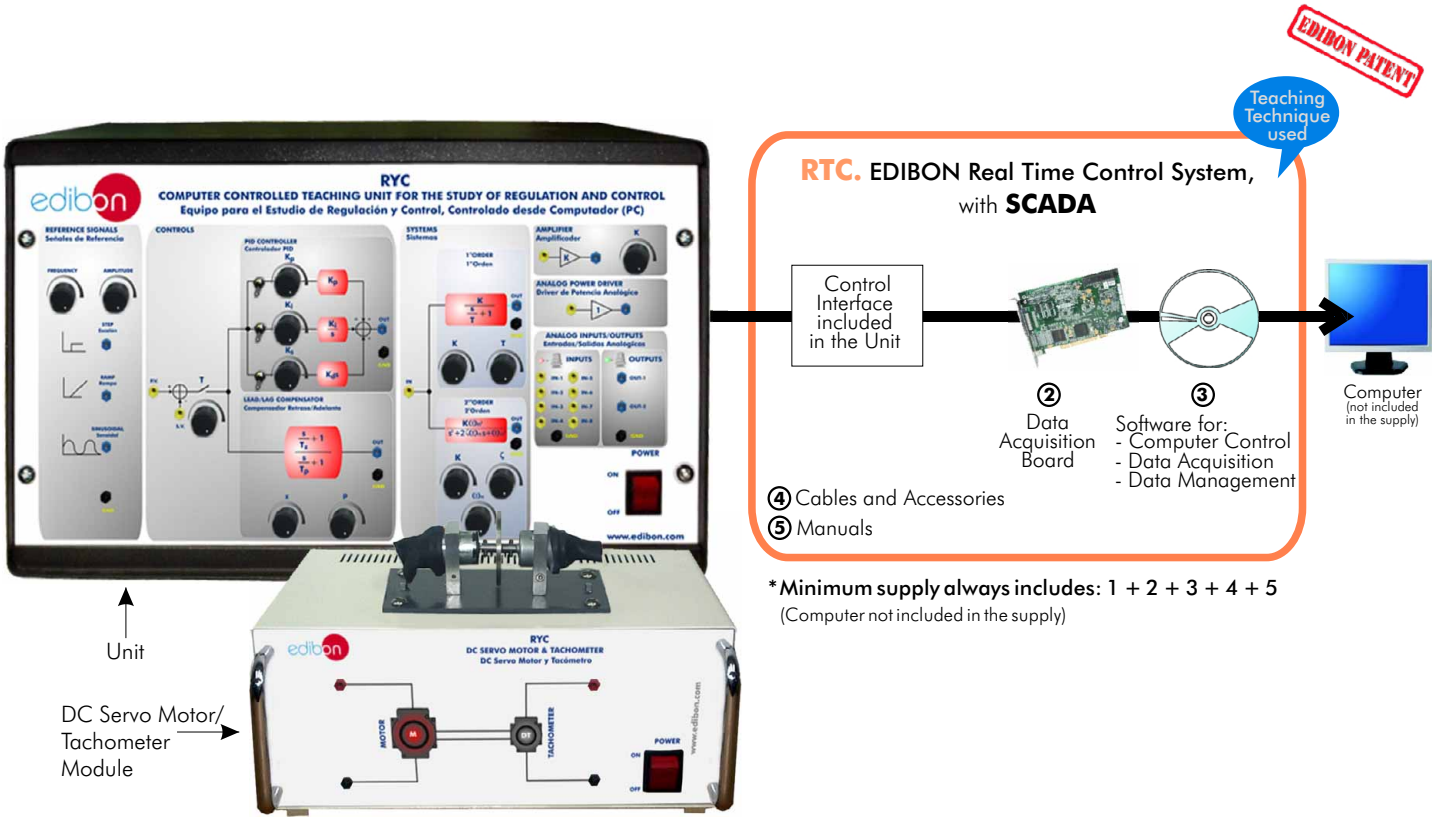
edibon
Technical Teaching Equipment

Computer Controlled **Teaching Unit for the Study of Regulation and Control,** with SCADA and PID Control

RYC



① Unit: RYC. Teaching Unit for the Study of Regulation and Control

OPEN CONTROL + MULTICONTROL + REAL TIME CONTROL

Key features:

- **Advanced Real Time SCADA.**
- **Open Control + Multicontrol + Real Time Control.**
- **Own Control Software based on Labview.**
- **National Instruments Data Acquisition board (250 KS/s (kilo samples per second)).**
- **Students multipost (an entire class) by using a projector.**
- **Ready for doing applied research, real industrial simulation, training courses possibilities, etc.**
- **Unit is totally safe (Mechanical, Electronic/Electrical and Software safety devices included).**
- **Results calculation and analysis software (CAL).**
- **Several future expansions, as ESN. EDIBON Scada-Net System (many students working simultaneously), and more.**
- **Designed and manufactured under several quality standards.**

www.edibon.com
Products
Products range
Units
2.-Electronics and
6.-Mechatronics & Automation

ISO 9000: Quality Management
(for Design, Manufacturing, Commercialization and After-sales service)

European Union Certificate
(total safety)

Certificates ISO 14000 and **ECO-Management and Audit Scheme**
(environmental management)

Worlddidac Quality Charter Certificate
(Worlddidac Member)

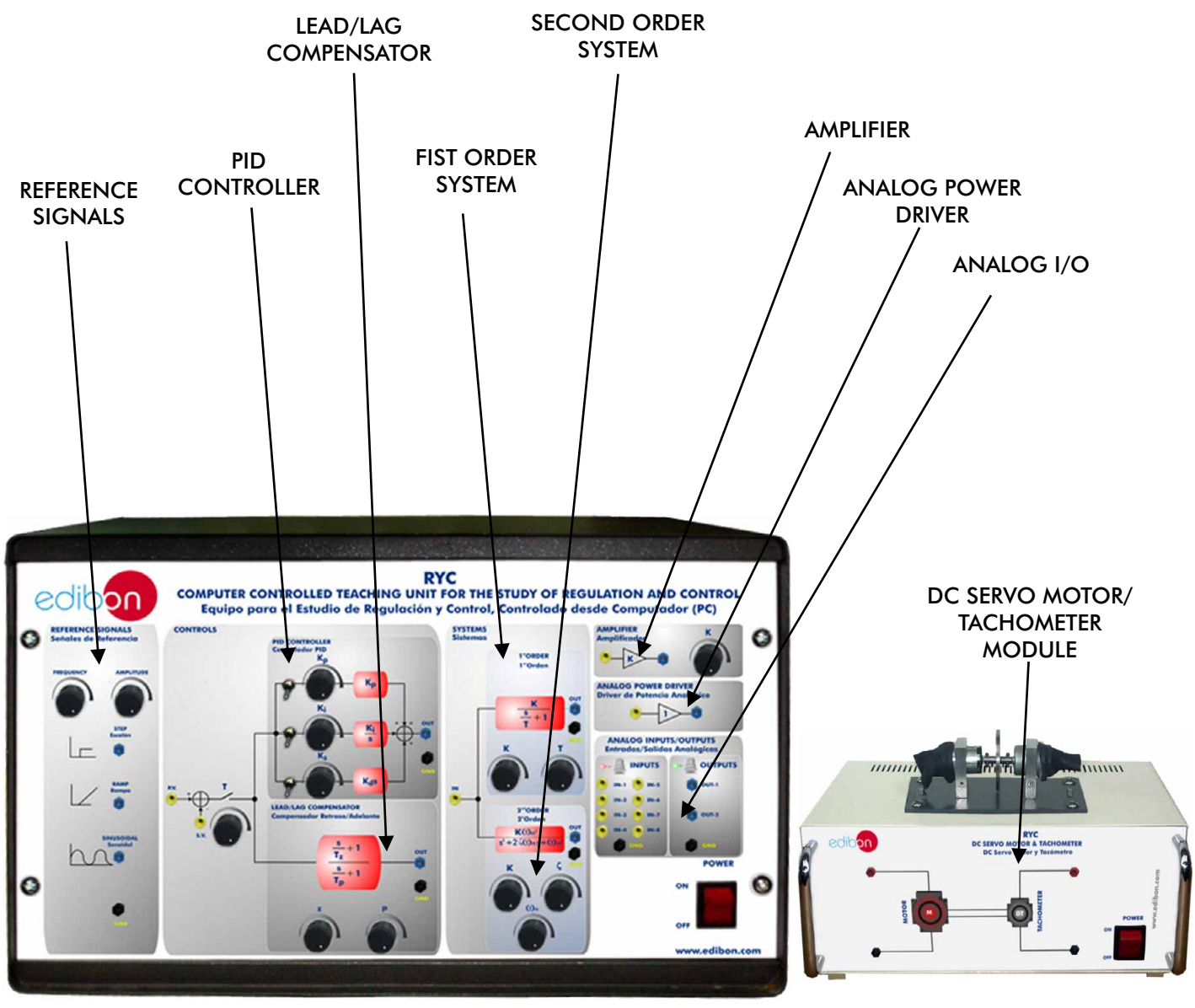
GENERAL DESCRIPTION

Regulation and control theory is divided into two major divisions in, namely, classical and modern. The implementation of classical controller designs as compared to systems designed using modern control theory is easier and these controllers are preferred in most industrial applications. The most common controllers designed using classical control theory are PID controllers.

