RDL TECHNOLOGIES

ATmega328

DEVELOPMENT TRAINER KIT

PLUG & CODE | ON BOARD PROGRAMMING | ON BOARD WIFI & BLUETOOTH | ON BOARD MODBUS RTU | ON BOARD SDCARD | RoHS 2011/65/EU

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START YOUR EMBEDDED SYSTEM DESIGN JOURNEY TODAY..!

ATMGEA328 IoT Trainer Kit essential development features a plug and plays design that makes it easy for connections and helps Students, hobbyists, enthusiasts, and professionals to focus more on Program/application development. ATMGEA328 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

- 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.
- 7 Segment Multiplexed Display.
- 16*2 LCD & OLED Display
- ADC & DAC Card.
- 23 general purpose I/O lines
- DC Motor/ Stepper Motor Driver.
- Power Supply 3.3V and 5V
- SD CARD Interface.
- RTC & EEPROM Interface.
- Relay, Buzzer.
- 1xTemperature Sensor.
- 3x Analog Test POT.
- 3.3 to 5V Level Converter.

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 with # deluminator
- Modbus master/slave 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
- Dice game using OLE
- Snake game using OLED
- Star war game using OLED
- Pong game using OLED

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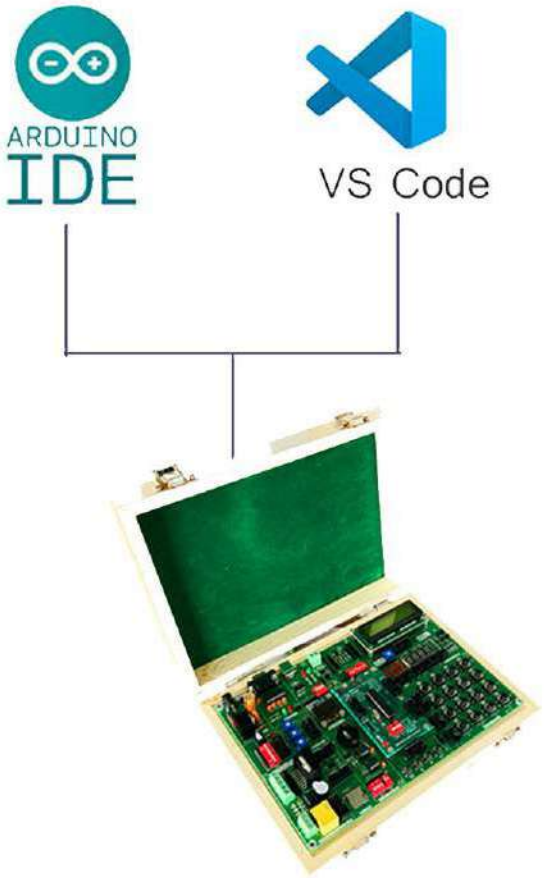
ABOUT ATmega328 DEVELOPMENT BOARD

Atmega 328 is one of the most commonly used Micro controllers with open source platform amongst many hobbyist and industrial communities. The simplicity and the low power of Atmega 328 helps design many prototype boards which could be used in numerous applications.The Atmega 328 includes 6 analog inputs, 14 digital I/O pins (6 amongst these could be used as PWM outputs), a crystal oscillator with 16MHz frequency.

Scope of Learning Experiments:

- LED blinking.
- 8 bit LED Left shift, Right shift and counting operation.
- Keypad and Interrupt Interface
- 16*2 LCD interface.
- Matrix Keypad Interface.
- ADC & DAC interface.
- Traffic Light Signal Interface.
- 8 bit DIP switch interface.
- 7 Segment interface.
- SPI protocol interface
- L298 Driver - DC Motor and Stepper motor interface.
- Elevator Interface.
- Buzzer, Relay interface.
- RS485, RS232 serial communication
- PWM Interface
- UART Operation
- RTC DS1307 I2C protocol interface.
- AT24C04 EEPROM I2C protocol interface.
- RF/WiFi Communication.
- Temperature Sensor Interface.

