

PRACTICAL
MODULAR
REAL-WORLD
SKILLS

RUMROCK

Modular Electronics Training System

LEARN
BUILD
EXPERIMENT
INNOVATE

Arduino Training Module



AC Rectifier & Power Supply Module



ESP32 IoT & Wireless Module



Modular Electronics Training Kit Main Training Station



HANDS-ON LEARNING

From fundamentals
to real applications



MODULAR DESIGN

Flexible and
expandable system



REAL-WORLD SKILLS

Build confidence
through practice



FUTURE READY

Electronics
Microcontrollers
Power Electronics
IoT

Professional Modular Learning Platform for Electronics, Microcontrollers, Power Electronics and IoT

eduokit.com

Main Electronics Training Kit

Central Bench-Top Platform for Modular Electronics Education



Product Overview

- Modular training platform for electronics education
- Supports plug-in experiment modules
- Designed for labs, colleges, and technical training centers



Main Specifications

- Fixed +5 V DC output
- Adjustable 0-12 V DC output
- +12 V and -12 V utility outputs
- Built-in breadboard area
- Integrated function generator: sine, square, triangle
- Digital voltage and current display
- Banana socket terminals and test points
- Overload and short-circuit protection



Core Features

- One central plug-in module bay
- Durable lab-grade enclosure
- Clear printed educational labeling
- Fast setup for classroom demonstrations
- Expandable modular training concept



Training Coverage

- Analog electronics
- Digital electronics
- Power electronics
- Microcontrollers
- Embedded systems
- IoT fundamentals



Supported Plug-In Modules

- Basic Electronics Module
- Operational Amplifier Module
- Digital Logic Gates Module
- Relay & Control Circuits Module
- Arduino Training Module
- AC Rectifier & Power Supply Module
- ESP32 IoT & Wireless Module



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Basic Electronics Module

Fundamental Components and Circuit Building Experiments

*From Components
to Real-World
Understanding*



Installed in Main Training Station



Plug-in design for a flexible
and expandable learning system.



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Description

- Plug-in module for learning basic electronic components and circuit fundamentals.
- Designed for use with the RUMROCK Main Electronics Training Kit.



Main Components

- Fixed resistors (various values)
- Electrolytic capacitors (various values)
- Ceramic capacitors (various values)
- Signal and power diodes
- NPN and PNP transistors
- Push button and toggle switch
- LEDs (red, green, yellow)
- Potentiometer / preset (optional, if included)
- Multiple connection points (banana terminals)



Key Specifications

- Includes sections: resistors, capacitors, diodes, transistors, switches and LEDs
- Fixed component values for educational use
- Multiple test terminals (banana connectors)
- Support for low-voltage, safe educational experiments
- Clear printed labeling and circuit symbols