The RYC is a Regulation and Control training unit designed by EDIBON. It allows students to learn the most important concepts about Regulation and Control in an easy and quick way.

The unit is provided with a set of practices, through which the user will understand how to characterize first and second order systems and how a PID controller works.

PROCESS DIAGRAM AND UNIT ELEMENTS ALLOCATION



COMPLETE TECHNICAL SPECIFICATIONS (for main items)

With this unit there are several options and possibilities:
- Main items: 1, 2, 3, 4 and 5.
- Optional items: 6, 7, 8 and 9.

Let us describe first the main items (1 to 5):

① RYC. Unit:

Unit:

Metallic box.

Diagram in the front panel with similar distribution to the elements in the real unit.

Reference signals module:

This module allows to generate three different types: step, ramp and sinusoidal. The frequency and amplitude of the signals can be adjusted using the potentiometers.

Frequency potentiometer and Amplitude potentiometer.

Step output. Ramp output. Sinusoidal output.

Step: Amplitude: ±10 V. Frequency: 0Hz to 1000Hz.

Ramp: Amplitude: ±10 V. Frequency: 0Hz to 1000Hz.

Sine: Amplitude: ±10 V. Frequency: 0Hz to 1000Hz.

RYC Unit

PID controller module:

This module is subdivided into proportional, integrative and derivative blocks. Each block has its own potentiometer to adjust each parameter independently.

Parameter potentiometers and Sample Period potentiometer.

P controller: Kp: 0 to 100. I controller: Ki: 1 to 100. D controller: Kd: 1 to 100.

Sample Time: 0.1 to 100ms.

Lead / Lag Compensator:

This module represents a compensator system in the Laplace domain. The system has a potentiometer z to modify the zero, p to modify the pole and K to modify the gain of the compensator.

Pole potentiometer, Zero potentiometer and K potentiometer. Sample Period potentiometer.

Pole constant: 1 to 10ms. Zero constant: 1 to 10ms. K : 1 to 100. Sample Time: 0.1 to 100ms.

First Order System:

This module represents a first order system in the Laplace domain. The system has a potentiometer T to modify the time constant of the system. The gain can be also adjusted using the K potentiometer.

T potentiometer and K potentiometer. Time constant T: 1ms to 100 ms. K: 1 to 100.

Second Order System:

This module represents a second order system in Laplace domain. The system has three potentiometers to modify the three parameters of the system: gain K, damping coefficient and the natural frequency.

Potentiometer, ωn potentiometer and K potentiometer.

Damping coefficient ξ: 0 to 1.5.

Natural frequency (ωn): 0 to 2π*100 rad/s (100Hz)

K : 1 to 100.

Amplifier module:

This module can be used for signal amplification. There is a potentiometer, K, to adjust the gain of the amplifier.

Analog Power Driver:

This module consists of a power amplifier that can be used as the last stage when a application requires high power supply (for example a DC Motor, pump, etc).

Analog I/O:

This module is provided with 8 analog inputs and 2 analog outputs. The inputs are used to visualize different signals in the computer. The analog outputs are for signal generation. These outputs could be used as reference signals with shape, frequency and amplitude controlled by the computer.

On/Off switch.

Fuse.

Connector to PC.

Control Interface included.

DC Servo Motor/Tachometer Module:

Metallic box.

Diagram in the front panel with similar distribution to the elements in the real unit.

DC Servo Motor:

Motor Supply: 10Vdc.

Motor Speed: 3600 rpm max.

Tachometer:

Tachometer Output: 10Vdc. Tachometer Speed: 3600 rpm max.

The complete unit includes as well:

Advanced Real Time SCADA.
Open Control + Multicontrol + Real Time Control.
Own Control Software based on Labview.
National Instruments Data Acquisition board (250 KS/s (kilo samples per second)).
Students multipost (an entire class) by using a projector.
Ready for doing applied research, real industrial simulation, training courses possibilities, etc.
Unit is totally safe (Mechanical, Electronic/Electrical and Software safety devices included).
Results calculation and analysis software (CAL).
Several future expansions, as ESN. EDIBON Scada-Net System (many students working simultaneously), and more.
Designed and manufactured under several quality standards.

② DAB. Data Acquisition Board:

The Data Acquisition board is part of the SCADA system.

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.

Resolution=16 bits, 1 in 65536.

Sampling rate up to: 250 KS/s (kilo samples per second).

Input range (V)=±10 V.

Data transfers=DMA, interrupts, programmed I/0. DMA channels=6.

DAB

Analog output:

Number of **channels=2**.

Resolution=16 bits, 1 in 65536.

Maximum output rate up to: 833 KS/s.

Output range(V)=±10 V.

Data transfers=DMA, interrupts, programmed I/0.

Digital Input/Output:

Number of **channels=24 inputs/outputs**.

D0 or DI Sample Clock frequency: 0 to 1 MHz.

Timing:

Number of **Counter/timers=2**.

Resolution: Counter/timers: 32 bits.

③ RYC/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.

Registration and visualization of all process variables in an automatic and simultaneous way.

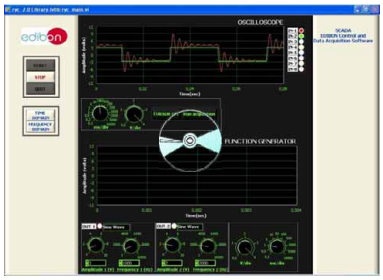
Flexible, open and multicontrol software, developed with actual windows graphic systems, acting simultaneously on all process parameters.

Management, processing, comparison and storage of data.

Sampling velocity up to 250 KS/s (kilo samples per second).

Comparative analysis of the obtained data, after the process and modification of the conditions during the process.

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 blackboard.



RYC/CCSOF

④ Cables and Accessories, for normal operation.

⑤ Manuals:

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

*References 1 to 5 are the main items: RYC + DAB + RYC/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 MAIN ITEMS

1.-Response of a first order system in time domain. (Step-response).

2.-Response of a first order system in time domain. (Ramp-response).

3.-Response of a first order system in time domain. (Sinusoidal-response).

4.-Response of a first order system in frequency domain (Sinusoidal-response).

5.-Response of a second order system in time domain (Step-response).

6.-Response of a second order system in time domain. (Ramp-response).

7.-Response of a second order system in time domain. (Sinusoidal-response).

8.-Response of a second order system in frequency domain (Sinusoidal-response).

9.-Phase Lead Compensator experiment.

10.-Phase Lag Compensator experiment.

11.-Structure of a PID controller (Proportional-Integrative-Derivative blocks).

12.-PID control of a first order system in open-loop.

13.-PID control of a second order system in open-loop.

14.-PID control of a first order system in closed- loop. (Mathematical tuning)

15.-PID control of a first order system in closed- loop. (Experimental tuning)

16.-PID control of a first order system in closed- loop. (Ziegler - Nichols tuning).

17.-PID control of a second order system in closed- loop. (Mathematical tuning).

18.-PID control of a second order system in closed- loop. (Experimental tuning).

19.-PID control of a second order system in closed- loop. (Ziegler - Nichols tuning).

20.-Characterization of a DC motor.

21.-DC motor speed control with a PID controller.

Other possibilities to be done with this Unit:

22.- Many students view results simultaneously.

To view all results in real time in the classroom by means of a projector or an electronic blackboard.

23.- The Computer Control System with SCADA allows a real industrial simulation.

24.- This unit is totally safe as uses mechanical, electrical and electronic, and software safety devices.

25.- This unit can be used for doing applied research.

26.- This unit can be used for giving training courses to Industries even to other Technical Education Institutions.

