RDL TECHNOLOGIES

ATmega 16 32 64

DEVELOPMENT TRAINER KIT

PLUG & CODE | ON BOARD PROGRAMMING | RTC | ON BOARD MODBUS RTU | ATMEGA MICRO CONTROLLER | RoHS 2011/65/EU

RDL TECHNOLOGIES

START YOUR EMBEDDED SYSTEM DESIGN JOURNEY TODAY...!

Atmega 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. PIC Development Board 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

- 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.
- RS232, RS485, USB communication port.
- On Board WiFi / Bluetooth Connectivity
- 8 interfacing LED's.
- 1 * 4 Menu keypad.
- 4 * 4 Matrix Keypad.
- RS232, RS485, USB communication port.
- 16 * 2 LCD & OLED Display
- ADC & DAC Card.
- 8 bit 4 port IO.
- On Board WiFi/Bluetooth Connectivity
- 3.3 to 5V Level Converter.
- SD CARD Interface.
- RTC & EEPROM Interface.
- DC Motor/ Stepper Motor Driver.
- Relay, Buzzer.
- 1xTemperature Sensor.
- 3x Analog Test POT.

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 Temperatuure sensing & Login to SD card
- Data Login through RS232 serial interface
- Modbus master/slave communication
- Bluetooth controlled appliance through Relay
- Timer enabled Relay
- Motor controlling using WiFi
- LED controlling through PC (USB Interface)
- 4 digit random number generator

RDL TECHNOLOGIES

The ATmega 16 / 32 / 64 is a low - power CMOS 8-bit microcontroller based on the AVR enhanced RISC architecture. The ATmega16 provides the following features: 16 Kbytes of In-System Programmable Flash Program memory with Read - While - Write capabilities, 512 bytes EEPROM, 1 Kbytes SRAM, 32 general purpose I/O lines, 32 general purpose working registers, On-chip Debugging support and programming, three flexible Timer/Counters with compare modes, Internal and External Interrupts, a serial programmable USART, a byte oriented Two - wire Serial Interface, an 8-channel, 10-bit ADC with optional differential input stage with programmable gain (TQFP package only), a programmable Watchdog Timer with Internal Oscilator, an SPI serial port, and six software selectable power saving modes.

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.
- Multi processing using Dual core ATmegha 16 32 64.
- Interfacing SD card and handling file system with ATmegha 16 32 64 using SPI and other method.
- Interfacing sensor with & Data parsing using RESTful & Json protocol.
- FTP Implementation.
- Interfacing sensor with ATmegha 16 32 64 and MQTT protocol Implementation.
- Exploring MQTT Features Subscribe & Publish Methods.
- 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
- Bio Medical sensor kit integration and connectiong IoT cloud platform for prediction
- Exploring OPC / UA server and client implementation.

Development Environment

SPECIFICATION

MCU

- Low - power Atmel® AVR® 8-bit Microcontroller.
- 16 Kbytes of In-System Self - programmable Flash program memory.
- 515 Bytes EEPROM.
- 1 Kbyte Internal SRAM.
- In-System Programming by On-Chip Boot Program.

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 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

