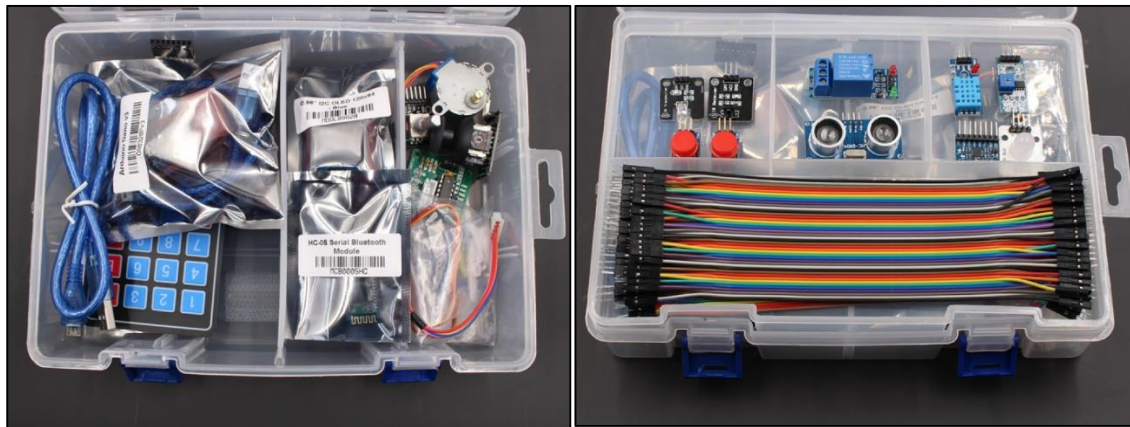


NodeMCU IOT Kit for starters Manual

This is a NodeMCU IOT Kit for starters. The kit includes two main Boards: Arduino Nano and **NodeMCU mini (this is the main board for this course)**, and 18 Kinds of the most popular used sensors and actuators such as Ultrasonic Ranger, OLED, stepper driver, etc. A breadboard and some jumper wires are also included to make this kit appropriate for starters using the kit by plug-and-play. With this kit, you can easily create your own IOT project by using any programming tools such as Arduino IDE, Lua or RAD Studio.



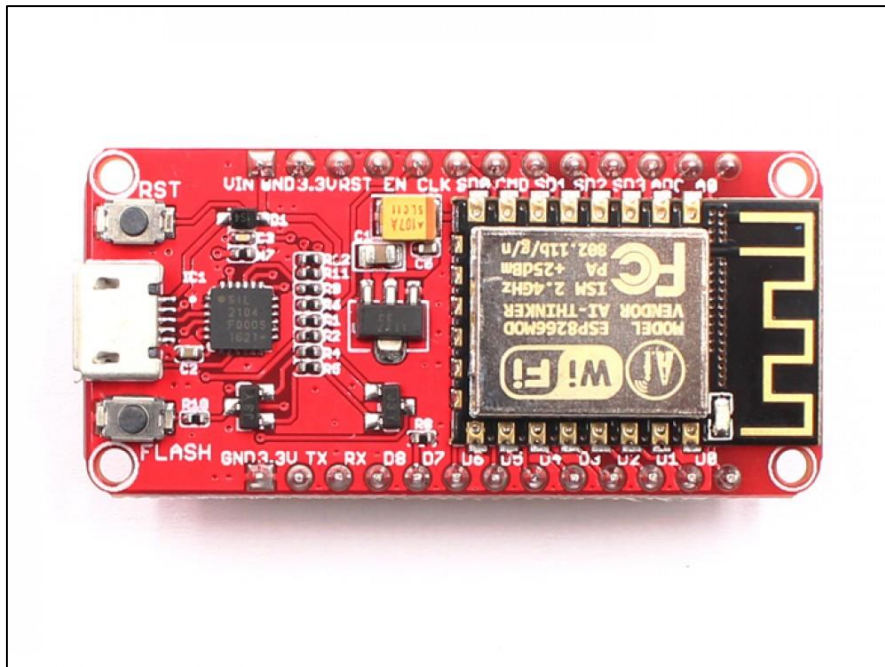
Package List:

