Arduino Training Kit

Kit Code :ES-ARDU

OVERVIEW

The EISAC Mobile Laboratory Training Kit is a high-performance development platform designed to eliminate the complexity of jumper wires and unstable breadboards. Engineered as a "System-on-Board," it provides a robust, protected, and organized environment for rapid firmware development and sensor integration. This kit is the ideal solution for engineers and students seeking to master the Arduino ecosystem, offering a seamless transition from basic coding to advanced industrial-style sensor networking.

TRAINING EXPERIMENTS

Environmental Monitoring: Building a digital weather station with OLED data logging

Smart Automation: Creating light-dependent systems using the integrated LDR sensor

Motion Electronics: Developing tilt-sensing alarms and step-counting algorithms

User Interface Design: Crafting menu systems and real-time graphs on the OLED display

Industrial Networking: Mastering I2C and UART serial communication between devices

SAFETY FEATURES

Connection Security: JST connectors prevent accidental polarity reversal and loose wiring.

Current Management: Integrated resistors to protect signaling LEDs and Buzzer circuits.

Stabilized Bus: Power distribution designed to prevent voltage drops during multi-sensor operation.

Circuit Clarity: High-quality silk-screen labeling for every pin to prevent wiring errors.

Master Control: Centralized power management for the controller and all peripheral sensors.

SYSTEM COMPONENTS

Control Unit	Integrated Socket for Arduino Nano (or compatible) controllers
Visual Interface	0.96" OLED Display Support for real-time graphics and data
Sensor Suite	Multi-Sensor Ecosystem (Environmental, Light, and Motion)
User Interaction	Tactile Push Button & Precision Rotary Potentiometer
Signaling Unit	Integrated Buzzer, Programmable LED, and Sound Output
Expansion Hub	Dedicated UART & I2C Bus for external module daisy-chaining

TECHNICAL SPECIFICATIONS

Processor Support	Fully compatible with Arduino Nano (Atmega328P) architecture
Environmental Sensing	Integrated Temperature, Humidity, and Barometric Pressure sensors.
Motion Analysis	On-board Acceleration Sensor for tilt and motion detection
Connectivity	Standardized JST connectors for secure, industrial-grade interfacing
Logic Levels	5V/3.3V compatible bus with dedicated I/O access (D2–D8 and A0–A3)
Signaling	Dual-mode feedback system utilizing both audible (Buzzer) and visual (OLED/LED) outputs

MECHANICAL SPECIFICATIONS

PCB Architecture: Industrial-grade, high-durability PCB with reinforced mounting points

Compact Design: Engineered as a "Mobile Lab" for high portability and space efficiency

Logical Partitioning: Components are intelligently grouped by function (Inputs, Outputs, Comms)

Interface Finish: Permanent, high-contrast labeling for all ports and component identifiers

Enclosure Ready: Dimensions optimized for standard laboratory desk use or custom housing

SOFTWARE & COMPATIBILITY

Programming IDE: Fully compatible with Arduino IDE, VS Code (PlatformIO), and MATLAB

Driver Support: Standard CH340/FTDI drivers for seamless PC connectivity

Library Support: Compatible with standard Adafruit/Arduino libraries for all on-board sensors

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