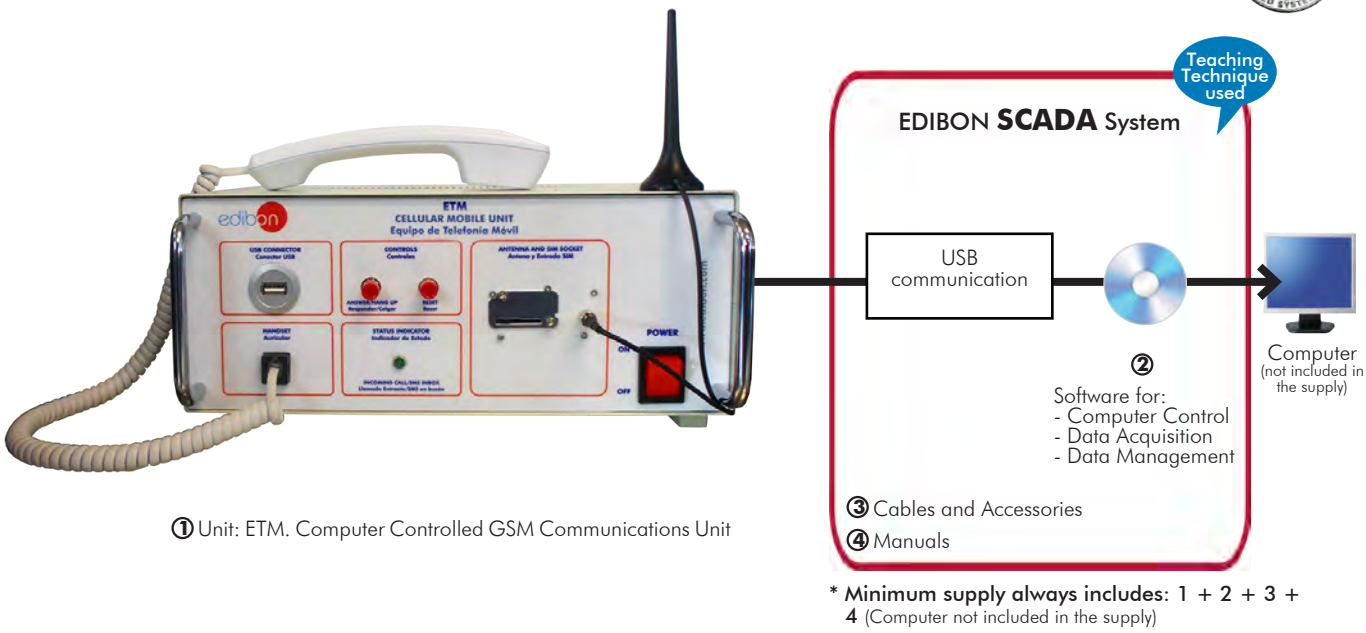
Engineering and Technical Teaching Equipment

Computer Controlled **GSM Communications Unit,** with SCADA

ETM



① Unit: ETM. Computer Controlled GSM Communications Unit

* Minimum supply always includes: 1 + 2 + 3 + 4 (Computer not included in the supply)

Key features:

- **Advanced Real-Time SCADA.**
- **Specialized EDIBON Control Software based on LabVIEW.**
- **Open Control + Multicontrol + Real-Time Control.**
- **Projector and/or electronic whiteboard compatibility allows the unit to be explained and demonstrated to an entire class at one time.**
- **Capable of doing applied research, real industrial simulation, training courses, etc.**
- **Remote operation and control by the user and remote control for EDIBON technical support, are always included.**
- **Totally safe, utilizing 4 safety systems (Mechanical, Electrical, Electronic & Software).**
- **Designed and manufactured under several quality standards.**
- **Optional ICAI software to create, edit and carry out practical exercises, tests, exams, calculations, etc. Apart from monitoring user's knowledge and progress reached.**
- **This unit has been designed for future expansion and integration. A common expansion is the EDIBON Scada-Net (ESN) System which enables multiple students to simultaneously operate many units in a network.**

OPEN CONTROL + MULTICONTROL + REAL TIME CONTROL

POWERED BY LabVIEW

www.edibon.com
PRODUCTS
3.- COMMUNICATIONS

For more information about Key Features, click here

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)

"Worlddidac Quality Charter" and Platinum Member of Worlddidac

INTRODUCTION

Mobile telephony is one of the most important development of the modern civilization. The Mobile telephony has a big impact in all fields of society; economy, human relationships, security, information, etc. The mobile technology increase the impact capability every time that a mobile service is available to the public. It is important to know how it work the main services that offers the Mobile telephony.