1 x NodeMCU Mini

NodeMCU Mini is an ESP8266 WiFi micro controller at 80MHz and at 3.3V logic. This microcontroller contains a Tensilica chip core as well as a full WiFi stack. You can program the microcontroller using the Arduino IDE for an easy-to-run Internet of Things core or using the Lua script language. We had ship with NodeMCU 0.9.5 build 20150704 powered by Lua 5.1.4, so we can directly use the Lua language to DIY the IOT project. We wired up a high-quality SiLabs CP2104 USB-Serial chip that can upload code at a blistering 921600 baud for fast development time. It also has auto-reset so no noodling with pins and reset button pressings.

Features:

- Super mini dimension: 23mm x 48.3mm x 13mm
- ESP8266 @ 80MHz with 3.3V logic/power
- 4MB of FLASH (32 MBit)
- Built in WiFi 802.11 b/g/n
- CP2104 USB-Serial converter onboard with 921600 max baudrate for speedy uploading
- Auto-reset support for getting into bootload mode before firmware upload
- Output all the GPIO of ESP-12F
- With Reset button and Flash button

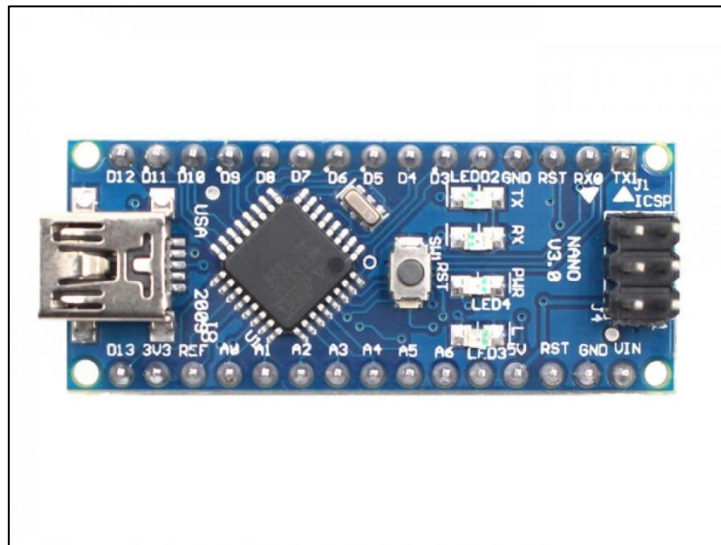


1 x Arduino Nano v3

The Arduino Nano is a small, complete, and breadboard-friendly board based on the ATmega328 (Arduino Nano 3.0). It has more or less the same functionality of the Arduino Duemilanove, but in a different package. It lacks only a DC power jack, and works with a Mini-B USB cable instead of a standard one.

Features:

- Microcontroller: Atmel ATmega328
- Operating Voltage (logic level): 5 V
- Input Voltage (limits): 6-20 V
- Digital I/O Pins: 14 (of which 6 provide PWM output)
- Analog Input Pins: 8
- DC Current per I/O Pin: 40 mA
- Flash Memory: 32 KB (ATmega328) of which 2 KB used by bootloader
- SRAM: 2 KB (ATmega328)
- EEPROM: 1 KB (ATmega328)
- Clock Speed: 16 MHz
- Dimensions: 0.73" x 1.70"
- Length: 45 mm
- Width: 18 mm



