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

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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

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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

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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)
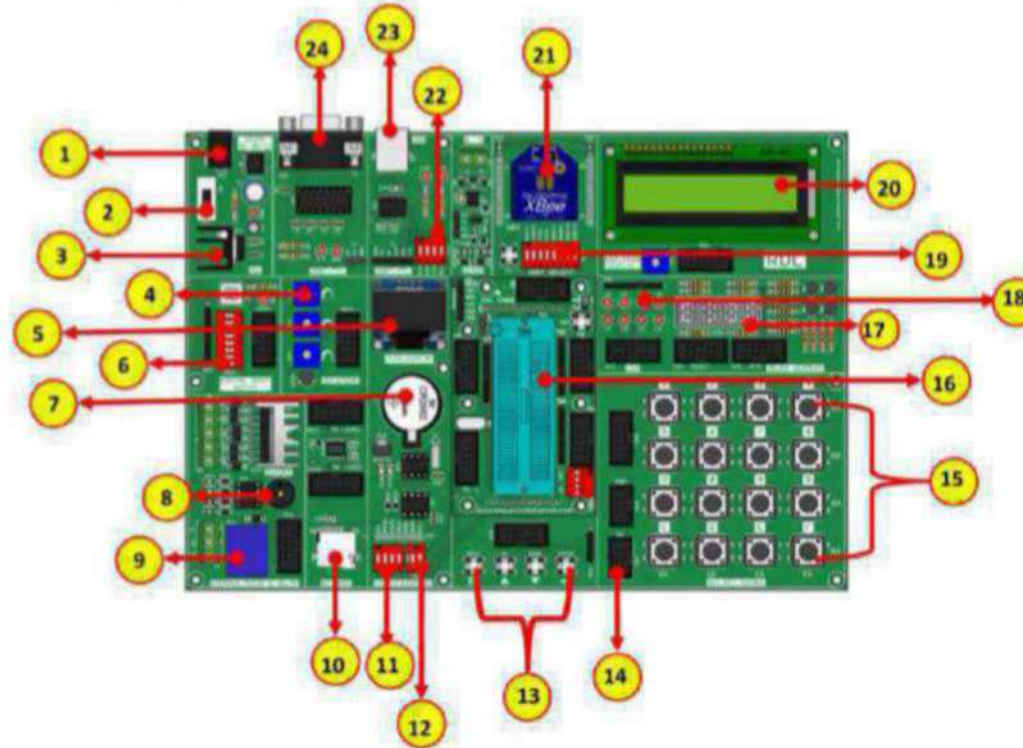
- RTC DS1307

