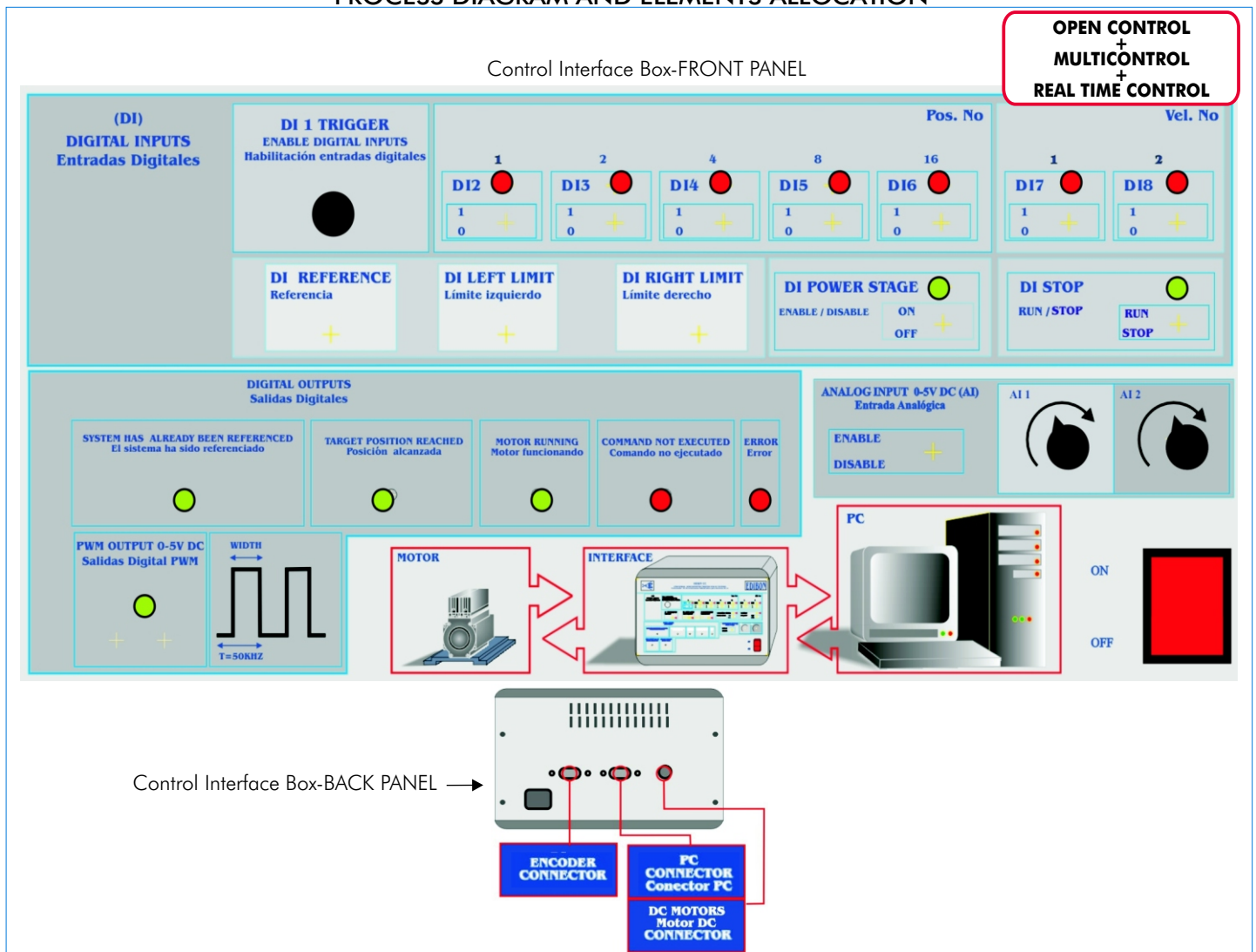


PROCESS DIAGRAM AND ELEMENTS ALLOCATION



SPECIFICATIONS

Items supplied as standard

① SERIN/CC. Unit:

It is formed by a Control Interface Box and a Direct Current Motor and Encoder Module.

The Control Interface Box has a **4-quadrants servo amplifier** for DC motors that controls the motor speed, position and current of the motor. In order to do this control the feedback is done thanks to an encoder.

The RS232 communication between the Control Interface Box and the computer (PC) provides the possibility of commanding the motor from the PC and to visualize the most important signals of the motor.

The 4-quadrant servo amplifier controls the motor operation and the braking operation in both rotation directions clockwise and counterclockwise.

Velocity, Position and Torque Control.

It allows predefined moves and programming.

Control Interface Box:

Front panel:

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

7 Digital outputs:

They have led's that indicate if the outputs are active or not.

Output 1: this output indicates when the system has been referenced already.

Output 2: this output indicates when a target position is reached.

Output 3: this output indicates when the motor is running.

Output 4: this output indicates when a command can not be executed.

Output 5: this output indicates when an error occurs.

Output 6: this output is a user definable PWM-output (5V, 0-100% duty cycle, 50kHz).

Output 7: this output is the common cathode of the freewheeling diode of the low side drivers.

13 Digital inputs:

7 User definable digital inputs for process control.

1 Digital input (trigger signal).

3 Digital inputs: reference, left limit and right limit:

DI reference: digital input for reference switch.

DI left limit: digital input for left limit switch of a linear unit.

DI right limit: digital input for right limit switch of a linear unit.

2 Digital inputs power stage and stop:

DI power stage: digital input for enabling the power stage.

DI stop: digital input for switching the regulation off if the signal is removed.