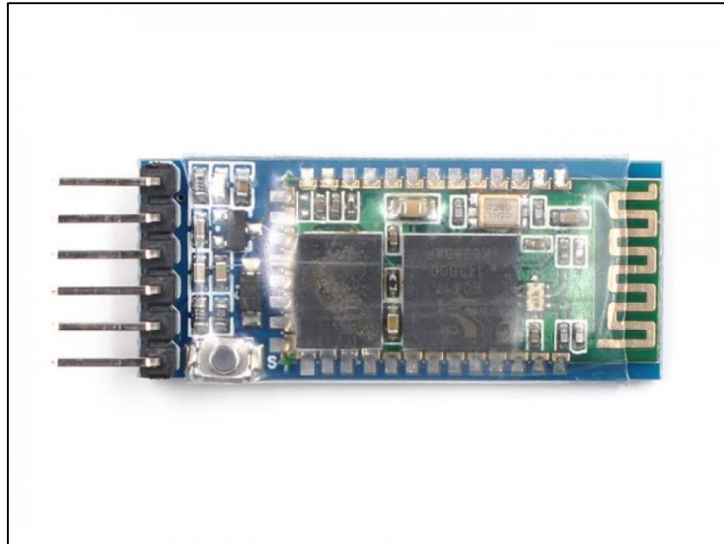
1 x HC-05 Serial Bluetooth Module

HC-05 module is an easy to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup. Serial port Bluetooth module is fully qualified Bluetooth V2.0+EDR (Enhanced Data Rate) 3Mbps Modulation with complete 2.4GHz radio transceiver and baseband. It uses CSR Bluecore 04-External single chip Bluetooth system with CMOS technology and with AFH (Adaptive Frequency Hopping Feature).

Features:

- Typical -80dBm sensitivity
- Up to +4dBm RF transmit power
- Low Power 1.8V Operation ,1.8 to 3.6V I/O
- UART interface with programmable baud rate

- With integrated antenna
- Default Baud rate: 38400, Data bits:8, Stop bit:1,Parity:No parity, Data control: has.
- Supported baud rate: 9600,19200,38400,57600,115200,230400,460800.
- Auto-pairing PINCODE:"0000" as default

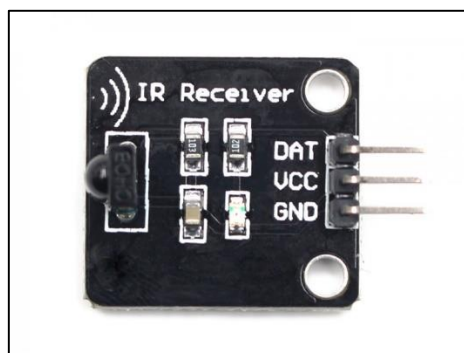


1 x IR receiver

IR is widely used in remote control. With this IR receiver, the Arduino project is able to receive command from any IR remoter controller if you have the right decoder. Well, it will be also easy to make your own IR controller using IR transmitter.

Features:

- Based on the 38KHz IR Receiver Sensor
- Working Voltage: 5V
- Frequency : 38Khz

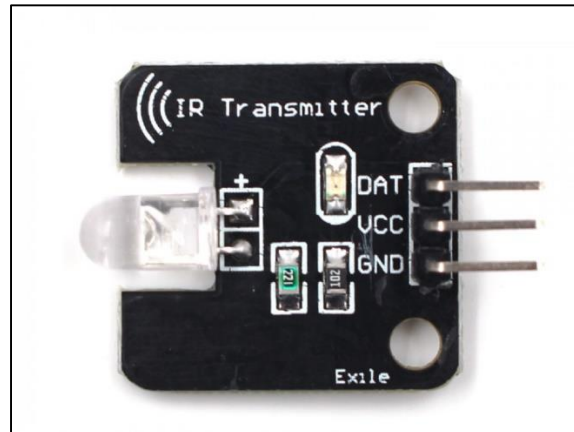


1 x IR Transmitter + 1 x Infrared Remote Controller

IR is widely used in remote control. With this IR transmitter, the Arduino project is able to transmit command to any IR remote Receiver if you have the right decoder. Well, it will be also easy to make your own IR controller using IR Receiver.

