



**Soil Moisture Detection Module**

**BME34M101**  
**Arduino Library V1.0.1 Description**

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## Introduction

The Best Modules BME34M101 is a soil moisture detection module, which uses the UART communication method. This document provides the description of the BME34M101 Arduino Lib functions and how to install the Arduino Lib. The example demonstrates the function of obtaining the module soil moisture detection value and temperature value.

## Arduino Lib Functions

Arduino Lib Name: BME34M101		Lib Version: V1.0.1
<b>Constructors &amp; Initialisation</b>		
1	BME34M101(HardwareSerial *theSerial=&Serial)	
	Description	Constructor, uses the hardware UART communication method
	Parameter	*theSerial: Serial parameter
	Return Value	---
	Note	---
2	BME34M101(uint8_t rxPin, uint8_t txPin)	
	Description	Constructor, uses the software UART communication method
	Parameter	rxPin: RX pin, connect to the module TX pin txPin: TX pin, connect to the module RX pin
	Return Value	---
	Note	---
3	void begin()	
	Description	Module initialisation
	Parameter	---
	Return Value	void
	Note	---
<b>Performance Functions</b>		
4	bool isConnected()	
	Description	The connection status of the module
	Parameter	---
	Return Value	Module connection status true: Connected false: Not connected
	Note	---
5	uint8_t getNumber()	
	Description	Obtain the module cascade number
	Parameter	---
	Return Value	Module cascade number
	Note	---
6	uint8_t getMoisture(uint8_t id = 1)	
	Description	Obtain the specified module moisture detection value
	Parameter	id: Module ID
	Return Value	The moisture detection value, unit: %
	Note	ID: Refer to the Multi-board Cascade chapter of the user guide
7	uint8_t getTemperature(uint8_t id = 1)	
	Description	Obtain the specified module temperature detection value
	Parameter	id: Module ID
	Return Value	The temperature detection value, unit: °C
	Note	ID: Refer to the Multi-board Cascade chapter of the user guide

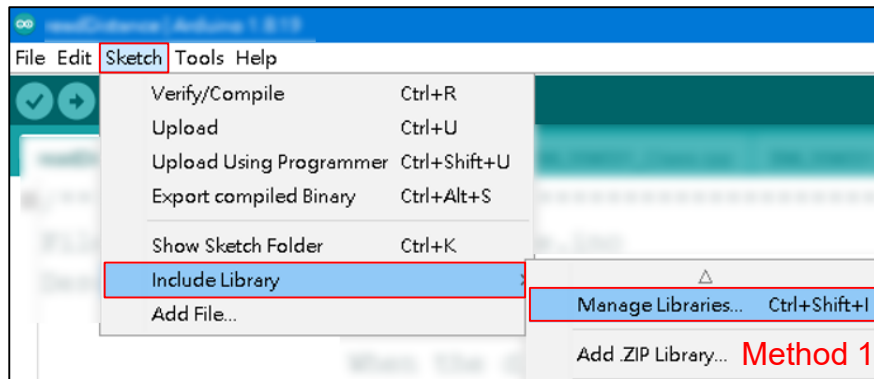
8	<b>void getAllMoisture(uint8_t moisBuff[])</b>	
	Description	Obtain the moisture detection values for all cascaded modules
	Parameter	moisBuff[]: Store moisture detection values moisBuff[0]: Total number of cascade modules, N moisBuff[1]: The ID=1 module soil moisture detection value, unit: % ..... moisBuff[N]: The ID=N module soil moisture detection value, unit: %
	Return Value	void
	Note	ID: Refer to the Multi-board Cascade chapter of the user guide
9	<b>void getAllTemperature(uint8_t tempBuff[])</b>	
	Description	Obtain the temperature detection value for all cascaded modules
	Parameter	tempBuff[]: Store the temperature detection value tempBuff[0]: Total number of cascade modules, N tempBuff[1]: The ID=1 module temperature detection value, unit: °C ..... tempBuff[N]: The ID=N module temperature detection value, unit: °C
	Return Value	void
	Note	ID: Refer to the Multi-board Cascade chapter of the user guide

## Arduino Lib Download and Installation

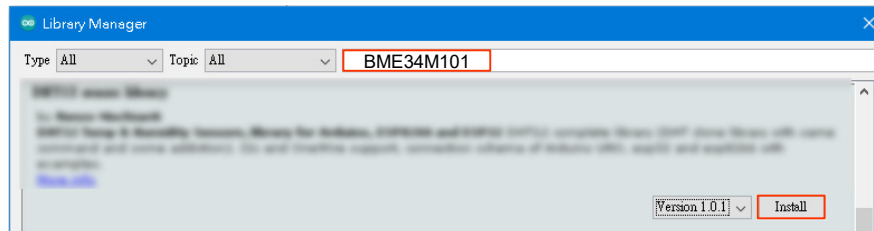
BME34M101 Library: Refer to the following two methods to install the BME34M101 Arduino Library.