REQUIRED SERVICES

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

-Computer (PC).

DIMENSIONS & WEIGHTS

RYC:

Unit:

-Dimensions: 490 x 330 x 310 mm. approx.

-Weight: 10 Kg. approx.

DC Servo Motor/Tachometer Module:

-Dimensions: 310 x 220 x 145 mm. approx.

-Weight: 10 Kg. approx.

AVAILABLE VERSIONS

Offered in this catalogue:

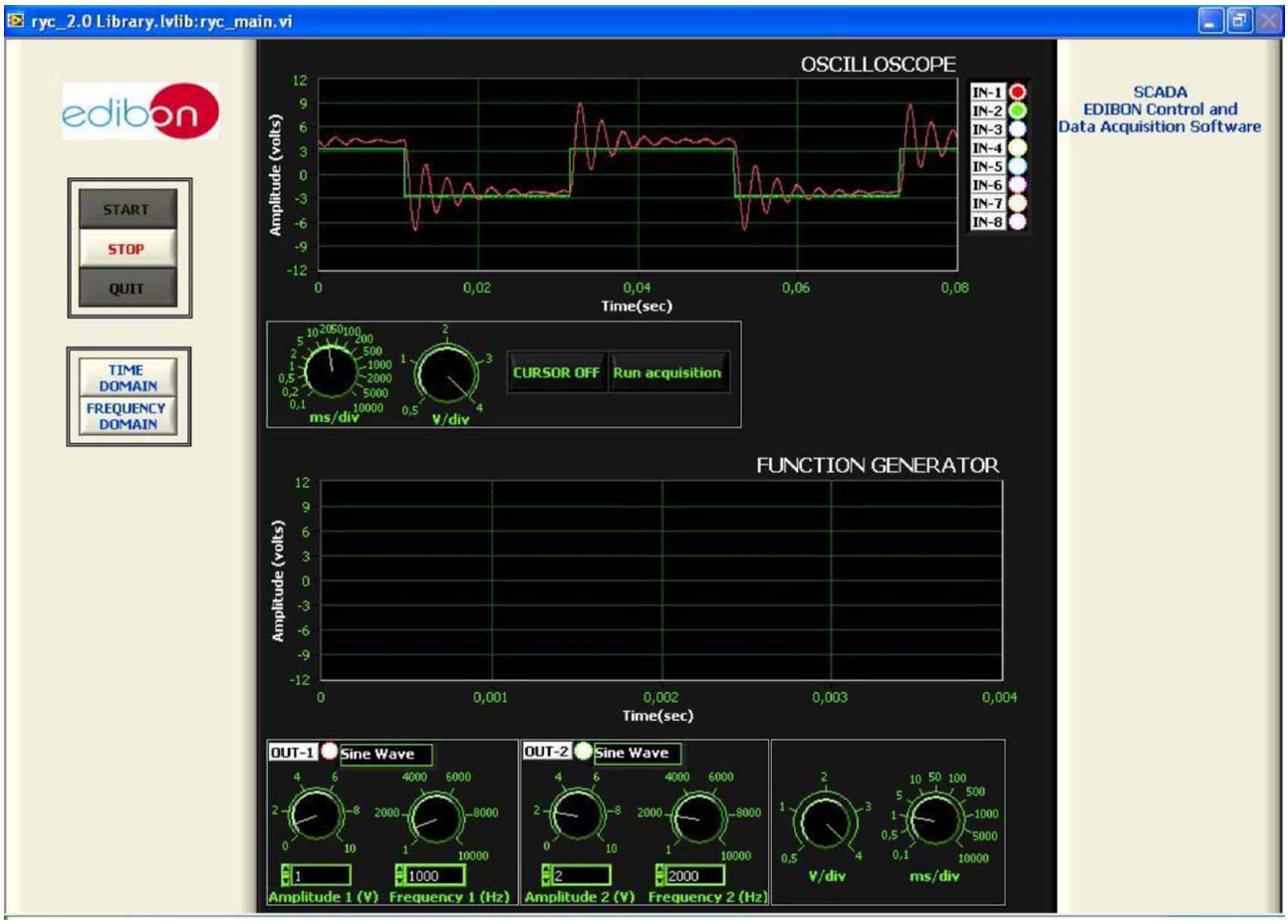
- RYC. Computer Controlled Teaching Unit for the Study of Regulation and Control.

Offered in other catalogue:

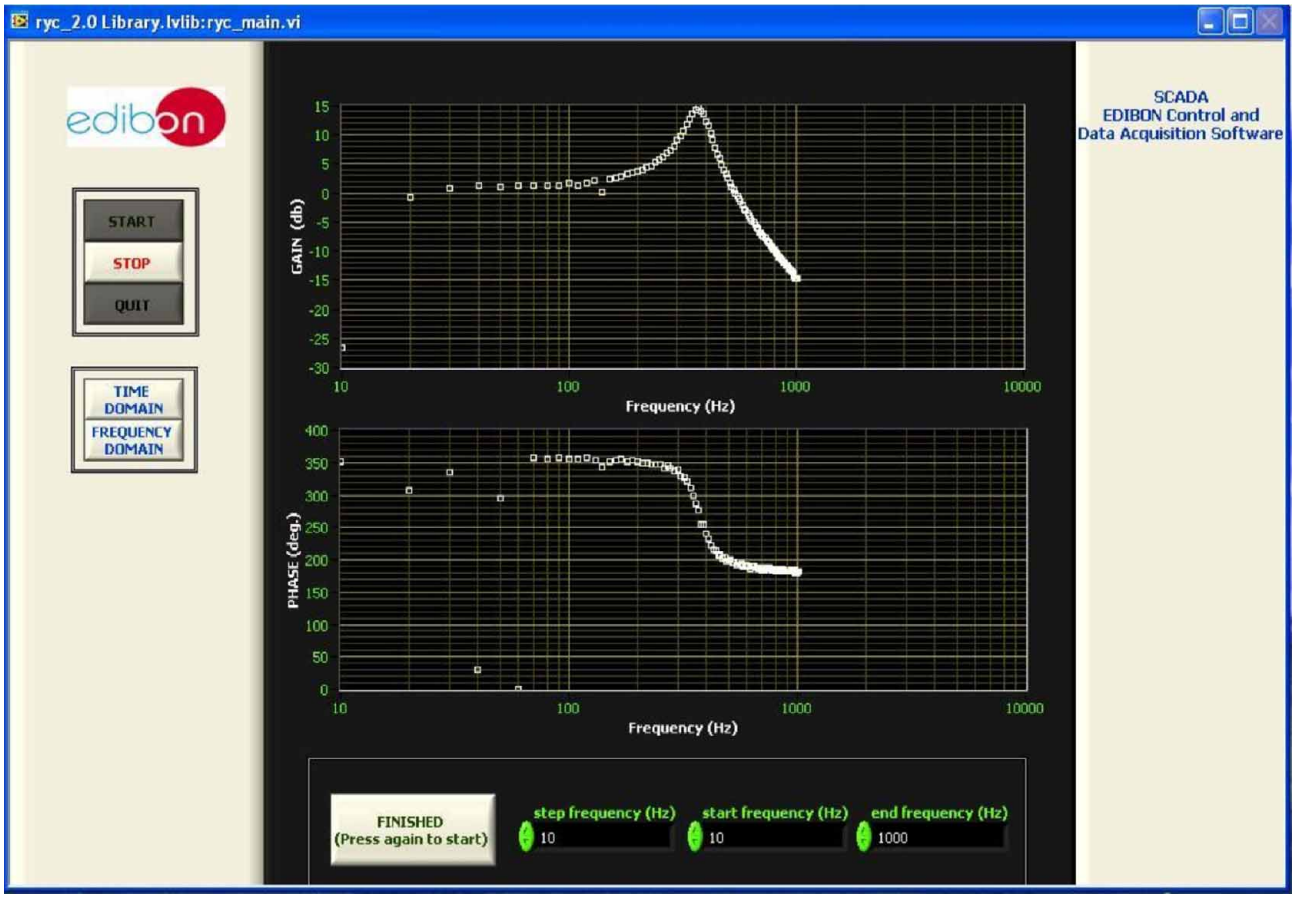
- RYC/B.Basic Teaching Unit for the Study of Regulation and Control.

