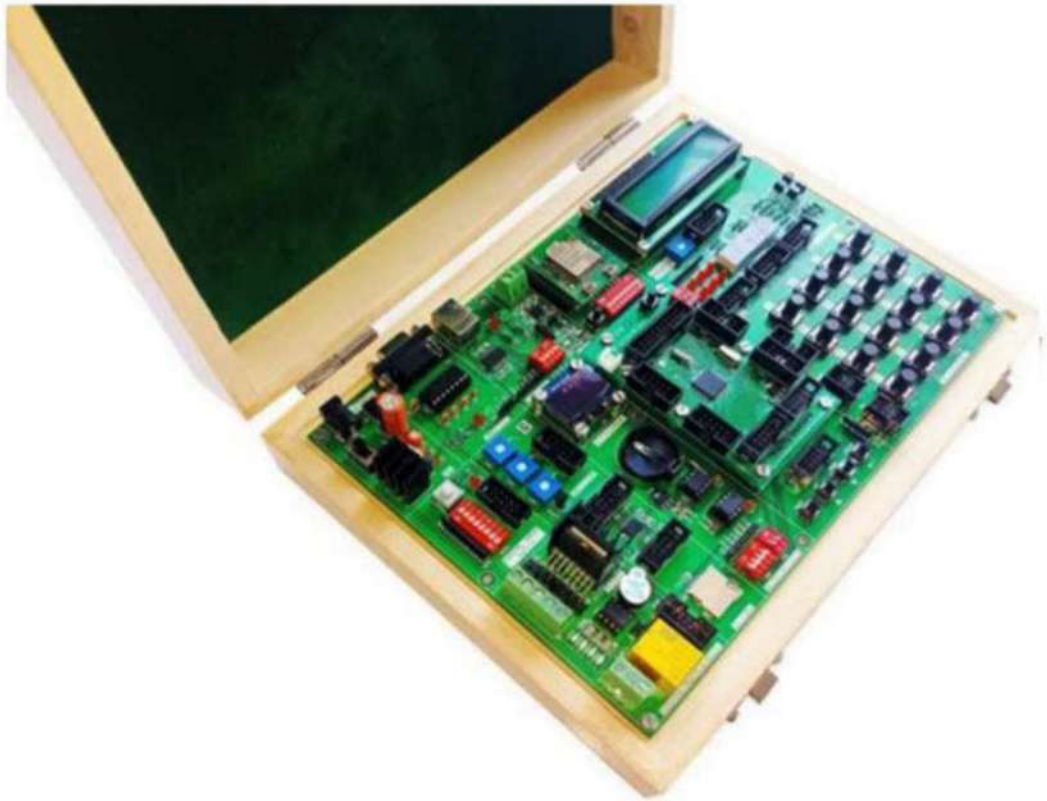
RDL TECHNOLOGIES



ARM

DEVELOPMENT TRAINER KIT

PLUG & CODE | ON BOARD PROGRAMMING | RTC | ON BOARD MODBUS RTU & CAN BUS | ARM 7 PROCESSOR | RoHS 2011/65/EU

RDL TECHNOLOGIES

START YOUR EMBEDDED SYSTEM DESIGN JOURNEY TODAY..!

LPC2129 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. LPC2129 Development Trainer Kit equipped with on board 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

- 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.
- High quality grade PCB with wooden enclosure.
- Stackable daughter board LPC2019 in - built CAN Module.
- On board debugging JTAG Option.
- ON board Micro SD Card.
- Controller Area Network (CAN) transceiver.
- ON/OFF slide switch, RDL bus.
- USB onboard programming.
- External jumper nodes.
- 8 interfacing LED's
- Reset button.
- 1 * 4 interfacing keys.
- Power plug - in DC Socket.
- 4 * 4 interfacing keypad matrix.
- Power supply indicator LED.
- Two channel RS232 port for communication.
- Test led for Tx, Rx.
- 3 ADC potentiometer input interface.
- 46 General purpose IO
- 16 * 2 LCD, OLED interface.
- FT232RL USB communication
- 7 Seg Multiplexed Display.
- 8 pin DIP switches.

