

LHP 302
AUTOMATION-MECHATRONICS



The LHP-302 laboratory introduces the student to **Basic and Advanced Automation and Process Control** including **Mechatronics**. The laboratory consists of a set of simulators, trainers and equipment listed on the right of this page. The laboratory deals with the basic automation applications in mechanical, electrical and electronics technology in automation using pneumatic and hydraulic components, electronic components, sensors and transducers, programmable logic control, electrical and digital control and process control applications as CIM and Mechatronics.

The software is organized in subjects corresponding to the simulations and the experimental exercises with scope:

- A series of aims for the specific experiment and the level of knowledge that must be obtained.
- Theoretical background relevant to the lesson as well as practical examples of use.
- Tests/Questions for the students and fault testing.

The insertion of faults is carried out by either the software application or with switches.

The simulators and the trainers are accompanied by relevant software to enable the student to follow step-by-step the theory and the exercise. The whole exercise procedure is carried out on the simulators. The system is accompanied by technical manuals for theory and exercises.



PROGRAMMABLE LOGIC	
PT 1208 Universal PLC Trainer	SIMULATORS
PT-10S PLC Trainer CPU 1214C	
PT-12 Analogue Input / Output Simulator	
PT-13 Digital Input Simulator	
PT-12 RM Analogue Input / Output Simulator	
PT-13 RM Digital Input/ Output Simulator	
PT-20 RM Two-zone Parking Garage Simulator	
PT-14 Flow, Pressure, Level & Temperature Control Trainer	
PT-21 Smart Traffic Lights Simulator (single crossing)	
PT-24 Handler/Conveyor Handling Simulation	
PT-21 4WP Smart Traffic Lights Simulator (multiple crossing)	
PT-33 MS Lift Model Trainer (with PLC)	
PT-22M Lift Model Trainer	
PT-22RM Lift Simulator	
PTS-2312 Sensors And Transducers Trainer	ELECTRIC CONTROLS
PT-2104G Electro mechanic component board	
PT-1015AV Squirrel Cage 3-Phase Asynchronous Motor	
PT-1022 Three Phase Induction Motor	
PT-1021 DHALANDER Two Speed Motor	PNEUMATICS & CONTROLS
PTS-3840 Electro-Pneumatics Training System	
PTS-3840 EPS Electro-Pneumatics Trainer	
HYDRAULICS AND CONTROLS	
PTS-3860 Hydraulics Training System	COMPUTER INTEGRATED MANUFACTURING MODEL
PT-CIM 2C Mechatronics Basic Trainer	
PTR 4D Robotic Arm Module	
PT SIM C-1610 Interactive PLC Trainer for Industrial Processes	

PROGRAMMABLE LOGIC CONTROLLERS

PT 1208 Simulator Universal PLC Trainer



The PT-1208 Universal trainer is a **Programmable Logic Controller Trainer** that combines high performance and easy of use operation for training students in PLC operation and programming.

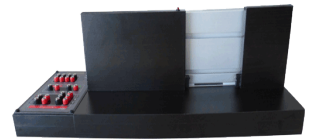
It can be programmed from its own panel, without computer using manual switching, or can be programmed via its USB port (**PT 1208U**) or Ethernet (**PT 1208E**) using a PC. PT 1208E allows networking of multiple PT 1208 CPUs.

The basic module is composed of a CPU with 12 digital inputs (2 of which can be analogue inputs) and 8 relay outputs and with extension modules can be configured up to 32 inputs and 16 outputs and up to 3 parallel process CPUs.

In order for the students to initiate the first and simple PLC project, we recommend as an accessory the **PT-21GD Garage Door** control system. It provides the basic features of opening and closing a garage door with various control parameters. The students can program the control of:

- 1) termination switches
- 2) garage door motor
- 3) infrared sensor
- 4) light alarm
- 5) sound alarm

It's recommended for all PLC experiments.



PT-10S Simulator PLC Trainer CPU 1214C



The PT-10S Simulator - programmable logic controller (**PLC**) allows to control machines and installations by using the sequential logic that replaces the traditional electromechanical boards, allowing, therefore, to save relays, timers and counters.

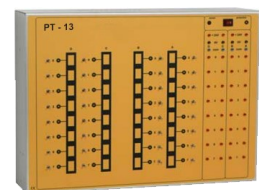
SIMULATORS

PT-12 Simulator Analogue Input / Output Simulator



The PT-12 simulator is essential and indispensable for operation and understanding of the analogue modules of the PLC.

PT-13 Simulator Digital Input Simulator



The PT-13 Digital Input Simulator allows **studying and analyzing the programming techniques through automatisms** which are freely and imaginatively implemented. Moreover, it allows the PLC potentialities to be pointed out.

SIMULATORS

PT-12RM Simulator Analogue Input/Output Simulator



PT-12RM is an Analogue Input / Output Simulator aimed for **operation** and **understanding** of the **analogue modules** of the PLC.