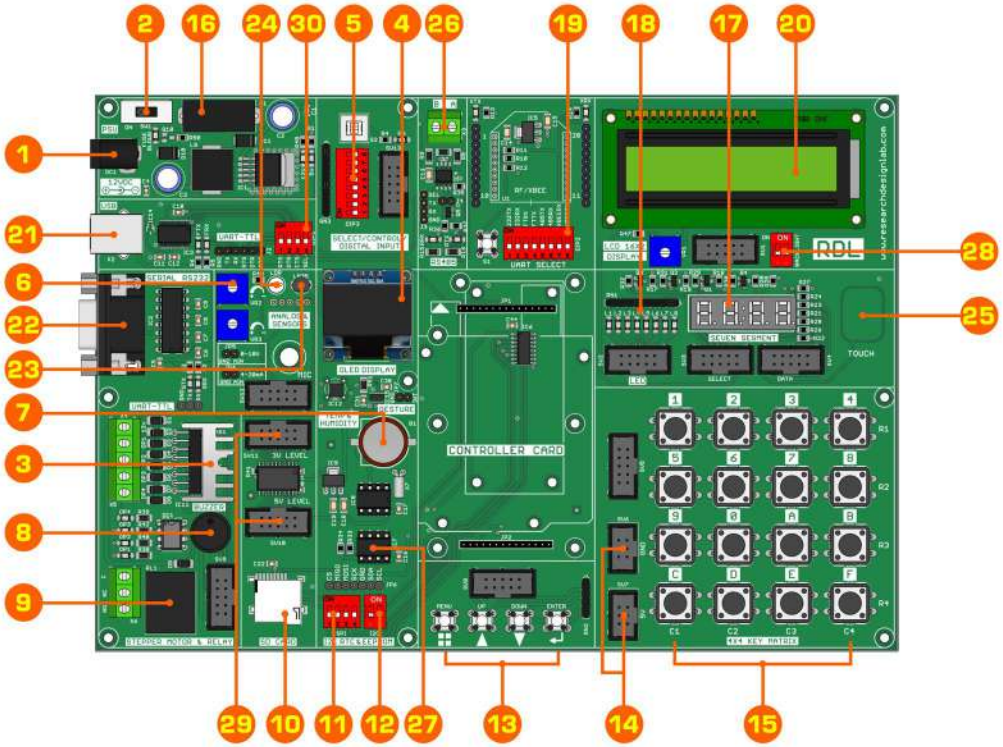
5V, 3.3V & GND

DIMENSION

W 264 X L199 X H 60

RDL TECHNOLOGIES

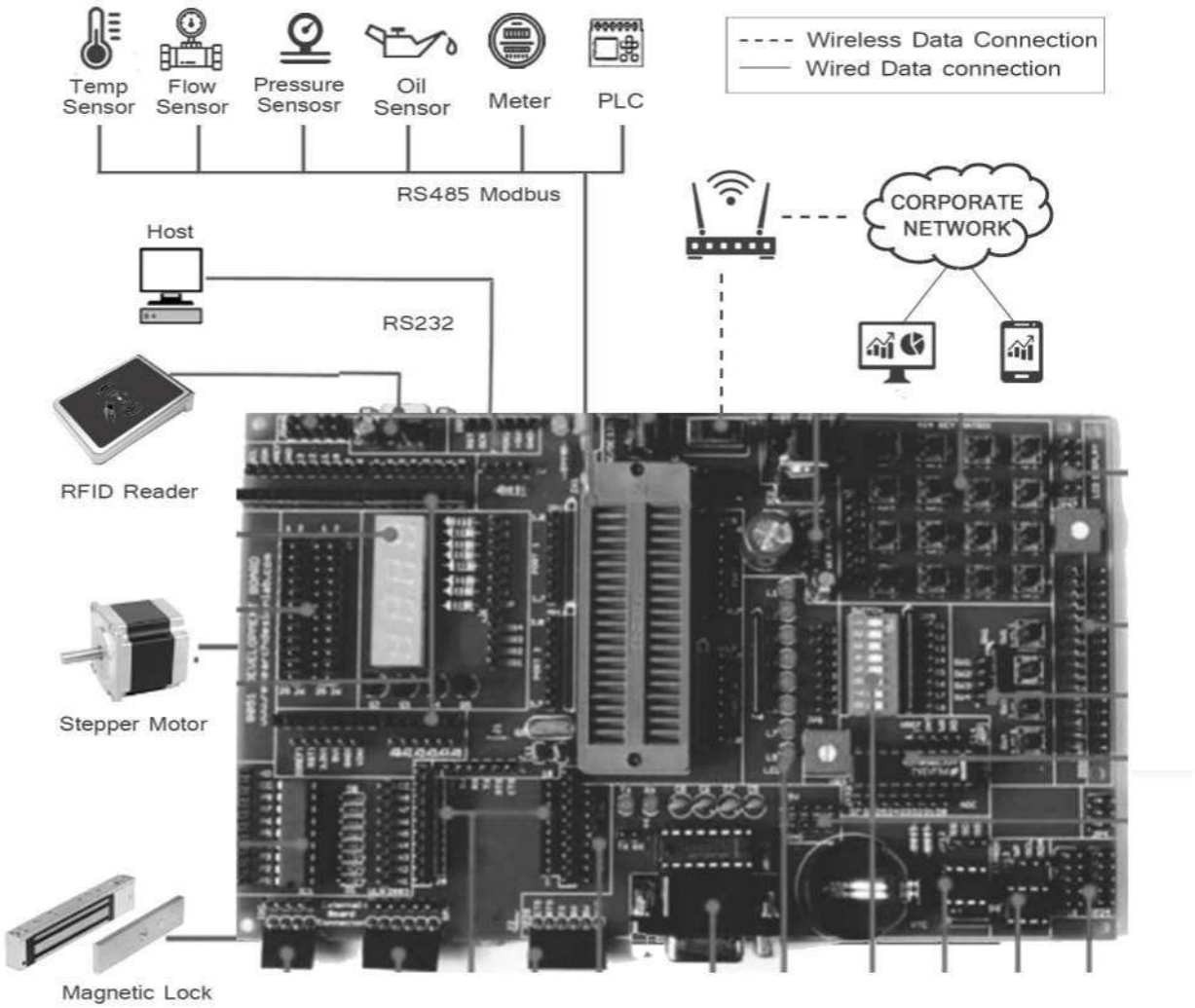
ATMEGA 16/32/64 DEVELOPMENT TRAINER KIT BOARD NARRATION



1. Power Supply
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. USB Port
22. DB-9 Serial Female Connector
23. LM35 - Temperature Sensor
24. LDR Sensor
25. Touch
26. RS485
27. EEPROM
28. Backlight On/Off Switch
29. 3.3V to 5V Level Controller
30. Comport Handshaking Signal DIP Switch

RDL TECHNOLOGIES

APPLICATION WIRING DIAGRAM



Quick Idea to Proof of Concept (POC)

IoT Requirement — Plug & Code — Build Solution

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 & SDCARD 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
5. Buy online @ www.researchdesignlab.com

RDL Technologies Pvt Ltd

Address: 5th Floor, Sahyadri Campus, Adyar, Mangaluru - 575007 Mob: +91 8088423347 Tel: +91 824 2988407

Email: sales@rdltech.in www.rdltech.in