SCADA

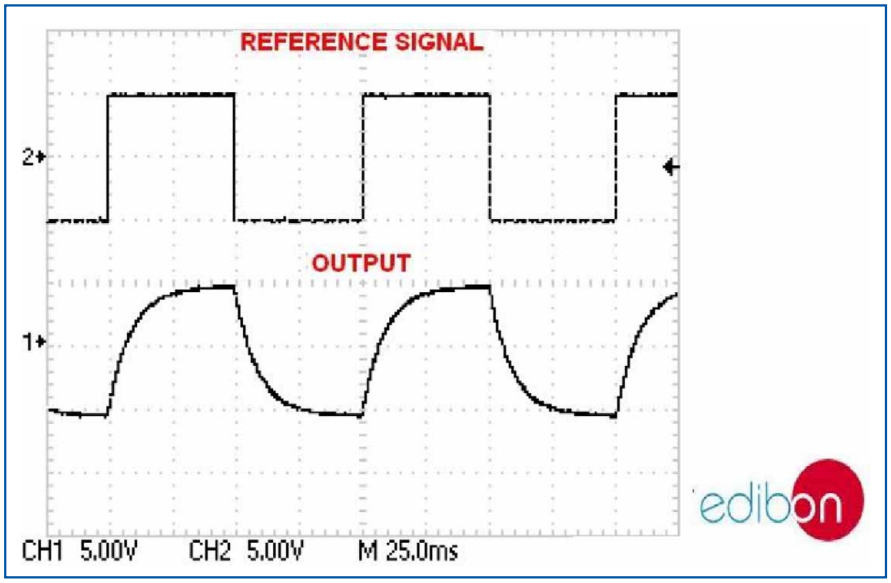
Time Domain Screen.
The figure shows the step-response 2nd order system in time domain.



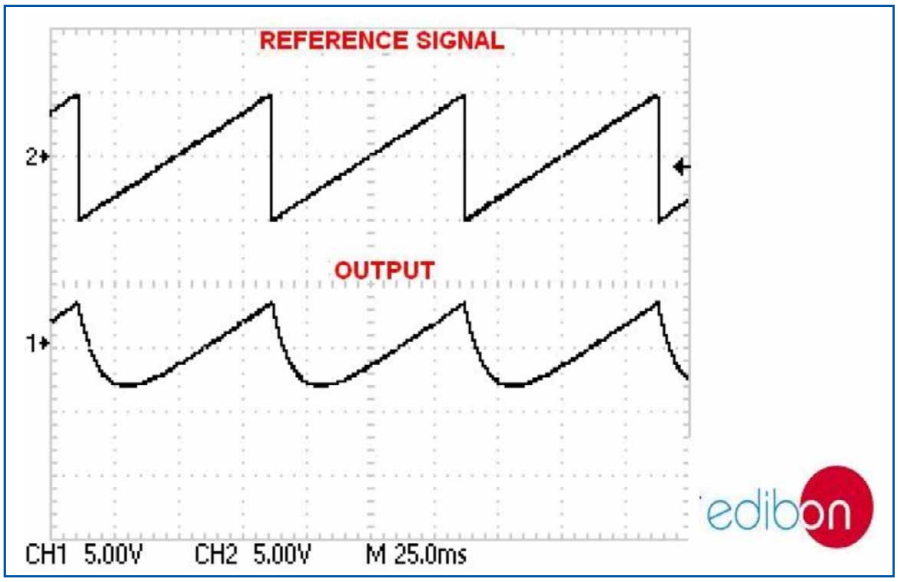
Frequency Domain Screen.
The figure shows the BODE plot with the magnitude and phase response of a 2nd order system.



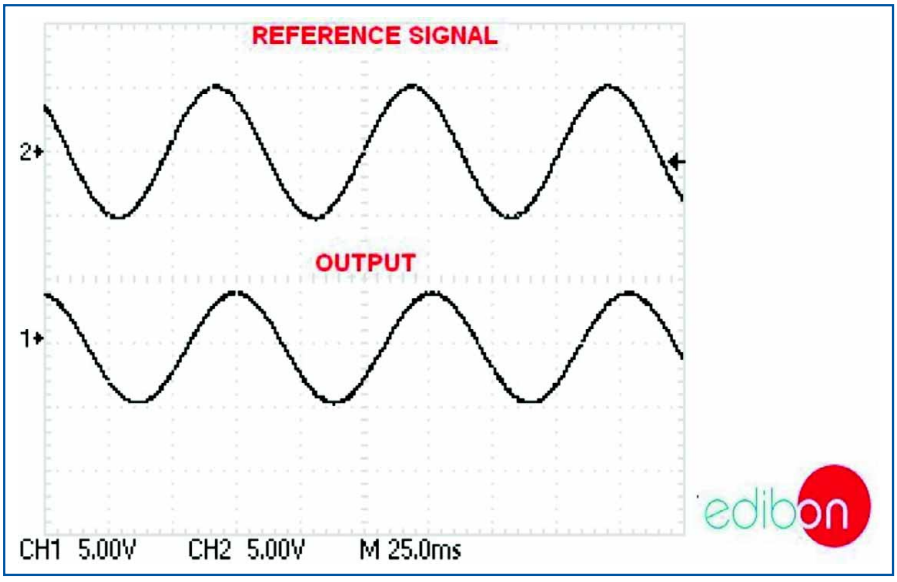
Response of a first order system in time domain