Open Source Development Environment



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SPECIFICATION

MCU

- ATmegha328P Microchip 8-bit AVR® RISC-based microcontroller
- 32 KB ISP Flash memory, 1 KB EEPROM, 2 KB SRAM
- Program Memory Type Flash
- Program Memory Size (KB) 32
- CPU Speed (MIPS/DMIPS) 20
- Data EEPROM (bytes) 1024

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 up to 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, 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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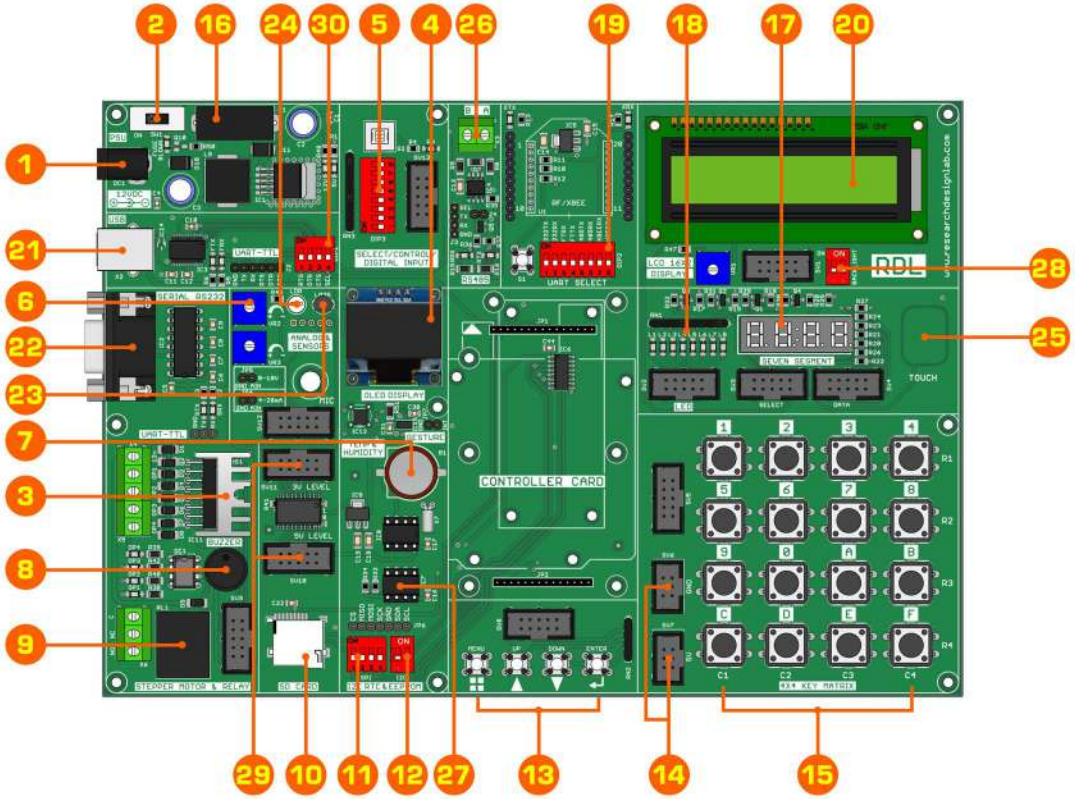
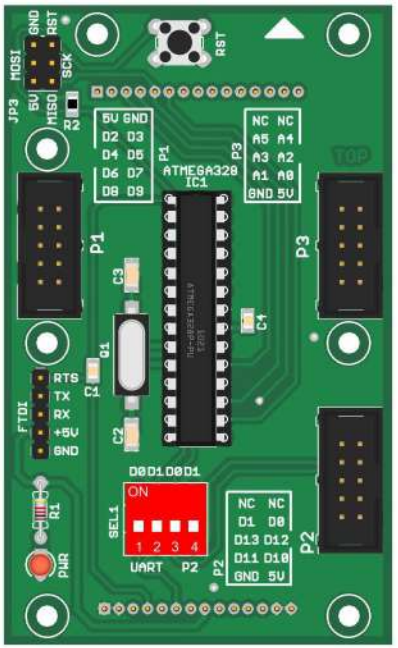
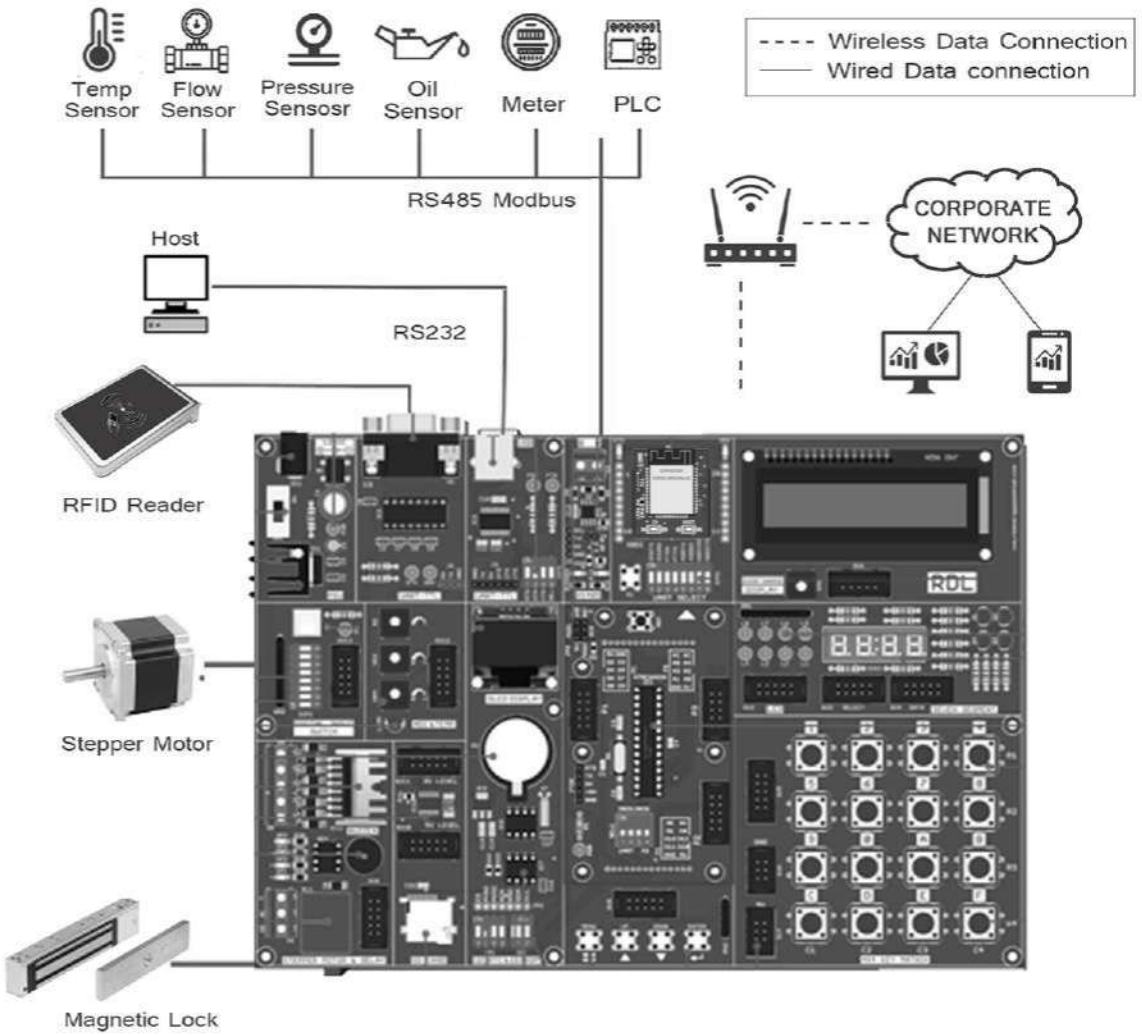
ATmegha 328 DEVELOPMENT BOARD NARRATION