### Method 1: Search for installation

Arduino IDE → Sketch → Include Library → Manage Libraries... → Search BME34M101 → Install



**Search for Installation Step 1**

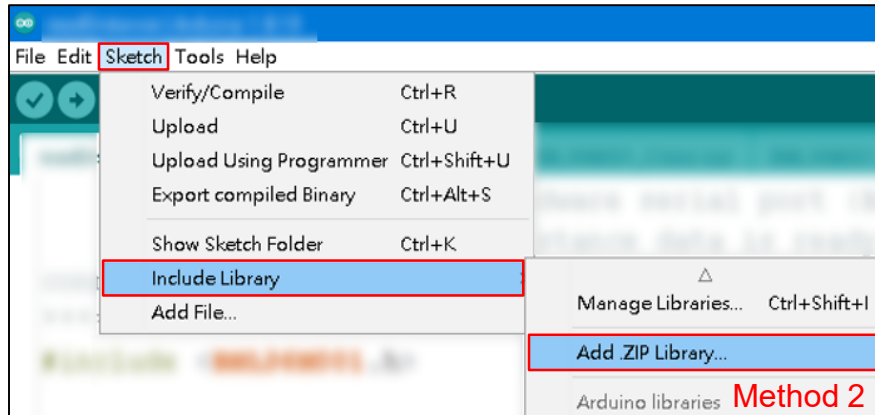


**Search for Installation Step 2**

## Method 2: Download the .ZIP library before adding it

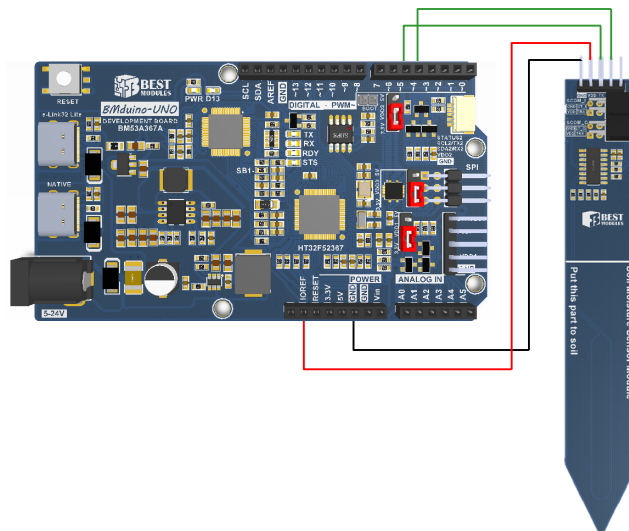
Download the Arduino example (BME34M101 Library) under the DOCUMENTS menu from the Best Modules website (<https://www.bestmodulescorp.com/bme34m101.html>)

Add .ZIP library: Arduino IDE → Sketch → Include Library → Add .ZIP Library...



## Arduino Example

### Example 1: getMoistureAndTemperature



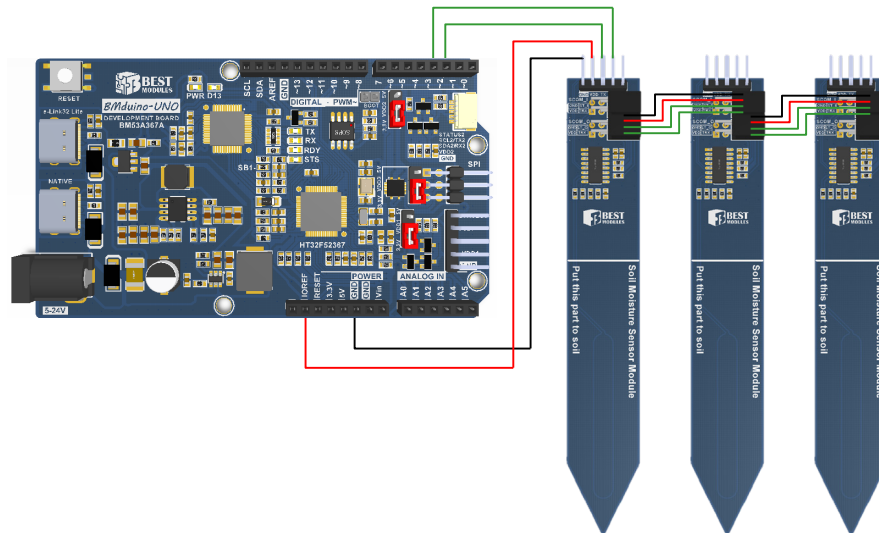
**Physical Connection Diagram**

Example 1 function: Obtain the module soil moisture detection value and temperature value and display them on the serial monitor.

1. Open the example: Arduino IDE → File → Examples → Select Lib (BME34M101) → Select example (getMoistureAndTemperature)



## Example 2: getMultipleModuleDetectionValue



**Physical Connection Diagram**

Example 2 function: Multiple modules are cascaded, the Bmduino UNO/Arduino UNO development board obtains the module soil moisture detection value and temperature value and displays them on the serial monitor.

