



8051

DEVELOPMENT TRAINER KIT



PLUG & CODE



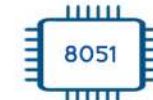
ON BOARD
PROGRAMMING



RTC



ON BOARD
MODBUS RTU



8051 MICRO
CONTROLLER





START YOUR EMBEDDED SYSTEM DESIGN JOURNEY TODAY..!

8051 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. 8051 Development 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.
- Supports 8051, AT89SXX and AT89CXX series chips 40 pin DIP package.
- The DIP40 locking device for reuse ATMEL microcontroller.
- High Quality Grade PCB with wooden Enclosure.
- On Board Programming.
- 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.
- Power Supply 3.3V and 5V.
- 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 & 16x2 LCD.
- Digital lock using Hex Keypad & 16x2 LCD .
- 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/slave communication.
- Bluetooth controlled appliance through Relay.
- Timer enabled Relay.
- Motor controlling through WiFi.
- LED controlling through PC (USB Interface).
- 4 digit random number generator.
- Graphic icon display using OLED.
- Menu controller LED chases.



ABOUT 8051 DEVELOPMENT BOARD

The W78E052D series is an 8-bit microcontroller which can accommodate a wider frequency range with low power consumption. The instruction set for the W78E052D series is fully compatible with the standard 8051. The W78E052D series contains 16K/8K bytes Flash EPROM programmable by hardware writer; a 256 bytes RAM; four 8-bit bi-directional (P0, P1, P2, P3) and bit-addressable I/O ports an additional 4-bit I/O port 4; three 16-bit timer/counters; a hardware watchdog timer and a serial port. These peripherals are supported by 8 sources 4-level interrupt capability.

Scope of Learning Experiments:

- LED blinking.
- 8 bit LED Left shift, Right shift and counting operation.
- Keypad Interrupt Interface
- 16*2 LCD interface.
- Matrix Keypad Interface.
- ADC & DAC interface.
- Traffic Light Signal Interface.
- 8 bit DIP switch interface.
- 7 Segment interface.
- Temperature Sensor Interface.
- L298 Driver for DC Motor and Stepper motor interface.
- Elevator Interface.
- Buzzer, Relay interface.
- RS485, RS232 serial communication

- PWM Interface
- UART Operation
- RTC DS1307I2C protocol interface.
- AT24C04 EEPROM I2C protocol interface.
- RF/WiFi Communication.
- Temperature Sensor Interface.

Development Environment





SPECIFICATION

MCU

- 8051 – DOWD – V3 embedded, Xtensa(R) dual-core 32-bit LX6 microprocessor, up to 240 MHz.
 - 448 KB ROM for booting and core functions
 - 520 KB SRAM for data and instructions
 - 16 KB SRAM in RTC
 - 16 MB SPI flash
-