ON BOARD DIY PROJECTS

- Digital clock using RTC DS1307 & 16x2LCD.
- Digital lock using Hex Keypad & 16x2LCD.
- Digital password enabled access control system.
- Temperature sensing & controlling relay.
- Temperature sensing & speed control of motor.
- Simple pulse input seven segment counter.
- Realtime Temperature sensing & Login to SD card.
- Data Login through RS232 serial interface with # deluminator.
- Modbus master / stave communication.
- Bluetooth controlled appliance through Relay
- Timer enabled Relay
- Motor controlling throught WiFi
- LED controlling through PC (USB Interface)
- 4 digit random number generator
- Graphic icon display using OLED
- Menu controller LED chases

DEVELOPMENT ENVIRONMENT

KEIL™ Tools by ARM

ABOUT LPC2129 DEVELOPMENT BOARD

The LPC2129 are based on a 16/32 bit ARM7TDMI-S* CPU with real time emulation and embedded trace support, together with 128/256 kilobytes (kB) of embedded high speed flash memory. With their compact 64 pin package, low power consumption, various 32-bit timers, 4-channel 10-bit ADC, 2 advanced CAN channels PWM channels and 46 GPIO lines with up to 9 external interrupt pins these micro controllers are particularly suitable for automotive and industrial control applications as well as medical systems and fault tolerant maintenance buses.

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
- ADC & DAC interface
- Traffic Light Signal Interface
- 8 bit DIP switch interface
- 7 Segment interface
- L298 Driver for DC Motor and Stepper motor interface
- Communication using UART, I2C & SPI
- Buzzer, Relay interface
- RS485, RS232 serial communication
- ARM IO Interfacing with different sensor
- RTC DS130712C protocol interface
- AT24C04 EEPROM I2C protocol interface
- RF/WiFi Communication
- Temperature Sensor Interface
- Multi processing using Dual core ARM
- Interfacing SD card and handling file system with ARM using SPI and other method
- Interfacing sensor with & Data parsing using RESTful & Json protocol
- FTP Implementation
- Interfacing sensor with ARM and MQTT protocol Implementation Exploring MQTT Features Subscribe & Publish methods
- MQTT SSL certificate implementation - ARM
- Interfacing RS485 salve using MODBUS protocol
- Interfacing BLE & Data parsing using RESTful/Json/MQTT protocol
- OTA Implementation -ARM
- Implementation of FREE RTOS on ARM
- Exploring DMA features of ARM
- Text to speach 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
- Exploring WiFi - MESH features
- BioMedical sensor kit integration and connecting IoT cloud platform for prediction
- Exploring OPC/UA server and client implementation
- implementation of ESP32 WEB server application

SPECIFICATION

MCU

- 16/32-bit ARM7TDMI-S microcontroller in a tiny LQFP64 package.
- In-System Programming (ISP)
- 40kB of on-chip static RAM
- 512kB of on-chip flash memory
- 10-bit DAC

HARDWARE

- **Interfaces:** SD card, UART, SPI, SDIO, I2C, LED PWM, Motor PWM, I2S, IR, pulse counter, GPIO, ADC.
- **Communication Interface:** RS232, RS485 (Modbus RTU), USB, SPI, I2C.

DISPLAY INTERFACE

- OLED 0.96"
- 16X2 LCD Display
- Seven Segment Display

KEYPAD INTERFACE

- 4X4 Hex Keypad
- 1X4 Menu Keypad

MEMORY INTERFACE

- SD Card Interface
- EEPROM AT24C08

DRIVERS, RELAY & BUZZER

- DC Motor/Stepper Motor
- Buzzer

ON BOARD SENSOR, TEXTING INPUT POT & SWITCHES

- 1X Temperature Sensor LM35
- 3X Analog Test POT
- 8X Selection DIP Switch

CONVERTER & ADAPTER INTERFACE

- Xbee Adapter
- 3.3V to 5V Level Converter

REAL TIME CLOCK (RTC)

