



RDL TECHNOLOGIES

RDL886 / DATASHEET



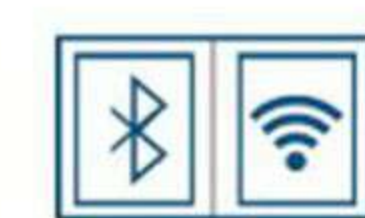
Biomedical Sensor Interface Trainer Kit



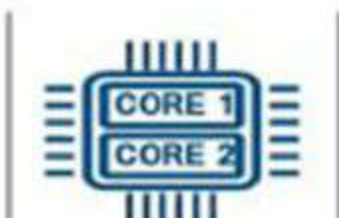
PLUG & CODE



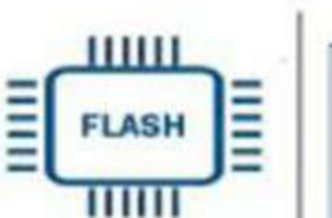
OTA / ON BOARD
PROGRAMMING



ON BOARD WIFI &
BLUETOOTH



DUAL CORE
240MHZ



FLASH
16 MB
FLASH



RoHS
2011/65/EU



BIOMEDICAL SENSOR INTERFACE TRAINER KIT

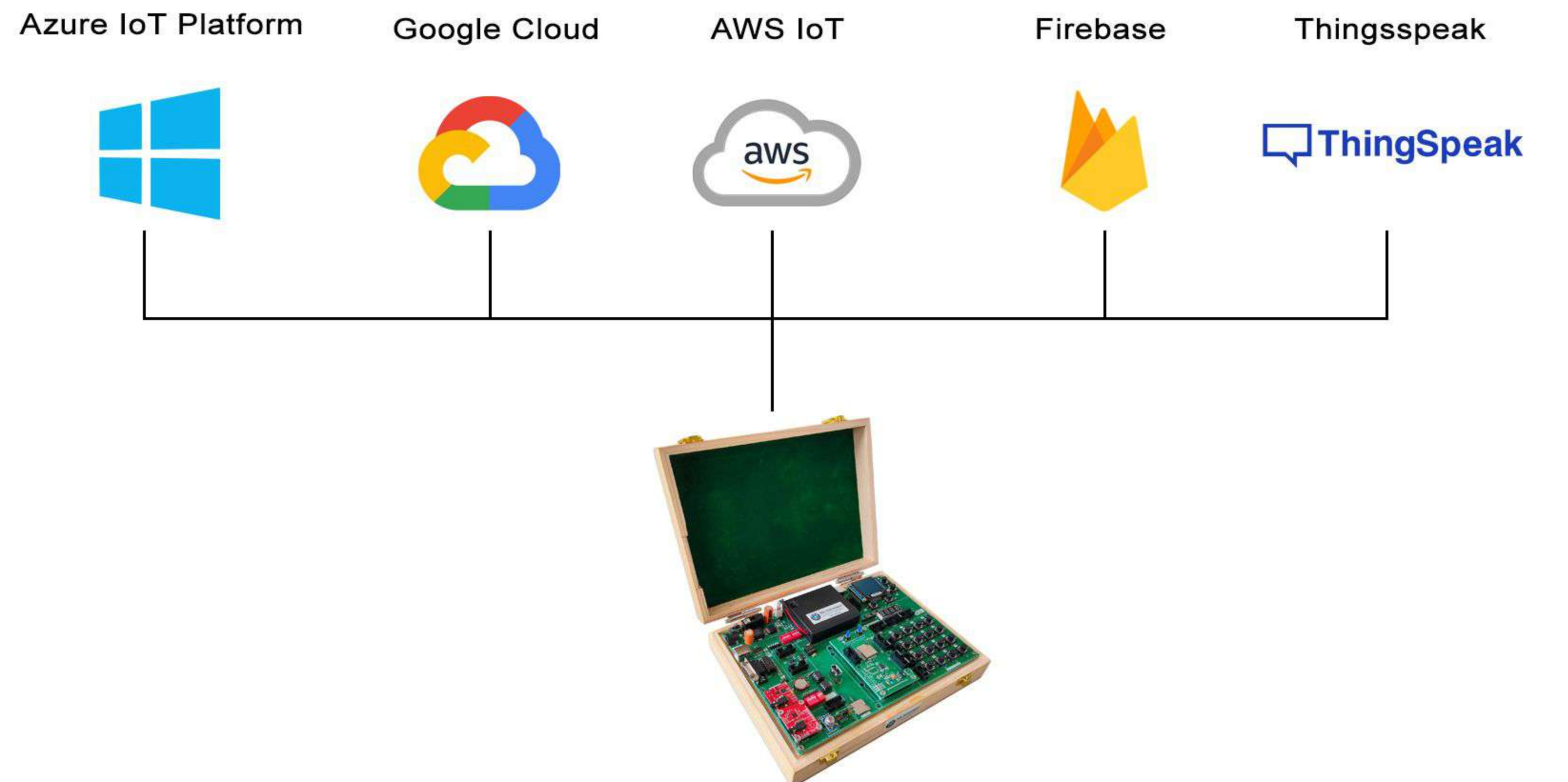
Biomedical Sensor interface Trainer Kit, the plug-and-play design that makes it easy for connections and helps Students, hobbyists, enthusiasts and professionals to make custom biomedical application projects. Biomedical Sensor interface Trainer Kit equipped with onboard IO's, Temperature, SPO2, Heart Rate sensor, ECG, EMG sensors interfaces and peripherals. It's used in many educational institutions and R&D labs across the world.

