

## INTRODUCTION

Deflection is the deformation suffered by an element due to the effect of internal bendings.

The structure of a building is commonly arranged in portal frames. A portal frame is the group of beams and pillars found in the same vertical plane of the building. In the portal frames, beam-pillar joints can be articulated (supported) or rigid (fixed). They are usually rigid structures.

With the Portal Frame Unit, "MPO", vertical and horizontal deflections generated in a rectangular portal frame when it is subjected to different loads, horizontally and vertically respectively, are studied. With the tests, it is studied on a small scale, what would occur in reality with rectangular portal frames when they are subjected to wind, snow or the load of a building element, and also the deformation produced in beams and pillars.

## GENERAL DESCRIPTION

The Portal Frame Unit "MPO" allows to perform vertical deflection and horizontal deflection measurements in a fixed rectangular portal frames.

To carry out the deflection tests, a series of loads with different weight must be applied to the rectangular portal frame. If the loads are applied on the central hook a vertical deflection will be generated, whereas if they are applied on the pulley included in the unit a horizontal deflection will be generated.

There are two dial gauges to measure the deflections generated.



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

## SPECIFICATIONS

Bench-top unit with adjustable legs.

Anodized aluminum structure and panels in painted steel.

The MPO unit mainly consists of:

Rectangular portal frame made of F114 steel:

Height: 330 mm.

Length: 480 mm.

Section: 15 mm x 4mm.

Cord and pulley to hang the masses horizontally.

Hook to hang masses vertically.

Two dial gauges, range: 0-10mm., accuracy: 0.01 mm.

In order to carry out some of the practices with MPO unit, a "B" Type Set of weights is required. (See "Required Accessories" section).

Manuals: This unit is supplied with the following manuals: Required services, Assembly and Installation, Starting-up, Safety, Maintenance and Practices Manual.

## EXERCISES AND PRACTICAL POSSIBILITIES

- 1.- To determine the experimental value of the vertical deflection in a point subjected to a vertical load in a rectangular portal frame.
- 2.- To determine the experimental value of the horizontal deflection in a point subjected to a horizontal load in a rectangular portal frame.
- 3.- To determine the experimental value of the vertical and horizontal deflection in two points subjected to two loads, a horizontal load and a vertical load in a rectangular portal frame.
- 4.- To compare the theoretical and experimental results.
- 5.- To determine the theoretical value of the bending moments and reactions when a vertical deflection is generated.
- 6.- To determine the theoretical value of the bending moments and reactions when a horizontal deflection is generated.

## REQUIRED ACCESSORIES (Not included)

- 1 "B" Type Set of weights. Each Set B includes:

6 weights of 200 gr. (0.44 pounds).

6 weights of 100 gr. (0.22 pounds).

2 weights of 50 gr. (0.11 pounds).

2 weights of 20 gr. (0.044 pounds).

2 weights of 10 gr. (0.022 pounds).

1 support hook of 100 gr. (0.22 pounds).

## DIMENSIONS AND WEIGHT

-Dimensions: 550 x 500 x 550 mm. approx.

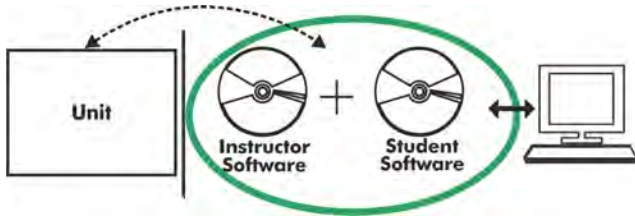
(21.65 x 19.68 x 21.65 inches approx.)

-Weight: 15 Kg. approx.

(33 pounds approx.).

## Optional

### MPO/ICAI. Interactive Computer Aided Instruction Software System:



Without no physical connection between unit and computer (PC), this complete software package consists of an Instructor Software (EDIBON Classroom Manager -ECM) totally integrated with the Student Software (EDIBON Student Labsoft -ESL). Both are interconnected so that the teacher knows at any moment what is the theoretical and practical knowledge of the students.