Features:

- Working voltage:5V
- Based on the 38KHz IR Transmitter Sensor
- Frequency : 38Khz
- Distance:10m



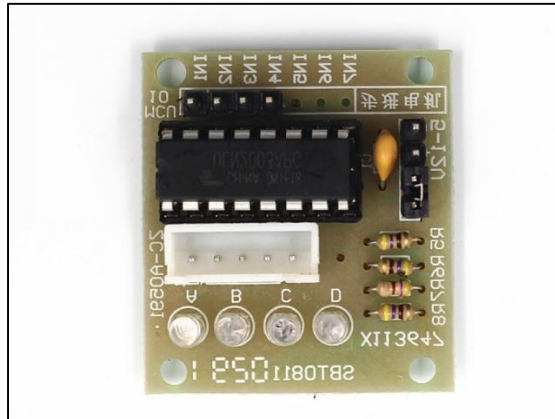
1 x 28BYJ-48 Stepper motor-5V

The 28BYJ-48 is a small, cheap, 5 volt geared stepping motors. These stepping motors are apparently widely used to control things like automated blinds, A/C units and are mass produced. Due to the gear reduction ratio of approximately 64:1 it offers decent torque for its size at speeds of about 15 rotations per minute (RPM).



1 x ULN2003 Stepper Motor Driver

The ULN2003 stepper motor driver board allows you to easily control the 28BYJ-48 stepper motor from a microcontroller, like the Arduino Uno. One side of the board has a 5 wire socket where the cable from the stepper motor hooks up and 4 LEDs to indicate which coil is currently powered. The motor cable only goes in one way, which always helps. On the side you have a motor on / off jumper (keep it on to enable power to the stepper).



1 x Tower Pro 9g SG-90 Mini Servo

Tiny little servo can rotate approximately 180 degrees (90 in each direction), and works just like the standard kinds you're used to but smaller. You can use any servo code, hardware or library to control these servos. It is really good work with Arduino for beginner.

Note! red (+), brown (-), yellow (signal).

Features:

- Size : 21.5x11.8x22.7mm
- Voltage : 4.8V to 6V DC
- Weight: 9g
- Speed : 0.12 sec/60 (at 4.8V)
- Torque : 1.2-1.4 kg/cm (at 4.8V)
- Working Temp : -30C~60C

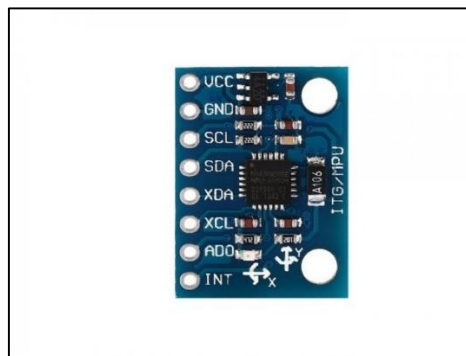


1 x MPU6050 3-Axis Acceleration Gyroscope 6DOF Module

The MPU-6050 devices combine a 3-axis gyroscope and a 3-axis accelerometer on the same silicon die, together with an onboard Digital Motion Processor™ (DMP™), which processes complex 6-axis MotionFusion algorithms. The device can access external magnetometers or other sensors through an auxiliary master I²C bus, allowing the devices to gather a full set of sensor data without intervention from the system processor.

Features:

- Tri-Axis angular rate sensor (gyro) with a sensitivity up to 131 LSBs/dps and a full-scale range of 250, 500, 1000, and 2000dps
- Integrated 16-bit ADCs enable simultaneous sampling of gyros
- Gyroscope operating current: 3.6mA
- Tri-Axis accelerometer with a programmable full scale range of +-2g, +-4g, +-8g and 16g
- Integrated 16-bit ADCs enable simultaneous sampling of accelerometers while requiring no external multiplexer
- Accelerometer normal operating current: 500μA
- Operating voltage: 3V-5V



1 x HC-SR04 Ultrasonic Range Measurement Module

HC-SR04 is a non-contact distance measurement module, it provides high accuracy and high resolution ultrasonic proximity detection and ranging in air. This ultrasonic sensor detects objects from 2 cm to 4.5meters.

