RDL Technologies

RDL922 / DATASHEET

RPI 4

(MODEL B)

IOT TRAINER KIT

PLUG & CODE

OTA / ON BOARD PROGRAMMING

ON BOARD WIFI & BLUETOOTH

1 GHz Single Core CPU

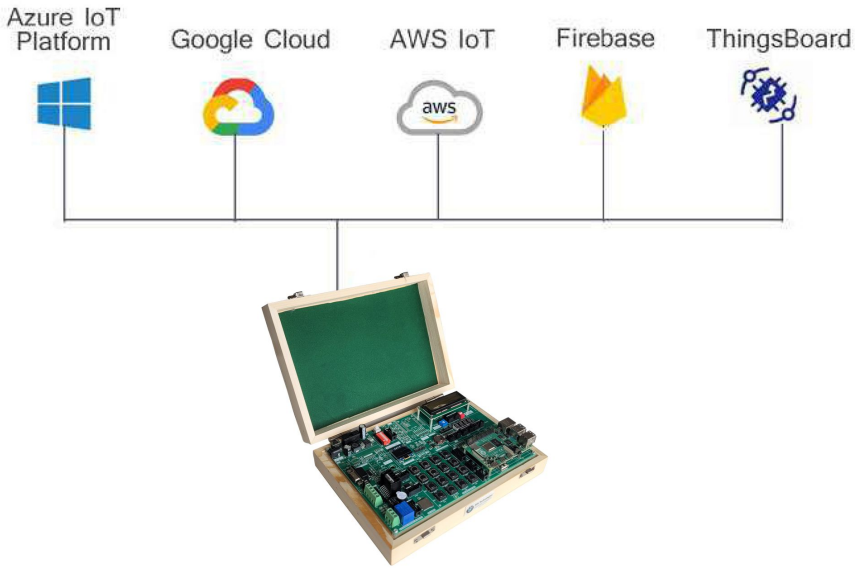
RoHS 2011/65/EU

RPI 4 IoT Development Trainer Kit essential development features a plug - and - play design that makes it easy for connections and helps Students, hobbyists, enthusiasts and professionals to focus more on Program/application development. RPI 4 IoT Trainer Kit equipped with onboard IO's, communication interfaces & peripherals. It is really easy to design, experiment with, and test circuits without soldering. It's used in many educational institutions and R&D LAB across the world.

Board Features:

- Broadcom BCM2711, quad-core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz.
- 4GB LPDDR4 SDRAM.
- 2.4GHz and 5.0GHz IEEE 802.11b/g/n/ac wireless LAN, Bluetooth 5.0, BLE.
- True Gigabit Ethernet.
- 2x USB 3.0 ports, 2x USB 2.0 Ports.
- Fully backwards compatible 40-pin GPIO header.
- 2x Micro HDMI ports supporting up to 4K 60Hz video resolution.
- 2-lane MIPI DSI/CSI ports for camera and display.
- 4-pole stereo audio and composite video port.
- MicroSD card slot for loading operating system and data storage.
- Onboard 5.1V, 3A power via USB-C or GPIO.
- On Board Programming.
- 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 with wooden Enclosure.
- Open-source Hardware RPI 0 single-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, and Modbus RTU and RS232.

Support most of the cloud platform

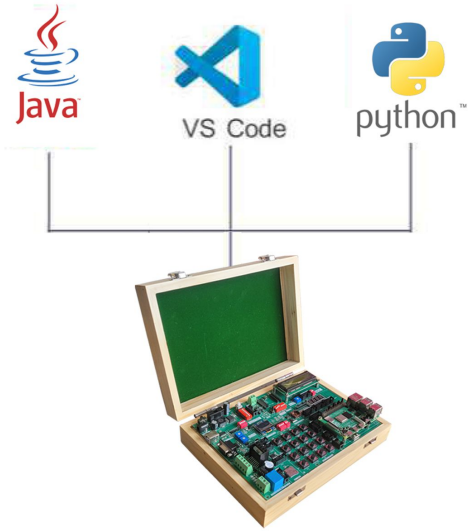


- Supported DC 12V Power Supply.
- 1 * 8 interfacing LED’s.
- 1 * 4 Menu keypad.
- 4 * 4 Matrix Keypad.
- RS232, RS485, USB communication port.
- 7 Segment Multiplexed Display.
- 16*2 LCD & OLED Display.
- On Board Wi-Fi/Bluetooth Connectivity.
- 3.3 to 5V Level Converter.
- Power Supply 3.3V and 5V.
- SD CARD Interface.
- RTC & EEPROM Interface.
- DC Motor/ Stepper Motor Driver.
- Relay, Buzzer.
- High Quality Grade PCB with wooden Enclosure.

