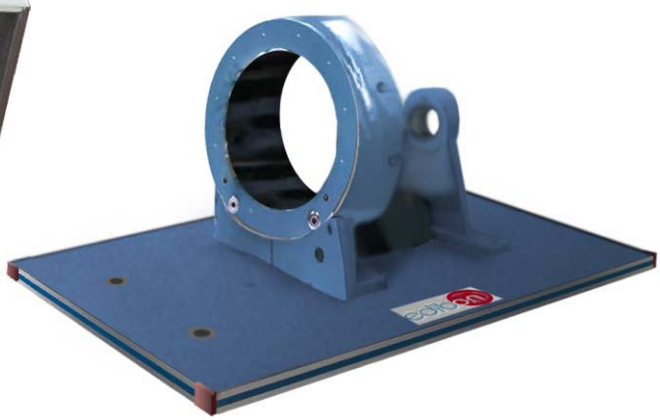
Technical Teaching Equipment

Disassembly Machines Kit

EMT-KIT



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Products
Products range
Units
4.-Electricity

DESCRIPTION

This Disassembly Machines Kit "EMT-KIT" allows the student to construct, operate and make more than 50 assemblies and practices of different electrical machines.

We have designed EMT-KIT to introduce students to electrical machines basic principles and a good understanding of motors and generators operation.

The student, using this Kit, will see clearly the machines components and how interconnecting them, both electrically and mechanically.

The different machines have protected rotating parts, use low voltages, but the machines characteristics are compatible to their industrial models equivalents.

ISO:9001-2000 Certificate of Approval. Reg. No. E204034

European Union Certificate

Certificates ISO 14001: 2004 and **ECO-Management and Audit Scheme**
(environmental management)

Worlddidac Quality Charter Certificate Worlddidac Member

SPECIFICATIONS

Baseplate.
Frame ring.
Fixed and removable bearing housings.
Shaft.
Squirrel cage rotor.
Wound stator.
Centrifugal switch.
Couplings.
Hand crank.
Interpoles.
Armature poles and Hub.
Armature, field and interpole coils.
Compound field coils.
Field poles.
Brush holders.
Brushes.
Commutator/slip rings.
Robust case for the elements.
Necessary tools and elements for normal working operation.
All machines that may be assembled use low voltage.
Protected rotating parts.
Operating at low power levels.
Control switches and resistive and capacitive elements included.
Power supply system:

The mains supply required is a 5-wire, 380/415V three-phase 50/60Hz power system with neutral and earth connections.

The power supplies in the unit have over-current circuit breakers for equipment protection and differential protection for student safety, and have variable voltage outputs for DC, single-phase AC and three-phase AC.

This power supply has three-phase AC variable supply totally adjustable, single-phase AC variable supply totally adjustable and DC power supply totally adjustable. This unit cover all possibilities motors requirements.

Brake dynamo.
Tacho-dynamo.
Mobile elements are protected, and electrical protections available.
Manuals:

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

EXERCISES AND PRACTICAL POSSIBILITIES

The student can study and make theses machines assemblies:

1.- Machines operating principles.
2.- Electromagnetism introduction.
3.- Basic DC and AC generators.
4.- DC shunt motor (with and without interpoles).
5.- DC shunt motor faults.
6.- DC series motor (with and without interpoles).
7.- DC compound motor (with and without interpoles).
8.- DC shunt generator (with and without interpoles).
9.- DC series generator (with and without interpoles).
10.- DC compound generator (with and without interpoles).
11.- DC separately excited generator (with and without interpoles).
12.- Single-phase AC series universal motor.
13.- Single-phase AC induction motor, squirrel cage (4 pole).
14.- Single-phase AC induction motor, squirrel cage (2 pole).
15.- Single-phase AC synchronous motor/generator (4 pole).
16.- Single-phase AC synchronous motor/generator (2 pole).
17.- Single-phase AC repulsion motor.
18.- Single-phase AC generator, rotating armature.
19.- Single-phase AC generator, rotating field.
20.- AC brushless generator.
21.- Three-phase AC induction motor, squirrel cage (4 pole).
22.- Three-phase AC induction motor, squirrel cage (2 pole).
23.- Three-phase AC synchronous motor (2 pole).
24.- Three-phase AC synchronous generator (2 pole).
25.- Shaded pole induction motor.
26.- Split field series motor.
27.- Stepper motors.
28.- 4 pole induction motor faults.
29.- Pole changing induction motor.
30.- Synchronous motor characteristics.
31.- Synchronisation.
32.- AC motors power factor correction.
33.- DC motor dynamic braking.