Computer Controlled GSM Communications Unit, "ETM", is a complete unit to study the basic services of the mobile telephony. The ETM allows to perform the practical exercises with the local GSM network in order to understand how works a real mobile network.

ETM unit is provided with a set of practical exercises, through which the students will familiarize with the basic concepts of the mobile telephony. The students will understand the steps to use the basic mobile services as SMS technology, mobile call service, steps to connection and disconnection with the GSM network, AT commands, etc.

GENERAL DESCRIPTION

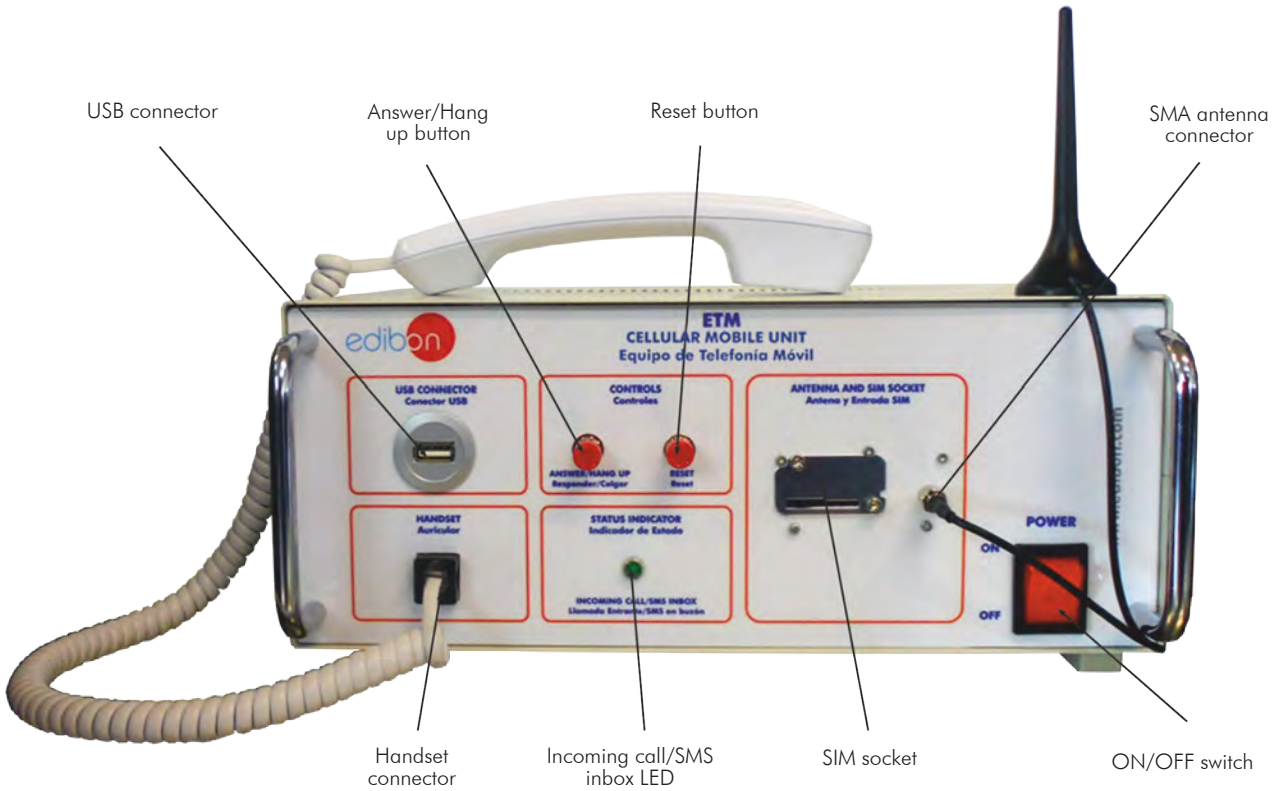
The Computer Controlled GSM Communications Unit, "ETM", operates in conjunction with a computer, which is connected with the ETM interface box through a USB connector. The ETM software allows the students to visualize in an easy way the AT commands sent and received to the SIM card to perform the different mobile phone services.

