

IT.96ATC-MT

Automatic control technology is a wide generic term covering the operation and regulation of processes without continuous direct human intervention. This laboratory has been designed to introduce the fundamentals.

The end user has the possibility to perform the control of variables such as temperature, light, level, flow and DC motor in different ways as PID, open loop, closed-loop, continuous and discontinuous. Its architecture is very easy and modular allowing the user to both learn the concepts in a simple way and to create new ones.

Beside this trainer we have realized a compact board that allows to study the processes and the controllers, all in one unit, complete with data acquisition and processing software for Windows.



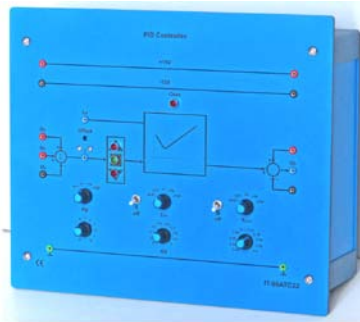
This laboratory is designed for the study of Control of a DC motor to allow the student a practical training, based on the performance of guided experiments. Industrial type components are educationally adapted by using a modular panel system to allow easy step by step assembling, from the simplest circuit to the most complex system. This trainer has a modular structure and it consists of didactic panels installed on a vertical frame. It is supplied with a theoretical and practical manual.

CONTROL OF A DC MOTOR



The modularity of this didactic system can give the students a direct and immediate approach to the topics, offering the opportunity to study various subjects, performing several experiments:

- P, PI and PID controls of the speed of a DC motor using the CHR method
- Control of a DC generator



IT.96ATC-22 PID CONTROLLER

This module can simulate a standard industrial controller for use as P, PI, PD or PID regulator in automatic closed-loop control systems.

Controller continuously adjustable parameters:

- **proportional gain $K_p = 0 \dots 1000$**
- **integral action time $T_I = 1 \text{ ms} \dots 100 \text{ s}$**
- **differential action time $T_D = 0.2 \text{ ms} \dots 20 \text{ s}$**



IT.96ATC-81 DC MOTOR

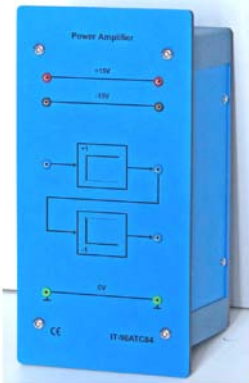
- Power supply: +15 V ; 0 V ; -15 V
- Electric power of the motor: 10 W
- Maximum speed of the motor: 5000 min-1
- DC Motor
- DC Generator

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IT.96ATC-84 POWER AMPLIFIER

- Power supply: +15 V ; 0 V ; -15 V
- Signal voltage range: -10V, ..., +10V
- Output voltage:
 - -10 V ... +10 V to ground
 - 0 ... ±20 V symmetrically
- Max. output power: 30 W



IT.96ATC-82 LOAD SWITCH

- Power supply: +15 V ; 0 V ; -15 V
- Input voltage: max. 220 Vac
- Load: 3 incandescent lamps



IT.96ATC-14 VOLTAGE REFERENCE GENERATOR

- Output voltage: 0...+10 V AND -10 V ...+10 V
- Power supply: +15 V / 0 V / - 15 V

IT.96ATC-70 P CONTROLLER

- Proportional gain $K_p = 0 \dots 100$



IT.96ATC-13 DC POWER SUPPLY

- Output voltages: +15V / 0 V / - 15V
- Output current: 2-3 A

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IT.96ATC2P

Single Pole Pushbutton

- Plug-in element, switch load 2 A, 250 V.



IT.96USB Data acquisition / control unit

Interface unit: to interconnect real world signals to a data acquisition system.

- Power supply from USB, < 100mA
- 2 relay outputs
- 2 analogue outputs, serial 8 bit D/A converter
- Output: -10/+10 V
- 8 analogue inputs, 12 bit A/D converter
- Input: -10/+10 V
- Max speed of conversion: 10 kHz

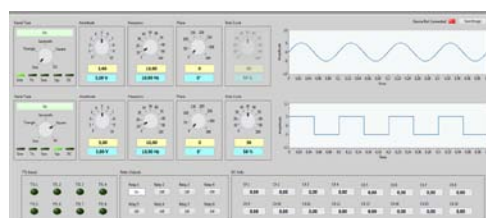


IT.96MSW Software

To generate the control signals and to acquire and visualize the signals and the wave forms to be analyzed.

- Input/Output Control window.
- Signal Generator window (continuous, square wave, ramp, triangular, sinusoidal, pulse).
- 3 trace Oscilloscope window with continuous, single and trigger control operation.
- 4 channel Chart Recorder window.
- Window with I/O controls for setting and visualizing the signals.

FUNCTION GENERATOR



4 Ch. OSCILLOSCOPE