RECOMMENDED ACCESSORIES

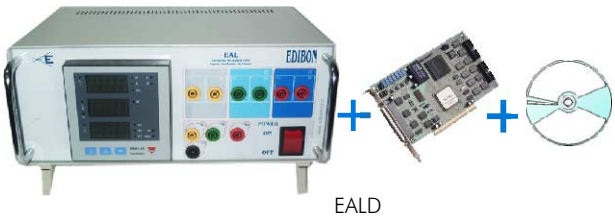
- EAL. **Network Analyzer Unit**

This unit shows the main electric parameters on the electric network through the interface and an easy parameter selection.
Steel box. Diagram in the front panel.
3 current inputs. 3 voltage terminals.
Control and visualization digital display.
Voltage: Range 20 - 500 Vrms. Prec.: ± 0.5%. Phase to phase-Phase to neutral.
Current: Range 0.02 - 5 Arms. Prec.: ± 0.5%.
Frequency: Range 40 - 500 Hz. Prec.:± 0.5%.
Power: Active, Reactive and Apparent. Range 0.01 to 9900 kW. Prec.: ±1%.
Power Factor:Power Factor for each phase and average. Range -0.1 to + 0.1. Prec.±1%.
Temperature: Average temperature by an internal sensor. Range 0-60 °C. Prec.:±2 °C.
Power supply: 220 V/50 Hz. - 110 V/60Hz.
Dimensions: 300 x 180 x 120 mm. Approx. Weight: 3 Kg. Approx.
*It has to be complemented with a digital multimeter when working with DC.

EAL

Other available versions:

- EALD. **Network Analyzer Unit, with Computer Data Acquisition + Oscilloscope (PC)**



EALD

- EALDG. **Network Analyzer Unit, with Computer Data Acquisition +Oscilloscope (PC) +Oscilloscope Display**

EALDG

- MUAD. **Power Data Acquisition System**

MUAD System includes EPIB + DAB + MUAD/SOF:

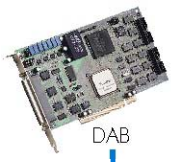
1)Hardware :

1.1) **EPIB. Electric power interface box** (dimensions: 300 x 120 x 180 mm. approx.):
Interface that carries out the conditioning of the diverse signals that can be acquired in a process, for their later treatment and visualisation.
Front panel separated in two: left-hand part for VOLTAGE sensors, and right-hand part for CURRENT
Sensors.
- 8 analog input channels.
- 4 Tension sensors AC/DC, 400V.
- Sampling range: 300KHz for single channel.
- 4 Current sensors.


EPIB

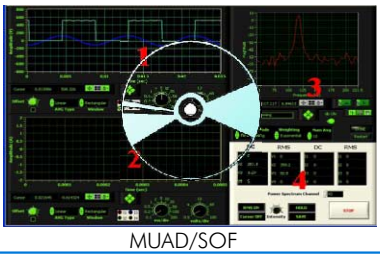
+

1.2) **DAB. Data acquisition board :**
PCI Data acquisition board (National Instruments) to be placed in a computer slot. Bus PCI.
Analog input:
Number of channels= 16 single-ended or 8 differential. Sampling rate up to: 250 KS/s.
Analog output:
Number of channels=2. Maximum output rate up to: 833 KS/s.
Digital Input/Output:
Number of channels=24 inputs / outputs.
Timing: Counter/timers=2.


DAB

+

2) **MUAD/SOF. Data acquisition software :**
Data Acquisition Software with Graphic Representation:
Amicable graphical frame. Compatible with actual Windows operating systems.
Configurable software allowing the representation of temporal evolution of different signals.
Visualization of circuit tensions on the computer screen.
Sampling rate up to 250 KS/s (Kilo samples per second) guaranteed.
* Software is available in English and Spanish. Any other language available on request.



MUAD/SOF

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

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REPRESENTATIVE:

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