Step-Response Time Constant=10ms

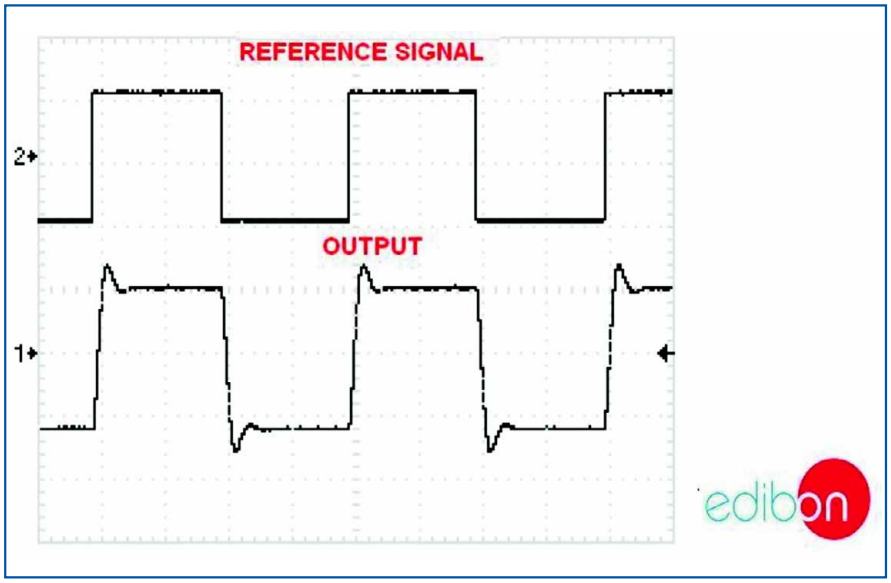


Ramp-Response Time Constant=10ms

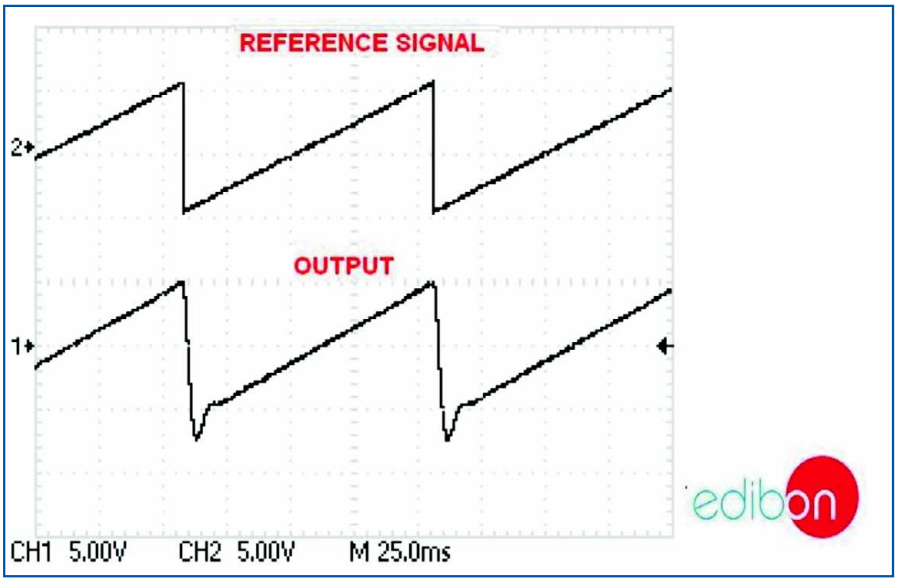


Sinusoidal-Response T=10ms

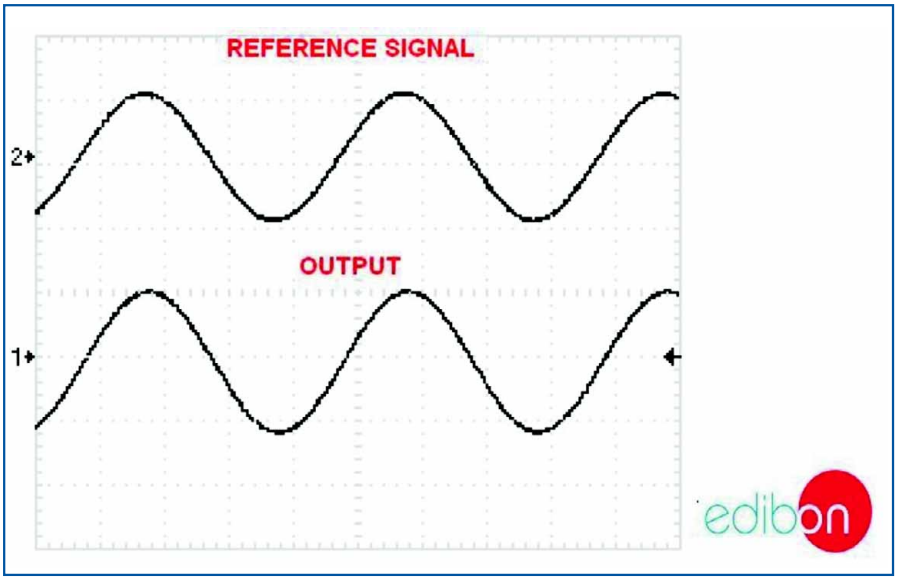
Response of a second order system in time domain



Step-Response Damping Coefficient ξ=0.5

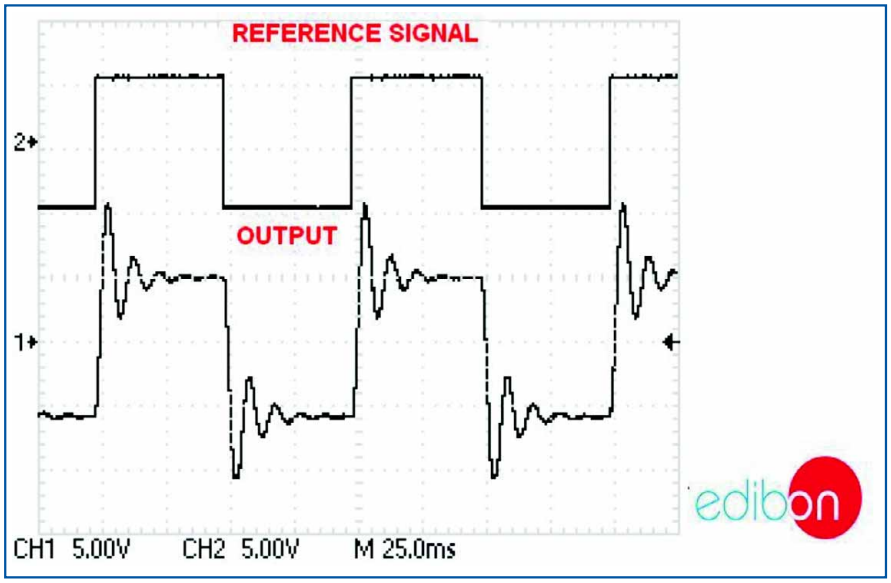


Ramp-Response Damping Coefficient ξ=0.5

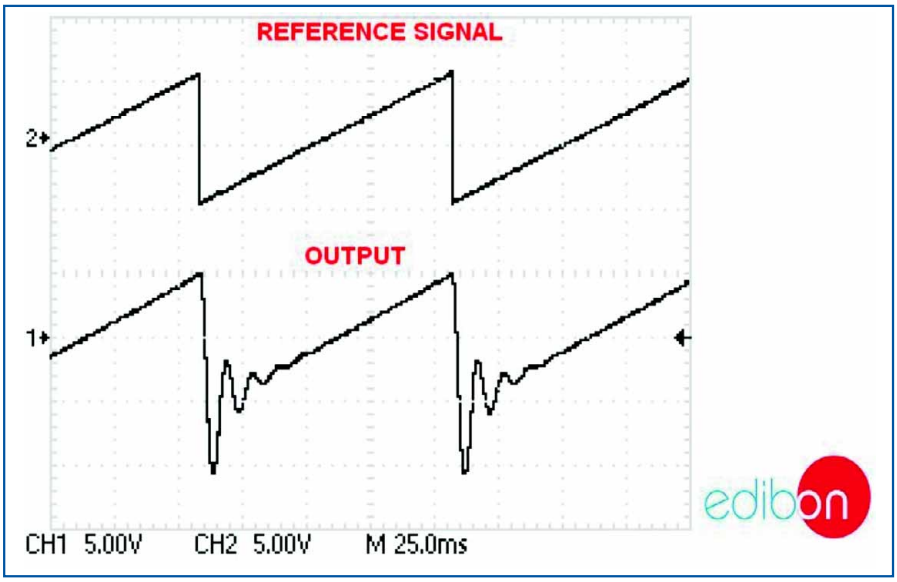


Sinusoidal-Response Damping Coefficient ξ=0.5

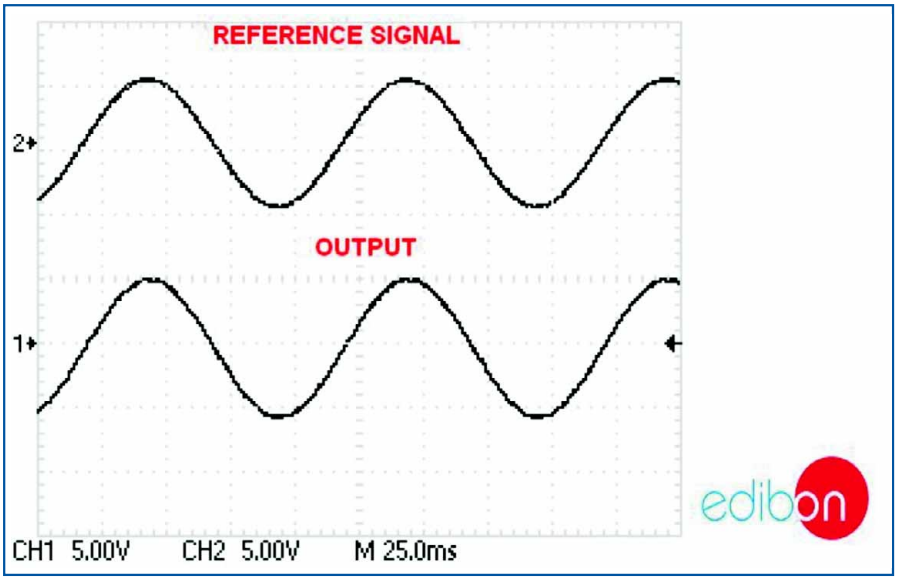
Response of a second order system in time domain (continuation)