2 Analog inputs with voltages in the range of 0-5V.

2 Potentiometers to select the value of the analog inputs (0-5 V DC), these potentiometers are enabled by a commuting switch placed next to them.

Ignition Switch. When the unit is on, the red LED is active and lighting.

Back panel:

Voltage supply. There is a voltage supply that feeds the unit with 220 V of alternating current.

Motor power supply. It is a 24 V DC motor power supply (it is a three wires connection motor +, motor -, and one taking to earth).

Connection port in series. It is a connection plug to connect the Control Interface with the PC by the RS-232 port, in order to allow the software to manage the motor.

Connection with the Feedback. It is a connection with the motor Feedback. It allows the encoder to manage the motor.

Direct Current Motor and Encoder Module:

DC Motor, 90W. Position, speed and current are controlled by the Control Interface.

Digital encoder, 500 pulses per revolution, with RS232 communication port.

2 Power supply wires (one for the motor and other for the Control Interface).

2 Communication RS232 wires (one from the Control Interface to the computer (PC) and other from the Control Interface to the encoder).



SERIN/CC Unit

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

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

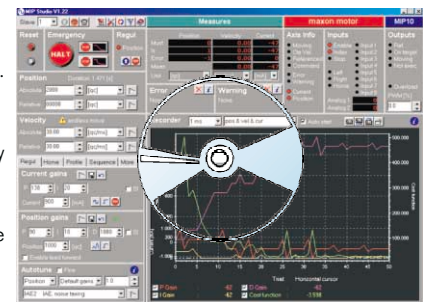
Compatible with the industry standards.

Registration and visualization of all process variables in an automatic and simultaneously 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.

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



SERIN/CC/CCSOF. Software

③ Cables and Accessories.

④ Manuals:

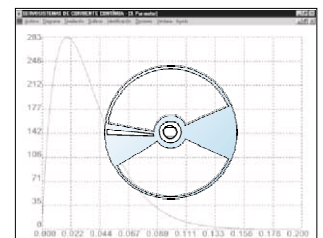
This unit is supplied with 8 manuals: Required Services, Assembly and Installation, Interface and Control Software, Starting-up, Safety, Maintenance, Calibration & Practices Manuals.

*References 1 to 4: SERIN/CC + SERIN/CC/CCSOF + Cables and Accessories + Manuals are included in the minimum supply, enabling a normal operation.

Complementary items to the standard supply

Simulation Software:

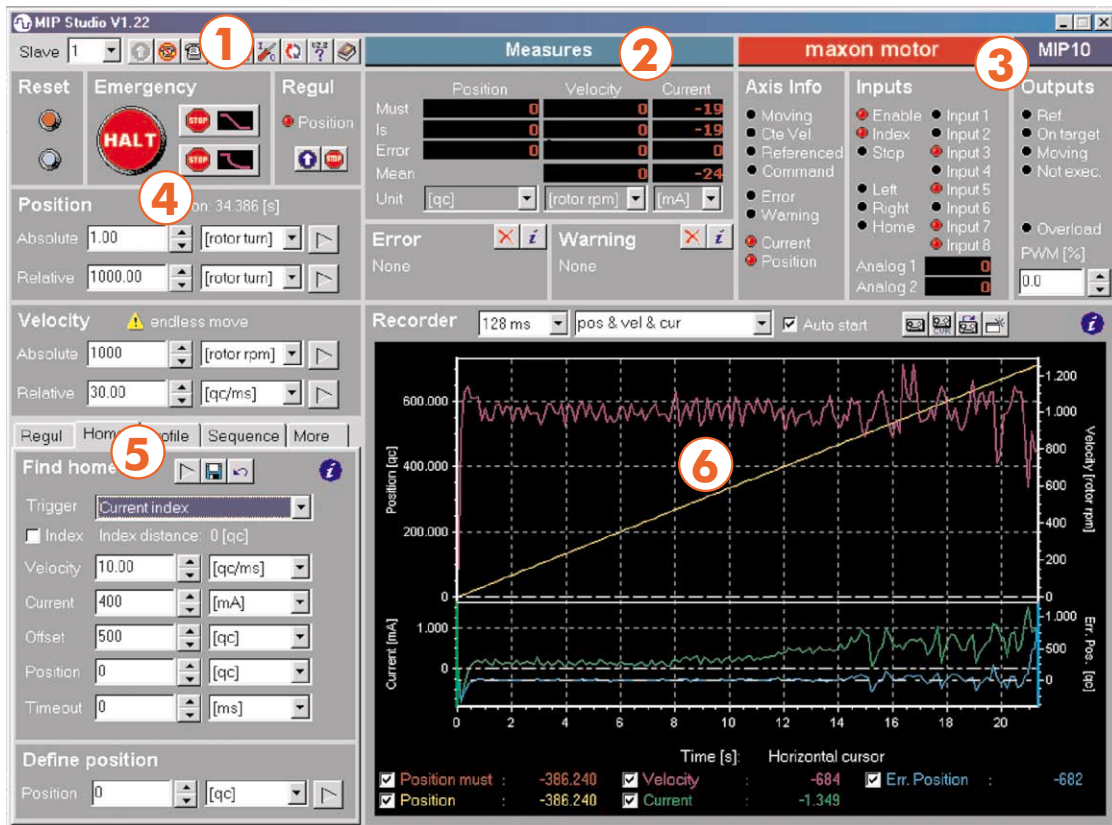
⑤ SERVOS/SOF. Servosystems Simulation Software Package. (See SERVOS/SOF Catalogue).