The ETM unit allows to use the basic mobile services and visualize the steps needed to it, through the computer. The ETM unit also allows to study the management of the SIM card memory for SMS inbox, phonebook, etc.

This Computer Controlled Unit is supplied with the EDIBON Computer Control System (SCADA), and includes: The unit itself + Computer Control , Data Acquisition and Data Management Software Packages, for controlling the process and all parameters involved in the process.

PROCESS DIAGRAM AND UNIT ELEMENTS ALLOCATION

OPEN CONTROL + MULTICONTROL + REAL TIME CONTROL



With this unit there are several options and possibilities:
- Main items: 1, 2, 3 and 4.
- Optional items: 5, 6 and 7.

Let us describe first the main items (1 to 4):

① ETM. Unit:

GSM transceiver:
- 850 MHz/900MHz:
  - E-GSM.
  - Out power: class 4 (2W).
  - Fully compliant with ETSI GSM phase 2 + normal MS.
- 1800MHz/1900MHz:
  - Out power: class 1 (1W).
  - Fully compliant with ETSI GSM phase 2 + normal MS.
- GPRS class 10.
- SIM interface 1.8/3V.
- SMA main antenna.

Antenna and SIM socket:
- SIM slot to SIM card.
- SMA connector to GSM antenna.

GSM antenna:
- GSM 900/1800.
- Cable 2.6 mts.

Phone:
- RJ-11 connector to telephone handset.

Telephone handset.

Two Controls buttons and status led indicator.

USB connector to computer.

The complete unit includes as well:

Advanced Real-Time SCADA.

Open Control + Multicontrol + Real-Time Control.

Calibration exercises, which are included, teach the user how to calibrate a sensor and the importance of checking the accuracy of the sensors before taking measurements.

Projector and/or electronic whiteboard compatibility allows the unit to be explained and demonstrated to an entire class at one time.

Capable of doing applied research, real industrial simulation, training courses, etc.

Remote operation and control by the user and remote control for EDIBON technical support, are always included.

Totally safe, utilizing 4 safety systems (Mechanical, Electrical, Electronic & Software).

Designed and manufactured under several quality standards.

Optional ICAI software to create, edit and carry out practical exercises, tests, exams, calculations, etc. Apart from monitoring user's knowledge and progress reached.

This unit has been designed for future expansion and integration. A common expansion is the EDIBON Scada-Net (ESN) System which enables multiple students to simultaneously operate many units in a network.

Unit: ETM

② ETM/CCSOF. Computer Control + Data Acquisition + Data Management Software:

The three softwares are part of the SCADA system.

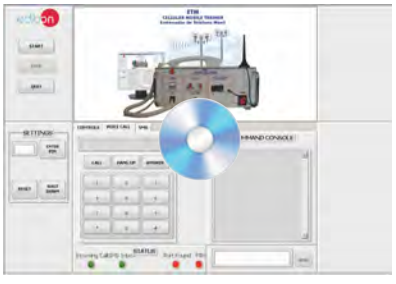
Compatible with actual Windows operating systems. Graphic and intuitive simulation of the process in screen. **Compatible with the industry standards.**

Flexible, open and multicontrol software.

Management, processing, comparison and storage of data.

It allows to visualize the communication with the SIM card through the command console of the ETM/CCSOF.

This unit allows the 30 students of the classroom to visualize simultaneously all the results and the manipulation of the unit, during the process, by using a projector or an electronic whiteboard.


ETM/CCSOF

③ Cables and Accessories, for normal operation.

④ Manuals:

This unit is **supplied with the following manuals**: Required Services, Assembly and Installation, Control Software, Starting-up, Safety, Maintenance & Practices Manuals.

∗References 1 to 4 are the main items: ETM + ETM/CCSOF + Cables and Accessories + Manuals are included in the minimum supply for enabling normal and full operation.

EXERCISES AND PRACTICAL POSSIBILITIES TO BE DONE WITH THE MAIN ITEMS

1.- Familiarization with the unit.
2.- Configuration and study of the mobile phone parameters.
3.- Study of the call process.
4.- Study of the answer and hang up processes.
5.- Study of the SMS reception and SMS reading processes.
6.- Study of the SMS sending process.
7.- Configuration of the audio and frequency bands.
8.- Knowledge of AT commands using the command console.
9.- Analysis of a mobile phone status and SIM card.

