



Analog Process Control

The CM184-APC is a desktop sized training system for demonstrating Analog Process Control. The CM184-APC provides for hands-on study of a typical closed loop process control system commonly used in industry. The system can be operated stand-alone using the two included universal controllers or interfaced to a Programmable Logic Controller (PLC) with analog I/O control.

With the included courseware package, the trainee gains hands-on experience using an assortment of temperature and pressure sensing components to control and monitor a water circulation application.

Trainees will heat water to a preset temperature. The pumping system fills, drains, or circulates water through two water storage tanks. The water temperature can be adjusted and maintained manually or automatically using the two universal controllers or an analog control enabled PLC.

The CM184-APC system curriculum includes separate manuals for the instructor and student. Both manuals contain a number of exercises and questions designed to cover control principles using the universal controllers and PLC. Control modes include: On/Off, Proportional, Integral, Derivative, and Composite Modes.

SPECIFICATIONS

The CM184-APC training system is mounted upright on a metal frame with extended front tray and stainless steel front panel for easy learner access to hardware and convenient interfacing to TII PLC training systems. All front panel features have been silkscreened for easy identification.

One large acrylic water storage tank is attached to the front tray and a second acrylic water storage tank is embedded into the center section of the stainless steel front panel. Located to either side of the front panel are two digital universal controllers. A pumping system is housed inside the metal frame. This system is used to fill, drain, or circulate water through the two water storage tanks. The water temperature is adjusted manually or automatically using the two universal controllers or PLC with analog I/O control capability.

System Components:

- Two liquid (approx volume - three quarts each) storage tanks with removable lids.
- Three side mounted liquid level switches.
- Single station liquid level switch for overflow detection.
- Over temperature detector.
- Screw plug immersion heater.
- Two chromega-alomega thermocouples.
- Four-position rotary selector switch for temperature readouts.
- A 35 psi , 1/11 hp, high pressure pump.
- Pressure transducer.
- Non-pressure compensated flow valve.
- Two-position power switch.
- Three-position pump switch.
- Two-position auto/manual override switch.
- Three position tank selector switch.
- Drain valve to siphon off circulating liquid.

- Four 24 VDC solenoid directional control valves with LED indicators.
- Two universal auto-tune controllers with an array of alarm actions and input/output jacks for external process control.

Control Mode Functionality:

- On / Off
- Proportional
- Integral
- Derivative
- Composite

Curriculum:

- System Familiarization
- System Initialization
- Controller Temperature Control
 - Principles
 - Control Modes
 - On / Off
 - Proportional
 - Integral
 - Derivative
 - Composite
 - Controller Operation
- PLC Temperature Control
 - PLC basics
 - Setting PID Values
- Appendices
 - Glossary
 - Controller Reference Guide
 - Trending Chart

Dimensions: 20 in. W x 15 in. H x 14 in. D
Shipping Weight: 60 lbs.

For more information, customer service and technical assistance, call toll-free:

New England Academic Representative:



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1-800-338-2238 | www.TECedu.com | info@TECedu.com