Step-Response Damping Coefficient ξ=0.2

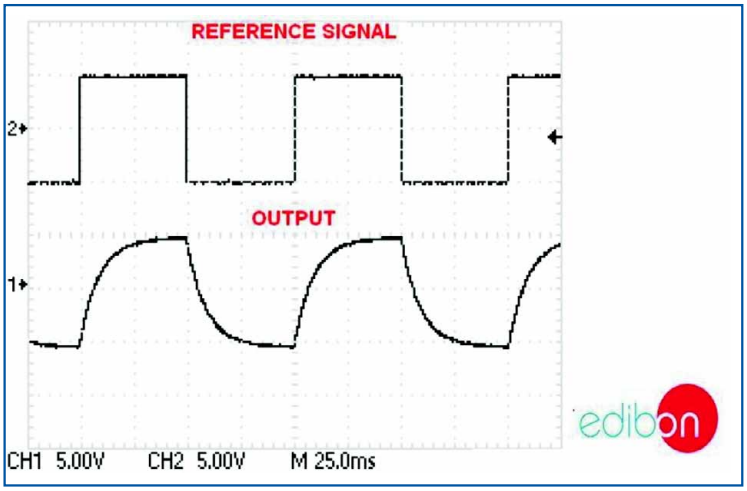


Ramp-Response Damping Coefficient ξ=0.2



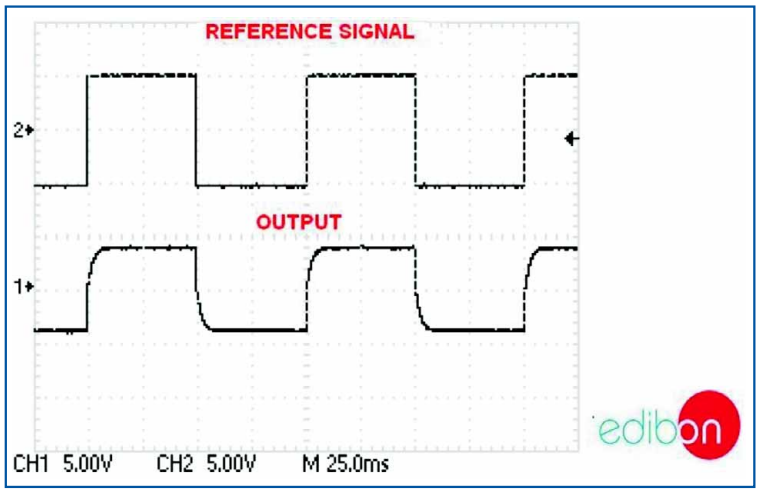
Sinusoidal-Response Damping Coefficient ξ=0.2

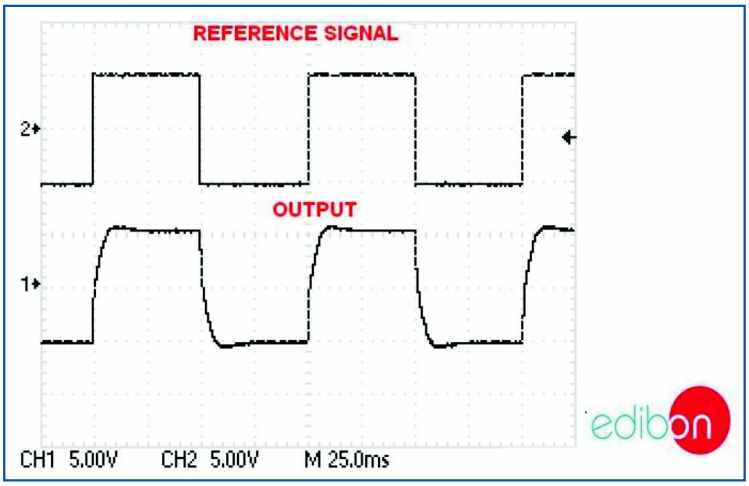
PID Control of a first order system



Output of the system without PID controller

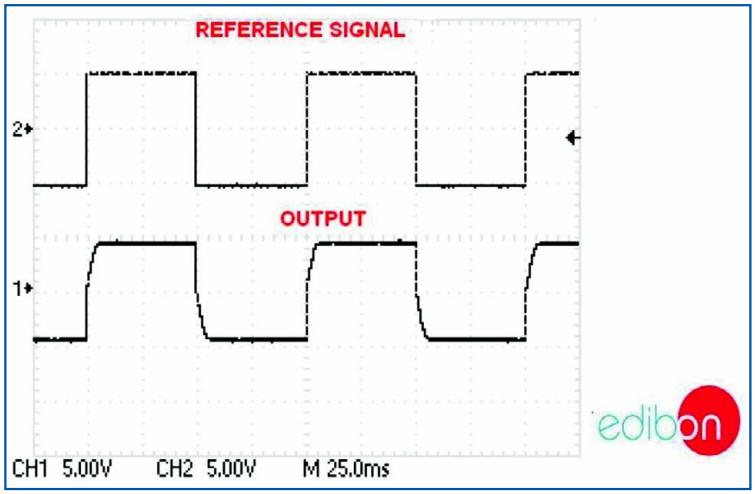
Output of the system with PID controller Kp=2.5 Td=0 Ti=0



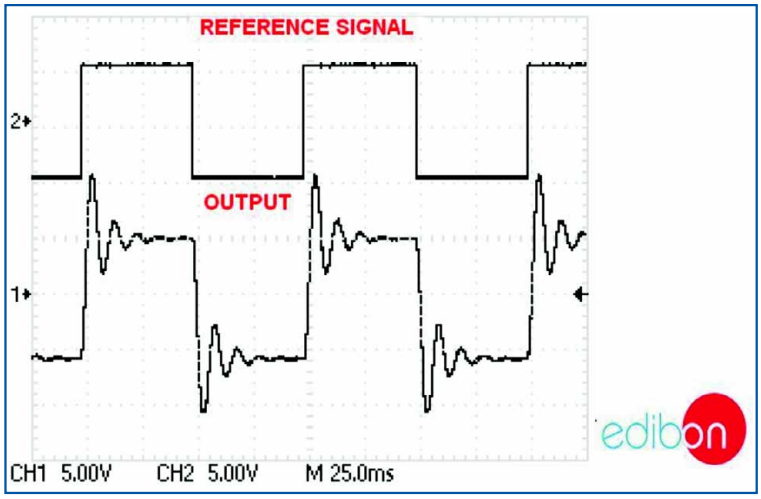


Output of the system with PID controller Kp=2.5 Td=0 Ti =2ms

Output of the system with PID controller Kp=2.5 TD=2ms Ti=2ms

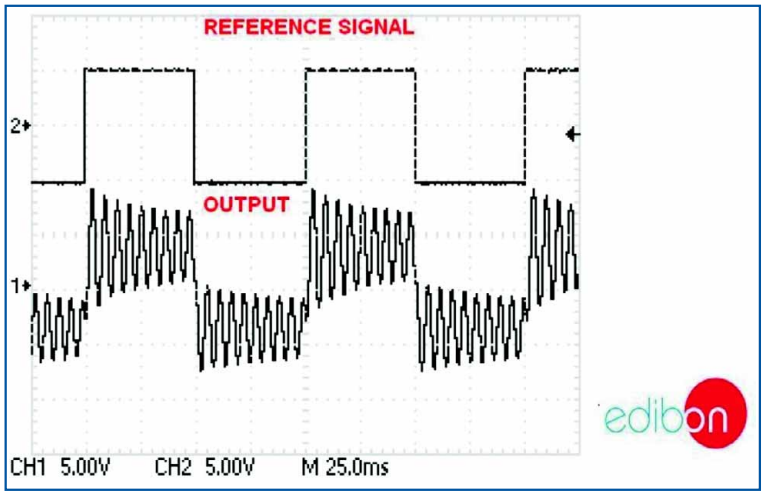


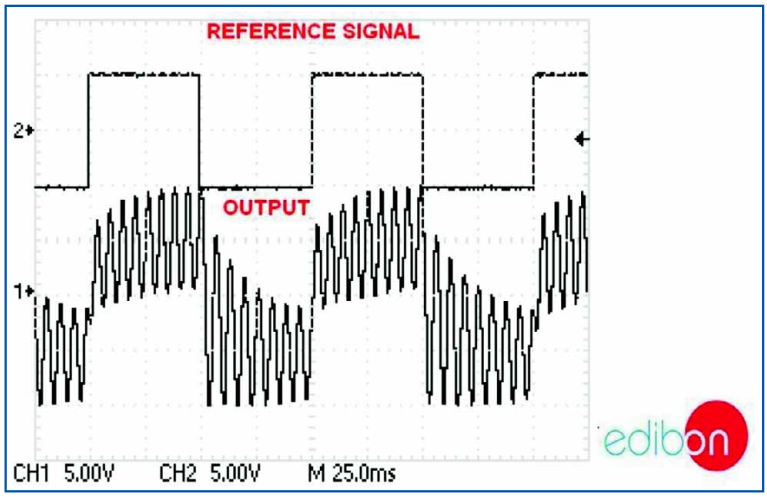
PID Control of a second order system



Output of the system without PID controller

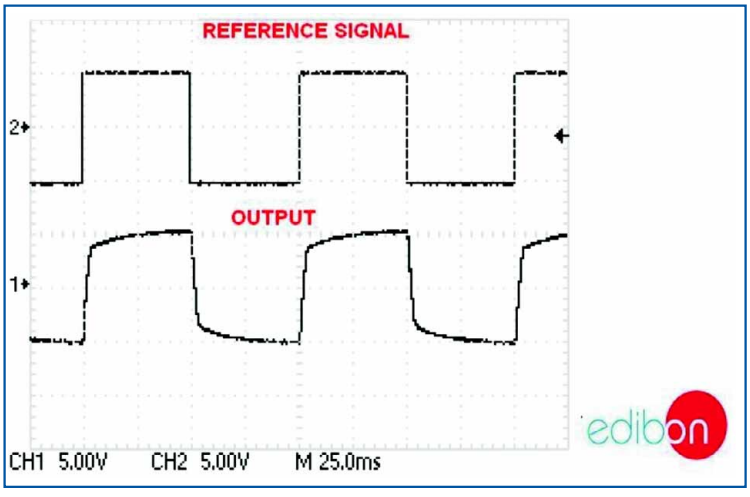
Output of the system with PID controller Kp=1 Td=0 Ti=0





