

**CM184 Advanced Programmable Logic Controller**



**An Industrial PLC Training System Featuring  
The Allen-Bradley SLC500 Controller**

The CM184 is a complete industrial-based PLC training system featuring the Allen-Bradley SLC500, a rapidly growing family of compact, but powerful programmable controllers. This system will enable learners to develop competence in operating, programming, and troubleshooting a true industrial Programmable Logic Controller (PLC).

Instructor's guide with student manual and activities provide complete, clear instructions and laboratory exercises, permitting the student to rapidly attain PLC competency. Also included is Windows-based PC software (RS Logix) and computer interface for on-line/off-line programming.

The CM184 curriculum begins with basic wiring concepts and moves quickly through circuits, I/O, ladder logic and programming. Additional units focus on troubleshooting, practical applications, and the special features of the Allen-Bradley SLC500.

Each unit in the curriculum includes programming and wiring experiments, which stimulate proficiency in controller operation and industrial applications.

The experiment station permits easy access to the PLC input/output terminals with simple banana-jack connectors. This allows rapid set-up and testing of wiring changes, using the built-in input/output devices including pushbutton switches/lights, thumbwheel input, and BCD display output, or user-identified external devices. The SLC500 controller is programmed using ladder diagrams, and each programming element is entered directly via the Windows-based RS Logix programming software.

Because of the CM184's flexible design and expansion capabilities like adding sensor inputs, PID process control, robotic interfacing, or other advanced applications; coupled with the SLC500's performance features, means you can create a PLC learning experience that will be industrially relevant today and in the future.

## **SPECIFICATIONS**

The CM184 series of PLC training systems feature the Allen-Bradley SLC500. The standard configuration, CM184-03 with SLC500 5/03 processor is described below. Other SLC500 processors, digital or analog inputs and outputs are available.

Regardless of the configuration selected, using the included instructor's guide and student activity manual with detailed exercises and written testing materials, the learner will develop competence in operating, programming, and troubleshooting a true industrial Programmable Logic Controller. Also included as standard is a computer interface for PC to PLC communications and Windows-based RS Logix software for on-line/off-line ladder logic programming.

The CM-184-03 PLC Trainer is installed in a 16-gauge fabricated steel "wedge shaped" cabinet. The components are mounted on a 16-gauge and brushed stainless steel panel. All features of the panel are silkscreened for easy identification.

### **CM184-03 Station Specifications:**

The station is mounted into the cabinet for convenient interfacing with other trainers. A power on toggle switch with light indicator and one amp system fuse protection is located along the cabinet side. The training panel contains the Allen-Bradley SLC 500 (internally fused) with analog connector prewired. Purchase of the analog module is optional.

### **Panel Components:**

- 7-segment, 4-digit BCD LED output display
- 4-digit Thumbwheel input
- 8 pushbuttons:
  - 2 momentary/normally open
  - 2 momentary/normally closed
  - 2 latching/normally open
  - 2 latching/normally closed
- 8 indicator lights prewired and addressed
- 20 sets of female connectors for interfacing to external devices using the universal connecting patchcord/banana jack system:
  - 8 sets of inputs
  - 8 sets of outputs
  - 4 sets of analog (2 inputs and 2 outputs)

DIMENSIONS: 17 in. L x 16 in. H x 13 in. D

## **ALLEN BRADLEY SLC 500 Specifications:**

Processor Memory:	5/03 CPU with 8K memory, other CPUs and memory available
Digital I/O:	One 16 point VDC Input Card; One 16 point Relay Output Card; One Combination Card (2 AC Digital Inputs / 2 Relay Outputs)
Analog I/O:	OPTIONAL
Racks or Slots:	One 7-slotted rack (standard)
I/O Capacity:	4096
Power Backup:	2 years, Lithium
Memory Backup:	Flash EEPROM
LED Indicators:	Run, CPU Fault, Forced I/O, Battery Low, RS232, DH485
Programming:	RS Logix Software
Typical Scan Time:	1 ms/K
Bit Execution:	0.4 microseconds
Communication:	RS 232 or DH 485
Analog Capability:	PID
Warranty:	One year

## **CURRICULUM**

### Section 1: PLC Basic Information

Introduction/Internal Operations/  
Series and Parallel Circuits/  
Numbering Systems/ Boolean Algebra/  
Ladder Logic.

### Section 2: SLC500 Basic Information

System Familiarization/Programming/  
External Input and Output Elements/  
Internal Bits/AND, OR, and NOT Gates/  
Latching Instructions/Timers/Counters/  
Cascading Timers/Move and Convert/  
EQU, NEQ, LES, and GRT Instructions/  
LEQ and GEQ Instructions.

### Section 3: SLC500 PLC Basic Applications

Coolant System/Conveyor/Batch Processing/  
Test Station.

### Section 4: SLC500 PLC Advanced Instructions

Arithmetic/JMP, LBL, and MCR/Jump to  
Subroutine Instructions/Bit Shift and File Copy/  
Sequencer Instructions.

### Section 5: SLC500 PLC Advanced Applications

Palletizer/Candy Bar Production Line/  
Automated Paint Booth/Robotic Application.

*For more information, customer service, or technical assistance please call 800-451-2169*

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