FEATURES

- Plug & Play Interface Connectivity.
- Professional EMI/RFI Complaint PCB Layout Design.
- Modular Block design makes Easy access & quick Prototyping.
- FRC connectivity features minimize the connection Error.
- ROHS Compliant High Quality Grade PCB.
- Supported DC 12V Power Supply.
- Wooden Enclosure - Go green initiative.
- Optical SPO2 with heart rate Sensor - MAX30100.
- Optical Temp Sensor - MLX90614.
- ECG Sensor - AD8232.
- EMG Sensor - AD8226.

- All sensors are working on low power.
- Open-source Hardware ESP32 dual-core 32-bit up to 240 MHz, Flash 16 MB.
- Supported most of the open-source platforms for Custom Programming.
- The device offers multiple industrial protocols like MODBUS RTU, MODBUS TCP, JSON, MQTT and FTP and supports secure communication SSL.
- Supported most of the cloud platforms including Microsoft Azure & AWS etc.
- OTA Firmware upgrade supported.
- On Board Programming.
- Supported communication over USB, WiFi & Bluetooth.

SUPPORT MOST OF THE POPULAR CLOUD PLATFORM





APPLICATION

- Generic Low power IoT Sensor Hub.
- Generic Low Power IoT Data logger.
- Wearable Electronics.
- Health Care.
- Human Machine interface.
- Muscle-Computer Interface (MUCI).
- Human Robot Interface.
- Exoskeleton.
- Robotics Artificial Actuators.

SCOPE OF LEARNING EXPERIMENTS

- Interface the SPO2 Sensor - MAX30100 and Display the SPO2 And Heart rate
- Interface the Optical Temperature sensor - MLX90614 and display the body Temp
- Interface the ECG Sensor -AD82324 and observe the ECG waveform at the terminal.
- Interface the EMG AD8226 Sensor & make the muscular movement & control the LED
- Interface the EMG Sensor and display the text on display based on muscle movement.
- Interface the EMG Sensor and control the Mouse activities on the computer.
- Log the time series data ECG , Temp , SPO2 Sensor data in to SD Card
- Build Snake Game using muscular sensor EMG AD8226
- Sending ECG, Temperature, and SPO2 sensor data via MQTT protocol to AWS, AZURE and Thingspeak cloud.
- Create an Android application with Bluetooth to display data from the SPO2 sensor, temperature, and ECG.

SPECIFICATION

MCU

- ESP32-D0WD-V3 embedded, Xtensa® dual-core 32-bit LX6 microprocessor, up to 240 MHz.
- 448 KB ROM for booting and core functions.
- 520 KB SRAM for data and instructions.
- 16 KB SRAM in RTC.
- 16 MB SPI flash.

Bluetooth® / BLE

- Bluetooth V4.2 BR/EDR and Bluetooth LE Specification.
- Class-1, Class-2 and Class-3 Transmitter.
- AFH.
- CVSD and SBC.