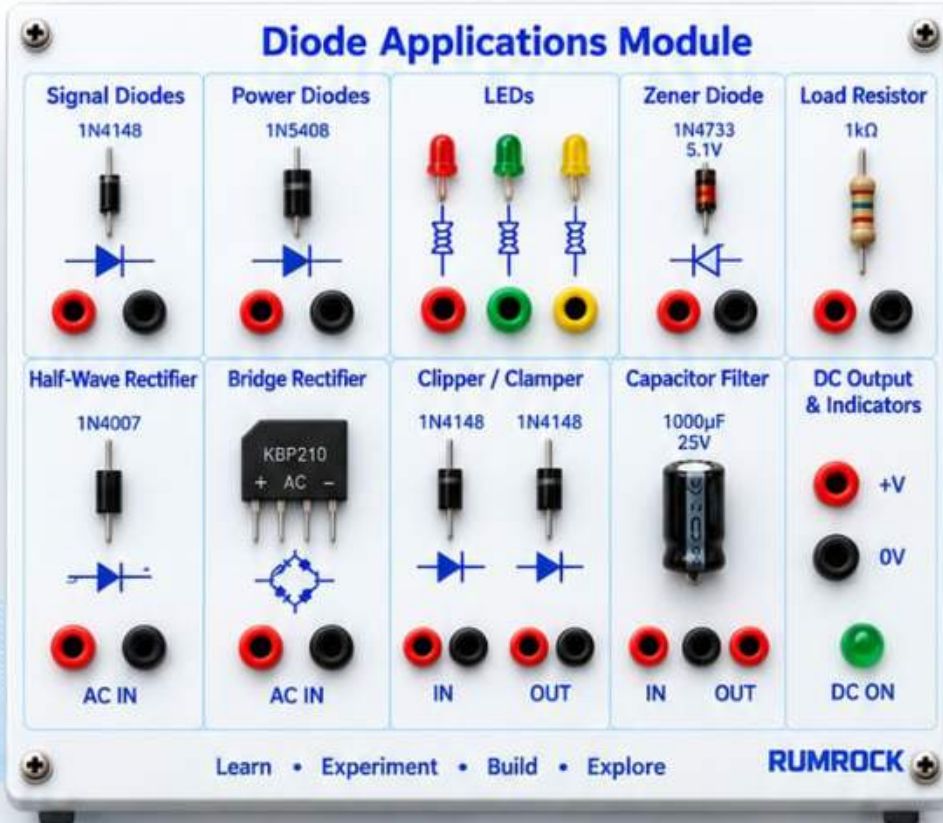


Experiments Covered

- Resistor series and parallel circuits
- Voltage divider experiments
- Capacitor charge and discharge
- RC timing basics
- Diode forward and reverse bias
- LED circuits and current limiting
- Transistor as a switch
- NPN/PNP transistor identification
- Continuity and switch experiments
- Simple component identification and testing

Diode Applications Module

Rectification, Zener and Diode Circuit Experiments



*From Components
to Real-World
Understanding*

Installed in Main Training Station



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Description

- Plug-in module for learning diode applications, rectification, regulation and wave shaping circuits.
- Provides a hands-on platform to study different diode types and practical circuit configurations.
- Designed for use with the RUMROCK Main Electronics Training Kit.



Main Components

- Signal diodes (1N4148)
- Power diodes (1N4007, 1N5408)
- LEDs (red, green, yellow) with current limiting resistors
- Zener diode (1N4733, 5.1V)
- Bridge rectifier (KBP210)
- Electrolytic capacitor (1000μF, 25V)
- Load resistor (1kΩ / 2W)
- Test points and banana terminals
- Power output indicator LED
- Clear printed circuit symbols and labels



Key Specifications

Signal Diode	1N4148 (general purpose)
Power Diode	1N4007 (1A), 1N5408 (3A)
LEDs	Red, Green, Yellow (with current limiting resistors)
Zener Diode	1N4733 (5.1V, 1W)
Bridge Rectifier	KBP210 (2A, 1000V)
Filter Capacitor	1000μF, 25V (electrolytic)
Load Resistor	1kΩ / 2W (for rectifier/filter experiments)
Test Points	AC input, DC output, and circuit test terminals
Indicators	Power/Output LED (Green)



Experiments Covered

- 1 Diode forward and reverse bias characteristics
- 2 Signal diode vs power diode comparison
- 3 LED polarity and current limiting
- 4 Zener diode voltage regulation
- 5 Half-wave rectification
- 6 Full-wave bridge rectification
- 7 Clipper circuit basics (positive/negative)
- 8 Clamper circuit basics (DC level shifting)
- 9 Capacitor filtering and ripple reduction
- 10 Real-world diode applications

AC Rectifier & Power Supply Module

Half-Wave, Full-Wave and Regulated DC Experiments



Module installed in Main Training Station (for reference)



Description

- Plug-in module for teaching AC to DC conversion and power supply fundamentals.
- Designed for use with the RUMROCK Main Electronics Training Kit.



Main Components



Key Specifications

AC Input	Low-voltage isolated AC input (6–12V AC, 1A)
Rectifier Sections	• Half-wave rectifier section • Full-wave bridge rectifier section
Filter Section	• Electrolytic capacitor section
Regulation Section	• Zener regulation section • Fixed regulators: 7805 and 7812 • Adjustable regulator: LM317
Output Test Points	• Output test points for waveform observation (AC, DC unregulated, DC regulated)