ON BOARD POWER POINTS
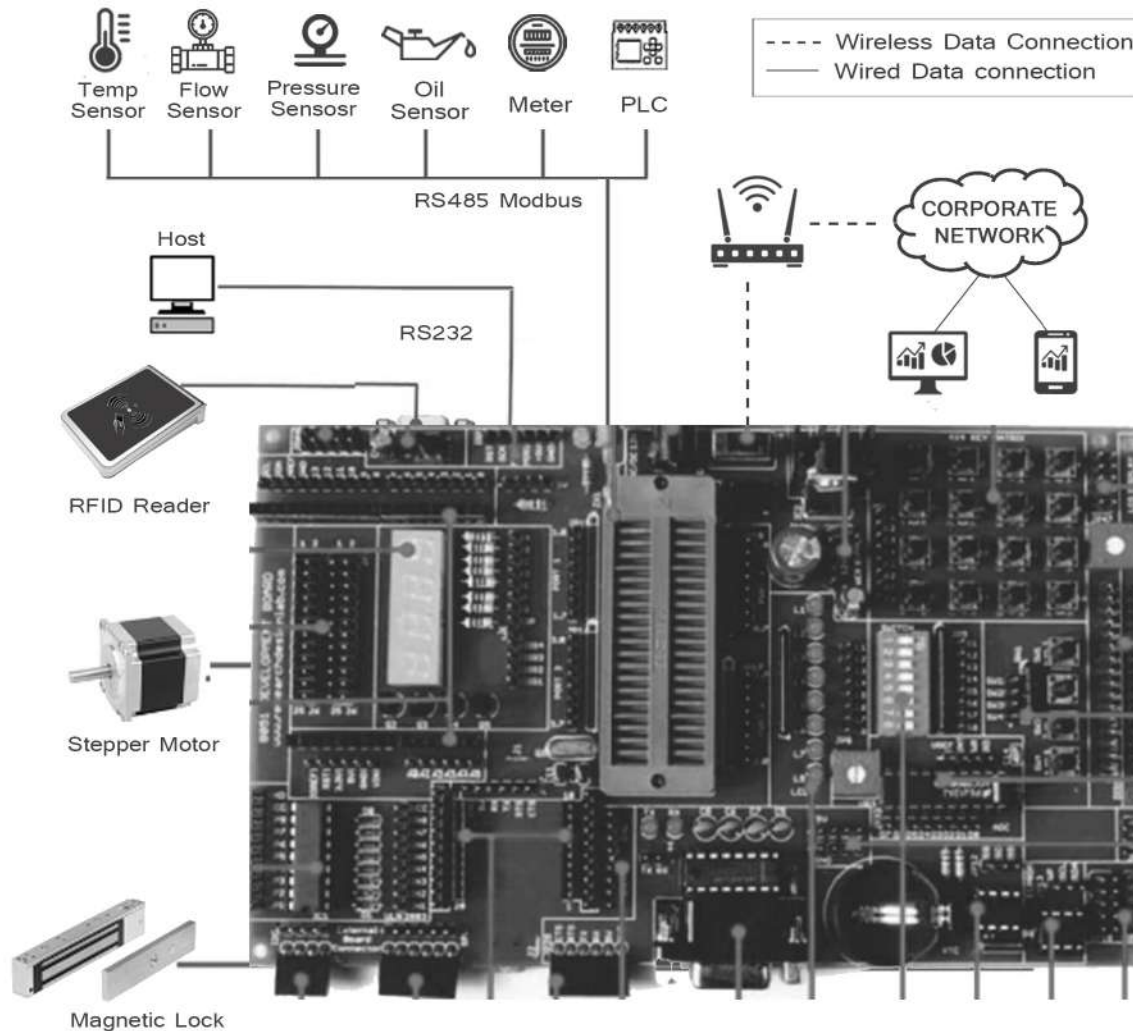
5V, 3.3V & GND

DIMENSION

W 264 X L199 X H 60

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ATMEGA 16/32/64 DEVELOPMENT TRAINER KIT BOARD NARRATION
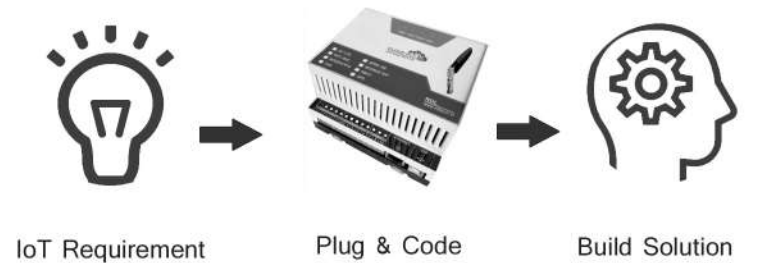

1. Power Supply	9. Relay	17. 7 Segment Display
2. Power ON Switch	10. SD Card Holder	18. 2*4 LED's
3. Heat Sink	11. Jumper Settings for 12C RTC	19. Jumper Settings for UART Selection Pin
4. ADC (Variable Resistor POT)	12. Jumper Settings for EEPROM	20. 16*2 LCD Display
5. OLED Display	13. 1*4 Keyboard 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. Atmega controller	24. DB-9 Serial Female Connector

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APPLICATION WIRING DIAGRAM

Temp Sensor Flow Sensor Pressure Sensosr Oil Sensor Meter PLC

- - - - Wireless Data Connection
——— Wired Data connection

RS485 Modbus

Host

RS232

RFID Reader

Stepper Motor

Magnetic Lock

CORPORATE NETWORK

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

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