Features:

- Power supply: 5V DC
- Effectual angle: < 15 degrees
- Ranging distance: 2cm to 450 cm
- Resolution: 1 cm
- Ultrasonic Frequency: 40k Hz

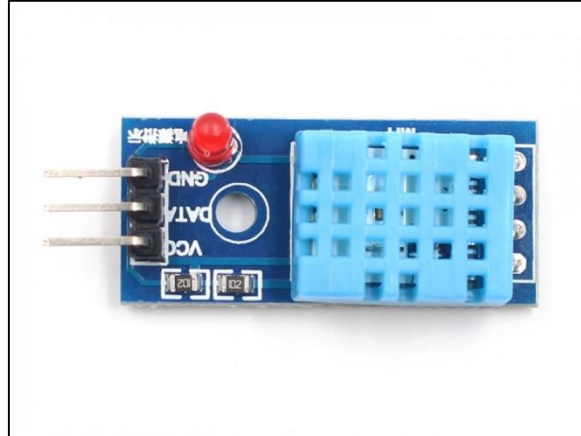


1 x DHT11 Temperature& Humidity Module

The DHT-11 is a small humidity and temperature sensor that you can connect to your Arduino and get readings for temperature and humidity in the environment.

Features:

- Power supply: DC 3.5

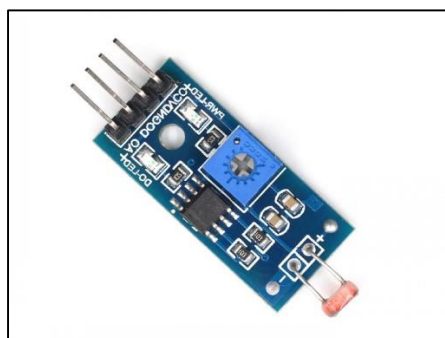


1 x Light Sensor Module

This Light sensor module based on photodetector GL5528 to detect the light intensity of the environment. As the resistance of the sensor varies depending on the amount of light it is exposed to, the output voltage changes with the light intensity. This module outputs both analog and digital signals, which can be used to trigger other modules. Also, the potentiometer can be used to adjust the sensitivity of digital output. The digital terminal output HIGH when the light intensity exceeds the value set by potentiometer, and vice versa. The outputs of analog terminal increase with the light intensity.

Features:

- Working voltage: 5V
- Output signal: Analog and Digit(0 or 1)

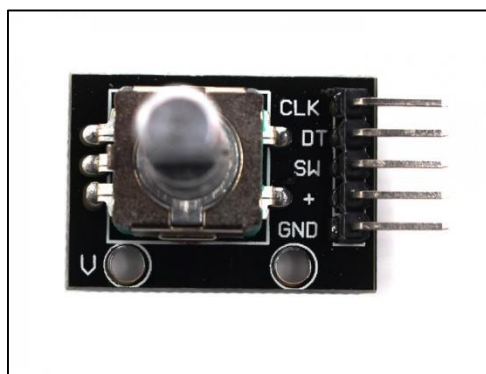


1 x EC11 Encoder

This module based on a EC11 incremental encoder with 360 degree rotation. It converts a mechanical input into electrical signals, which can be processed by counters, tachometers, programmable logic controllers and industrial PCs. Rotary encoders can be used in all applications that require monitoring rotation rate, speed, acceleration and direction.

Features:

- Incremental encoder
- EC11 encoder switch button module
- Location number: 20
- Pulse count: 20



1 x 1-Channel Relay Module-10A

The Relay is a digital normally open switch that controls a relay capable of switching much higher voltages and currents than your normal Arduino boards. When set to HIGHT, the LED will light up and the relay will close allowing current to flow. The peak voltage capability is 250V at 10 amps.