Output of the system with PID controller
Kp=1 Td=0 Ti =10ms

Output of the system with PID controller
Kp=1 Td=10ms Ti =10ms



COMPLETE TECHNICAL SPECIFICATIONS (for optional items)

Additionally to the main items (1 to 5) described, we can offer, as optional, other items from 6 to 9.
All these items try to give more possibilities for:

a) Technical and Vocational Education configuration. (CAI)
b) Higher Education and/or Technical and Vocational Education configuration. (CAL)
c) Multipost Expansions options. (Mini ESN and ESN)

a) Technical and Vocational Education configuration

⑥ RYC/CAI. Computer Aided Instruction Software System.

This complete package included two Softwares: the INS/SOF. Classroom Management Software (Instructor Software) and the RYC/SOF. Computer Aided Instruction Software (Student Software).

This software is optional and can be used additionally to items (1 to 5).

This complete package consists on an Instructor Software (INS/SOF) totally integrated with the Student Software (RYC/SOF). Both are interconnected so that the teacher knows at any moment what is the theoretical and practical knowledge of the students. These, on the other hand, get a virtual instructor who helps them to deal with all the information on the subject of study.

- INS/SOF. Classroom Management Software (Instructor Software):

The Instructor can:

Organize Students by Classes and Groups.
Create easily new entries or delete them.
Create data bases with student information.
Analyze results and make statistical comparisons.
Print reports.
Develop own examinations.
Detect student's progress and difficulties.
...and many other facilities.

Instructor Software

- RYC/SOF. Computer Aided Instruction Software (Student Software):

It explains how to use the unit, run the experiments and what to do at any moment.

This Software contains:

Theory.
Exercises.
Guided Practices.
Exams.

Student Software

For more information see **CAI** catalogue. Click on the following link:
www.edibon.com/products/catalogues/en/CAI.pdf

b) Higher Education and/or Technical and Vocational Education configuration

⑦ RYC/CAL. Computer Aided Learning Software (Results Calculation and Analysis).

This Computer Aided Learning Software (CAL) is a Windows based software, simple and very easy to use, specifically developed by EDIBON. It is very useful for Higher Education level.

CAL is a class assistant that helps in making the necessary calculations to extract the right conclusions from data obtained during the experimental practices.

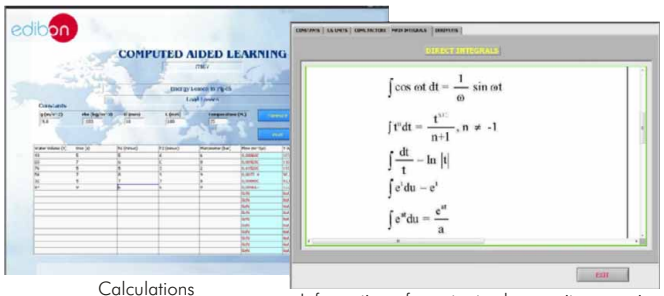
CAL will perform the calculations.

CAL computes the value of all the variables involved.

It allows to plot and print the results. Between the plotting options, any variable can be represented against any other.

Different plotting displays.

It has a wide range of information, such as constant values, unit conversion factors and integral and derivative tables.



Calculations

Information of constant values, unit conversion factors and integral and derivative tables

Plotting options

For more information see **CAL** catalogue. Click on the following link:
www.edibon.com/products/catalogues/en/CAL.pdf

c) Multipost Expansions options

⑧ Mini ESN. EDIBON Mini Scada-Net System.

Mini ESN. EDIBON Mini Scada-Net System allows 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 on 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:

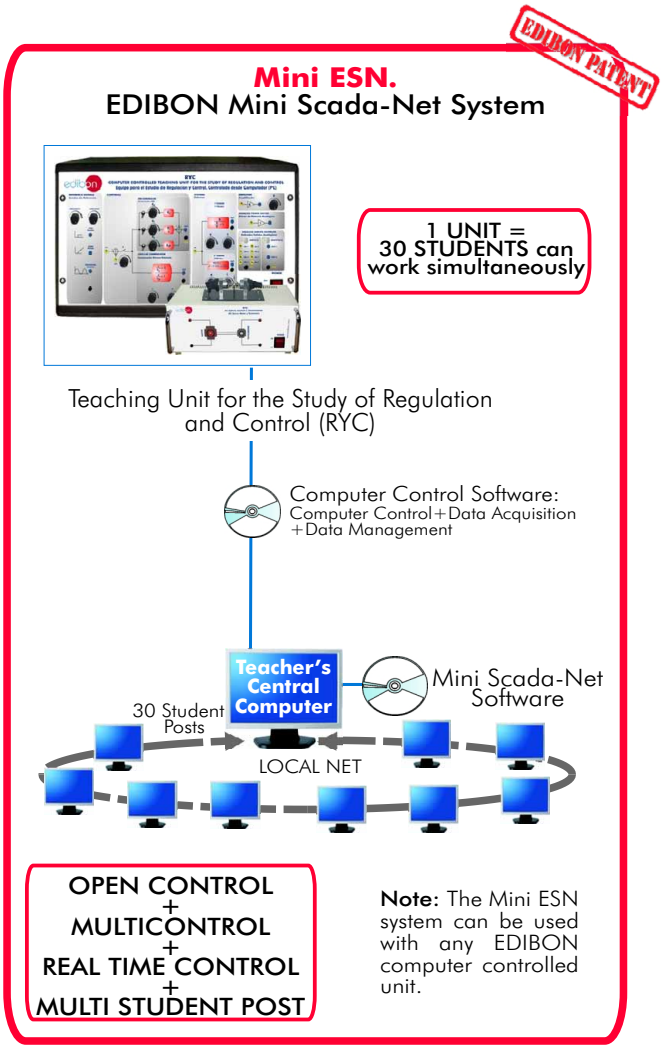
- **It allows 30 students to work simultaneously with the EDIBON Computer Controlled Unit with SCADA, connected in a local net.**
- **Open Control + Multicontrol + Real Time Control + Multi Student Post.**
- **Teacher controls and explains to all students at the same time.**
- **Any user/student can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

Main advantages:

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

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

www.edibon.com/products/catalogues/en/Mini-ESN.pdf



⑨ ESN. EDIBON Scada-Net System.

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

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

www.edibon.com/products/catalogues/en/units/electronics/esn-electronicscommunications/ESN-ELECTRONICS_COMMUNICATIONS-ADVANCED.pdf

ORDER INFORMATION

Main items (always included in the supply)

Minimum supply always includes:

① **Unit: RYC. Teaching Unit for the Study of Regulation and Control.**

② **DAB. Data Acquisition Board.**

③ **RYC/CCSOF. Computer Control + Data Acquisition + Data Management Software.**

④ **Cables and Accessories**, for normal operation.

⑤ **Manuals.**

* IMPORTANT: Under RYC we always supply all the elements for immediate running as 1, 2, 3, 4 and 5.

Optional items (supplied under specific order)

a) Technical and Vocational configuration

⑥ RYC/CAI. Computer Aided Instruction Software System.

b) Higher Education and/or Technical and Vocational Education configuration

⑦ RYC/CAL. Computer Aided Learning Software (Results Calculation and Analysis).

c) Multipost Expansions options

⑧ Mini ESN. EDIBON Mini Scada-Net System.

⑨ ESN. EDIBON Scada-Net System.

① RYC. Unit:

Unit:

Metallic box.

Diagram in the front panel with similar distribution to the elements in the real unit.