SERVOS/SOF

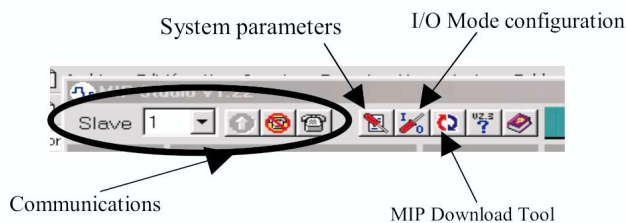
Software Main Screens

Main screen

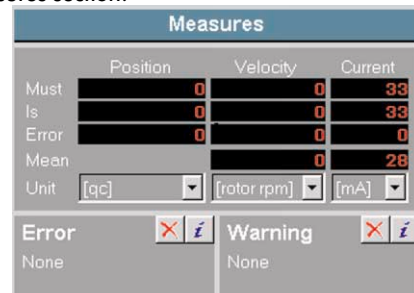


This main screen is divided in different sections:

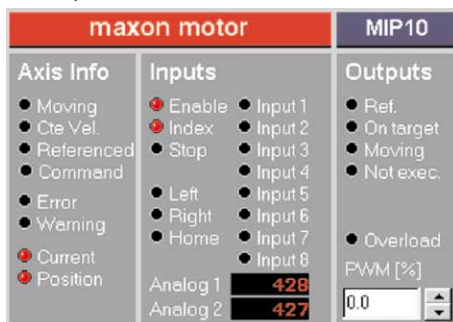
1.- Menu section:



2.- Measures section:



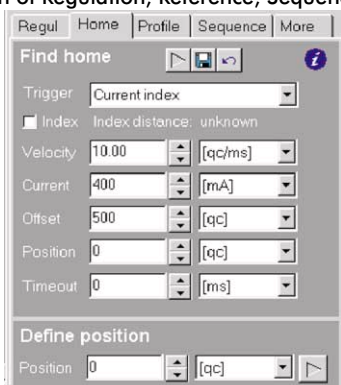
3.- Inputs, Outputs and Axis info section:



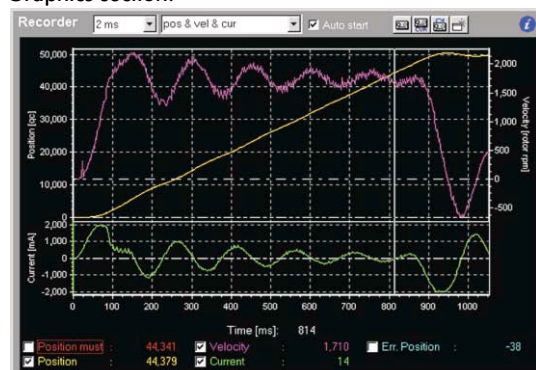
4.- Reset, Halt, Position Regulation, Position Control and Velocity section:



5.- Section of Regulation, Reference, Sequence, etc.:



6.- Graphics section:



Continue...

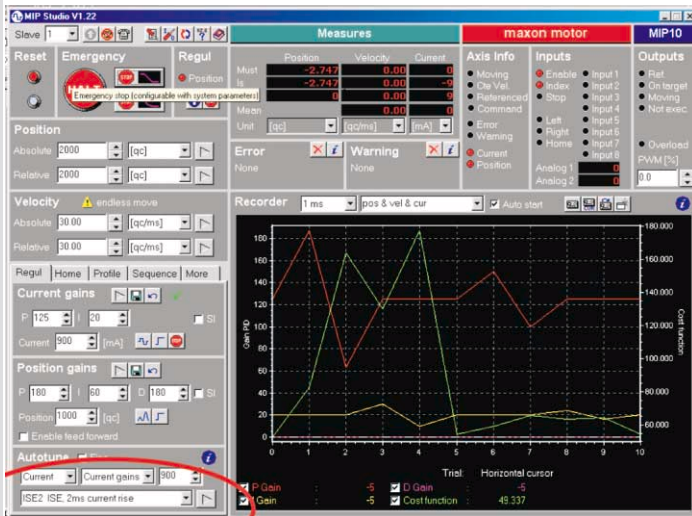
Some typical results

Autotuning

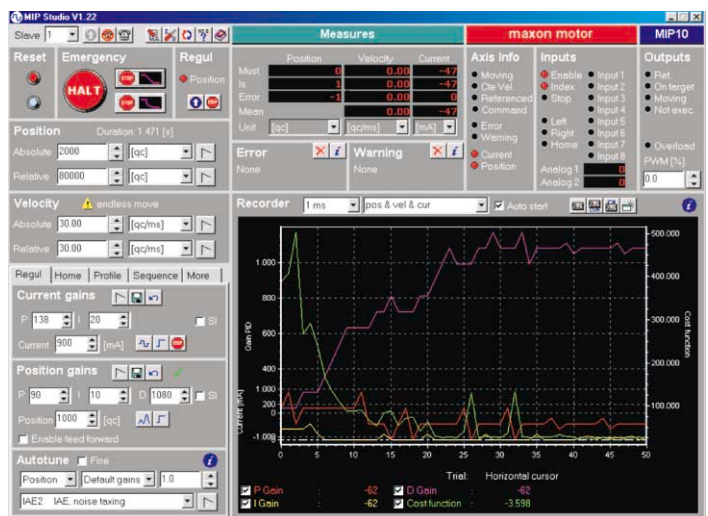
Gains Tuning

1.- In the lower left corner of the screen there is the autotuning function. Once the autotuning is done we can see the parameters on the emerging window.