Applications

- Genetic Low - power IoT Sensor Hub.
- Genetic Low - power IoT Dataloggers.
- Cameras for Video Streaming.
- Over-the-top (OTT) devices.
- Speech Recognition.
- Image Recognition.
- Mesh Network.
- Home Automation.
- Smart Building.
- Industrial Automation.
- Smart Agriculture.
- Audio Applications.
- Health Care Applications.
- Wi-Fi Enabled Toys.
- Wearable Electronics.
- Retail & Catering Applications.

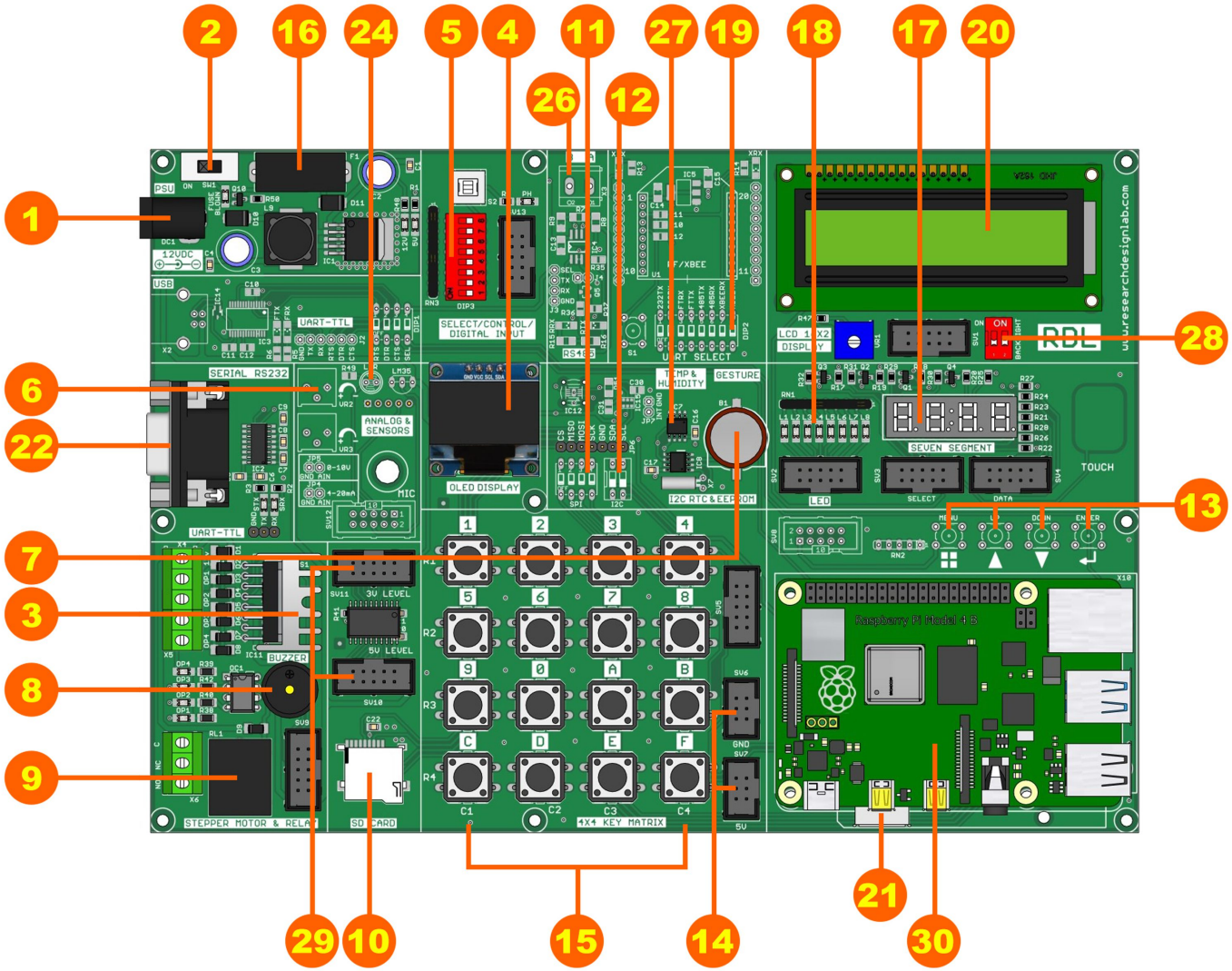
Supported language & development environment