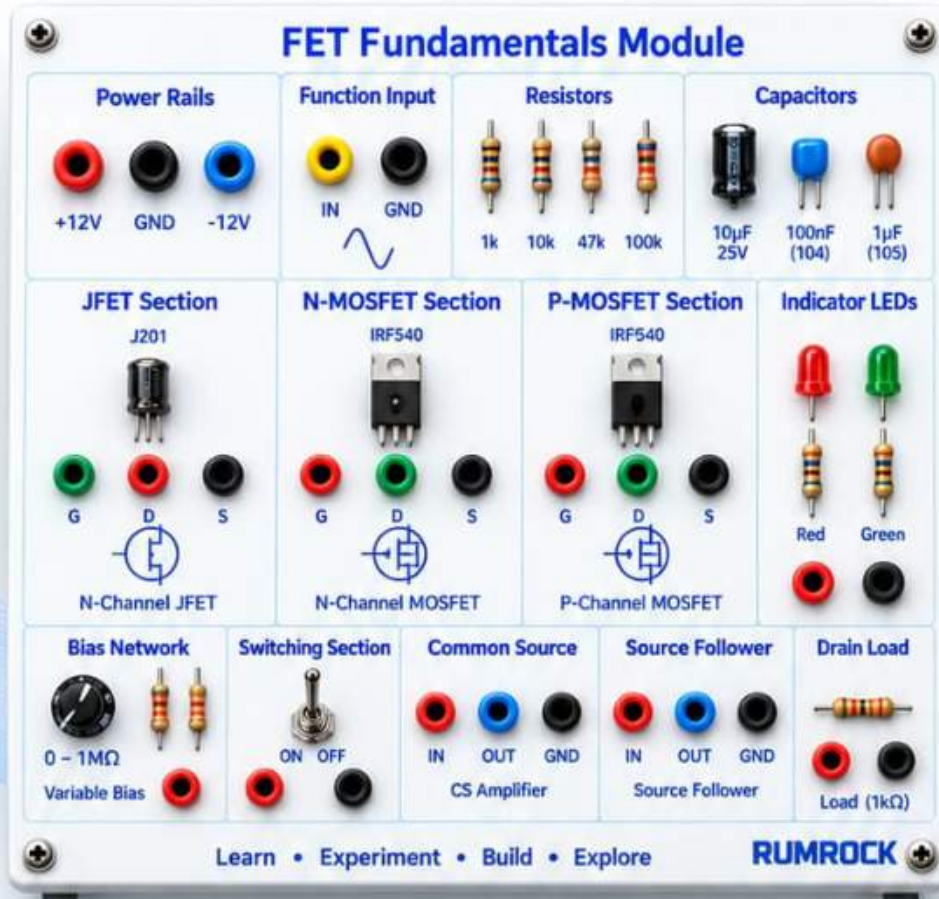


Experiments Covered

- 1 Half-wave rectification
- 2 Full-wave rectification
- 3 Bridge rectifier operation
- 4 Ripple measurement
- 5 Capacitor filtering
- 6 Comparison of filtered and unfiltered DC
- 7 Zener voltage regulation
- 8 Fixed regulator operation
- 9 Adjustable LM317 regulation
- 10 Complete AC-to-DC power supply experiment

FET Fundamentals Module

MOSFET, JFET and Field-Effect Transistor Experiments



*From Components
to Real-World
Understanding*

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and expandable learning system.



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Description

- Plug-in module for learning FET fundamentals including JFETs and MOSFETs.
- Provides a hands-on platform to study biasing, switching and amplifier configurations.
- Designed for use with the RUMROCK Main Electronics Training Kit.



Key Specifications

FET Types	• N-channel JFET (e.g. J201) • N-channel MOSFET (e.g. IRF540) • P-channel MOSFET (e.g. IRF9540)
Power Rails	±12 V DC (from training station)
Function Input	Sine/square input (from function generator)
Variable Bias	0 – 1 MΩ potentiometer
On-board Components	Resistors, capacitors, indicator LEDs, switch
Test Terminals	Multiple 4 mm banana sockets
Module Size	Standard RUMROCK plug-in format



Experiments Covered

- 1 FET terminal identification (JFET and MOSFET)
- 2 JFET basic characteristics and gate control
- 3 MOSFET switching operation
- 4 Gate input behavior and high input impedance
- 5 Common-source amplifier (voltage gain)
- 6 Source follower (buffer) configuration
- 7 Biasing fundamentals and operating point
- 8 Load switching with MOSFET
- 9 Drain characteristics (output curves)
- 10 Comparison with BJT transistor behavior