Other possibilities to be done with this Unit:

10.- Many students view results simultaneously.
To view all results in real time in the classroom by means of a projector or an electronic whiteboard.
11.- Open Control, Multicontrol and Real Time Control.
This unit allows intrinsically and/or extrinsically to change the span, gains; proportional, integral, derivative parameters; etc, in real time.
12.- The Computer Control System with SCADA allows a real industrial simulation.
13.- This unit is totally safe as uses mechanical, electrical/electronic, and software safety devices.
14.- This unit can be used for doing applied research.
15.- This unit can be used for giving training courses to Industries even to other Technical Education Institutions.
16.- Control of the ETM unit process through the control interface box without the computer.

- Several other exercises can be done and designed by the user.

REQUIRED SERVICES

- Electrical supply: single-phase 200 VAC – 240 VAC/50 Hz or 110 VAC – 127 VAC/60 Hz.
- SIM card: GSM TS 11.11.

REQUIRED ELEMENTS

- AEL-PC. Touch Screen and Computer.
or
- PC. PC to work with the unit.

DIMENSIONS AND WEIGHTS

-Dimensions: 310 x 220 x 145 mm approx.
(12.20 x 8.66 x 5.70 inches approx.)
-Weight: 3 Kg approx.
(6.6 pounds approx.).

SIMILAR UNITS AVAILABLE

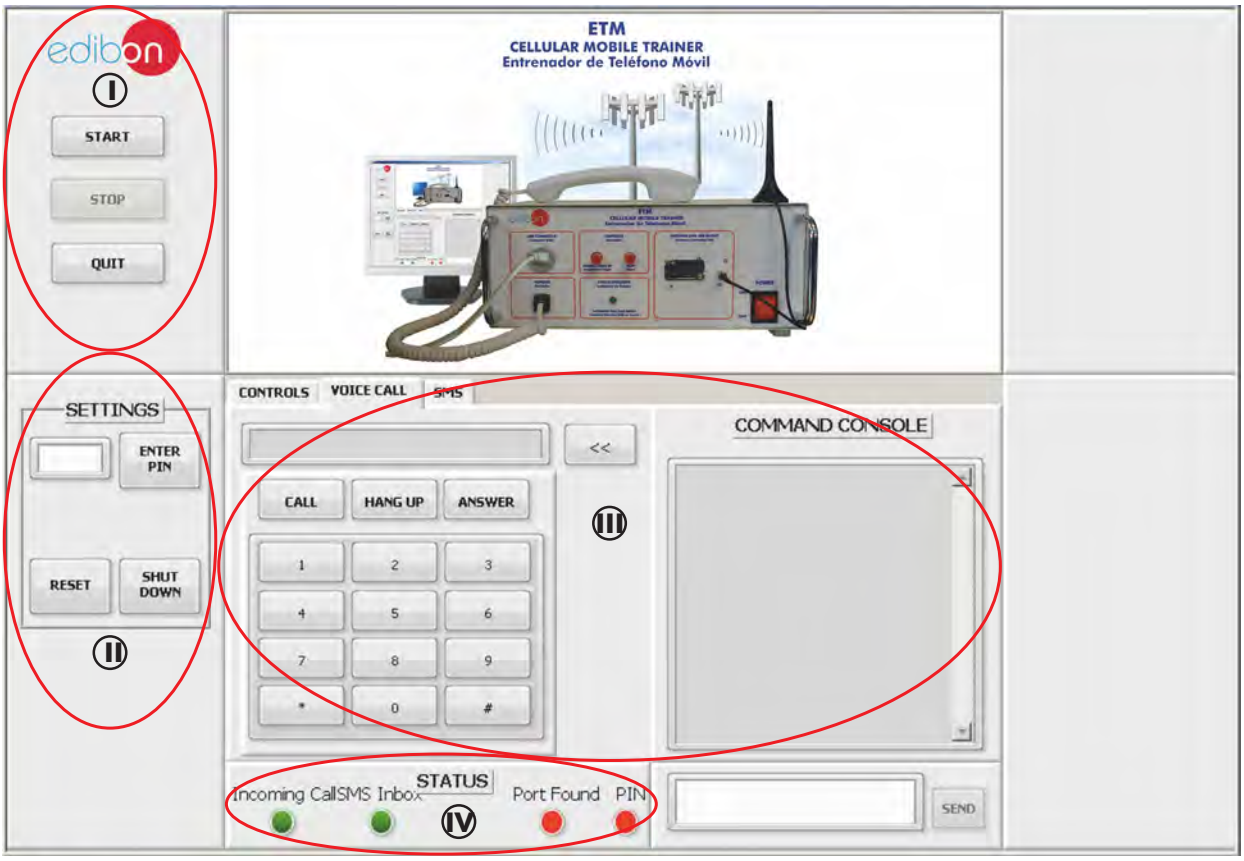
Offered in this catalog:

- ETM. Computer Controlled GSM Communications Unit.