2.- We can, as well, develop the position autotuning choosing the POSITION option (where before CURRENT were chosen) with the parameters used. We can observe the regulation parameters on the emerging window too.



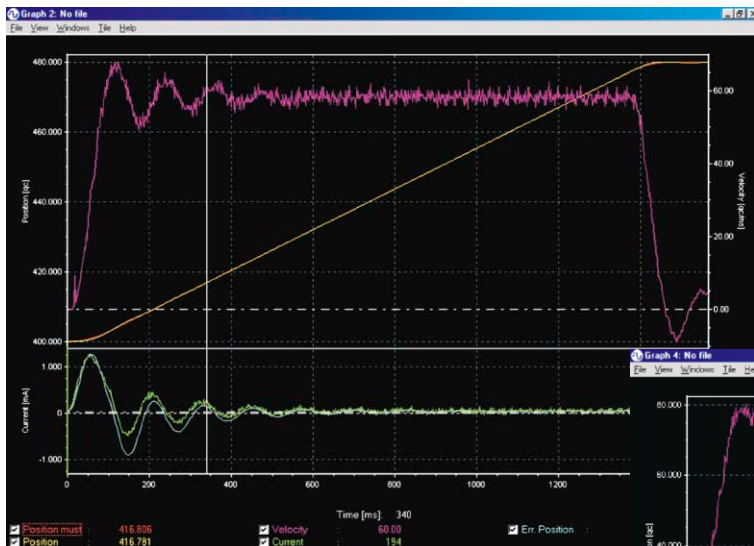
Emerging window:



Emerging window:

3.- We will have both graphics: firstly the current regulation and then the position regulation graphic after to make a relative movement (on the right upper side we find the options for the movements in position and speed):

This is what we get with the current regulation:



Once the position autotuning is done, this is the graphic for the same 80.000 qc relative movement:



Continue...

Some typical results (continuation)

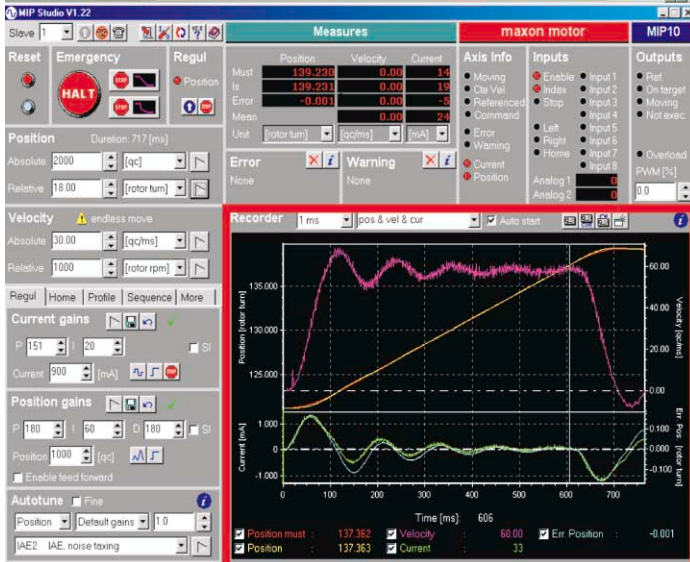
Signals Graph, Transient Analysis

Recorder function

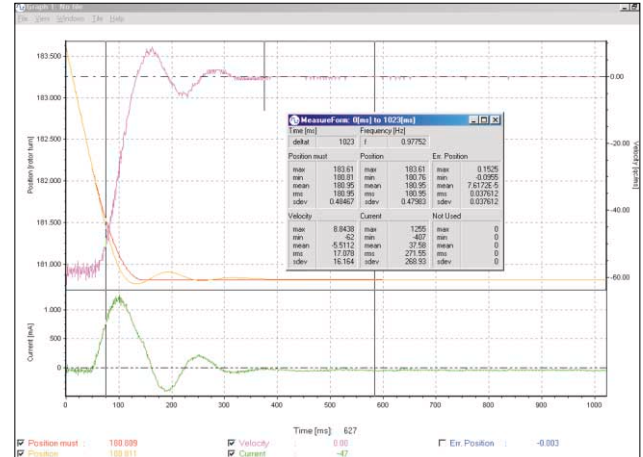
(this function provides graphs for the parameters used on the movement of the motor. We have included values for each parameter, that allow the transient analysis)

1.- Values for each parameter (position, current, velocity) are included, that allow the transient analysis. Firstly, the position graph is shown versus the velocity and the current. Autostart is selected, 1ms is introduced and position & velocity & current are chosen, in this way, these data of these parameters will be recorded for a later use of the graph.

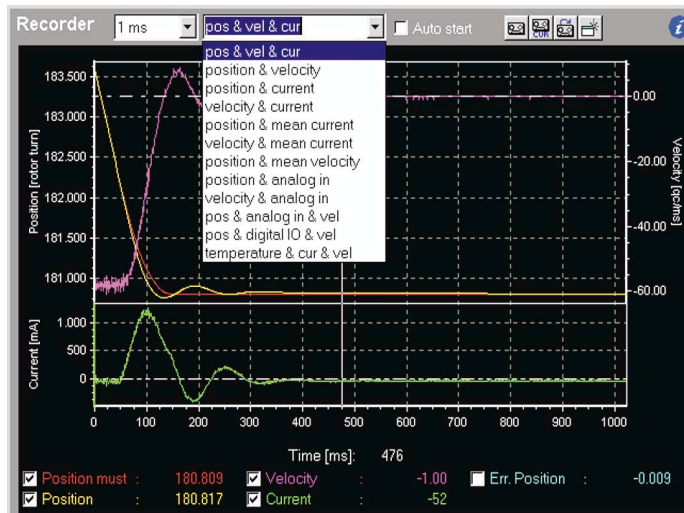
2.- In this zone of the main screen corresponding to RECORDER, there are 4 buttons:
-Start Recording.
-Start Recording Current and Duty Cycle.
-Reload Recorded Data.
-Open new window for display graph.