Wi-Fi

- 802.11b/g/n.
- Bit Rate: 802.11n upto 150 Mbps.
- A-MPDU and A-MSDU Aggregation.
- 0.4 μs Guard interval support.
- Center frequency range of operating channel: 2412 ~ 2484 MH.



HARDWARE

- **Interfaces:** SD Card, UART, SPI, SDIO, I2C, LED PWM, Motor PWM, I2S, IR, Pulse Counter, GPIO, Capacitive Touch Sensor, ADC, DAC, Two-Wire Automotive Interface.
- **Communication Interface:** RS232, USB, SPI & I2C.

DISPLAY INTERFACE

- OLED 1.5.
- Driver: SSD1327.
- Interface: I2C.
- Display color: White.
- Grayscale: 16.
- Resolution: 128×128.
- Viewing angle: >160°.
- Operating voltage: 3.3V / 5V.
- Power supplied through battery for EMG & ECG Sensor.
- On board battery low indicator.

REAL TIME CLOCK (RTC)

- RTC DS1307

KEYPAD INTERFACE

- 4X4 Hex Keypad.
- Seven Segment Display.

MEMORY INTERFACE

- SD Card Interface
- EEPROM AT24C08

BUZZER

- Buzzer

ON BOARD SENSOR, TESTING INPUT POT & SWITCHES

- 1X Temperature Sensor LM35.
- 3X Analog Test POT.
- 8X Selection DIP Switch.
- Optical SPO2 with heart rate Sensor - MAX30100.
- Optical Temp Sensor - MLX90614.
- ECG Sensor - AD8232.
- EMG Sensor - AD8226.



VOLATGE LEVEL CONVERTER

- 3.5V to 5V Level Converter.
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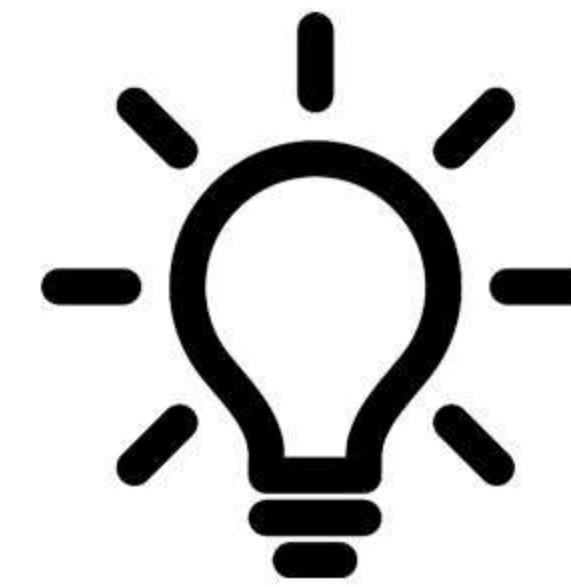
SUPPLY VOLTAGE

- Supply Input Voltage DC 12V / 24V.
 - Permissible Range, Lower Limit (DC) 9V.
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DIMENSION

- Wooden Box : 247mm X 170mm X 60mm.
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QUICK IDEA TO PROOF OF CONCEPT (POC)



Idea



Development Kit
Single board IoT edge
computing hardware
platform.