Offered in other catalogs:

- EBL. Bluetooth Unit.
- EGPS. GPS Unit.

SCADA
Main screen



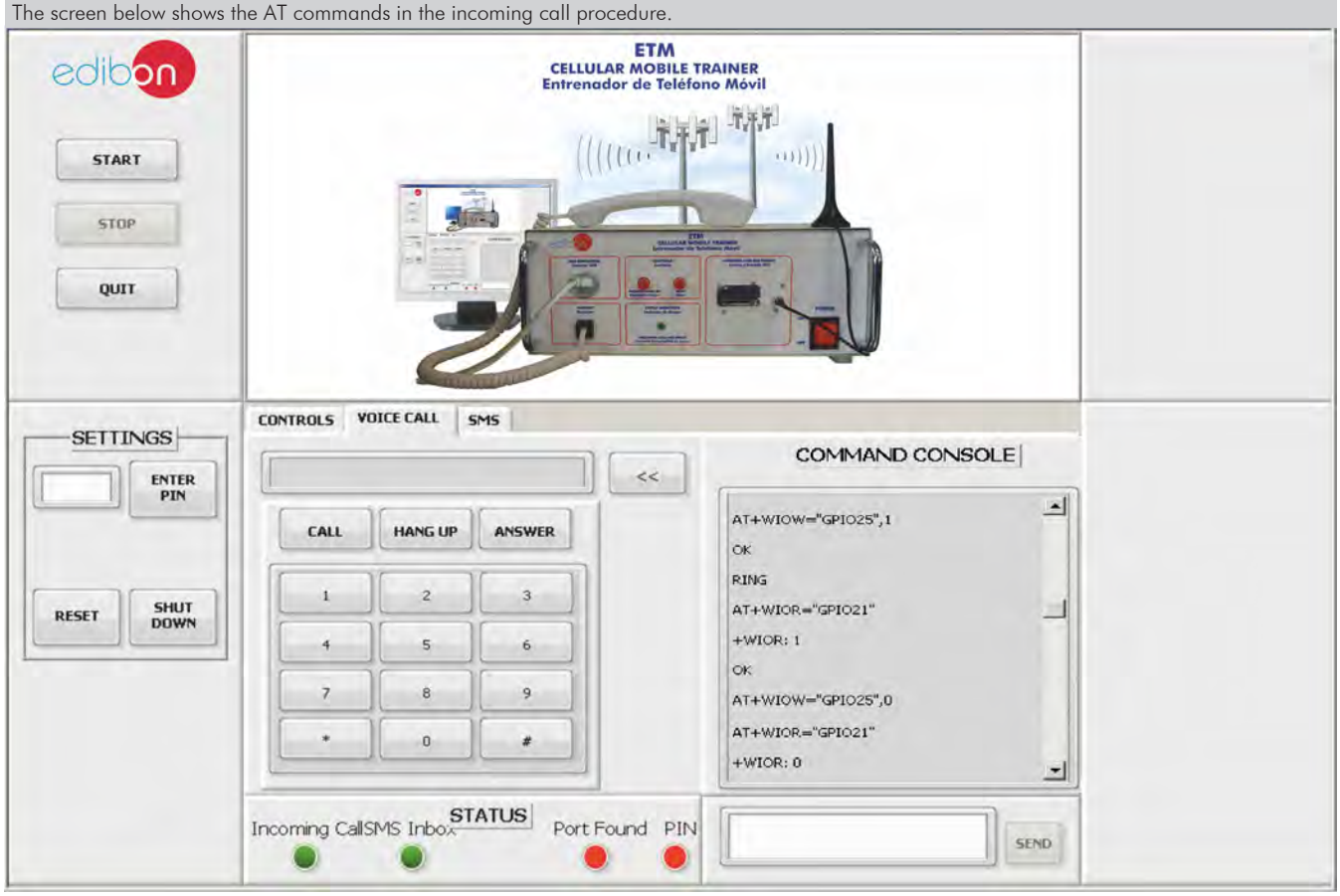
(I) Main software operation buttons.