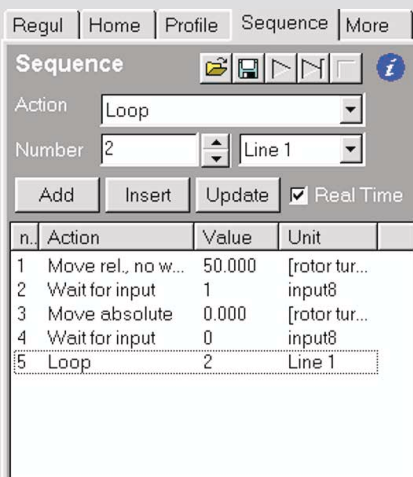
Example of a graph: In this graph we can analyze measures values, during the execution of other functions



3- This window shows the options from the submenu "Variables to be recorded"

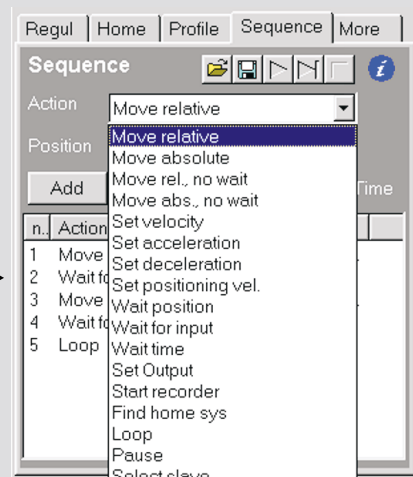


Batch Commands



← The "sequence" menu allows us to put one action after another one (series connection)

This is the list of available options. →
With these instructions we can develop useful sequences for industrial purposes

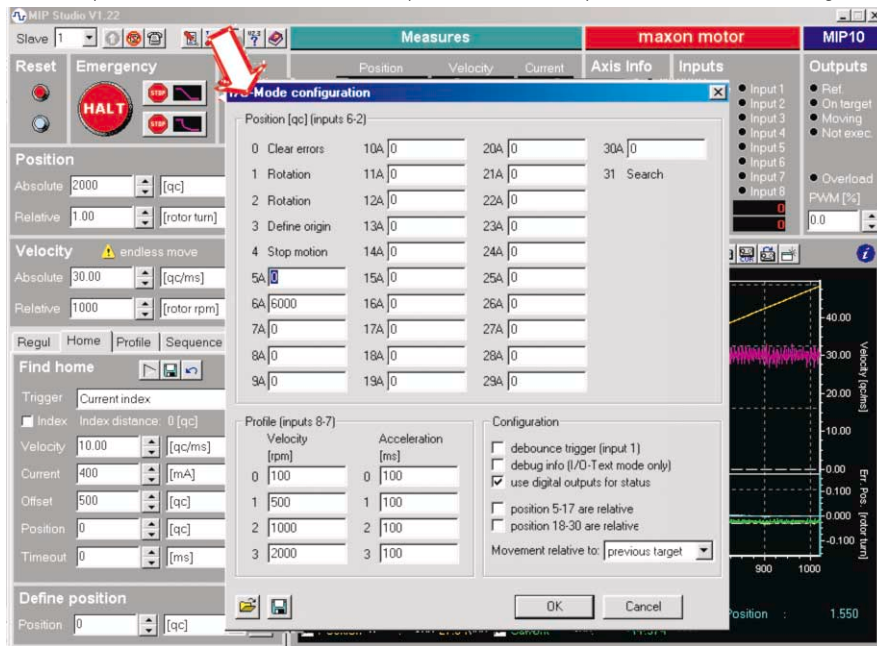


Continue...

Some typical results (continuation)