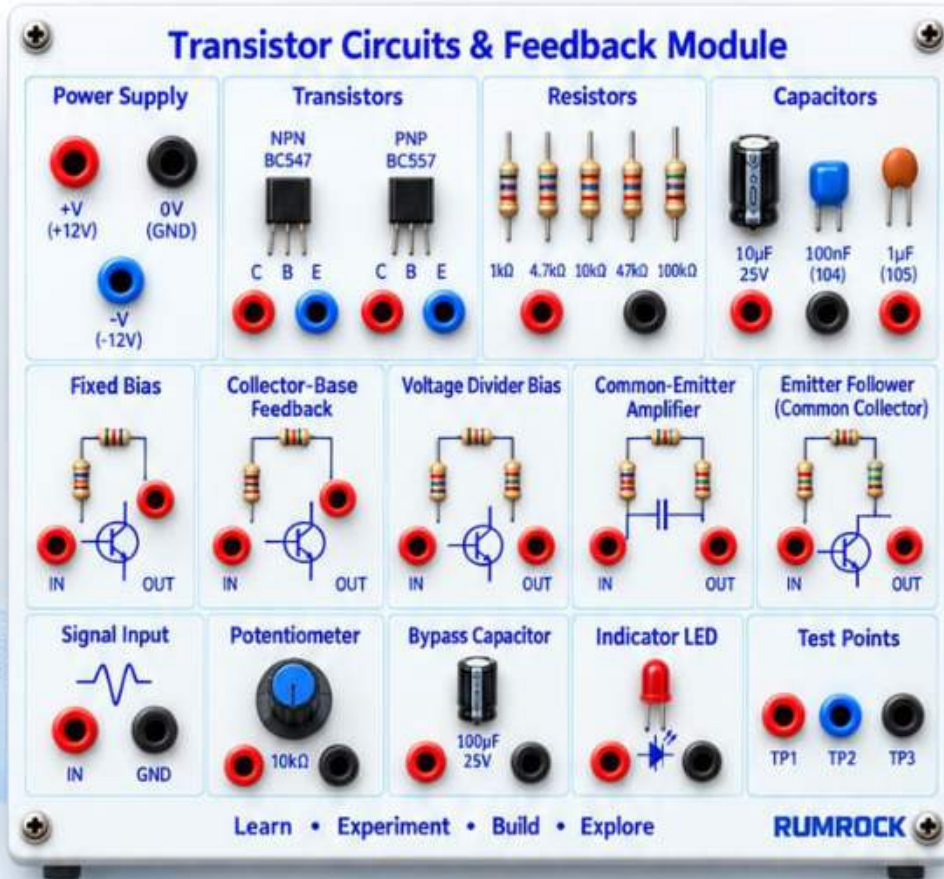


Main Components

- N-channel JFET (J201)
- N-channel MOSFET (IRF540)
- P-channel MOSFET (IRF9540)
- Fixed resistors (1k, 10k, 47k, 100k, etc.)
- Capacitors (100nF, 1µF, 10µF, etc.)
- Variable resistor / potentiometer (0 – 1MΩ)
- Toggle switch (ON/OFF)
- Indicator LEDs (red, green)
- Input, output and test terminals (banana sockets)

Transistor Circuits & Feedback Module

BJT Biasing, Amplifier and Feedback Experiments



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Description

- Plug-in module for learning transistor circuits, biasing methods and feedback techniques.
- Provides a hands-on platform to study amplifier configurations and their characteristics.
- Designed for use with the RUMROCK Main Electronics Training Kit.



Key Specifications

Transistors	NPN (BC547) and PNP (BC557)
Supply Rails	+12 V, 0 V (GND), -12 V (from training station)
Resistors	1 kΩ, 4.7 kΩ, 10 kΩ, 47 kΩ, 100 kΩ (fixed)
Capacitors	100 nF, 1 μF, 10 μF, 100 μF (various values)
Potentiometer	10 kΩ (panel mounted)
I/O Terminals	Banana sockets for input, output and test points
Indicator	Signal LED (red)
Circuit Sections	Fixed bias, collector-base feedback, voltage divider bias, common-emitter amplifier, emitter follower



Main Components

- NPN transistor (BC547) and PNP transistor (BC557)
- Fixed resistors (1k, 4.7k, 10k, 47k, 100k)
- Electrolytic and ceramic capacitors (100nF, 1μF, 10μF, 100μF)
- 10kΩ potentiometer
- Signal input and output banana terminals
- Indicator LED and test points
- Pre-configured circuit sections with clear labelling