(II) Pin box, Reset button and Shut Down button of the SIM card.

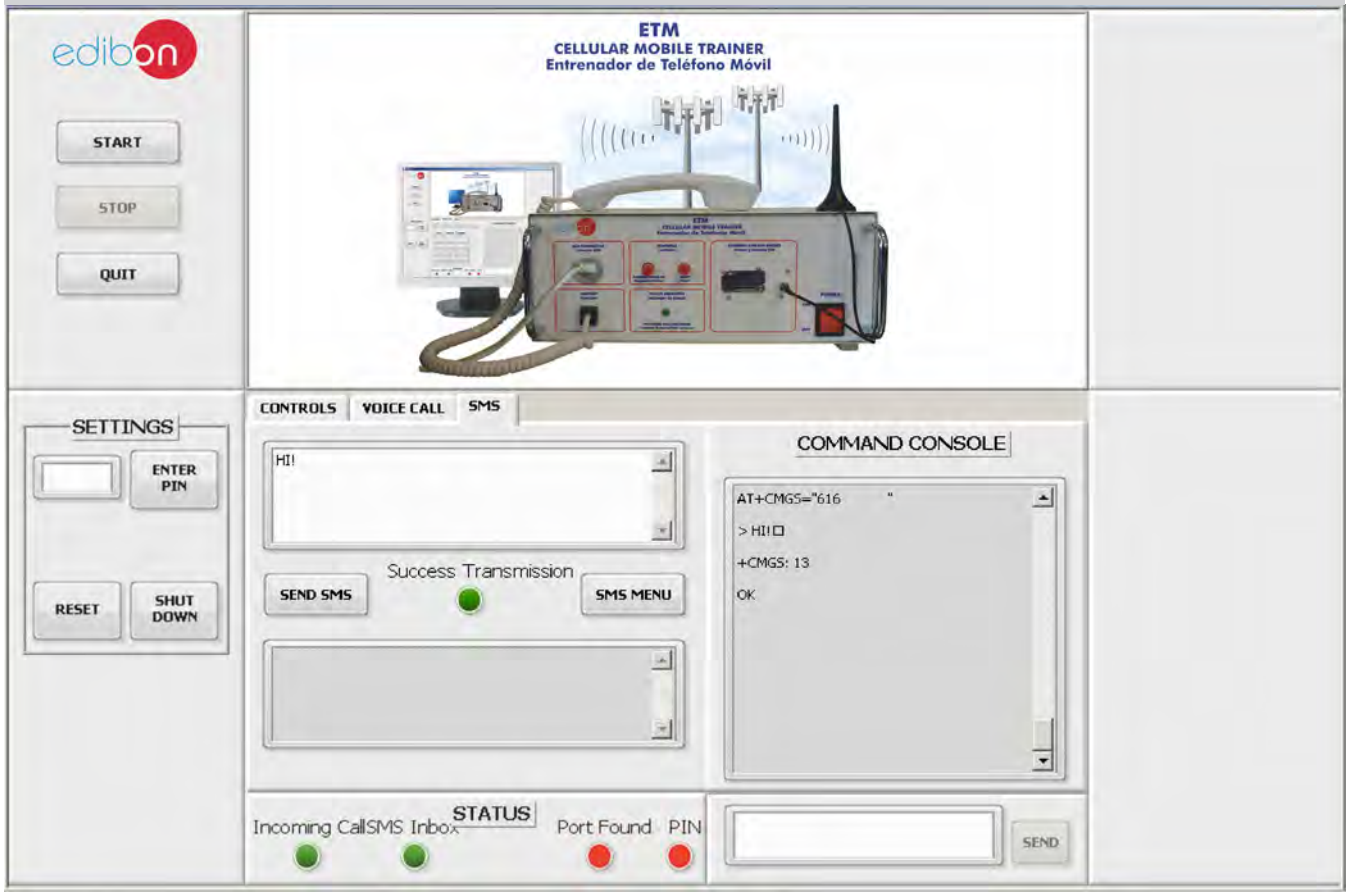
(III) Operation buttons and the command console for controls, voice call and SMS.

(IV) Status indicators.

The screen below shows the AT commands in the incoming call procedure.



The screen below shows the AT commands to send a SMS.



Additionally to the main items (1 to 4) described, we can offer, as optional, other items from 5 to 7.
All these items try to give more possibilities for:

a) Technical and Vocational Education configuration. (ICAI)
b) Multipost Expansions options. (MINI ESN and ESN)

a) Technical and Vocational Education configuration

⑤ ETM/ICAI. Interactive Computer Aided Instruction Software.

