



General Description

The Universal Microcontroller Trainer is a comprehensive, modular training system designed for practical learning in microcontroller-based applications. Housed in a durable aluminum alloy frame box, the unit includes a front panel with component identification diagrams for DIP components, and circuit diagrams for enhanced learning and reference.

This platform supports a wide variety of microcontroller architectures, including Intel AT89S52, AVR, PIC, CPLD, and FPGA, enabling extensive experimentation and development flexibility.

Key Features

- **Pluggable and Replaceable CPU Core Board:** Supports Intel, AVR, PIC, CPLD, FPGA platforms
- **Download Interface:** RS232 or USB for programming and simulation
- **Comprehensive Component Layout:** Front-side DIP layout with labeled components; with schematic and PCB diagrams
- **Modular Expansion Capability:** 1 mm pin and 2 mm gold-plated socket I/O for external interfacing and expansion
- **Pin Spacing:** 2.54 mm compatible with standard jumper wires
- **Engineering Templates:** Comes with application routines, burned files, and source codes
- **Educational Focus:** Suitable for undergraduate and vocational institutions

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



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Hardware Modules Included

- Serial Communication Module
- RS-485 Communication Module
- Serial-to-Parallel and Parallel-to-Serial Modules
- Dual Color Dot Matrix Module
- LCD Modules: 1602, 12864
- SD Card Interface Module
- DS1302 Real-Time Clock Module
- IC Modules: 74HC573, 74HC138
- Infrared Communication Module
- LED Display Modules:
 - Single-Color
 - Dual-Color
 - RGB Running Water Lamp
- Input Interfaces:
 - 8 Independent Push Buttons
 - 16-Key Matrix Keyboard
- Audio and Signal Modules:
 - Buzzer
 - 24C02 EEPROM Module
 - AD/DA Converter Module
- Motor Control Modules:
 - Relay Module
 - Stepper Motor Module
 - DC Motor Module
- Sensor Modules (8 types):
 - Flame, Light, Temperature, Humidity, Hall Effect, Displacement, Acceleration, Pressure
- **Power Supply Module:** Outputs: 5V, 3.3V, 1.8V

Supported Experiments**Basic & Intermediate Experiments:**

- Memory Block Reset

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- Binary to BCD & ASCII Conversion
- Memory Movement and Jump Tables
- Data Arrangement
- IO Port Configuration
- PWM and Relay Control
- Audio control experiment
- Timers, Counters, Interrupts
- DA/AD Conversion
- Display Control:
 - LCD (1602, 12864)
 - 7-Segment Displays
- Serial Communication
- Motor Control (DC & Stepper)
- Sensor Data Acquisition
- Keyboard Input Scanning
- Real-Time Clock Application

Application Projects:

- Automatic Ringer Controller
- Copier Control Circuit
- Washing Machine Controller
- Digital Password Lock
- Simple Frequency Meter
- Traffic Signal Controller
- Electronic Clock
- Tug of War Game Console
- Coin-operated Vending Machine
- Arbitrary Base Addition Counter
- Multifunctional Decimal Counter
- 1011 Sequence Generator and Detector
- Railway-Highway Traffic Controller
- Code Converter
- Basketball Timer (30 sec Rule)
- Festival Lantern Controller

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- Elevator Automation System

Power Requirements

- **Input Power:** 220V AC $\pm 10\%$, 50Hz

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