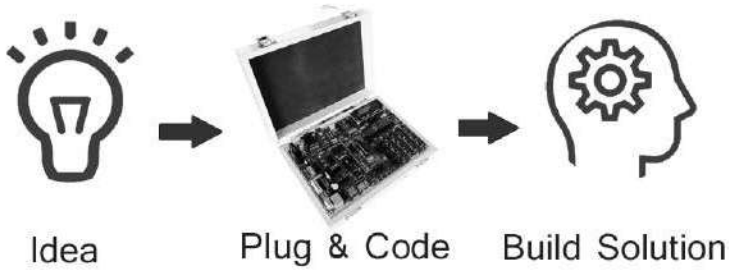


1. Power Supply
2. Power ON Switch
3. L298 Driver
4. OLED Display
5. Digital Input Switch
6. ADC (Variable Resistor POT)
7. RTC Battery
8. Buzzer
9. Relay
10. SD Card Holder
11. On Off Switch for SPI
12. On Off Switch for I2C
13. 1*4 Keypad Switches
14. RDL Bus FRC 5V & GND Connector
15. 4*4 Keypad Matrix
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

APPLICATION WIRING DIAGRAM



Idea to Proof of Concept (POC)



Package Includes

- ✔ Development Board with Wooden Enclosure
- ✔ USB Cable.
- ✔ Atmegha328 Breakout Board
- ✔ 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
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