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.

This software is optional and can be used additionally to items (1 to 6).

- 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.**

- 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:

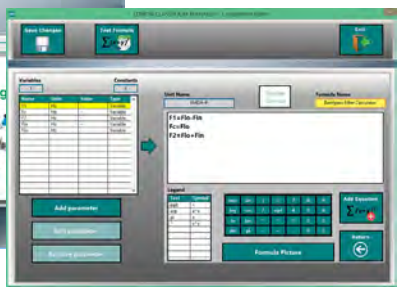
- **Student Log-In & Self-Registration.**
- **Existing Tasks checking & Monitoring.**
- **Default contents & scheduled tasks available to be used from the first session.**
- **Practical Exercises accomplishment by following the Manual provided by EDIBON.**
- **Evaluation Methods to prove your knowledge 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

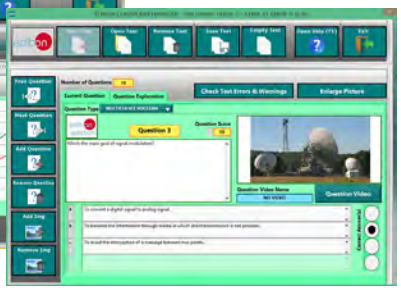
Instructor Software

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



ECAL. EDIBON Calculations Program Package - Formula Editor Screen

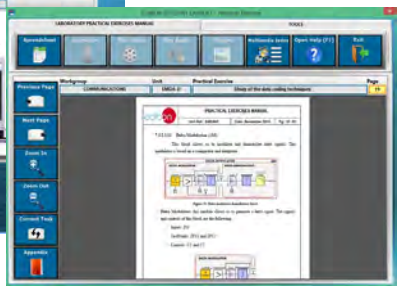
ERS. EDIBON Results & Statistics Program Package - Student Scores Histogram



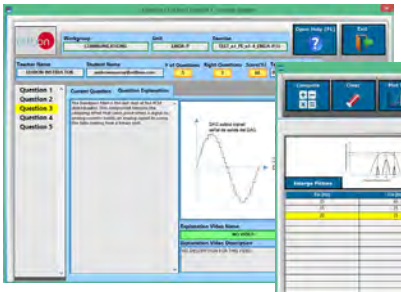
ETTE. EDIBON Training Test & Exam Program Package - Main Screen with Numeric Result Question

Student Software

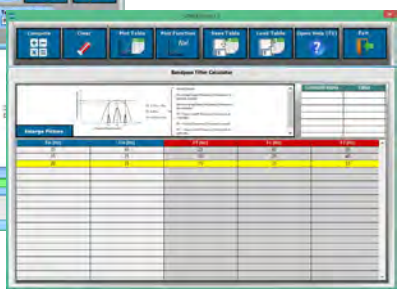
ESL-SOF. EDIBON Student LabSoft (Student Software) Application Main Screen



EPE. EDIBON Practical Exercise Program Package Main Screen



ERS. EDIBON Results & Statistics Program Package - Question Explanation



ECAL. EDIBON Calculations Program Package Main Screen

b) Multipost Expansions options

⑥ MINI ESN. EDIBON Mini Scada-Net System for being used with EDIBON Teaching Units.

MINI ESN. EDIBON Mini Scada-Net System allows up to 30 students to work with a Teaching Unit in any laboratory, simultaneously. It is useful for both, Higher Education and/or Technical and Vocational Education.

The MINI ESN system consists of the adaptation of any EDIBON Computer Controlled Unit with SCADA integrated in a local network.