Scope of Learning Experiments

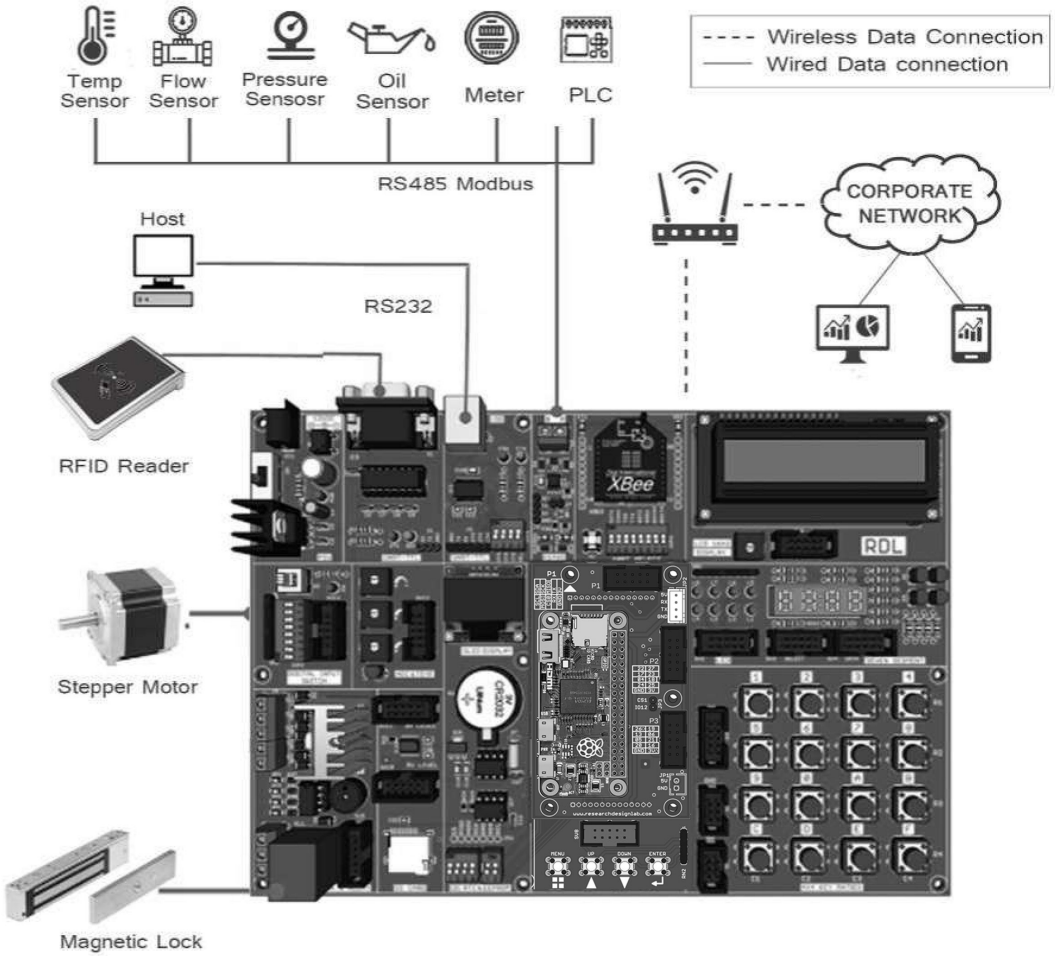
- LED blinking.
- 8 bit LED Left shift, Right shift and counting operation.
- Keypad interrupt interface.
- 6*2 LCD interface.
- Matrix Keypad Interface.
- Traffic light signal interface.
- 8 bit DIP switch interface.
- L298 Driver for DC Motor and Stepper motor interface.
- Communication using UART, I2C & SPI.
- Buzzer, Relay interface.
- RS485, RS232 serial communication.
- RPI4 IO interfacing with different sensor.
- RTC DS1307I2C protocol interface.
- AT24C04 EEPROM I2C protocol interface.
- Wi-Fi Communication.
- Interfacing SD card and handling file system.
- Interfacing sensor with & Data parsing using RESTful & Json protocol.
- FTP Implementation.
- Interfacing sensor with RPI 4 and MQTT protocol implementation.
- Exploring MQTT features subscribe & publish methods.
- MQTT SSL certificate implementation - RPI 4.
- Interfacing RS485 salve using MODBUS protocol.
- Interfacing BLE & Data parsing using RESTful / Json / MQTT protocol.
- Text to speech implementation.
- Device control through speech recognition & alexa integration.
- Appliance control through cloud platform using MQTT protocol.
- Environment data like temp & humidity capturing using cloud platform.
- Modbus RTU communication and accessing data from Industrial PLC.
- Wireless TCP / IP socket connection implementation using node and server architecture.
- BioMedical sensor kit integration and connecting IoT cloud platform for prediction.
- Implementation of RPI 4 WEB server application.