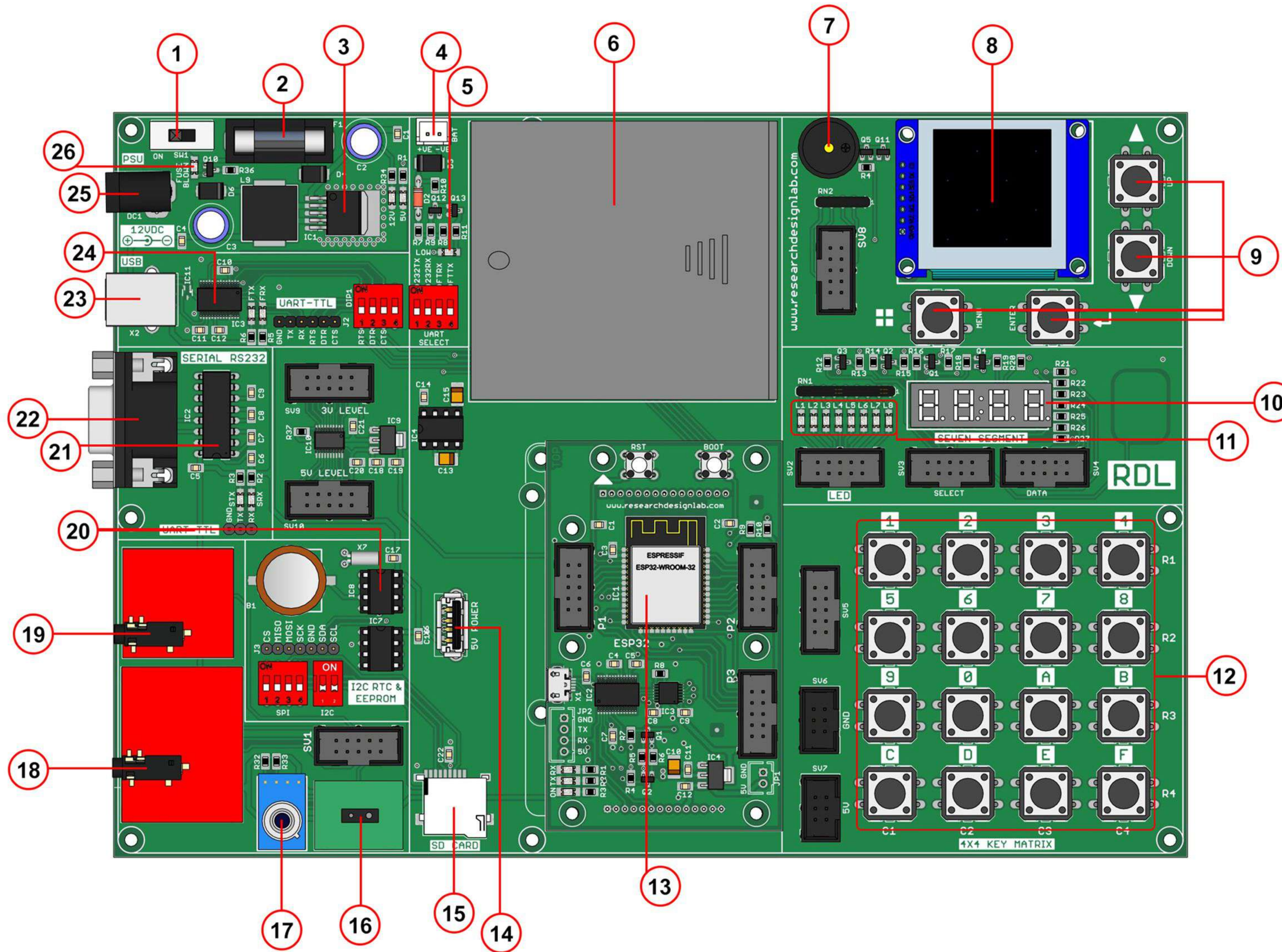
Solution
Use familiar open
source IDE to build
custom solution.