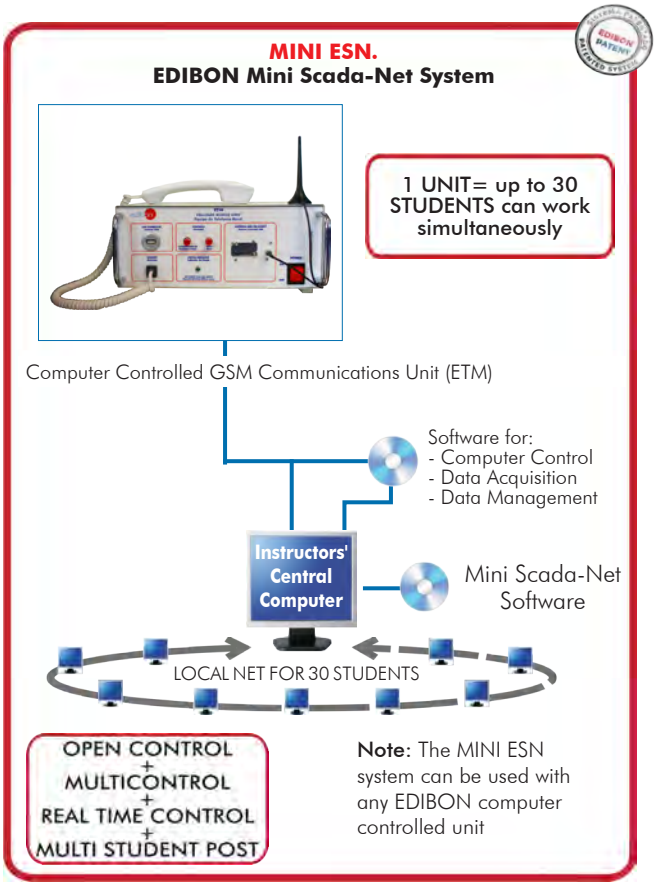
This system allows to view/control the unit remotely, from any computer integrated in the local net (in the classroom), through the main computer connected to the unit. Then, the number of possible users who can work with the same unit is higher than in an usual way of working (usually only one).

Main characteristics:

- **It allows up to 30 students to work simultaneously with the EDIBON Computer Controlled Unit with SCADA, connected in a local net.**
- **Open Control + Multicontrol + Real Time Control + Multi Student Post.**
- **Instructor controls and explains to all students at the same time.**
- **Any user/student can work doing "real time" control/multicontrol and visualisation.**
- **Instructor can see in the computer what any user/student is doing in the unit.**
- **Continuous communication between the instructor and all the users/students connected.**

Main advantages:

- **It allows an easier and quicker understanding.**
- **This system allows you can save time and cost.**
- **Future expansions with more EDIBON Units.**



For more information see **MINI ESN** catalogue. Click on the following link:

www.edibon.com/en/files/expansion/MINI-ESN/catalog

⑦ ESN. EDIBON Scada-Net Systems.

This unit can be integrated, in the future, into a Complete Laboratory with many Units and many Students.

For more information see **ESN** catalogue. Click on the following link:

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

ORDER INFORMATION

Main items (always included in the supply)

Minimum supply always includes:

① **Unit: ETM. Computer Controlled GSM Communications Unit.**

② **ETM/CCSOF. Computer Control + Data Acquisition + Data Management Software.**

③ **Cables and Accessories,** for normal operation.

④ **Manuals.**

*IMPORTANT: Under ETM we always supply all the elements for immediate running as 1, 2, 3 and 4.

Optional items (supplied under specific order)

a) Technical and Vocational Education configuration

⑤ ETM/ICAI. Interactive Computer Aided Instruction Software.

b) Multipost Expansions options

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Telephone handset.
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- Calibration exercises, which are included, teach the user how to calibrate a sensor and the importance of checking the accuracy of the sensors before taking measurements.
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Exercises and Practical Possibilities to be done with the Main Items

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a) Technical and Vocational Education configuration

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- Custom Design of Evaluation Methods.
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- User Monitoring Learning & Printable Reports.
- Multimedia-Supported auxiliary resources.

b) Multipost Expansions options

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Main characteristics:

- It allows up to 30 students to work simultaneously with the EDIBON Computer Controlled Unit with SCADA, connected in a local net.
- Open Control + Multicontrol + Real Time Control + Multi Student Post.
- Instructor controls and explains to all students at the same time.
- Any user/student can work doing "real time" control/multicontrol and visualisation.
- Instructor can see in the computer what any user/student is doing in the unit.
- Continuous communication between the instructor and all the users/students connected.

Main advantages:

- It allows an easier and quicker understanding.
- This system allows you can save time and cost.
- Future expansions with more EDIBON Units.

The system basically will consist of:

This system is used with a Computer Controlled Unit.

- Instructor's computer.
- Students' computers.
- Local Network.
- Unit-Control Interface adaptation.
- Unit Software adaptation.
- Webcam.
- MINI ESN Software to control the whole system.
- Cables and accessories required for a normal operation.

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

REPRESENTATIVE:

edibon INTERNATIONAL

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