Features:

- Control voltage: 5V
- HIGHT level active
- Max Control Capacity: 10A@250VAC



1 x Analog 2-axis Thumb Joystick with Select Button

This thumb stick is an analog joystick - more accurate and sensitive than just 'directional' joysticks - with a 'press in to select' button. Since its analog (10k potentiometers), you'll need two analog reading pins on your microcontroller to determine X and Y. Having an extra digital input will let you read the switch.

Features:

- Working voltage: 3.3V-5V
- Output: 2 Analog Output 1Digital Output

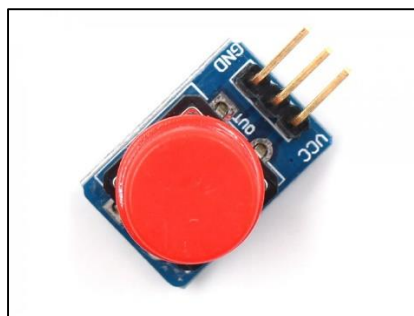


2 x Hat Button Module

This is a momentary button, which output logic High when pressed and logic Low when released.

Features:

- Working Voltage: 3.3-5V



1 x 10mm RGB LED Module

The RGB LED module is constituted of a plug-in full-colour LED. The intensity of the three primary colors, namely, red, green, and blue, can be adjusted by PWM voltage input at pins R, G and B, thus producing a variety of mixed colours. To control the module by Arduino can realize a fascinating lighting.

Features:

- Working Voltage: 5V
- 10mm RGB LED



1 x Sealed Membrane 4X4 Button Pad With Sticker

This is a 4x4 button pad with sticker with 8 Pin output, which is ready to go and super slim.

Features:

- Pad Size: 70 * 77 * 0.8mm
- Cable Length: 85mm(include connector)
- 8 pins female header, 2.54mm Pitch



1 x 0.96" I2C OLED 128x64- Blue

The 0.96" OLED displays are perfect when you need an ultra-small display. It is an OLED monochrome 128×64 dot matrix display module with I2C Interface. The characteristics of this display module are high brightness, self-emission, high contrast ratio, slim outline, wide viewing angle, wide temperature range, and low power consumption.

The driver chip SSD1306, communicates via I2C only. It compatible with any 3.3v-5V microcontroller, such as the Arduino.

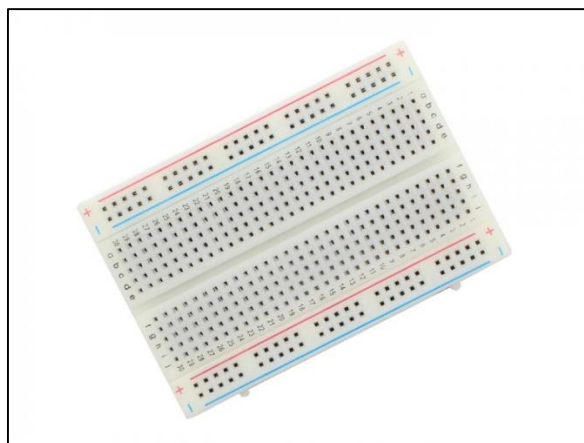


1 x Breadboard- 8.3x5.5cm

The dimension of this breadboard is 8.3cm x 5.3cm. It has 2 power buses, 10 columns and 30 rows - a total of 400 tie in points. All pins are spaced by a standard 0.1"(2.54mm). It has a self-adhesive on the back and also interlocking parts, so you can hook as many together as you'd like.

Features:

- 400 Tie Point
- Dimensions: 8.3 * 5.3cm



1 x 40 pin dual male splittable jumper wire - 20cm

This is a splittable 40 pin 20cm length dual male jumper wire for 2.54mm, it is super flexible, can be transformed from 1-40 pin jumper wire. With some of these, you will no need to worry about the jumper wires you got before do not fit your project, just split it and go.



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