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
-

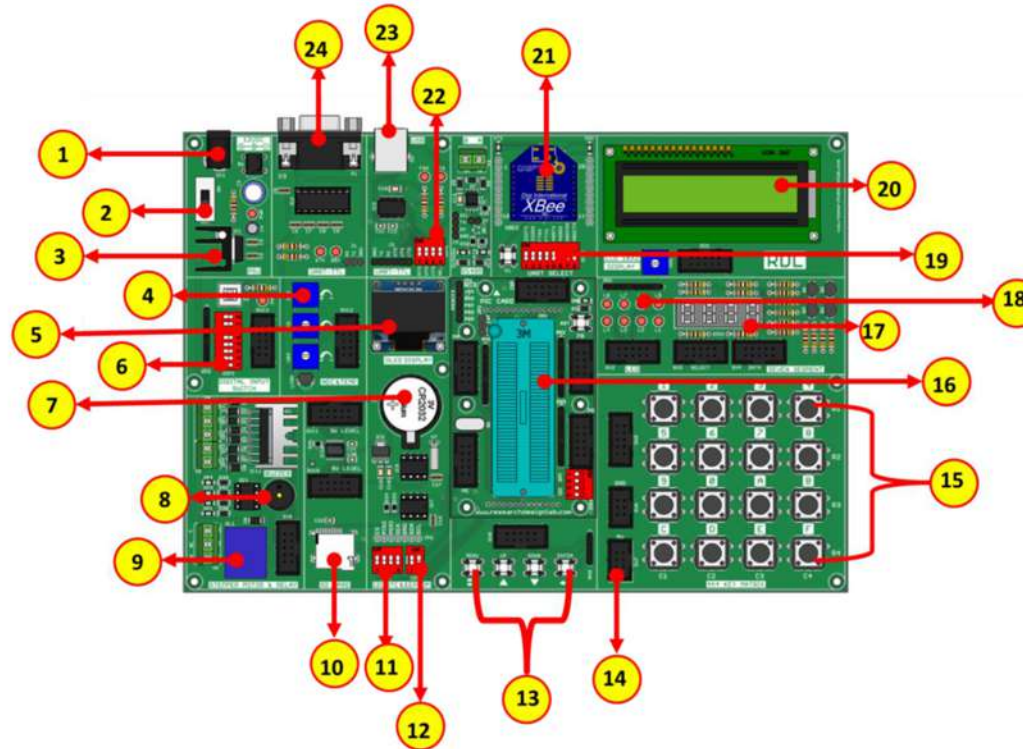
ON BOARD POWER POINTS

- 5V, 3.3V & GND
-

DIMENSION

- W 264 X L199 X H 60
-

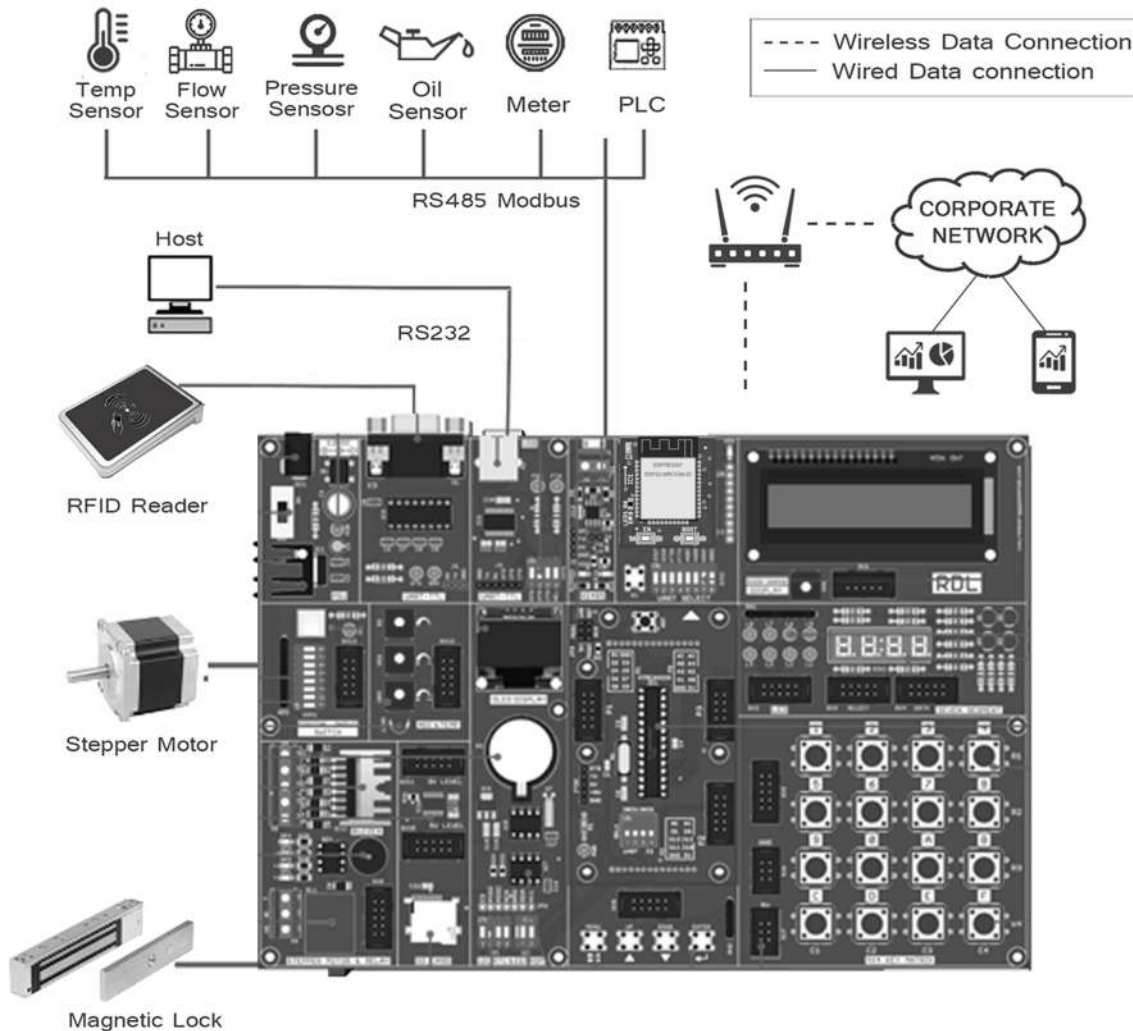
8051 DEVELOPMENT TRAINER KIT BOARD NARRATION



1. Power Supply	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. 8051 Controller	24. DB-9 Serial Female Connector



APPLICATION WIRING DIAGRAM



Idea to Proof of Concept (POC)



IoT Requirement

Plug & Code

Build Solution

Package Includes

- ✓ Development Board with Wooden Enclosure
- ✓ USB Cable.
- ✓ 8051 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 should not have the support for the 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