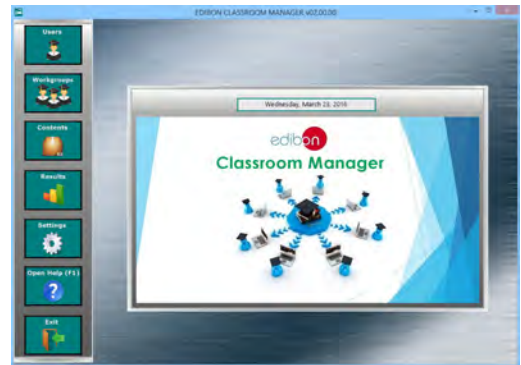
### Instructor Software

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

ECM 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:

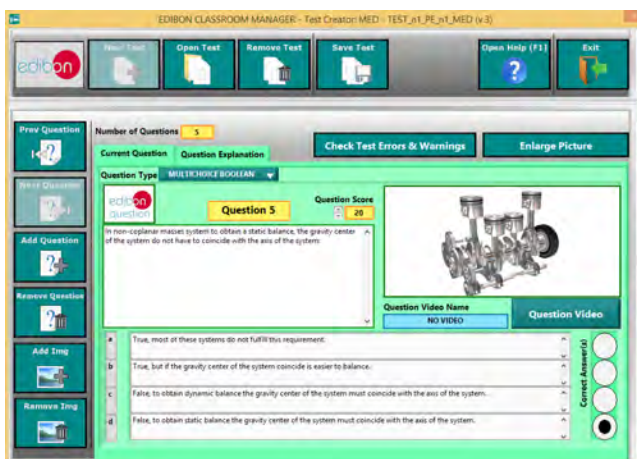
- User Data Base Management.
- Administration and assignment of Workgroups, Tasks and Training sessions.
- Creation and Integration of Practical Exercises and Multimedia Resources.
- Custom Design of Evaluation Methods.
- Creation and assignment of Formulas & Equations.
- Equation System Solver Engine.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



ECM. 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. EDIBON Student Labsoft (Student Software).**

ESL 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.

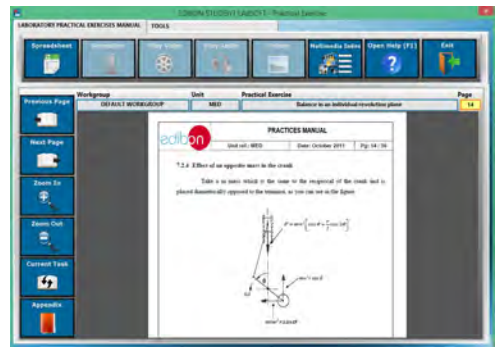
Innovative features:

- 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.**

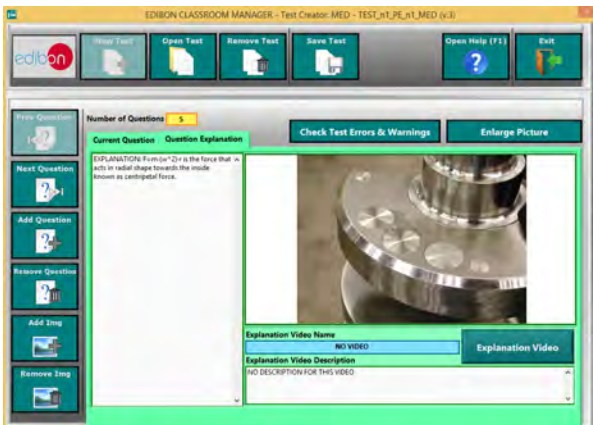
For more information see ICAI catalogue. Click on the following link:  
[www.edibon.com/products/catalogues/en/ICAI.pdf](http://www.edibon.com/products/catalogues/en/ICAI.pdf)



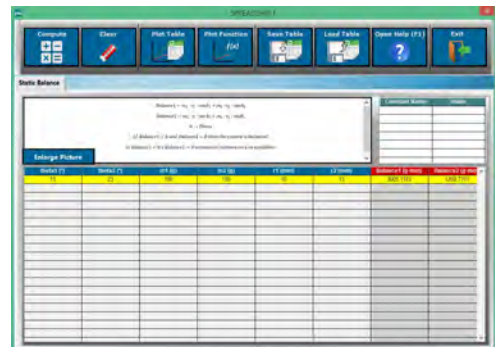
ESL. EDIBON Student LabSoft (Student Software) Application Main Screen



EPE. EDIBON Practical Exercise Program Package Main Screen



ERS. EDIBON Results & Statistics Program Package-Question Explanation



ECAL. EDIBON Calculations Program Package Main Screen

**BDAS. Basic Data Acquisition System and Sensors.**

For being used with mechanical modules.

BDAS is designed to monitor the measurements of each mechanical module from a computer (PC).

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



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REPRESENTATIVE