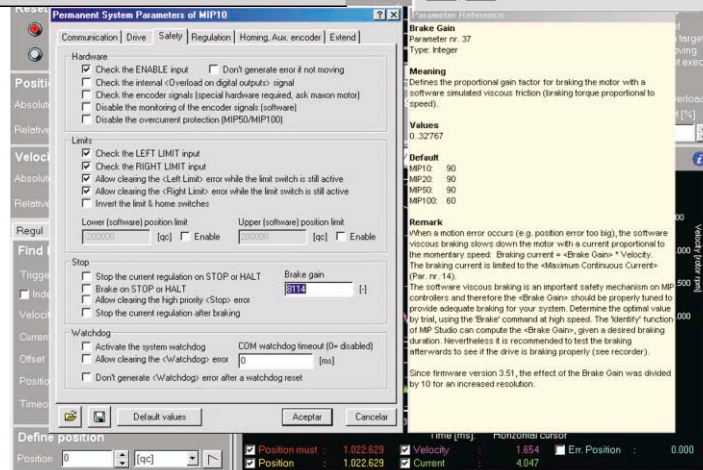
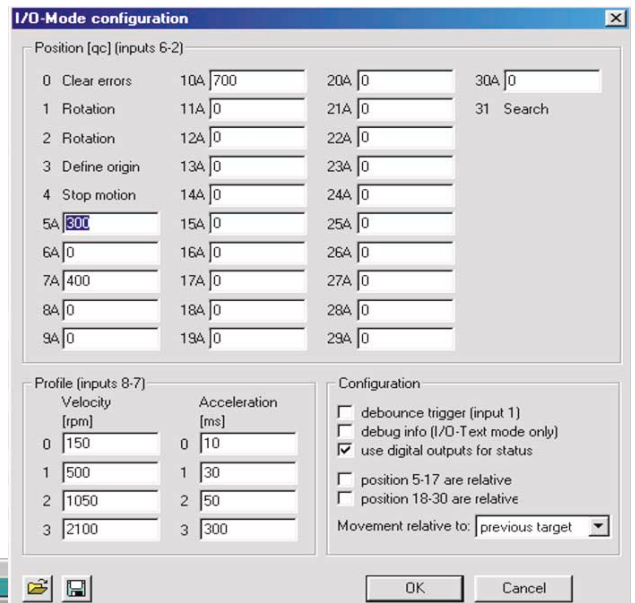
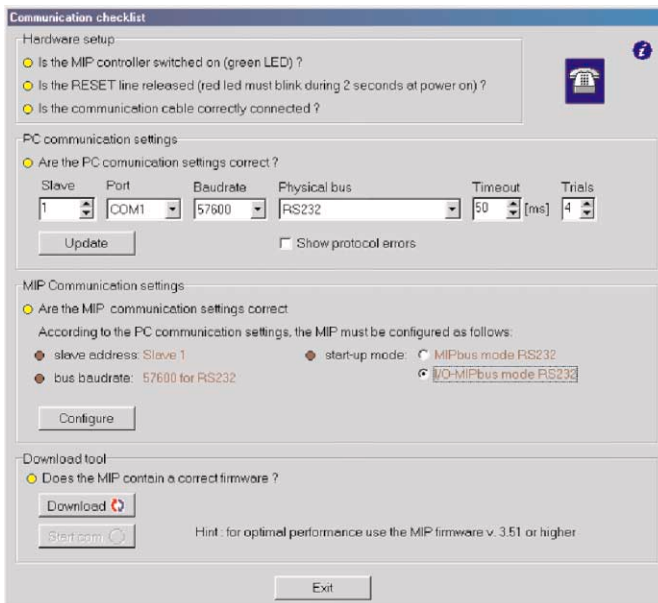
User's parameters, Position Val, Velocity Val, Acceleration Val

The servomotor's control system allows the definition of some parameters, in a way these can be used with digital inputs from the system



Digital inputs and outputs in I/O mode

Digital inputs/outputs configurations windows

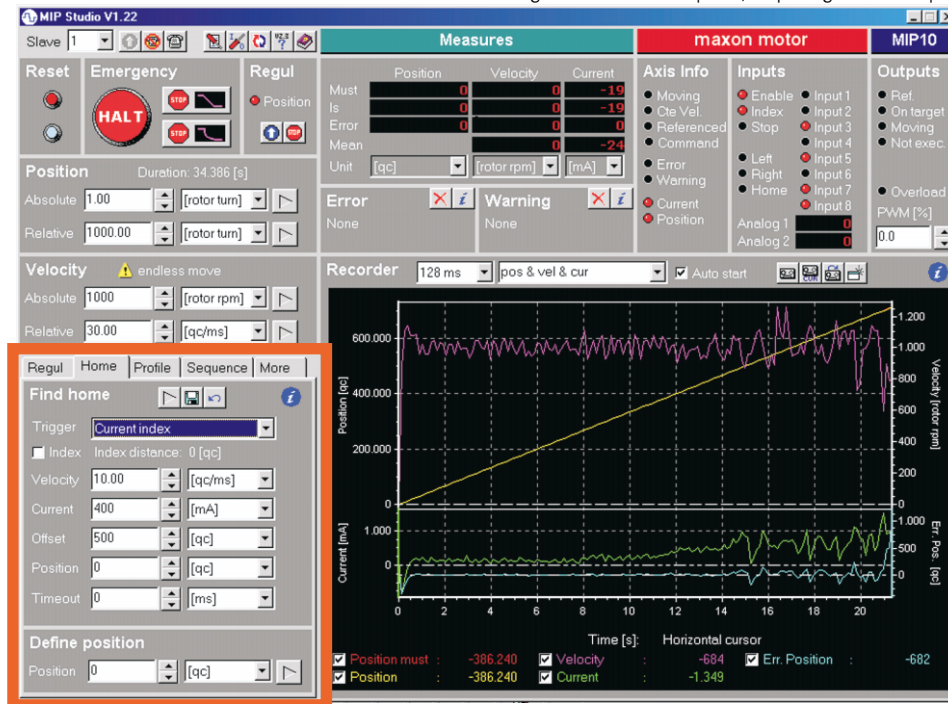


Continue...