ESP32 - RPI 4 Board Narration

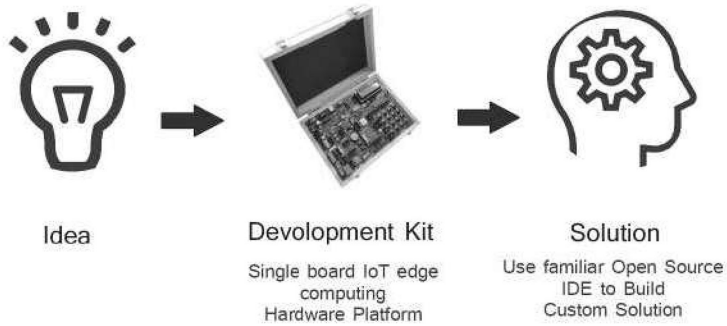


1. Power Supply - DC to DC 3 Amps
2. Power ON Switch
3. L298 Driver
4. OLED Display
5. Digital Input Switch
6. ADC (Variable Resistor POT)
7. RTC Battery
8. Buzzer
9. Relay
10. SD Card Holder
11. On Off Switch for SPI
12. On Off Switch for I2C
13. 1*4 Keypad Switches
14. RDL Bus FRC 5V & GND Connector
15. 4*4 Keypad Matrix
16. FUSE Holder
17. 7 Segment Display
18. 1*8 LED's
19. Jumper Settings for UART TTL
20. 16*2 LCD Display
21. Onboard Raspberry Pie Power Supply
22. DB-9 Serial Female Connector
24. LDR Sensor
26. RS485
27. EEPROM
28. Backlight On/Off Switch
29. 3.3V to 5V Level Controller
30. Raspberry Pi 4

Application Wiring Diagram



Quick Idea to Proof of Concept (POC)



Package Includes

- Development Board with Wooden Enclosure
- USB Cable
- 12V 2A Adapter
- FRC Cable

- **NOTE: XBee modules is not included in the package.**

Accessories - Programmable ESP32 IoT EDGE IO MODULE

ORDER CODE: RDL869

Features:

- Controller ESP32 Bit Dual Core 32 Bit 240 MHz 16MB
- 8X Isolated Digital Input
- 1X Isolated Ethernet 10/100MBPS
- 1X USB for Programming & Configuring
- 9 to 36V Power Supply
- 16GB SD Card for Event Log
- Real Time Clock
- OnBoard Bluetooth & WiFi

Application:

- ✓ Andon System
- ✓ Hotel Room Automation
- ✓ Smart FeedBack Collecting System
- ✓ Alaram & Automated Task Application
- ✓ Digital Checksheet

ORDER CODE: RDL865

Features:

- Controller ESP32 Bit Dual Core 32 Bit 240 MHz 16MB
- 3x Isolated Digital Input 24V
- 2X Isolated Relay 6A
- 4X Isolated Analog Input 0-10V to 4-20mA
- 1X Isolated RX45 Modbus RTU
- 1X USB for Programming Configuration
- RTC for Realtime Clock
- OnBoard Bluetooth & WiFi
- Supply Voltage 12-36V

Application:

- ✓ Production & Process Monitoring System
- ✓ Removte Monitoring System
- ✓ Condition Monitoring System
- ✓ Utility Monitoring System
- ✓ Greenhouse Monitoring System

