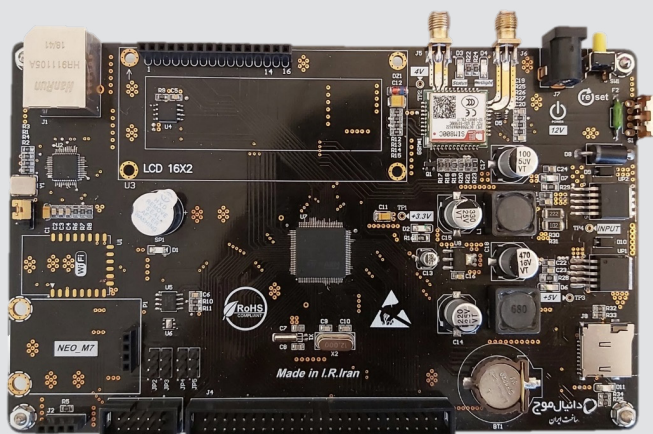


# Motherboard

DMITRAR3GMXXXX



## Introduction

This is a multi-purpose powerful motherboard that can easily be configured for any IoT-based application. Having equipped with all necessary and mostly-used communicative ICs and peripherals, this motherboard can address all you need to implement your smart IoT ideas. It can also be used as an evaluation board for the R&D and prototyping phases. Thanks to its powerful 32-bit MCU, it can perform complicated tasks as a standalone unit.

## Features

- Character LCD
- SD-card slot for event logging
- Precise onboard temperature sensor
- Onboard humidity sensor
- Backup battery
- GPS
- Powerful ARM (32bit) microprocessor
- Wi-Fi(esp8266) module for wireless communications
- GPS and GPRS module for communications via SMS, Internet, or phone calls
- Bluetooth data transfer
- Network connection via Ethernet or Wi-Fi module
- Deploying different network protocols including SNMP, FTP, UDP, TCP/IP, HTTP, HTTPS

## Wi-Fi and Bluetooth module

- Low cost, compact and powerful
- Power Supply: +3.3V
- Current Consumption: 100mA
- I/O Voltage: 3.6V (max)
- I/O source current: 12mA (max)
- Built-in low power 32-bit MCU @ 80MHz
- 512kB Flash Memory
- Can be used as Station or Access Point or both combined
- Supports Deep sleep (<10μA)
- Supports serial communication hence compatible with many development platforms like Arduino
- Can be programmed using Arduino IDE or AT-commands or Lua Script

## Character LCD

- Operating Voltage is 4.7V to 5.3V
- Current consumption is 1mA without backlight
- Alphanumeric LCD display module, meaning can display alphabets and numbers
- Consists of two rows and each row can print 16 characters.
- Each character is built by a 5x8 pixel box
- Can work on both 8-bit and 4-bit mode
- It can also display any custom generated characters
- Available in Green and Blue Backlight

## MCU

|                           |                                              |
|---------------------------|----------------------------------------------|
| Product Range             | STM32 Family STM32F1 Series Microcontrollers |
| Architecture              | ARM Cortex-M3                                |
| No. of Bits               | 32bit                                        |
| CPU Speed                 | 72MHz                                        |
| Program Memory Size       | 256KB, 256KB                                 |
| RAM Memory Size           | 64KB                                         |
| No. of Pins               | 100Pins                                      |
| MCU Case Style            | LQFP                                         |
| No. of I/O's              | 80I/O's                                      |
| Embedded Interface Type   | CAN ENET I2C SPI UART USB                    |
| Supply Voltage Min        | 2V                                           |
| Supply Voltage Max        | 3.6V                                         |
| MCU Family                | STM32                                        |
| MCU Series                | STM32F1                                      |
| RoHS Phthalates Compliant | Yes                                          |
| MSL                       | MSL 3 - 168 hours                            |
| SVHC                      | No SVHC (17-Dec-2015)                        |
| Clock Frequency           | 72MHz                                        |
| Controller Family/Series  | STM32                                        |
| Flash Memory Size         | 256KB                                        |
| IC Generic Number         | 32F107VCT                                    |

|                             |                       |
|-----------------------------|-----------------------|
| MPU Core Size               | 32bit                 |
| No. of ADC Inputs           | 16                    |
| No. of PWM Channels         | 16                    |
| No. of Timers               | 10                    |
| Operating Temperature Max   | 85°C                  |
| Operating Temperature Min   | -40°C                 |
| Operating Temperature Range | -40°C to +85°C        |
| Oscillator Type             | External Internal     |
| Peripherals                 | ADC DAC DMA PWM Timer |
| Supply Voltage Range        | 2V to 3.6V            |
| Termination Type            | Surface Mount Device  |

## Ethernet Port

|                                   |                          |
|-----------------------------------|--------------------------|
| Data Rate                         | 100Mbps                  |
| Ethernet Type                     | IEEE 802.3u              |
| Supply Voltage Min                | 3V                       |
| Supply Voltage Max                | 3.6V                     |
| Controller IC Case Style          | LQFP                     |
| No. of Pins                       | 48Pins                   |
| IC Interface Type                 | MII RMII Serial          |
| Operating Temperature Min         | 0°C                      |
| Operating Temperature Max         | 70°C                     |
| Product Range                     | DP83848C/I/VYB/YB PHYTER |
| Automotive Qualification Standard | -                        |
| MSL                               | MSL 3 - 168 hours        |
| SVHC                              | No SVHC (27-Jun-2018)    |
| No. of Channels                   | 1Channels                |
| No. of Ports                      | 1Ports                   |
| Operating Temperature Range       | 0°C to +70°C             |
| Supply Current                    | 92mA                     |
| Supply Voltage Range              | 3V to 3.6V               |
| Termination Type                  | Surface Mount Device     |

## GPS Module

- TTL level, compatible with 3.3V/5V systems
- Baud rate 9600 only
- Operating voltage: 2.7V-5.0V (VCC input)
- Operating current: 35mA

## Humidity sensor

|                      |                                    |
|----------------------|------------------------------------|
| Size                 | 3 x 3 x 1.1 mm                     |
| Output               | I <sup>2</sup> C digital, PWM, SDM |
| Supply voltage range | 2.1 to 3.6 V                       |
| Energy consumption   | 3.2μW (at 8-bit, 1 measurement/s)  |
| RH operating range   | 0 - 100% RH                        |
| T operating range    | -40 to +125°C (-40 to +257°F)      |
| RH response time     | 8 sec (tau63%)                     |

## Temperature sensor

- Operating Voltage: 3.5V to 5.5V.
- Operating current: 0.3mA (measuring) 60uA (standby)
- Output: Serial data.
- Temperature Range: -40°C to 80°C.
- Humidity Range: 0% to 100%
- Resolution: Temperature and Humidity both are 16-bit.
- Accuracy: ±0.5°C and ±1%

## Memory

- Package Type: SOIC
- Operating Temperature Range: -40° C to +85° C
- Interface Type: Serial, I2C
- Base Number: 24
- Memory capacity: 2K bit
- Memory Type: EEPROM
- Memory Configuration: 256 x 8 b
- Supply Voltage Range: 2.7 V - 5.5 V
- Chip label: 24C02
- Mounting Type: Surface Mount