PT-13RM Simulator Digital Input/ Output Simulator



The PT-13RM Digital Input / Output Simulator is aimed for studying and analyzing the programming techniques through automatism which are freely and imaginatively implemented.

PT-20RM Simulator Two-Zone Parking Garage Simulator



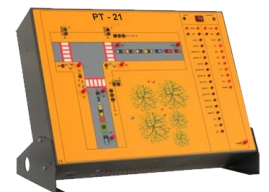
PT-20RM Simulator represents a two-zone parking garage where it is possible to realistically simulate the sequences that a car driver has to perform when he wants to use an automated parking garage.

PT-14 Trainer Flow, Pressure, Level and Temperature control Trainer



The PT-14 trainer is aimed to provide automation training by the means of controlling the flow, the pressure and the temperature level of a water circulation system apparatus using a set of sensors and actuators for level, pressure, temperature and flow. Control is provided by P,PI ,PD and PID control. Additionally, using a PLC, the system is fully controllable and operational (optional).

PT-21 Simulator Smart Traffic Lights Simulator (single crossing)



The PT-21 Simulator represents a **crossing between two one-way streets**, each controlled by a semaphore and provided with three pedestrian crossings with semaphores too.

SIMULATORS

PT-24 Simulator

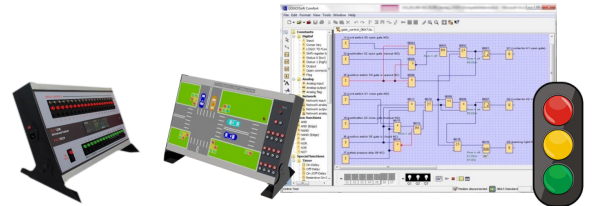
Handler / Conveyor Handling Simulator



The PT-24 Simulator allows simulating the **transfer of material**. The system of rolls used for the transport, the loading and the accumulation of material are simulated by means of LED.

PT-21 4WP Simulator

Smart Traffic Lights Simulator (multiple crossing)



The PT-21 4WP Simulator represents a **crossing between 2 two-way streets**, each controlled by a traffic light system and provided with three pedestrian crossings with pedestrian signaling in the cross-section while also providing a pedestrian crossing with a pedestrian call button and signaling.

PT-33 MS Trainer

Lift Model Trainer (with PLC)



The PT-33 MS lift trainer module provides to the students training in various **signals and functions of modern elevator control equipment**, control actuators and display components.

The model consists of a **real three-stop scaled down lift** and allows PLC control and management with a build-in PLC (PT-1208).

PT-22M Trainer

Lift Model



The PT-22M lift model provides to the students training in various signals and functions of **modern elevator control equipment, control actuators** and **display components**.

The model consists of a real three-stop scaled down lift and allows an innovative approach to PLC control and management. Each cabin is 200 mm high, while the whole lift model is 1000 mm high.

PT-22RM Simulator

Lift Process Simulator



The PT-22RM Lift Simulator provides a simulation of a **three-stop lift with real processing procedures**, a lift car up-down manual cycle with automatic PLC control and management.

SIMULATORS

PT-2312 Simulator Sensors And Transducers Trainer



The PT-2312 Sensors and Transducers trainer teaches the operating principles of the sensors/transducers which are most widely used in industry. It is subdivided in two sections: in the lower section there are all the input and output transducers, while in the upper side there are all the signal conditioning systems as well as the instrumentation.

ELECTRIC CONTROLS

PT-2104G Simulator Electro-mechanic component board



The PT-2104G trainer board allows performing the most important **experiments in electromechanical controls** fund of industrial electrical plants including basic electromotor control process.

PT-1015AV Motor Squirrel Cage 3-Phase Asynchronous Motor



The PT-1015AV motor is aimed for **induction processes with three-phase stator winding** and squirrel cage buried in the rotor.

PT-1022 Motor Three Phase Induction Motor



The PT-1022 motor is aimed for induction **processes with slip ring rotor**, complete with built-in manual braking device and 3-step starting rheostat.

PT-1021 Motor DHALANDER Two Speed Motor



The PT-1021 DHALANDER motor is aimed for **induction processes with three-phase stator and two speeds squirrel cage**.

PNEUMATICS & CONTROLS

PTS-3840 Trainer
Electro-pneumatics Training System



The PTS-3840 trainer introduces the student to basic and advanced **automation and process controls** in **Pneumatics and Electro-pneumatics** and **Automation with PLCs**. The training course offers deals with the mechanical and electronics component integration as a subtopic of Mechatronics and the technology of automation using pneumatics components logic control and process control application. The system's structure consists of a **3 sets of compact desktop modular units**. The system is an ideal tool for building, operating and controlling circuits that include pneumatics, electro-pneumatics, sensors, actuators, electronics and process control components and controllers.