ORDER CODE: RDL857

Features:

- Controller ESP32 Bit Dual Core 32 Bit 240 MHz 16MB
- 4X Isolated Digital Input 24V
- 4X Isolated 6AmpsRelay
- 1X Isolated RS485 Modbus RTU
- 1X USB Programming & Configuring
- On Board WiFi & Bluetooth
- Power Supply to 12-36V

Application:

- ✓ Andon System
- ✓ Hotel Room Automation
- ✓ Smart FeedBack Collecting System
- ✓ Alaram & Automated Task Application
- ✓ Digital Checksheet

Note: Additional Accesories need to be Order Seperately. For More Additional Accessories Please Contact us Directly.

Accessories - Programmable ESP32 IoT EDGE IO MODULE

4G/LTE COMMUNICATION MODULE

ORDER CODE: RDL876

Features:

• 4G/LTE	Max 150Mbs Down link / Max 50 Mbps Uplink
• Edge	Max 256kbps Down link / Max 236.8 kbps Uplink
• 4G/LTE Chipset	Qualcomm MDM9207, ARM Cortex A7 1.3 GHz
• Protocol	TCP / IP, JSON, MQTT, SSL, FTP, RESTful
• Security	WFA,WPA/WPA2 and WAPI

Application:

- ✓ Renewable Monitoring System
- ✓ Asset Tracking
- ✓ Automation
- ✓ Digital Signage
- ✓ Smart Grid & Meter
- ✓ Fixed Wireless Access
- ✓ Telehealth
- ✓ Paymeny Terminal

CLOUD PLC

ORDER CODE: RDL826

Features:

- Controller ESP32 Bit Dual Core 32 Bit 240 MHz 16MB
- LX6 Microprocessor 32 bit, with Clock Frequency 240MHz
- 4X Isolated Analog input 0-24V
- 6X isolated Digital input 24V
- 4X Isolated digital output/PWM
- Working Voltage 24V
- 2X Relay (NO & C)
- 1X Isolated RS485
- DS3231 RTC
- 1X WiFi
- UART Programming OTA (Over The Air) Firmware
- upgrade for WiFi devices
- 16 GB inbuilt storage
- LED indicators to indicate Power

Application:

- ✓ Production and process monitoring.
- ✓ Utilities monitoring.
- ✓ Condition monitoring.
- ✓ Environment monitoring.
- ✓ Industrial Smart grid
- ✓ Leakage detection.
- ✓ Cold storage monitoring.
- ✓ District metering.
- ✓ Water treatment.
- ✓ Generator monitoring.
- ✓ Green House.

WiFi RELAY 30A

ORDER CODE: RDL877

Features:

- Controller ESP32 Bit Dual Core 32 Bit 240 MHz 16MB
- 1X RTC
- 1X Current Sensor
- 1X 30 Amps Relay
- On Board WiFi & Bluetooth
- On Board Power Supply 100-270VAC 50/60Hz

Application:

- ✓ Home Automation
- ✓ Alarms
- ✓ Relay Timer Enabled
- ✓ Open Wall control
- ✓ Vending machine

Note: Additional Accesories need to be Order Seperately. For More Additional Accessories Please Contact us Directly.

Accessories - DIY IoT Development Kit

DIY AUTOMATED PLANT MONITORING SYSTEM

ORDER CODE: RDL878

Package Includes

- ESP32 IoT Trainer Kit with Wooden Enclosure
  USB Cable
- 12V 2A Adapter
- FRC Cable
- 1X IoT Module RDL 865
- 2X Soil Moisure Sensor
- 2X Valve
- 3X 1Meter Drip Irrigation Pipe
- Coupling Accessories 1 Set

CLOUD PLC RPI - 0

ORDER CODE: RDL895

Package Includes

- Cloud PLC with Raspberry Pi 0
- USB Cable

DIY ANDON

ORDER CODE: RDL880

Package Includes

- ESP32 IoT Trainer Kit with Wooden Enclosure
  USB Cable
- 12V 2A Adapter
- FRC Cable
- IoT Edge Io Module RDL857
- 1X Event Input Box
- 1X Tower Light
- Connecting Accessories

Note: Additional Accesories need to be Order Seperately. For More Additional Accessories Please Contact us Directly.

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.
6. For additional information on Product and to buy online @ www.researchdesignlab.com

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