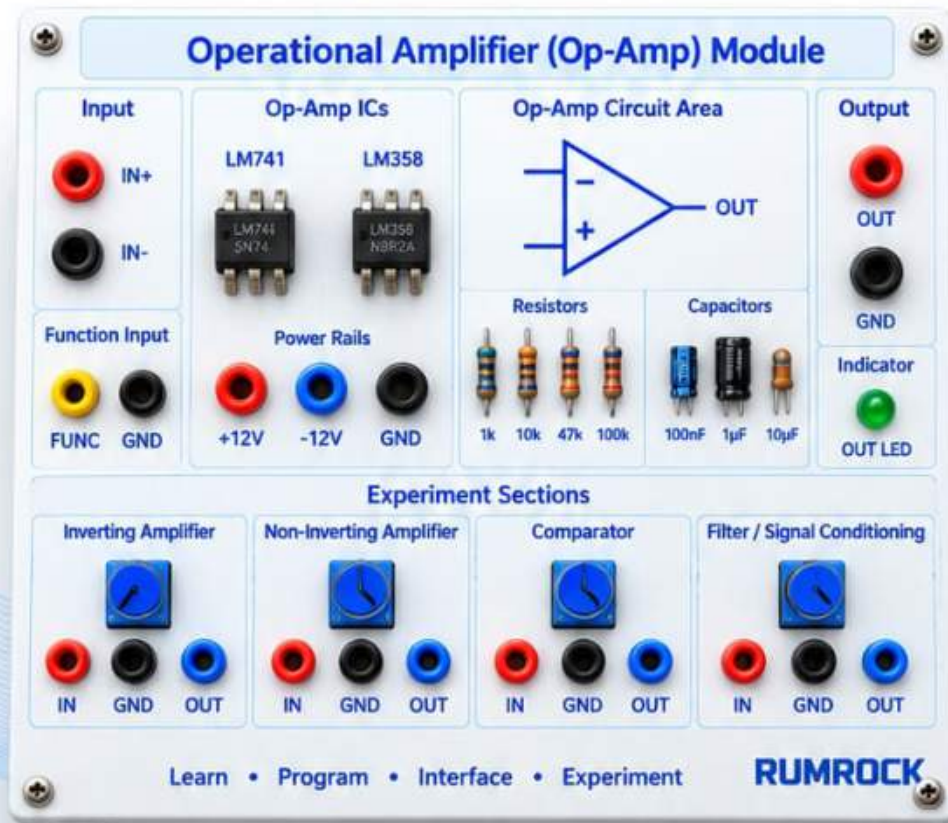


Experiments Covered

- 1 Transistor biasing and operating point
- 2 Fixed bias configuration
- 3 Collector-to-base feedback
- 4 Voltage divider bias
- 5 Transistor as a switch
- 6 Common-emitter amplifier
- 7 Emitter follower (common collector)
- 8 Gain measurement and comparison
- 9 Stability improvement with feedback
- 10 Effect of coupling and bypass capacitors

Operational Amplifier (Op-Amp) Module

Analog Signal Conditioning and Amplifier Experiments



*From Code
to Real-World
Applications*



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Description

- Plug-in module for learning operational amplifier circuits and analog electronics.
- Provides a hands-on platform to study amplifier, comparator, filter and signal conditioning circuits.
- Designed for use with the RUMROCK Main Electronics Training Kit.



Main Components

- LM741 operational amplifier IC
- LM358 dual operational amplifier IC
- Fixed resistors (1k, 10k, 47k, 100k, etc.)
- Capacitors (100nF, 1µF, 10µF, etc.)
- Trim potentiometers
- Input and output banana terminals
- Indicator LED and test points
- Experiment section connectors



Key Specifications

Core devices	LM741 and LM358 operational amplifiers
Operating support rails	+12 V and -12 V (from training station)
Analog input terminals	Banana sockets (IN+, IN-, function input)
Analog output terminals	Banana sockets (output with indicator)
Adjustable components	Trim potentiometers for variable resistance
Experiment interface	Breadboard-compatible connection points
Application	Suitable for signal conditioning and amplifier studies



Experiments Covered

- 1 Voltage follower (unity gain buffer)
- 2 Inverting amplifier
- 3 Non-inverting amplifier
- 4 Summing amplifier (adder)
- 5 Comparator (voltage comparator)
- 6 Integrator circuit
- 7 Differentiator circuit
- 8 Active filter basics (low-pass / high-pass)
- 9 Offset adjustment
- 10 Gain control and adjustment



*From Code
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Applications*



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Description

- Plug-in module for learning Arduino programming and embedded control
- Designed for use with the RUMROCK Main Electronics Training Kit



Key Specifications

Controller	Arduino Uno compatible
Microcontroller	ATmega328P
Operating voltage	5 V DC
Digital I/O	Up to 14 channels
Analog inputs	Up to 6 channels
PWM outputs	Up to 6 channels
Programming interface	USB
Communication support	UART, I2C and SPI



Main Components

- Arduino-compatible board
- Push buttons
- Indicator LEDs and RGB LED
- Potentiometer
- Buzzer
- Sensor input headers
- Relay driver stage
- Servo / DC motor interface headers



Experiments Covered

- LED ON/OFF and blinking
- Push button input reading
- Analog input using potentiometer
- PWM and brightness control
- RGB LED control
- Buzzer tone generation
- Relay control
- Sensor interfacing
- Servo motor control
- Serial communication
- I2C communication
- SPI communication

ESP32 IoT & Wireless Module

Wi-Fi, Bluetooth and Embedded Systems Training



*Build
Real Skills
for a Smarter World*



Description

- Plug-in module for learning ESP32 programming, wireless communication and IoT applications
- Designed for use with the RUMROCK Main Electronics Training Kit



