Hz.

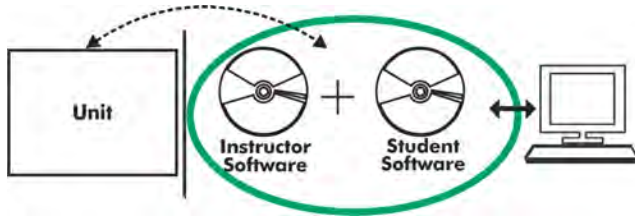
DIMENSIONS AND WEIGHTS

AEL-EMCF:

- Dimensions: 640 x 320 x 670 mm. approx.
(25.19 x 12.59 x 26.37 inches approx.)
- Weight: 50 Kg. approx.
(110 pounds approx.)

Optional

AEL-EMCF/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.

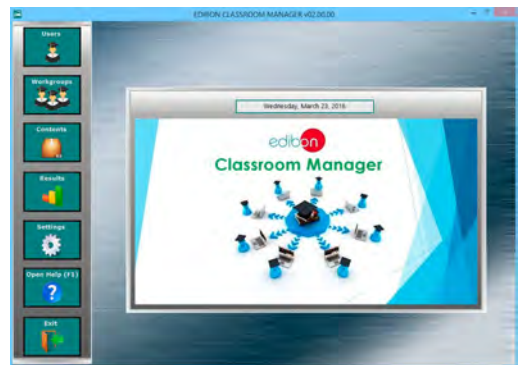
Instructor Software

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

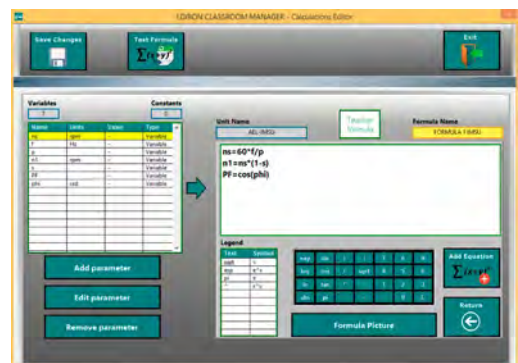
ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual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

Innovative features:

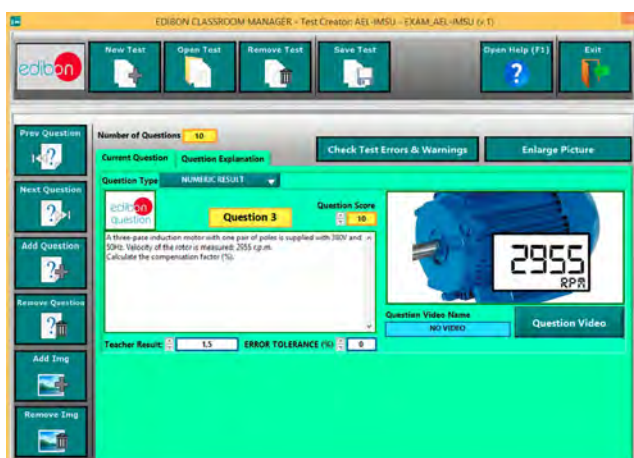
- User Data Base Management.
- Administration and assignment of Workgroup, Task and Training sessions.
- Creation and Integration of Practical Exercises and Multimedia Resources.
- Custom Design of Evaluation Methods.
- Creation and assignment of Formulas & Equations.
- Equation System Solver Engine.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



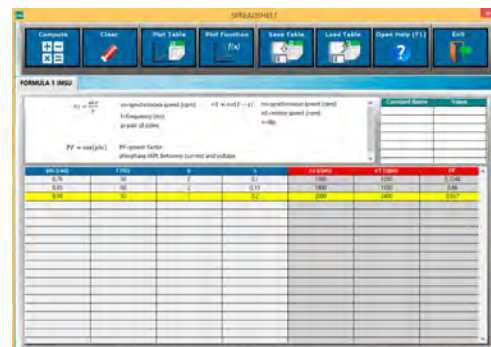
ESL-SOF. EDIBON Student LabSoft (Student Software) Application Main Screen



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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Edition: ED01/17
Date: April/2017

REPRESENTATIVE:

