MAE 183

COMP AID DESIGN

BLUETOOTH & CNC-SHIELD SETUP INSTRUCTION

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Bluetooth Module

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The HM-10 is a Bluetooth Low Energy (BLE) module that uses Bluetooth 4.0 to communicate with other devices. To set up an HM-10 Bluetooth module, follow these steps:

1. Gather materials:
   - HM-10 Bluetooth module
   - Arduino Uno
   - Breadboard
   - Jumper wires
2. Connect the power and data pins:
   - Connect the VCC pin of the HM-10 module to the 3.3V or 5V power supply on the Arduino Uno (3.3V or 5V pin)
   - Connect the GND pin of the HM-10 module to the GND pin on the Arduino Uno
   - Connect the RXD pin of the HM-10 module to a digital pin on the Arduino Uno (e.g., D2)
   - Connect the TXD pin of the HM-10 module to another digital pin on the Arduino Uno (e.g., D3)
3. Use SoftwareSerial:
   - Since the HM-10 module will be in AT mode and you'll need to communicate with it using the serial monitor, it is best to use SoftwareSerial for communication.
4. Upload the code to the Arduino Uno:
   - Open the Arduino IDE and write a simple code to test the communication between the HM-10 module and the Arduino Uno.

Example code


```
#include <SoftwareSerial.h>

SoftwareSerial mySerial(2, 3); // RX, TX

void setup() {
  // Open serial communications and wait for port to open:
  Serial.begin(9600);
  while (!Serial) {
    ; // wait for serial port to connect. Needed for native USB port only
  }

  // set the data rate for the SoftwareSerial port
  mySerial.begin(9600);

  // Ensure the HM-10 is in AT mode
  mySerial.print("AT");
  delay(100);
}

void loop() { // run over and over
  if (mySerial.available()) {
    Serial.write(mySerial.read());
  }
  if (Serial.available()) {
    mySerial.write(Serial.read());
  }
}
```

AT Command

1. Test the AT mode:
   - Open the serial monitor in the Arduino IDE (Tools > Serial Monitor)
   - Set the baud rate to 9600 and the line ending to "Both NL & CR" or "Carriage return".
   - Type "AT" (without quotes) and press Enter. If the HM-10 module is in AT mode, it should respond with "OK".
2. Configure the HM-10 module:
   - Use the AT commands listed in the HM-10 datasheet to configure the module according to your needs. For example, you can change the name, baud rate, and other settings of the module.

Remember that not all HM-10 modules have the same default settings, so consult the documentation for the specific HM-10 module you are using for the appropriate AT commands and default values.
Link to the data sheet

Example AT command

1. Verify the baud rate: It is important to check the baud rate set on the HM-10 module you have received. While it is not necessary to change the baud rate of the module, ensure that the Arduino's baud rate matches this value, as we will use the Arduino's TX and RX pins to communicate with the Bluetooth module.
2. Set a custom name for the Bluetooth module: Assigning a unique name to the Bluetooth module is recommended to avoid confusion when connecting to other devices. This will ensure that you do not accidentally connect to another device with a similar name.

Added since V3.0

50. Query/Set Module name

Send	Receive	Parameter
AT+NAME?	OK+NAME[P1]	P1: module name, Max length is 12. Default: HMSoft
AT+NAME[P1]	OK+Set[P1]	

e.g.

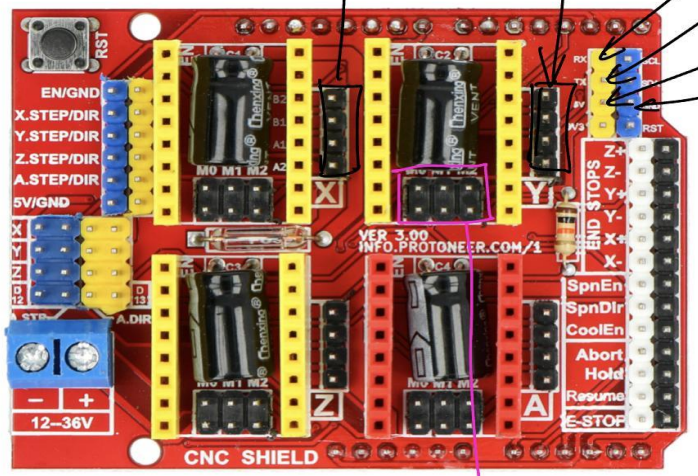
change module name to bill_gates

Send: AT+NAMEbill_gates

Receive: OK+SetName:bill_gates

Things to check

1. Ensure proper alignment of the pins when connecting the Arduino to the shield.
2. If the power system is 12V or below, connect the power supply directly to the Arduino Uno.
3. Avoid unplugging the stepper motor or driver while the shield is powered to prevent potential damage.
4. Adjust the current potentiometer according to the recommended motor current specified in the stepper motor's datasheet.



MicroStep Pin

Look at the Datasheet of driver for connection