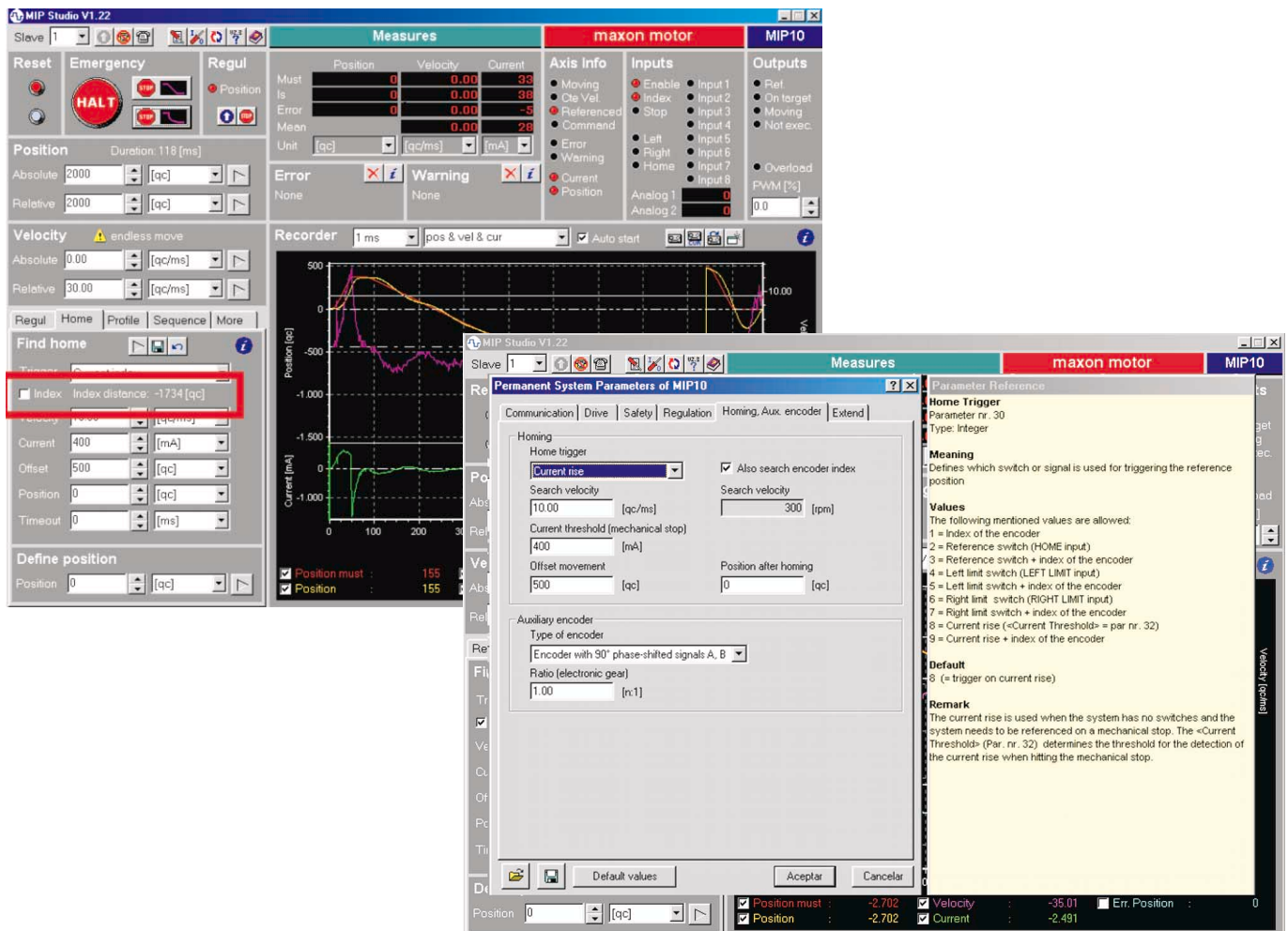
Some typical results (continuation)

Load and braking simulation

We use the braking system, connected to the servomotor to simulate a load or braking the servo due to a course end. In this windows we observe that the simulation of an course end begins at the home option, adjusting the menu parameters.



Searching reference

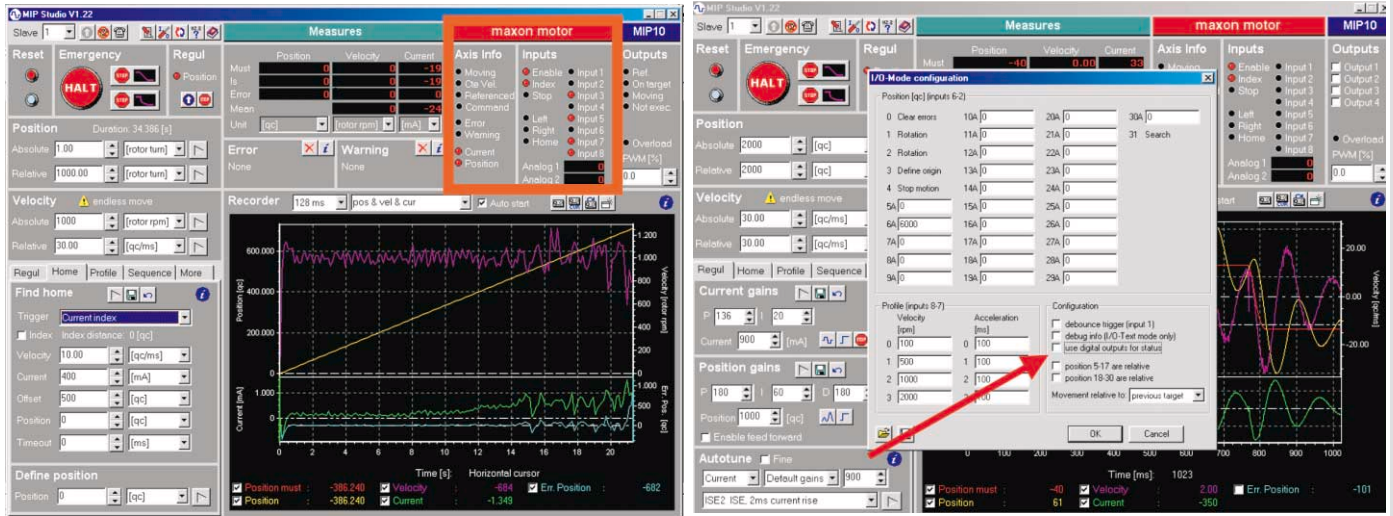


Continue...