The modules of the PTS-3840 are:

- **PTS 3840 P-Pneumatics**
- **PTS 3840 EP-Electro-pneumatics**
- **PTS 3840 PLC-Kit managed by PLC**

Each of these modules can be inserted onto:

- **PTS 3840 BA** - a working bench with a top frame (110 cm x 60 cm), made of aluminum and offering 3-level horizontal beams for installing the components circuits. It comes with the power supply unit and PLC module preinstalled in case the purchased kit includes the Electropneumatic set.

♦ **PTS 3840 P - Pneumatics kit**

Created for the realization of complex pneumatic circuits for movements in sequence of at least three cylinders. It is provided also with valves manifolds with a single or dual pneumatic command, a push-button panel, end stroke pneumatic sensors, OR and AND selector valves and an air service until inlet.

♦ **PTS 3840 EP - Electro-pneumatics kit**

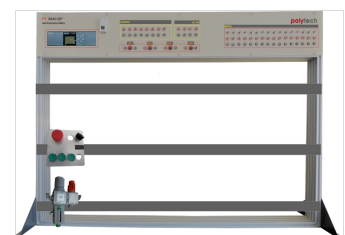
Created for the realization of electro pneumatic circuits with relay technique and sensors for moving in sequence at least two cylinders with a three 5/2 solenoid valve on a manifold (one single and two dual solenoid valves) with multipoint connection, push-button panel, terminal board and relay assembled on a DIN rail and an air service unit at inlet.

♦ **PTS 3840 PLC - PLC Kit**

Offered as an add-on of Electropneumatics kit for the realization of the above electropneumatic circuits using the PLC control software but for introducing the students to the PLC control systems and control logic.



PTS 3840 BA



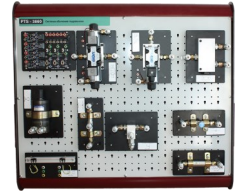
PTS-3840 EPS Trainer
Electro-pneumatics Training Station For Students



The PTS 3840 EPS offers students training in the sector of **electro-pneumatics** and **Automation with PLCs** as part of the Automation laboratory LHP 302 equipment. The training course offered deals with the mechanical and electronics component integration and technology automation or Mechatronics using pneumatics components logic control and process control application.

HYDRAULICS & CONTROLS

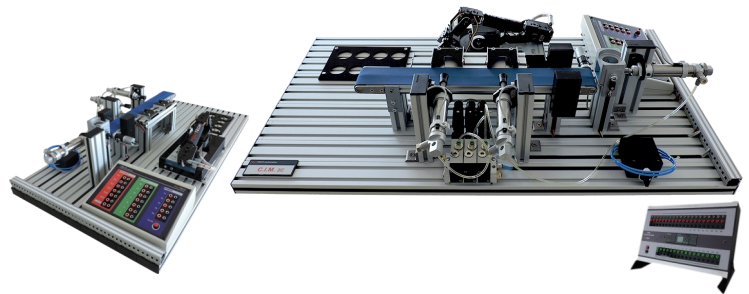
PTS-3860 Trainer Hydraulics Training System



The PTS-3860 Hydraulics Training System is designed and constructed with most modern and advanced technological components of the hydraulics and the electro hydraulics. The hardware configuration of the system allows its use like an ideal tool for building, operation and control of hydraulics circuits. This configuration is designed to be combined in a safe, fast and easy way to make the hydraulics exercises thus, providing the student with the most complete and effective education and training in the automation hydraulic technologies.

COMPUTER INTEGRATED MANUFACTURING MODEL

PT-CIM 2C Trainer Mechatronics Basic Trainer



The PT-CIM 2C trainer has been designed for students to explore **basic Mechatronics processes**, one of the most used applications in the industry, while learning on a more advanced level **how to program an automation Mechatronics process via PLCs**.

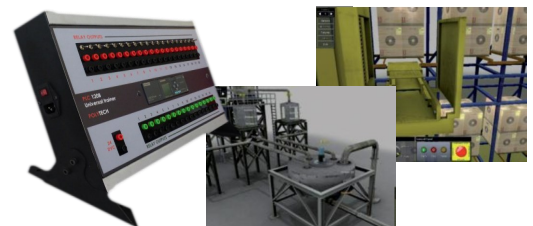
COMPUTER INTEGRATED MANUFACTURING MODEL

PTR 4D Robotic Arm Module



The PTR 4D is a robotic arm module which can provide to the students **training in the basic construction and operation of Robotic systems** or can be operated as an add-on to certain Automation and CIM labs of Kondle.

PT-SIM C 1610 Simulator Interactive PLC Trainer for Industrial Processes



The Universal PT-SIM C 1610 simulator is a Programmable Logic Controller that combines high performance and easy of use operation for those who are approaching for the first time the world of PLC and CIM – Mechatronics environment.