PACKAGE INCLUDES

- Development board with wooden enclosure.
 - USB cable.
 - 12V 2A Adapter.
 - FRC Cable.
 - Interface electrode cable.
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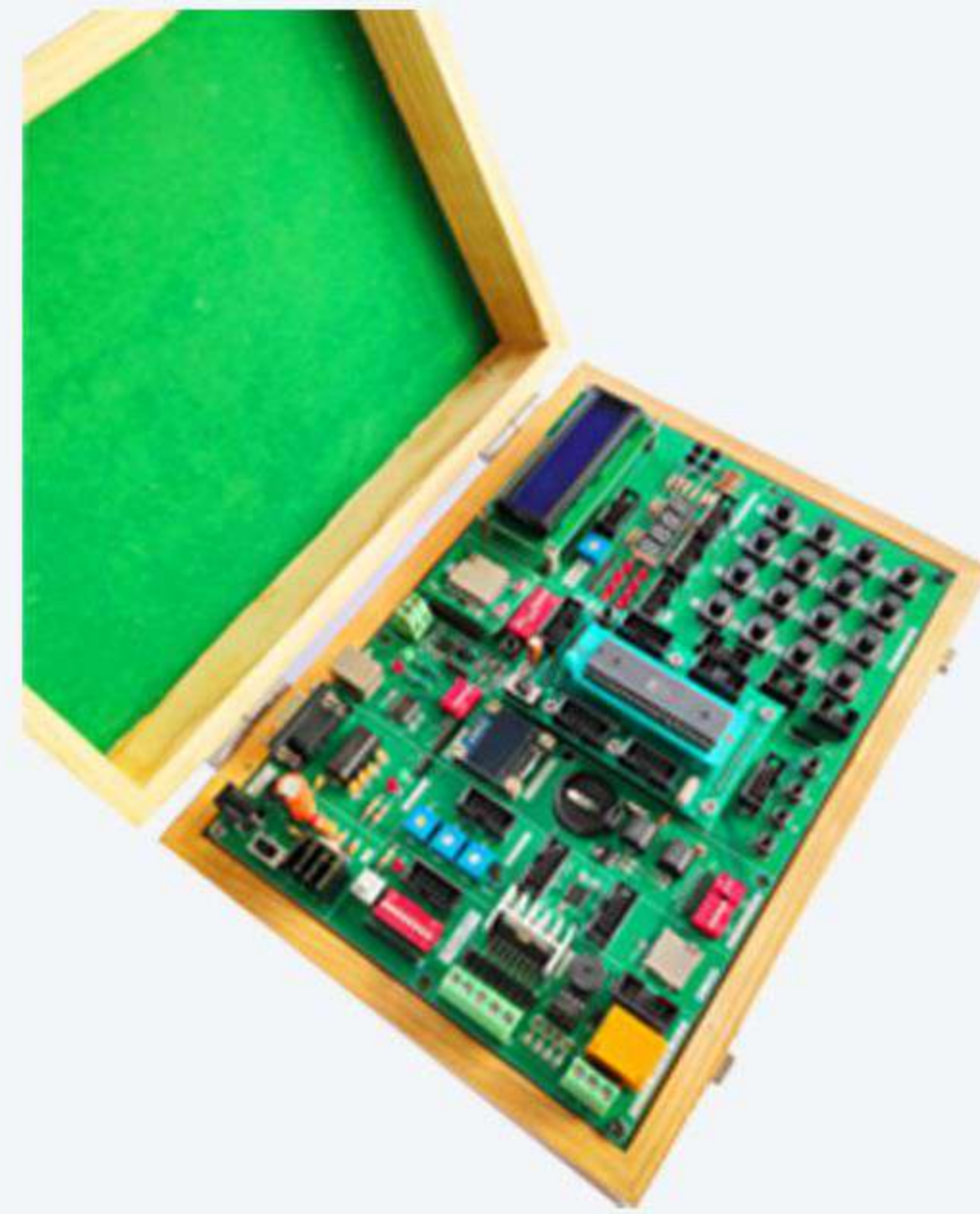
BIOMEDICAL SENSOR INTERFACE TRAINER KIT BOARD NARRATION



- 1) On/Off Switch
- 2) Fuse
- 3) Buck Converter
- 4) Battery Connector
- 5) Batter Low Indicator
- 6) 4 X AA 1.5V Cell Battery Box
- 7) Buzzer
- 8) 1.5" OLED Display
- 9) 1X4 Keypad
- 10) 7 Segment Display
- 11) 1X8 LED
- 12) 4X4 Hex Keypad
- 13) Controller Card
- 14) 5V DC IN
- 15) SD Card Reader
- 16) SPO2 Sensor
- 17) Human Body Teperature Sensor
- 18) ECG Sensor
- 19) EMG Sensor
- 20) RTC IC
- 21) MAX232 IC
- 22) DB9 Connector
- 23) USB Connector
- 24) USB to UART Converter
- 25) 12VDC Input
- 26) Fuse Blown Indicator