- RTC DS1307

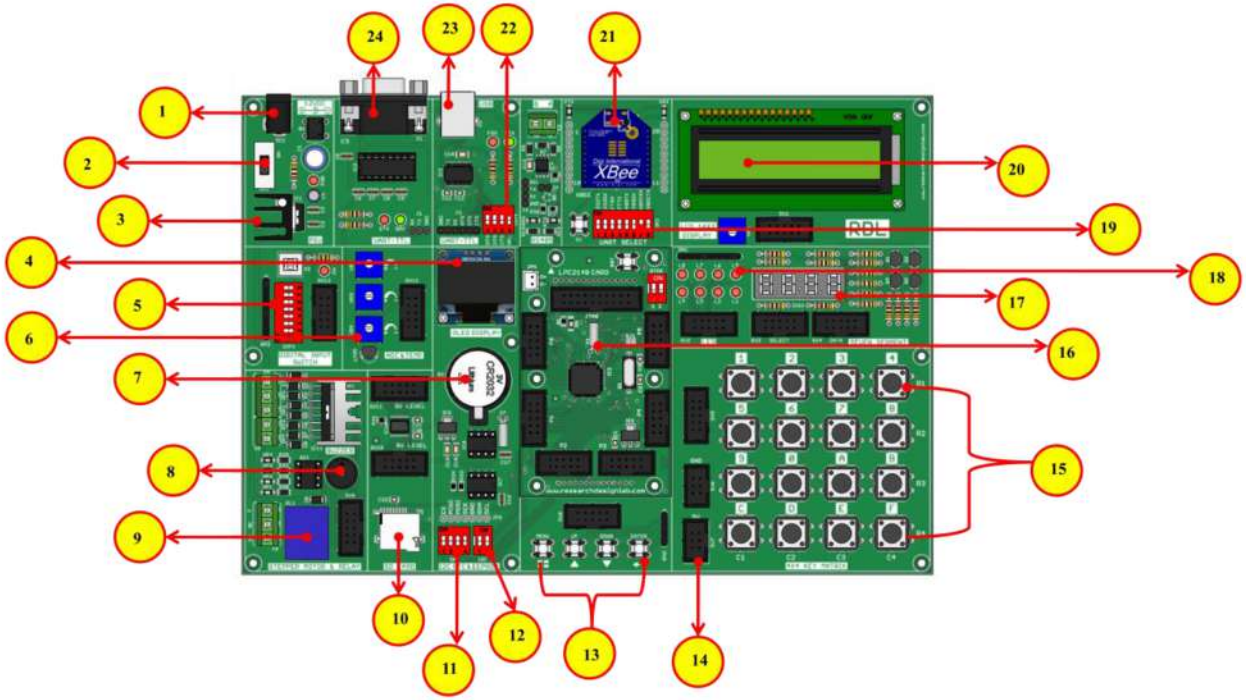
ON BOARD POWER POINTS

- 5V, 3.3V & GND

DIMENSION

- W 264 X L199 X H 60

ARM DEVELOPMENT TRAINER KIT BOARD NARRATION



1. Power Supply	9. Relay	17. 7 Segment Display
2. Power ON Switch	10. SD Card Holder	18. 2*4 LED's
3. Heat Sink	11. Jumper Settings for I2C RTC	19. Jumper Settings for UART Selection Pin
4. ADC (Variable Resistor POT)	12. Jumper Settings for EEPROM	20. 16*2 LCD Display
5. OLED Display	13.1*4 Keypad Switches	21. WiFi Module
6. Digital Input Switch	14. RDL Bus FRC Connector	22. Jumper Settings for UART TTL
7. RTC Battery	15. Keypad Matrix	23. USB Port
8. Buzzer	16. ARM LPC2129 Controller	24. DB-9 Serial Female Connector

