**Arduino Mega 2560**

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| --- | --- |
| Microcontroller | [ATmega2560](http://www.atmel.com/Images/Atmel-2549-8-bit-AVR-Microcontroller-ATmega640-1280-1281-2560-2561_datasheet.pdf) |
| **Operating Voltage** | **5V** |
| **Input Voltage (recommended)** | **7-12V** |
| Input Voltage (limit) | 6-20V |
| Digital I/O Pins | 54 (of which 15 provide PWM output) |
| Analog Input Pins | 16 |
| DC Current per I/O Pin | 20 mA |
| DC Current for 3.3V Pin | 50 mA |
| Flash Memory | 256 KB of which 8 KB used by bootloader |
| SRAM | 8 KB |
| EEPROM | 4 KB |
| Clock Speed | 16 MHz |
| Length | 101.52 mm |
| Width | 53.3 mm |
| Weight | 37 g |

**GY-87**

|  |  |  |
| --- | --- | --- |
| Device | Protocol |  |
| MPU6050- 3 axis accelerometer + 3-axis gyroscope | I2C | accessible directly by I2C masters (microcontrollers) |
| BMP180 barometer | I2C | accessible directly by I2C masters (microcontrollers) |
| HMC5883L 3 axis compass | Auxiliary I2C | access MPU6050 first, and enable I2C pass through |

(MPU6050 3 axis accelerometer + 3 axis gyroscope, HMC5883L 3 axis compass, BMP180 barometer). MPU6050 and BMP180 are connected to the main I2C bus and are accessible directly by I2C masters (microcontrollers) without any configuration. HMC5883L is connected to the Auxiliary I2C bus of MPU6050 - to access HMC5883L, you need to access MPU6050 first, and enable I2C pass through to become accessible to the microcontroller.

Power consumption:

Power supply : 3-5v

Has on-board level shifters, so works with 3-5v I2C

10 degrees of freedom – 3 axis accelerometer + 3 axis gyroscope + 3 axis compass + barometer

**Keypad (4x4)**

Using keypad library for Arduino from: http://playground.arduino.cc/Code/Keypad#Download

Configuration chart:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Keypad | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|  | Col2 | Col1 | Col0 | Row3 | Row2 | Row1 | Row0 |

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 2 | 3 | Row0 (pin33) |
| 4 | 5 | 6 | Row1 (pin32) |
| 7 | 8 | 9 | Row2 (pin31) |
| \* | 0 | # | Row3 (pin30) |
| Col0 (pin36) | Col1 (pin35) | Col2 (pin34) | - |

Connected to Row pin {33, 32, 31, 30};

Connected to Column pin {36, 35, 34};

Power consumption:

**Ultrasonic sensors:**

**Trigger pin: 22**

**Echo pin:24**

Using NewPing Library for Arduino (Ultrasonic sensors) from: [**http://forum.arduino.cc/index.php/topic,106043.0.html**](http://forum.arduino.cc/index.php/topic,106043.0.html)

**datasheet:** [**http://www.micropik.com/PDF/HCSR04.pdf**](http://www.micropik.com/PDF/HCSR04.pdf)

|  |  |
| --- | --- |
| Working Voltage | DC 5 V |
| Working Current | 15mA |
| Working Frequency | 40Hz |
| Max Range | 4m |
| Min Range | 2cm |
| MeasuringAngle | 15 degree |
| Trigger Input Signal | 10uS TTL pulse |
| Echo Output Signal | Input TTL lever signal and the range in  proportion |