1. Open the example: Arduino IDE → File → Examples → Select Lib (BME34M101) → Select example (getMultipleModuleDetectionValue)
2. Example Description:
  - a. Create object & initialise module

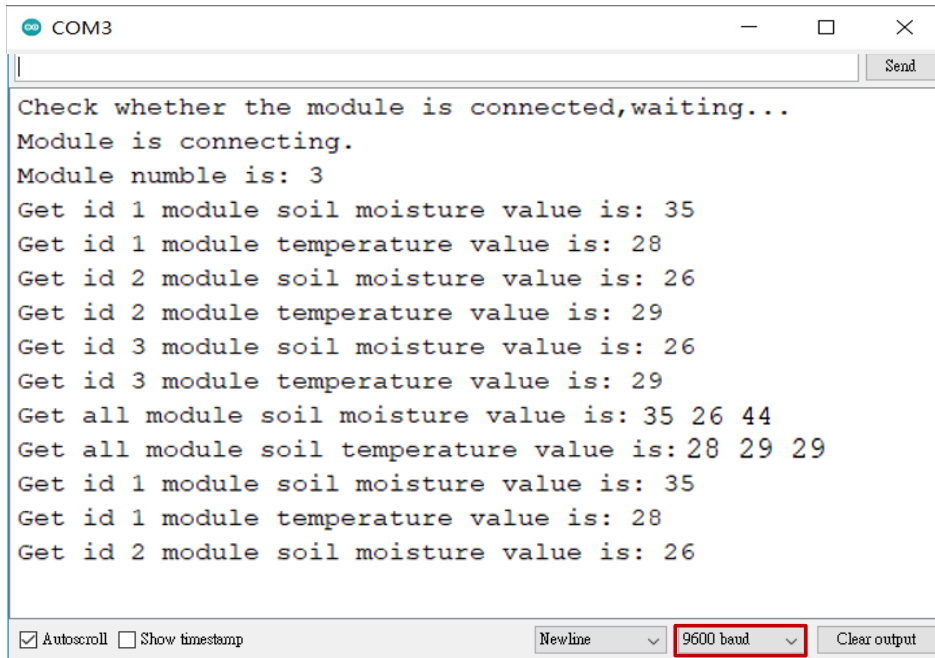
```
#include <BME34M101.h>
BME34M101 mySoilMoistureSensor(5,4); // Software UART, RX=D5, TX=D4
uint8_t moduleNumber;
uint8_t moistureValBuff[5] = {0};
uint8_t temperatureValBuff[5] = {0};
void setup()
{
  Serial.begin(115200); // Configure the serial monitor
  mySoilMoistureSensor.begin(); // Module initialisation
  Serial.println("Check whether the module is connected,waiting...");
  while(mySoilMoistureSensor.isConnected() == true) // Query if the
  // module is connected or ready
  {
    delay(1000);
  }
  Serial.println("Module is connecting.");
  moduleNumber = mySoilMoistureSensor.getNumber(); // Read the
  // number of cascade modules
  if(moduleNumber==0)
  {
    Serial.println("Get module number error.");
  }
}
```

```
else
{
  Serial.print("Module number is: ");
  Serial.println(moduleNumber);
}
}
```

- b. Obtain the soil moisture detection value and temperature value and display them on the serial monitor

```
void loop()
{
  uint8_t i;
  uint8_t id;
  for(id = 1; id <= moduleNumber; id++)// Obtain a module temperature
                                        // and moisture detection values
                                        // and display them to the serial monitor
  {
    Serial.print("Get id ");
    Serial.print(id);
    Serial.print("module soil moisture value is: ");
    Serial.println(mySoilMoistureSensor.getMoisture(id));
    delay(1000);
    Serial.print("Get id");
    Serial.print(id);
    Serial.print("module temperature value is: ");
    Serial.println(mySoilMoistureSensor.getTemperature(id));
    delay(1000);
  }
  // Obtain all module moisture detection values
  // and display them to the serial monitor
  mySoilMoistureSensor.getAllMoisture(moistureValBuff);
  Serial.print("Get all module soil moisture value is: ");
  for(i = 1; i <= moduleNumber; i++)
  {
    Serial.print(moistureValBuff[i]);
    Serial.print(" ");
  }
  Serial.println();
  delay(1000);
  // Obtain all module temperature detection values
  // and display them to the serial monitor
  mySoilMoistureSensor.getAllTemperature(temperatureValBuff);
  Serial.print("Get all module soil temperature value is: ");
  for(i = 1; i <= moduleNumber; i++)
  {
    Serial.print(temperatureValBuff[i]);
    Serial.print(" ");
  }
  Serial.println();
  Serial.println("");
  delay(1000);
}
```

3. Open the serial monitor and set the baud rate to be 9600. The serial monitor will display as follows.



```
COM3
Check whether the module is connected,waiting...
Module is connecting.
Module numble is: 3
Get id 1 module soil moisture value is: 35
Get id 1 module temperature value is: 28
Get id 2 module soil moisture value is: 26
Get id 2 module temperature value is: 29
Get id 3 module soil moisture value is: 26
Get id 3 module temperature value is: 29
Get all module soil moisture value is: 35 26 44
Get all module soil temperature value is: 28 29 29
Get id 1 module soil moisture value is: 35
Get id 1 module temperature value is: 28
Get id 2 module soil moisture value is: 26
```

Autoscroll  Show timestamp    Newline    **9600 baud**    Clear output

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