Key Specifications

- ESP32 dual-core controller
- Operating logic voltage: 3.3 V
- USB programming interface
- Built-in Wi-Fi 2.4 GHz
- Bluetooth / BLE support
- GPIO, ADC and PWM capability
- UART, I2C and SPI communication
- Sensor and actuator connection headers



Main Components

- ESP32 development board
- Status LEDs
- Push buttons
- Potentiometer
- Buzzer
- Relay interface
- Expansion headers
- Sensor input terminals



Experiments Covered

- GPIO programming
- Analog input reading
- PWM output control
- Wi-Fi connection and scanning
- ESP32 web server
- Browser-based LED control
- Bluetooth communication
- Sensor monitoring over Wi-Fi
- Relay control
- IoT dashboard concept
- HTTP / MQTT introduction
- Wireless automation basics



**HANDS-ON
LEARNING**
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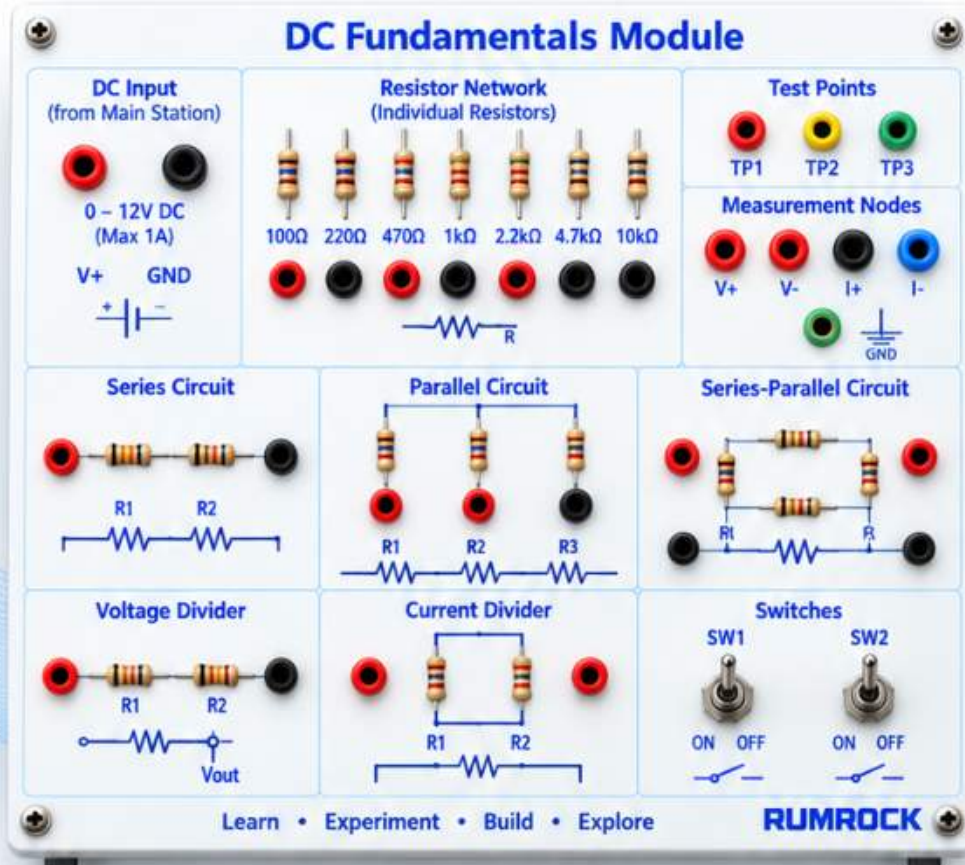
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Electronics
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DC Fundamentals Module

Ohm's Law, Kirchhoff's Laws and Basic DC Circuit Experiments



*From Components
to Real-World
Understanding*

Installed in Main Training Station



Plug-in design for a flexible
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Description

- Plug-in module for learning basic DC circuit theory and analysis.
- Provides a hands-on platform for Ohm's law, Kirchhoff's laws and common DC circuit configurations.
- Designed for use with the RUMROCK Main Electronics Training Kit.
- Use an external multimeter (not included) for measurements.



Key Specifications

- DC input from main station: 0 – 12V DC (max 1A)
- Resistors: 100Ω, 220Ω, 470Ω, 1kΩ, 2.2kΩ, 4.7kΩ, 10kΩ (1/4W, ±5%)
- Test points: TP1, TP2, TP3
- Measurement nodes: V+, V-, I+, I-, GND
- Two toggle switches (SPST)
- Clearly printed circuit diagrams and labels
- Use external multimeter for voltage, current and resistance measurements (not included).



