Mikrocontroller Board mit ATMega2560

mit CH340

Table of Contents

Specifications
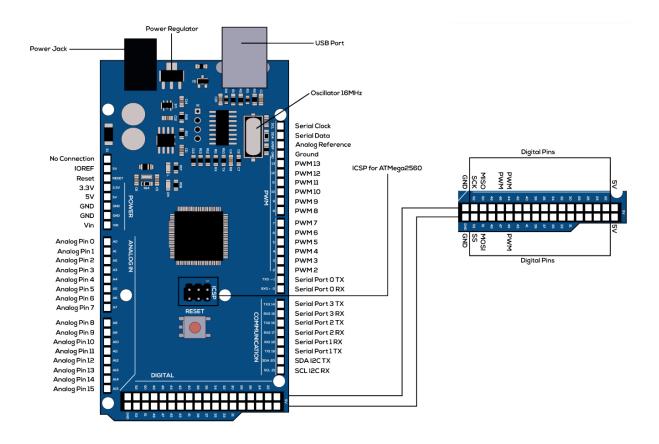
Microcontroller	ATmega2560
Operating Voltage	5V
Input Voltage (recommended)	7-12V
Input Voltage (limits)	6-15V
Digital I/O Pins	54 (of which 14 provide PWM output)
Analog Input Pins	16
DC Current per I/O	40mA
DC Current 3.3V Pin	50mA
Flash Memory	256kB (8kB used by bootloader)
SRAM	8kB
EEPROM	4kB
Clock speed	16MHz

Board Pinout

Power

The board can be powered via the USB connection or with an external power supply. The power source is automatically selected. External (non-USB) power can be from either an AC-to-DC adapter or a battery.
The adapter can be connected using a 2.1mm centre positive connector to the power socket on the board. Leads from a battery can be into the GND and VIN headers of the POWER connector.

The board can operate from an external supply of 6 to 15 volts. If the supply is less than 7V, however, the 5V pin may deliver less than five volts and the board may become unstable. If you use more than 12V, the voltage regulator may overheat and damage the board. The recommended range is 7 to 12 volts.

This board differs from all previous boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it uses the CH340 USB-to-serial converter.

The power pins are:

- **VIN**. The input voltage to the Arduino board when it's using an external power source (as opposed to 5 volts from the as opposed to 5 volts from the USB port or other regulated power source). You can supply power through this pin, or if you are supplying power through the power jack, you can access it through this pin.

- **5V**. The regulated power supply used to power the microcontroller and other components on the board.
on the board. This can either come from VIN via an on-board regulator, or from USB or any other regulated 5V supply.

- **3V3**. A 3.3 volt supply generated by the on-board regulator. Maximum current draw is 50mA.
- **GND**. Ground pins.

Memory

The ATmega2560 has 256 KB of Flash memory for code storage (8 KB of which is used for the bootloader), 8 KB of
bootloader), 8 KB SRAM and 4 KB EEPROM (which can be read and written with the EEPROM library).

Input and Output

Each of the 54 digital pins on this Board can be used as an input or output, using pinMode(), digitalWrite() and digitalRead() functions. They operate at 5 Volts. Each pin can provide or receive a maximum of 40 mA and has an internal pull-up resistor (disconnected by default) of 20-50 kOhms. In addition, some pins have specialized functions:

-**Serial0**: 0 (RX) and 1 (TX); **Serial 1**: 19 (RX) and 18 (TX); **Serial 2**: 17 (RX) and 16 (TX); **Serial 3**: 15 (RX) and 14 (TX). Used to receive (RX) and transmit (TX) TTL serial data. Pins 0 and 1 are also connected to the corresponding pins of the CH340 USB-to-TTL Serial chip.

- **External Interrupts**: 2 (interrupt 0), 3 (interrupt 1), 18 (interrupt 5), 19 (interrupt 4), 20 (interrupt 3), and 21 (interrupt 2). These pins can be configured to trigger an interrupt on a low value, a rising or falling edge, or a change in value. See the attachInterrupt() function for details.

-**PWM**: 0 to 13. Provide 8-bit PWM output with the analogWrite() function.

-**SPI**: 50 (MISO), 51 (MOSI), 52 (SCK), 53 (SS). These pins support SPI communication, which, although provided by the underlying hardware.

- **LED**: 13. There is a built-in LED connected to digital pin 13. When the pin is HIGH value, the LED is on, when the pin is LOW, it's off.

-**I2C**: 20 (SDA) and 21 (SCL). Support I2C (TWI) communication using the Wire library (documentation on the Wiring website). Note that these pins are not in the same location as the I2C pins on the Duemilanove.

This Board has 16 analog inputs, each of which provide 10 bits of resolution (i.e. 1024 different values). By default they measure from ground to 5 Volts, though is it possible to change the upper end of their range using the AREF pin and analogReference() function.

There are a couple of other pins on the board: **AREF**. Reference voltage for the analog inputs. Used with analogReference(). **Reset**. Bring this line LOW to reset the microcontroller. Typically used to add a reset button to shields which block the one on the board.

Communication

This Microcontroller Board has a number of facilities for communicating with a computer or other microcontrollers. The ATmega2560 provides four hardware UARTs for TTL (5V) serial communication. The Arduino IDE includes a serial monitor which allows simple textual data to be sent to and from the board. The RX and TX LEDs on the board will flash when data is being transmitted (but not for serial communication on pins 0 and 1). A SoftwareSerial library allows for serial communication on any of the digital pins. The ATmega2560 also supports I2C (TWI) and SPI communication. The Arduino IDE includes a Wire library to simplify use of the I2C bus.

Automatic (Software) Reset

There is an automatic reset circuit on the board for convenient programming. A manual operation is not necessary. A reset can also be triggered via the button on the board.