Reference signals module:

This module allows to generate three different types: step, ramp and sinusoidal. The frequency and amplitude of the signals can be adjusted using the potentiometers.

Frequency potentiometer and Amplitude potentiometer.

Step output. Ramp output. Sinusoidal output.

Step: Amplitude:±10 V. Frequency: 0Hz to 1000Hz.

Ramp: Amplitude:±10 V. Frequency: 0Hz to 1000Hz.

Sine: Amplitude:±10 V. Frequency: 0Hz to 1000Hz.

PID controller module:

This module is subdivided into proportional, integrative and derivative blocks. Each block has its own potentiometer to adjust each parameter independently.

Parameter potentiometers and Sample Period potentiometer.

P controller: Kp: 0 to 100. I controller: Ki: 1 to 100. D controller: Kd: 1 to 100.

Sample Time: 0.1 to 100ms.

Lead / Lag Compensator:

This module represents a compensator system in the Laplace domain. The system has a potentiometer z to modify the zero, p to modify the pole and K to modify the gain of the compensator.

Pole potentiometer, Zero potentiometer and K potentiometer. Sample Period potentiometer.

Pole constant: 1 to 10ms. Zero constant: 1 to 10ms. K: 1 to 100. Sample Time: 0.1 to 100ms.

First Order System:

This module represents a first order system in the Laplace domain. The system has a potentiometer T to modify the time constant of the system. The gain can be also adjusted using the K potentiometer.

T potentiometer and K potentiometer. Time constant T: 1ms to 100 ms. K: 1 to 100.

Second Order System:

This module represents a second order system in Laplace domain. The system has three potentiometers to modify the three parameters of the system: gain K, damping coefficient and the natural frequency.

Potentiometer, ωn potentiometer and K potentiometer.

Damping coefficient ξ: 0 to 1.5.

Natural frequency (ωn): 0 to 2π*100 rad/s (100Hz).

K : 1 to 100.

Amplifier module:

This module can be used for signal amplification. There is a potentiometer, K, to adjust the gain of the amplifier.

Analog Power Driver:

This module consists of a power amplifier that can be used as the last stage when a application requires high power supply (for example a DC Motor, pump, etc).

Analog I/O:

This module is provided with 8 analog inputs and 2 analog outputs. The inputs are used to visualize different signals in the computer. The analog outputs are for signal generation. These outputs could be used as reference signals with shape, frequency and amplitude controlled by the computer.

On/Off switch.

Fuse.

Connector to PC.

Control Interface included.

DC Servo Motor/Tachometer Module:

Metallic box.

Diagram in the front panel with similar distribution to the elements in the real unit.

DC Servo Motor:

Motor Supply: 10Vdc.

Motor Speed: 3600 rpm max.

Tachometer:

Tachometer Output: 10Vdc.

Tachometer Speed: 3600 rpm max.

The complete unit includes as well:

Advanced Real Time SCADA.

Open Control + Multicontrol + Real Time Control.

Own Control Software based on Labview.

National Instruments Data Acquisition board (250 KS/s (kilo samples per second)).

Students multipost (an entire class) by using a projector.

Ready for doing applied research, real industrial simulation, training courses possibilities, etc.

Unit is totally safe (Mechanical, Electronic/Electrical and Software safety devices included).

Results calculation and analysis software (CAL).

Several future expansions, as ESN. EDIBON Scada-Net System (many students working simultaneously), and more.

Designed and manufactured under several quality standards.

② DAB. Data Acquisition Board:

The Data Acquisition board is part of the SCADA system.

PCI Data acquisition board (National Instruments) to be placed in a computer slot.

Analog input: Channels= 16 single-ended or 8 differential. Resolution=16 bits, 1 in 65536. Sampling rate up to: 250 KS/s (kilo samples per second).

Analog output: Channels=2. Resolution=16 bits, 1 in 65536.

Digital Input/Output: Channels=24 inputs/outputs.

③ RYC/CCSOF. Computer Control + Data Acquisition + Data Management Software:

The three softwares are part of the SCADA system.

Compatible with the industry standards.

Flexible, open and multicontrol software, developed with actual windows graphic systems, acting simultaneously on all process parameters.

Management, processing, comparison and storage of data.

Sampling velocity up to 250 KS/s (kilo samples per second).

④ Cables and Accessories, for normal operation.

⑤ Manuals: This unit is supplied with the following manuals: Required Services, Assembly and Installation, Interface and Control Software, Starting-up, Safety, Maintenance & Practices Manuals.

Exercises and Practical Possibilities to be done with Main Items

1.-Response of a first order system in time domain. (Step-response).
2.-Response of a first order system in time domain. (Ramp-response).
3.-Response of a first order system in time domain. (Sinusoidal-response).
4.-Response of a first order system in frequency domain (Sinusoidal-response).
5.-Response of a second order system in time domain (Step-response).
6.-Response of a second order system in time domain. (Ramp-response).
7.-Response of a second order system in time domain. (Sinusoidal-response).
8.-Response of a second order system in frequency domain (Sinusoidal-response).
9.-Phase Lead Compensator experiment.
10.-Phase Lag Compensator experiment.
11.-Structure of a PID controller (Proportional-Integrative-Derivative blocks).
12.-PID control of a first order system in open-loop.
13.-PID control of a second order system in open-loop.
14.-PID control of a first order system in closed- loop. (Mathematical tuning).
15.-PID control of a first order system in closed- loop. (Experimental tuning).
16.-PID control of a first order system in closed- loop. (Ziegler -Nichols tuning).
17.-PID control of a second order system in closed- loop. (Mathematical tuning).
18.-PID control of a second order system in closed- loop. (Experimental tuning).
19.-PID control of a second order system in closed- loop. (Ziegler -Nichols tuning).
20.-Characterization of a DC motor.
21.-DC motor speed control with a PID controller.

Other possibilities to be done with this Unit:

22.-Many students view results simultaneously.
To view all results in real time in the classroom by means of a projector or an electronic blackboard.
23.-The Computer Control System with SCADA allows a real industrial simulation.
24.-This unit is totally safe as uses mechanical, electrical and electronic, and software safety devices.
25.-This unit can be used for doing applied research.
26.-This unit can be used for giving training courses to Industries even to other Technical Education Institutions.

a) Technical and Vocational Education configuration

⑥ RYC/CAI. Computer Aided Instruction Software System.

This complete package consists on an Instructor Software (INS/ SOF) totally integrated with the Student Software (RYC/SOF).

-INS/SOF. Classroom Management Software (Instructor Software):

The Instructor can:

- Organize Students by Classes and Groups.
- Create easily new entries or delete them.
- Create data bases with student information.
- Analyze results and make statistical comparisons.
- Print reports.
- Develop own examinations.
- Detect student's progress and difficulties.

-RYC/SOF. Computer Aided Instruction Software (Student Software):

It explains how to use the unit, run the experiments and what to do at any moment.

This Software contains:

- Theory.
- Exercises.
- Guided Practices.
- Exams.

b) Higher Education and/or Technical and Vocational Education configuration

⑦ RYC/CAL. Computer Aided Learning Software (Results Calculation and Analysis).

This Computer Aided Learning Software (CAL) is a Windows based software, simple and very easy to use.

CAL is a class assistant that helps in making the necessary calculations to extract the right conclusions from data obtained during the experimental practices.

CAL will perform the calculations.

CAL computes the value of all the variables involved.

It allows to plot and print the results. Between the plotting options, any variable can be represented against any other.

Different plotting displays.

It has a wide range of information, such as constant values, unit conversion factors and integral and derivative tables.

c) Multipost Expansions options

⑧ Mini ESN. EDIBON Mini Scada-Net System.

EDIBON Mini Scada-Net System allows 30 students to work with a Teaching Unit in any laboratory, simultaneously.

The Mini ESN system consists on 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.

Main characteristics:

- -It allows 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.
- -Teacher controls and explains to all students at the same time.
- -Any user/student can work doing "real time" control/multicontrol and visualisation.
- -The manager/teacher can see in his/her computer what any user/student is doing in the unit.
- -Continuous communication between the manager and all the users/students connected.

Main advantages:

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

The system basically will consist of:

This system can be used with Computer Controlled Unit.

- -Manager/Teacher computer.
- -Computers in a local net.
- -Mini SCADA-NET system (Manager/Instructor Software + User/Student Software + Unit Software adaptation + Unit-Control Interface adaptation + Webcam + cables and accessories required for a normal operation).

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

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