



## 1. Overview

The **Process Control Board** is an A4-format experimenting platform designed for fundamental and advanced training in process-oriented control engineering. It provides integrated controllers, control systems, meters, and evaluation features required to perform comprehensive practical experiments in automation and control technology.

The system supports the study of continuous and discontinuous controllers, analysis of control parameters, and examination of time-dependent behavior of controlled systems. Its high-quality, photorealistic front panel and didactic labeling facilitate intuitive operation for students and instructors.

## 2. Learning Objectives

- Understand the difference between **continuous** and **discontinuous** controllers
- Analyze **control parameters** and their interrelationships
- Examine **time-dependent behavior** of controllers and controlled systems
- Explain functionality of control circuits and perform measurements in **process control engineering**

## 3. Integrated Controllers

- Two-level controller
- Three-level controller
- P-controller (Proportional)
- I-controller (Integral)
- D-controller (Derivative)

*Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.*



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#### 4. Integrated Control Systems

- Level control
- Temperature control
- Illumination path
- Speed section
- Positioning section
- Step manipulation for three-level control

#### 5. Integrated Measuring Instruments

- Actual value meter
- Setpoint meter
- Universal measuring unit

#### 6. Technical Data

- **Power Supply:** 110–240 V AC, 50–60 Hz
- **Signal Voltage Range:** –10 V to +10 V DC
- **Central ON/OFF switch**
- **Connection System:**
  - 2 mm plug system
  - 5 mm bridging plug compatibility

#### 7. Design & Construction

- A4-format experimenting board
- Photorealistic four-color front panel
- Color-coded circuit lines for easy identification
- Scratch-proof special coating
- Didactic standard labeling with clear operating and connection information
- Facilitates easy system commissioning and learning

#### 8. Accessory Kits & Documentation

##### 8.1 Techno Card

- Measuring leads (2 mm), 30 cm: black, red, blue, yellow, green (1 each)
- Measuring leads (2 mm), 60 cm: black, red, blue, yellow, green (1 each)
- 15 × 2 mm connecting plugs (12 mm), black

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## 8.2 Documentation Set (91903-ENG)

### Ring Binder Set Includes:

- Trainer section
- Practical experiments
- Expert publications
- Transparencies
- Projects
- Digital media binder

### Application Masks – “Control Technology Basics”

6 multi-color masks (530 × 265 mm) for guided instruction:

- Speed regulation
- Speed control
- Hysteresis of the two-point controller
- Temperature control with two-point controller
- Level control
- Level control with continuous controller

## 8.3 Additional Documentation Set

- Student Manual (CD-ROM) – *Control Engineering: Projects*
- Instructor Manual (CD-ROM) – *Control Engineering: Projects*
- Media ring binder
- Manual with CD-ROM – *Control Engineering*

## 9. PC Measurement Interface

A high-precision **4-channel differential input measurement interface**, enabling safe measurements up to 600 V AC and real-time PC-based visualization and analysis.

### 9.1 Features

- 4 analog differential input channels
- Up to **5 MHz bandwidth**
- Sampling rates:
  - 16-bit up to 195 kHz
  - 14-bit up to 3.125 MHz
  - 12-bit up to 5 MHz
- Touch-safe CAT III (600 V) inputs
- Compatible with 19 mm safety bridge plugs

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## 9.2 Input Specifications

### Input 1:1

- Measurement range:  $\pm 200$  mV to  $\pm 80$  V (peak)
- Max input:  $\leq 200$  V AC
- 2 mm safety sockets

### Input 10:1

- Measurement range:  $\pm 2$  V to  $\pm 800$  V (peak)
- Max input:  $\leq 600$  V AC
- 4 mm safety sockets

## 9.3 Integrated Instruments

- 4-channel oscilloscope (216-bit)
- Spectrum analyzer with distortion factor calculation
- Transient recorder (0.01 s to 500 s sampling time)
- True RMS / average voltmeter
- USB 2.0 High-Speed (480 Mbit/s) interface
- Optional supply: 8–30 V DC

## 9.4 Design & Dimensions

- A4-format experimenting board
- Photorealistic multicolor front panel
- Scratch-proof coating
- Clear didactic labeling
- Size: **266 × 297 × 85 mm**

## 9.5 Included in Delivery

- USB cable
- Software package
- Operating instructions

## 9.6 System Requirements

- Pentium processor or higher
- 512 MB RAM
- 100 MB HDD
- Windows XP(SP3) / Vista / 7 / 8 / 10 (32 & 64 bit)
- CD-ROM drive

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**10. PC Measurement Interface – Safety Bridge Plug Set**

- 5 × 2 mm safety bridge plugs (with tap, 19 mm spacing, black)
- 4 mm safety bridge plugs (with grip, 19 mm spacing)

**Notes:** This is a reference image of the product. As we will customize this as per given specifications, the actual product may look different.

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