Main Components

- DC input terminals (0–12V DC from main station)
- 7 × fixed resistors (100Ω, 220Ω, 470Ω, 1kΩ, 2.2kΩ, 4.7kΩ, 10kΩ)
- Series circuit (3 resistors)
- Parallel circuit (3 resistors)
- Series-parallel circuit network
- Voltage divider (2 resistors)
- Current divider (2 resistors)
- Two toggle switches (SPST)
- Test points (TP1, TP2, TP3)
- Measurement nodes (V+, V-, I+, I-, GND)

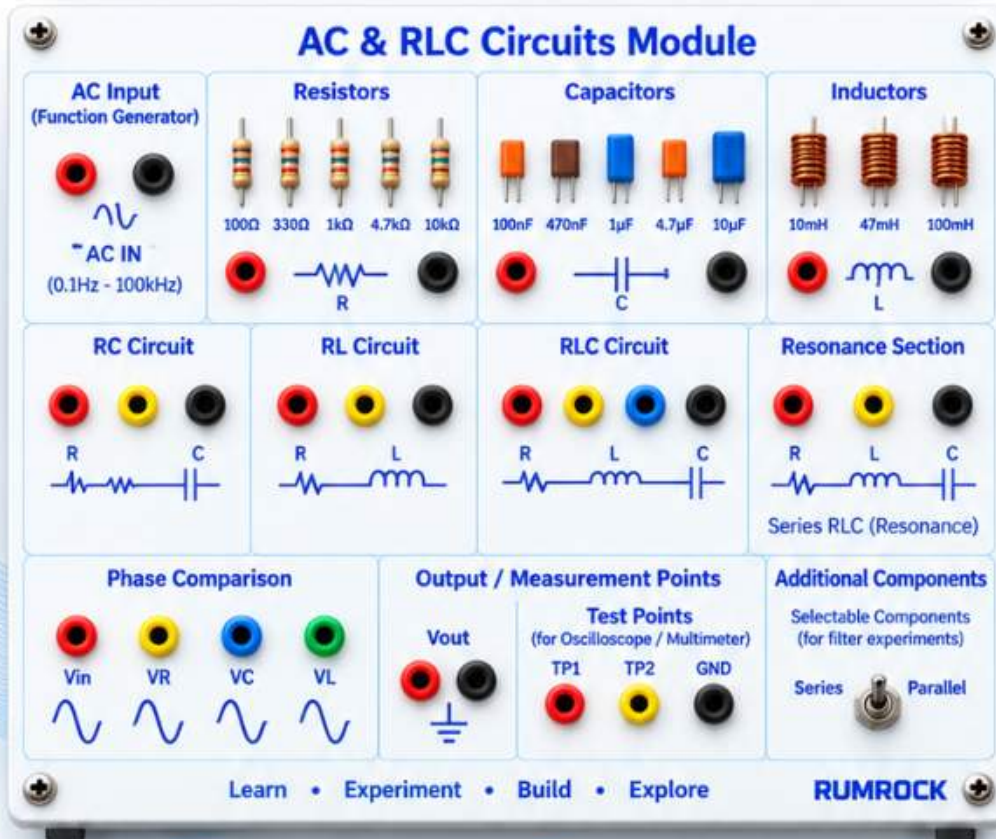


Experiments Covered

- 1 Basic resistor board work and identification
- 2 Ohm's law verification
- 3 Kirchhoff's Current Law (KCL)
- 4 Kirchhoff's Voltage Law (KVL)
- 5 Series circuit analysis
- 6 Parallel circuit analysis
- 7 Series-parallel circuit analysis
- 8 Voltage divider experiments
- 9 Current divider experiments
- 10 Basic DC measurements using an external multimeter

AC & RLC Circuits Module

AC Fundamentals, RLC Networks and Resonance Experiments



*From Components
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Understanding*



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Description

- Plug-in module for learning AC circuits, RLC networks and resonance phenomena.
- Provides a hands-on platform to study impedance, phase relationship and frequency response.
- Designed for use with the RUMROCK Main Electronics Training Kit.



Main Components

- Fixed resistors (100Ω, 330Ω, 1kΩ, 4.7kΩ, 10kΩ)
- Film/ceramic capacitors (100nF, 470nF, 1μF, 4.7μF, 10μF)
- Inductors (10mH, 47mH, 100mH)
- Circuit sections: RC, RL, RLC (series)
- Resonance section (selectable R, L, C)
- Test points and banana terminals
- Component selection switch (series/parallel)
- Clear printed circuit symbols and labels