Rx - RS485 receiver positive signal pin

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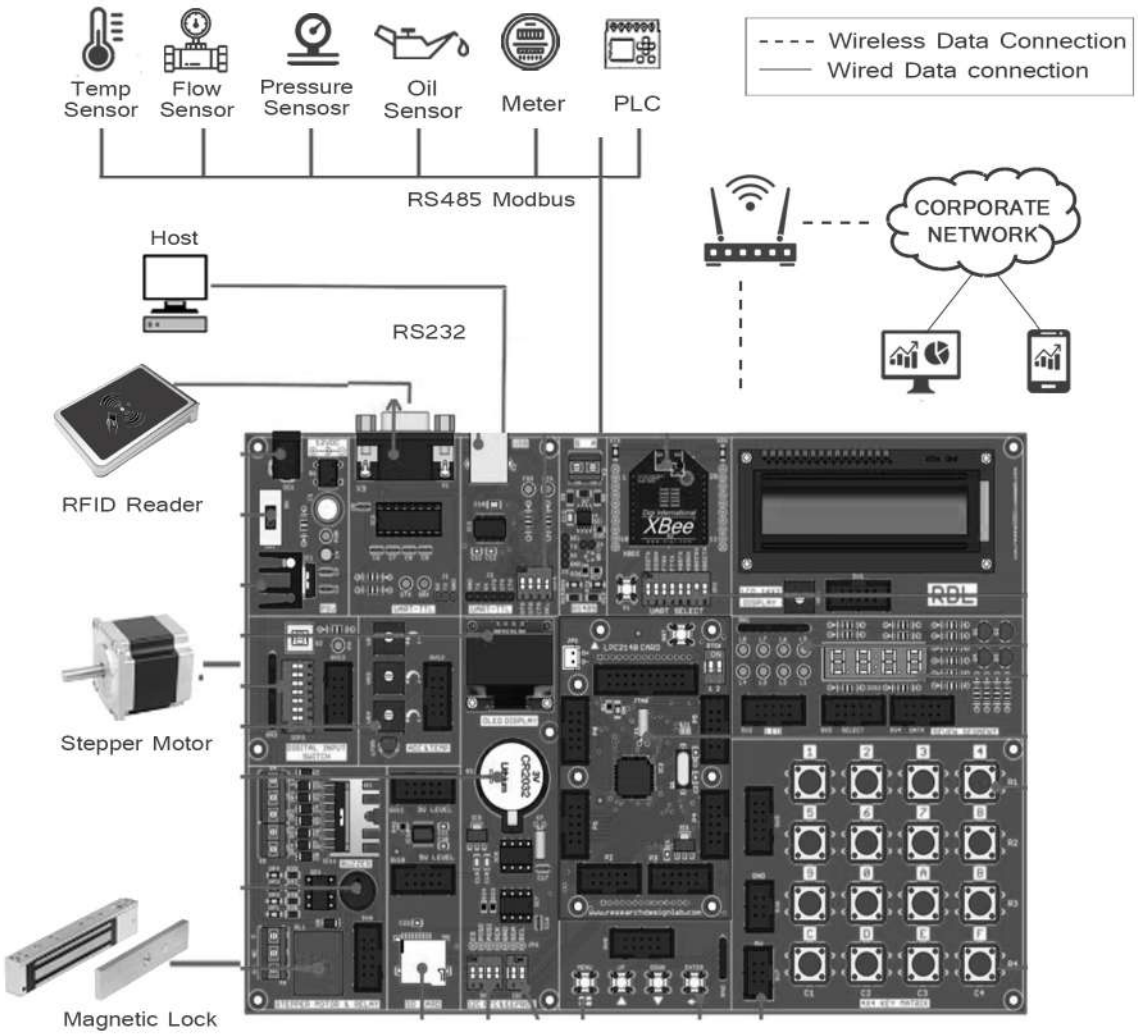
APPLICATION WIRING DIAGRAM



Quick Idea to Proof of Concept (POC)

Package Includes

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

NOTE: XBee module is not included in the package

Optional OLED & SD Card module provided on this board. hobbyist / developer can make use of this module with their previous knowledge or open source community support and we do not have the support for the optional modules.

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 can offer product customization; please contact the sales team directly for more information.
4. Specifications are subject to change without prior notice:
5. For additional information on Product please refer to www.rdltech.in
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