Some typical results (continuation)

Input/Output functions

Visualization of the digital inputs anytime. Lights on (red) or off (black), the input's state (1 or 0)



State commands and Exceptions

Example of windows of Errors and Warning signals

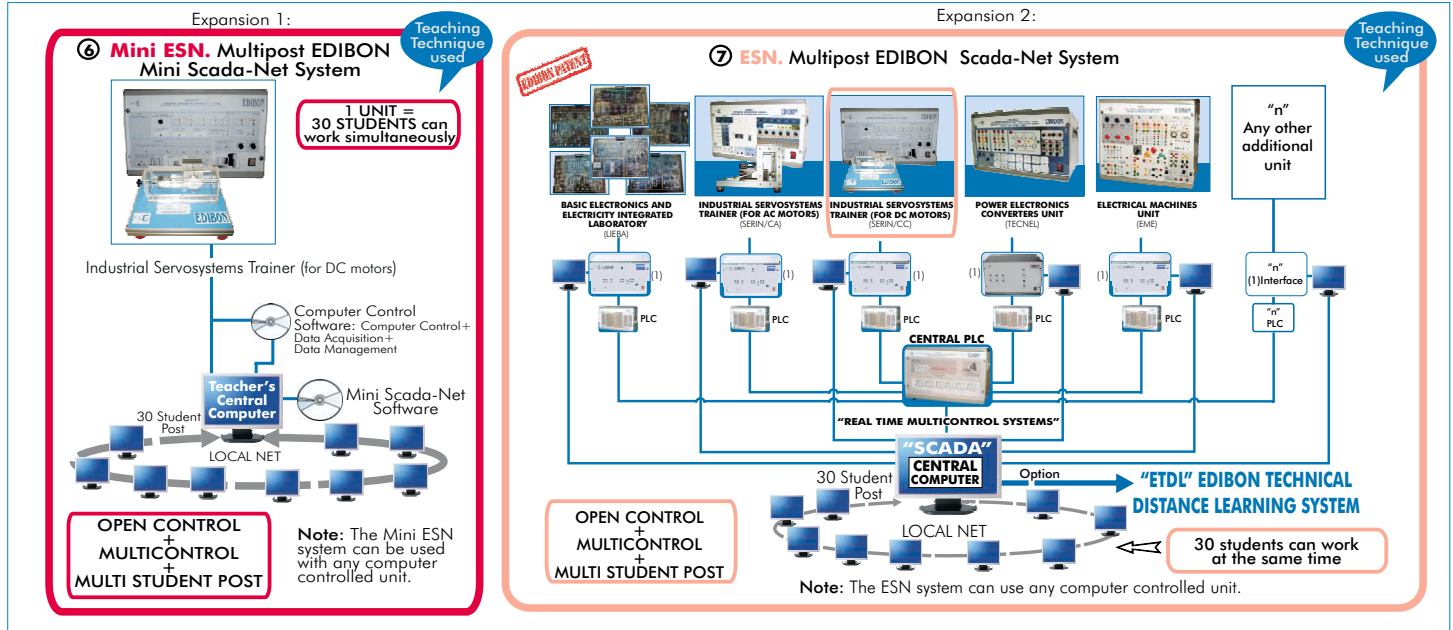


EXERCISES AND PRACTICAL POSSIBILITIES

Some Practical Possibilities of the unit:

- 1.- Autotuning.
- 2.- Manual tuning of the position regulator.
- 3.- Motion commands in MPBUS RS232 mode.
- 4.- Signals Graph, Transient Analysis.
- 5.- Batch Commands.
- 6.- User's parameters, Position Val., Velocity Val., Acceleration Val.
- 7.- Digital inputs and outputs in I/O mode.
- 8.- Load and braking simulation.
- 9.- Searching reference.
- 10.- Input/Output functions.
- 11.- State commands and Exception.
- 12.- Velocity, Position and Torque control.

POSSIBILITIES OF OTHER AVAILABLE EXPANSIONS



ORDER INFORMATION

Items supplied as standard

Minimum configuration for normal operation includes:

- ① Unit: SERIN/CC. Industrial Servosystems Trainer (for DC Motors).
- ② SERIN/CC/CCSOF. Computer Control + Data Acquisition + Data Management Software.
- ③ Cables and Accessories.
- ④ Manuals.

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

Complementary items to the standard supply

- ⑤ SERVOS/SOF. Servosystems Simulation Software Package.

Expansions

- ⑥ Mini ESN. Multipost EDIBON Mini Scada-Net System.
- ⑦ ESN. Multipost EDIBON Scada-Net System.

REQUIRED SERVICES

- Electrical supply: single-phase, 220V. 50Hz or 110V. 60Hz.
- Computer (PC).

DIMENSIONS & WEIGHTS

SERIN/CC Unit:

- Control Interface Box: -Dimensions: 490 x 330 x 310 mm. approx.
-Weight: 40 Kg. approx.
- Motor + Encoder Module: -Dimensions: 300 x 300 x 120 mm. approx.
-Weight: 5Kg. approx.

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

EDIBON International, S.A.

C/ San José 13, 28921 ALCORCON (Madrid) SPAIN.
Phone: 34-91-6199363 FAX: 34-91-6198647
E-mail: edibon@edibon.com WEB site: www.edibon.com

Issue: ED02/06
Date: October/2006

REPRESENTATIVE: