

# PC45/ML - Industrial Programmable Controllers



**The PC45/ML teaching set comprises:**

- AB ML1500 Allen Bradley Micrologix 1500 Controller, remote programming software and interface cable.
- PC45 AM Applications trainer, comprising of:
  - Conveyor belt with forward and reverse directions.
  - Set of cylindrical parts of differing dimensions.
  - Two sets of infra-red parts sensors.
  - Three pneumatically-controlled pistons, for pushing parts off the conveyor.
  - Parts bin for sorting parts into different categories.
  - Run/stop switches and green/red indicator lamps.
- PC11 Sequence switch module, allowing manual control of programmable controller inputs.
- PC49 Manually operated compressed air pump, providing a quiet source of compressed air.
- PC45/ML IM Curriculum Manual and Instructor's Manual.

The PC45/ML teaching set provides a complete introductory course in the programming and troubleshooting of industrial control applications.

The teaching set includes an industrially relevant applications trainer, an industry-standard programmable controller, a sequence switch module, a compressed air pump and a curriculum manual.

When used in conjunction with a student personal computer (PC), the curriculum manual is fully compatible with the ClassAct computer managed learning system.

The curriculum manual is divided into a series of chapters. Each covers a specific topic area and provides background theory, practical activities and student assessment questions.

Each chapter is designed around a list of performance objectives. These objectives are used by the ClassAct management system to generate a student competency report.

An instructor's manual is also included, providing solutions to all of the questions and practical activities contained in the curriculum manual.

**Typical topic areas include:**

- Introduction to PLCs
- Relays and Relay Ladder Logic
- Introduction to Ladder Logic Programming
- Basic Programming Instructions
- Latches and Master Control Reset (MCR) Instructions
- Timers
- Counters and Shift Registers
- Sequencers
- Programming the Complete System

**Typical activities include:**

- Identify hard-wired ladder & PLC ladder logic diagrams and its operation.
- Investigate the operation of a ladder logic program.
- Investigate the operation of Examine ON, Examine OFF and Output Energize instructions and their operation.
- Identify the operation of latching and self-latching relays.
- Recognize the Retentive Timer ON and RESET instructions and how they are programmed.
- Recognize the Bit Shift Left and Bit Shift Right instructions and how they are programmed.
- Recognize the operation of the Sequencer Output instruction and how it is programmed.
- Produce a program that sorts components by height.
- Produce a program that sorts components by width.
- Produce a complete processing system program.

**Additional items required:**

- Windows-based personal computer (PC) fitted with serial (COM) port.

**Module Facts**

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	No.	Average time
Chapters	10	90 minutes
<b>Total</b>		<b>15 hours</b>



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