Key Specifications

- AC input from function generator (0.1 Hz – 100 kHz)
- Resistors: 100Ω, 330Ω, 1kΩ, 4.7kΩ, 10kΩ
- Capacitors: 100nF, 470nF, 1μF, 4.7μF, 10μF
- Inductors: 10mH, 47mH, 100mH
- Built-in RC, RL and RLC circuit sections
- Resonance section with selectable components
- Phase comparison test points (V_{in} , V_R , V_C , V_L)
- Output and measurement test points
- Clear printed labeling and circuit symbols



Experiments Covered

- AC circuits and sine wave fundamentals
- Frequency, period, peak and RMS values
- RC, RL and RLC circuit response
- Impedance basics and phase shift
- Resonance in series RLC circuits
- Filter behavior (low-pass, high-pass)
- Phase comparison using test points
- Observation with external oscilloscope and multimeter
- Real-world AC circuit applications

Handheld Oscilloscope & Multimeter Set

External Measurement Instruments for Training and Troubleshooting.



**Measure
Analyze
Troubleshoot
in the Real World**

**Standalone Instruments
Not installed on training modules**

Use these instruments separately with the RUMROCK training modules for measurement, analysis and troubleshooting.

Perfect companion for your RUMROCK electronics experiments.



REAL-WORLD MEASUREMENT

From basic circuits to advanced analysis



VERSATILE FUNCTIONS

Oscilloscope + Multimeter in one portable device



HANDS-ON TROUBLESHOOTING

Build confidence through practice



PERFECT COMPANION

Use with RUMROCK training modules (external instrument)



Description

- Handheld oscilloscope and digital multimeter set for educational and troubleshooting use.
- Combines oscilloscope waveform observation with full multimeter functions in a single portable instrument.
- Designed to be used separately (not installed on the training station or plug-in modules).
- Ideal for use with RUMROCK training modules and other electronic projects.



Main Components

- Handheld oscilloscope & multimeter (main unit)
- Multimeter test leads (red and black)
- Oscilloscope probe (x1, with accessories)
- Probe accessories (ground clip, tip caps, color rings)
- USB charging cable
- Screwdriver / adjustment tool
- Carrying pouch
- User guide (quick reference)



Key Specifications

- Oscilloscope bandwidth: up to 1 MHz (typical)
- Sample rate: up to 250 MSa/s (typical)
- Channels: 1 (single probe)
- Vertical sensitivity: 10 mV/div – 10 V/div
- Time base: 5 ns/div – 50 s/div
- Multimeter functions: AC/DC voltage, AC/DC current, resistance, continuity, diode test, frequency measurement
- Display: 2.8" color LCD (waveform + measurement readout)
- Power: rechargeable battery (USB charging)
- Safety: CAT III 1000V / CAT IV 600V (typical)
- Compact, handheld and portable design



Applications / Experiments Supported

- Measure AC and DC voltage, current and resistance
- Continuity and diode testing
- Frequency and duty cycle measurement
- Observe waveforms (DC, AC and arbitrary signals)
- Probe-based oscilloscope measurements
- Troubleshoot and analyze circuits in RUMROCK training modules
- Verify signal waveforms from function generator outputs
- Real-world electronic testing and diagnostic practice

Two-Place Electronics Workbench

Steel Tube & White Laminated Wood Practical Training Bench

*Build
Learn
Experiment
Create*

PRACTICAL TRAINING
FOR A SMARTER
TOMORROW



PRACTICAL
DURABLE
RELIABLE



IDEAL FOR
EDUCATION
& TRAINING



TWO STUDENTS
MORE POSSIBILITIES

*Equip
Educate
Empower*



Description

The RUMROCK Two-Place Electronics Workbench is a practical and durable training bench designed for technical education. Built with a powder-coated square steel tube frame and white laminated wood panels, it provides a safe, organized and efficient workspace for two students to learn and practice electronics and electrical skills.



Key Specifications

- Overall dimensions: 1800 mm (W) × 750 mm (D) × 1600 mm (H)
- Worktop area: 1800 mm × 750 mm
- Student working zone (each): about 850 mm × 750 mm
- Two-student capacity
- Square steel tube frame (powder-coated)
- White laminated wood panels and worktop
- AC utility outlet(s) for each student
- Adjustable DC output 0 – 30 V
- Digital voltage and current display
- Function generator (0.1 Hz – 100 kHz)
- Storage shelf and component bins



Main Features

- Independent power and control panel for each student
- Adjustable DC power supply 0 – 30 V with digital display
- AC outlets, banana terminals and function generator
- Upper shelf with storage bins
- Cable management and grommets
- Sturdy steel tube and wood construction
- Clean, safe and professional design
- Ideal for hands-on practical training



Applications

- Electronics laboratories
- Technical and vocational schools
- Universities and colleges
- Skills training centers
- Research and development labs
- STEM and maker spaces
- Ideal for basic and advanced electronics experiments