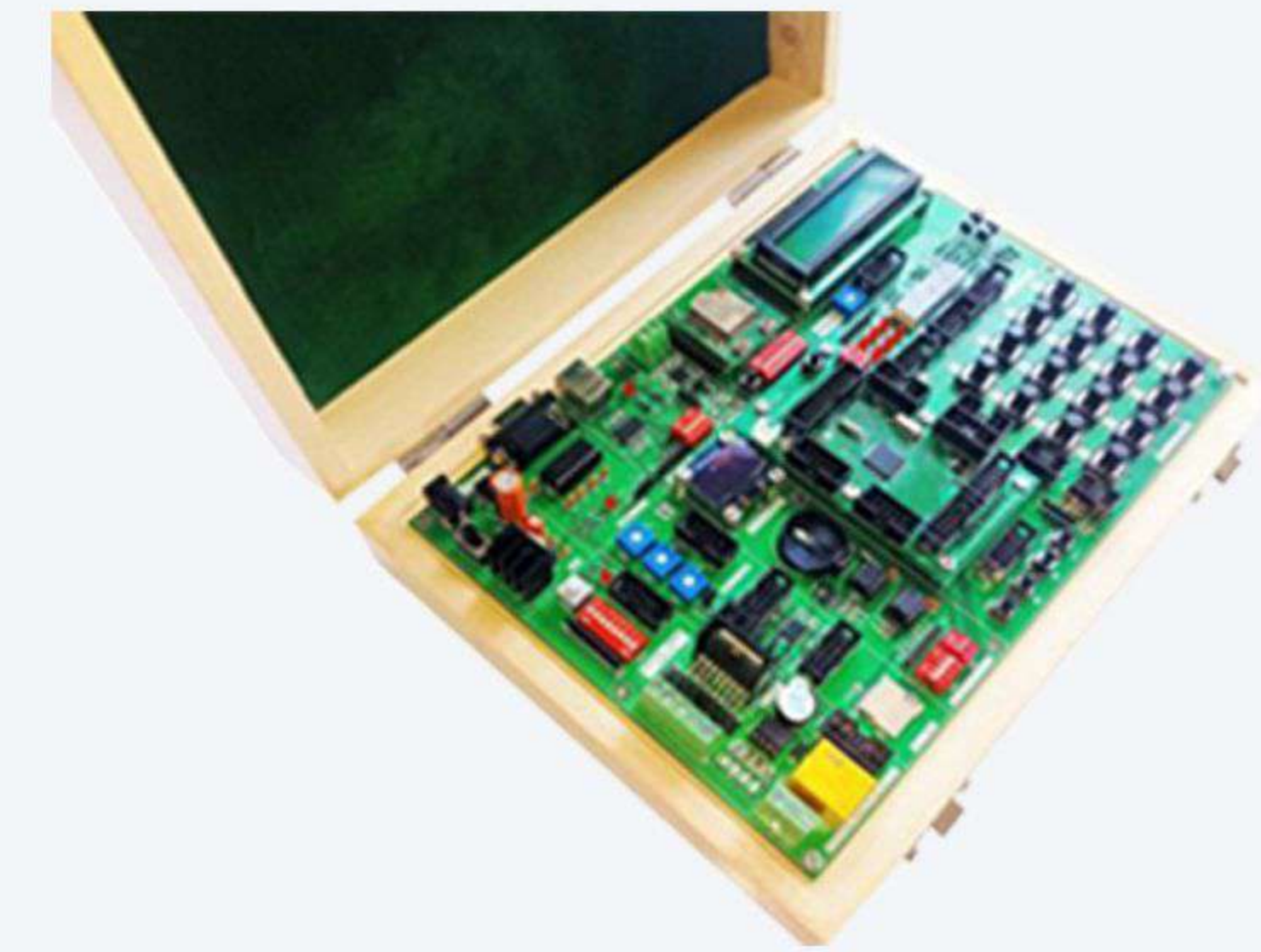
FREQUENTLY BROUGHT TOGETHER



**8051 Development Board -
Trainer Kit**
Model No. : RDL847



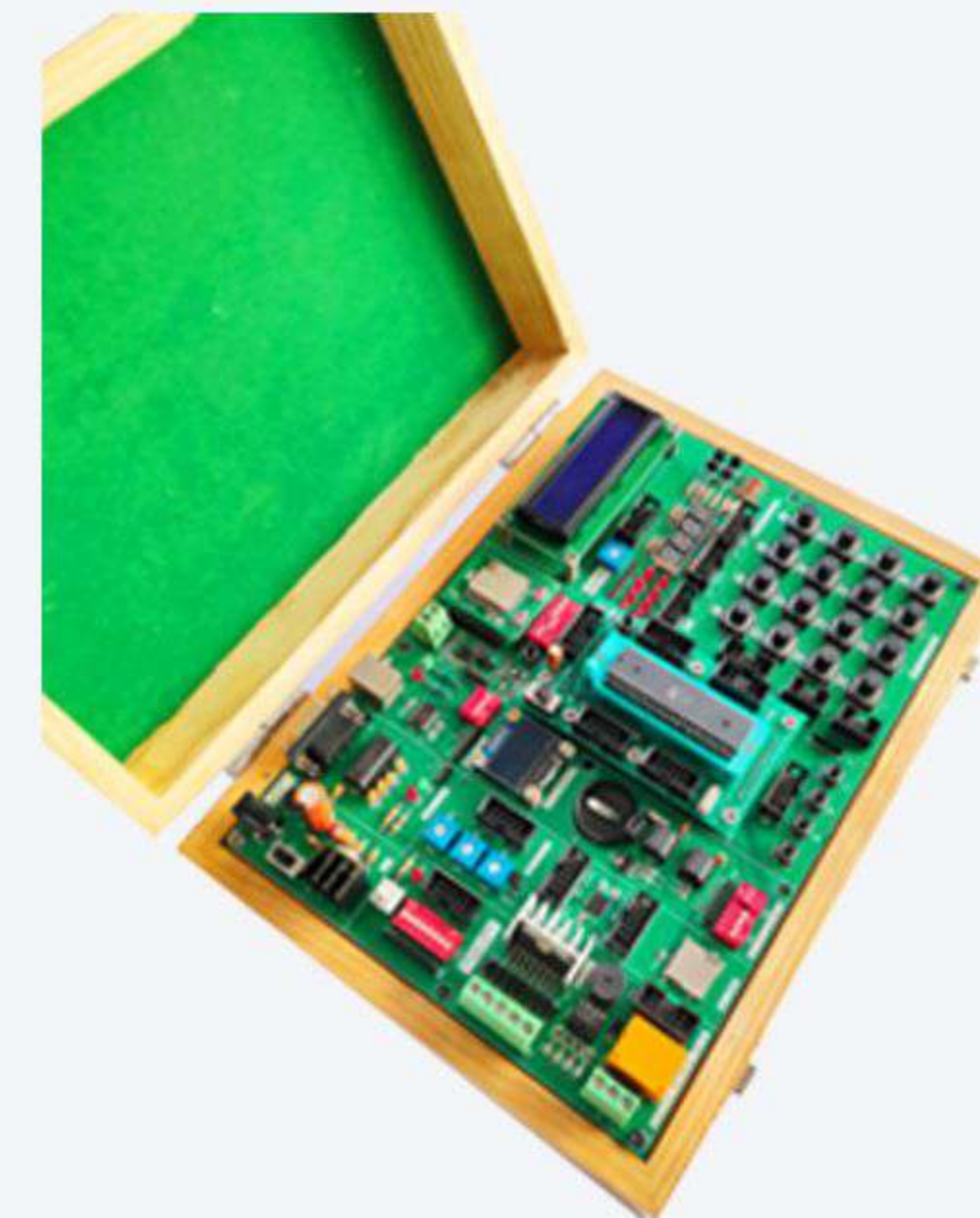
**PIC Development Board-
Trainer Kit**
Model No. : RDL740



**ARM Development Board -
Trainer Kit**
Model No. : RDL742



**ESP32 IoT Development
Trainer Kit**
Model No. : RDL814



**ATMEGA 16, 32, 64
Development Board-Trainer Kit**
Model No. : RDL741



**Motors, Sensor and Actuators
Interface Trainer Kit**
Model No. : RDL887



We Ship Worldwide

Our Shipping Partner



We Accept



Note:

1. Unless otherwise specified, all parameters in this datasheet were measured at 25°C and 75% humidity.
2. All index testing procedures in this datasheet are based on our company's corporate standards.
3. We offer product customization, OEM and ODM Services; please contact the sales team @ sales@rdltech.in.
4. We Ship Worldwide.
5. Specifications are subject to change without prior notice.
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RDL Technologies Pvt. Ltd.

🏠 5th Floor, Sahyadri Campus, Adyar, Mangaluru - 575007 | 📞 +91 8088423347 | 📞 +91 824 2988407

✉ sales@rdltech.in | 🌐 www.rdltech.in | 📺 www.youtube.com/@researchdesignlab956