Mand Labs®
step by step

ELECTRONIC SERIES KIT-1

Version-4, Custom Edition

MADE IN BRITAIN

INTRODUCTION

Mand Labs KIT-1 is a DIY (do-it-yourself) experiential learning kit for electrical, electronics and semiconductors. Using the kit, learners can build a range of hands-on projects, gain technical skills to prototype circuits, and learn concepts of physics and electronics through experimentation and vivid observation.

RECOMMENDED FOR SCHOOL STUDENTS (GRADE 9-12), SCIENCE EDUCATORS AND MAKERS.

- Build an exciting range of DIY projects
- Work with real world electronic components and understand how they work
- Learn and test the concepts of physics
- Gain circuit prototyping skills
- Learn electronics with fun

PROJECTS	VIDEOS	COMPONENTS	BOOKS
60	60	165	2

COURSEWARE

Level-1 Projects

- Measuring voltage using a multimeter
- Measuring resistance using a multimeter
- Continuity Test of an LED
- Glowing an LED and verifying Kirchhoff's Voltage Law (KVL)
- Measuring current in a circuit using a multimeter and verifying Ohm's law
- Varying intensity of LED using a preset
- Alternate glowing of LEDs using a preset
- Glowing an LED using an LDR
- Beeping a buzzer
- Series combination of LEDs and verifying Kirchhoff's Voltage Law and Ohm's Law
- Parallel combination of LEDs-Type 1
- Parallel combination of LEDs-Type 2 and verifying Kirchhoff's Current Law (KCL)
- Continuity test of an SPDT switch
- Controlling an LED using an SPDT switch
- Alternate switching of LEDs using an SPDT switch
- Staircase lighting
- Charging and discharging of a capacitor
- Charging different capacitors with resistors and Time constant calculation during charging (3 Cases)
- Discharging different capacitors with resistors and Time constant calculation during discharging (3 Cases)
- Sequential Glowing of LEDs

Level-2 Projects

- Continuity Test of a relay using a multimeter
- Alternate glowing of LEDs using a relay
- Burglar Alarm: Type 1 and Type 2
- Continuity test of Bump switch and Momentary push button switch
- Relay as an oscillator
- Diode as a switch: Its functioning in forward bias and reverse bias modes
- Minimum resistance path using a diode
- Protecting a circuit using a diode
- OR Gate using diodes
- AND Gate using diodes
- NOR Gate using diodes
- NAND Gate using diodes
- To learn how a zener diode works
- Zener diode as a voltage regulator

Level-3 Projects

- DC motor as a generator
- Surgery of a DC Motor
- Factors affecting speed of DC Motor
- Identifying the type of BJT transistor using a multimeter
- Measuring the gain of a transistor
- B-E junction as diode in a transistor
- Transistor as an Amplifier and a Switch: Demonstrating cut-off, active and saturation region of a transistor, Identifying the biasing conditions for all the three regions of a transistor, Experimental calculation of beta in active and saturation region
- Touch activated switch using a transistor and verifying the biasing conditions of 'transistor in saturation region'
- Darlington Pair and cascading transistors for multistage amplification
- Automatic night lamp
- Inverted night lamp
- OR Gate using transistors
- AND Gate using transistors
- NOR Gate using transistors
- NAND Gate using transistors
- Transistor as an Inverter (NOT Gate)
- LED Flasher using transistor and concept of Tunneling (Esaki diode)
- Alternating blinking of LEDs using transistors
- H-Bridge (Motor driving circuit used in Robotics)

Additional Projects

- IR (Infrared) Security Alarm System
- Temperature Sensor
- Joule Thief: drawing energy from a dead cell
- Lemon Battery
- Motor control using DPDT switches
- Voltage divider using a potentiometer
- Half-wave and Full-wave Rectifier

MAKE PROJECTS STEP-BY-STEP

Deliverables:

+ Hardware Kit
+ Digital learning Access
+ Paper back curriculum
+ Dedicated Support

ACCESS TO TWO GUIDE BOOKS
380 PAGES

ACCESS TO STEPWISE TUTORIALS
DETAILED ASSEMBLY

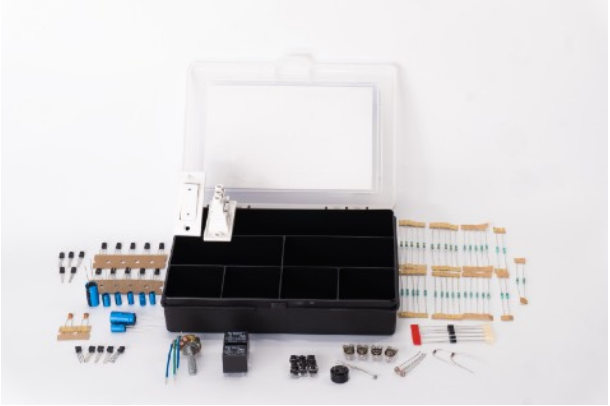
ACCESS TO LEARNING VIDEOS
9 HOURS

ABOUT MAND LABS, INC.

Mand Labs is a designer and manufacturer of high-quality experiential learning kits for project-based learning in STEM. Based out of Phoenix, Arizona, USA, the mission of the company is help students learn and understand scientific concepts better by doing. After closely working with and teaching 20,000 students and 100s of physics educators, the company has developed a comprehensive hands-on curriculum on electrical and electronics. Mand Labs brand is known for its quality, innovation and depth. Mand Labs Kits have been consistently featured in Forbes, TechCrunch, PCMagazine, Mashable, Fatherly and amongst other media outlets.

Mand Labs KIT-1 Version 4 Custom Edition Pictures

Compact and Durable Packaging to survive multiple rough usage both inside and outside classrooms



An Organizer box for smaller discrete components + A Large Components Tray for Quick Access

For more information: Email: support@mandlabs.com