Thermocouple Module

BM42S3021-1
Arduino Library Description

Revision: V1.00 Date: April 26, 2024

www.bestmodulescorp.com

Contents

Introduction

The BM42S3021-1 is a thermocouple module from Best Modules, which uses the I²C communication method. This document provides the description of the BM42S3021-1 Arduino Lib functions and how to install the Arduino Lib. The example uses the BMS23K302 module to demonstrate the function of reading temperature, etc.

Applicable types:

Part No.	Description
BM42S3021-1	Thermocouple module
BMS23K302	Includes a BM42S3021-1and a K-type probe thermocouple

Arduino Lib Functions

Arduino Lib Name: BM42S3021-1		Lib Version: V1.0.1
Constructors & Initialisation		
1	BM42S3021_1(TwoWire *theWire=&Wire)	
	Description	Constructor, select I²C communication
	Parameter	*theWire: Select I²C interface (default Wire interface)
	Return Value	—
	Note	—
2	void begin()	
	Description	Module initialisation
	Parameter	—
	Return Value	void
	Note	—
Performance Functions		
3	float readTemperature()	
	Description	Get the temperature
	Parameter	—
	Return Value	Temperature, unit: °C
	Note	—
4	uint8_t getThermocoupleType()	
	Description	Get the thermocouple type
	Parameter	—
	Return Value	Thermocouple type 0x01: K-type thermocouple 0x02: N-type thermocouple 0x03: E-type thermocouple 0x04: J-type thermocouple 0x05: R-type thermocouple
	Note	—
5	uint16_t getFWver()	
	Description	Get the version
	Parameter	—
	Return Value	Version
	Note	For example, if the return value is 0x0101, then the version number is V1.01.

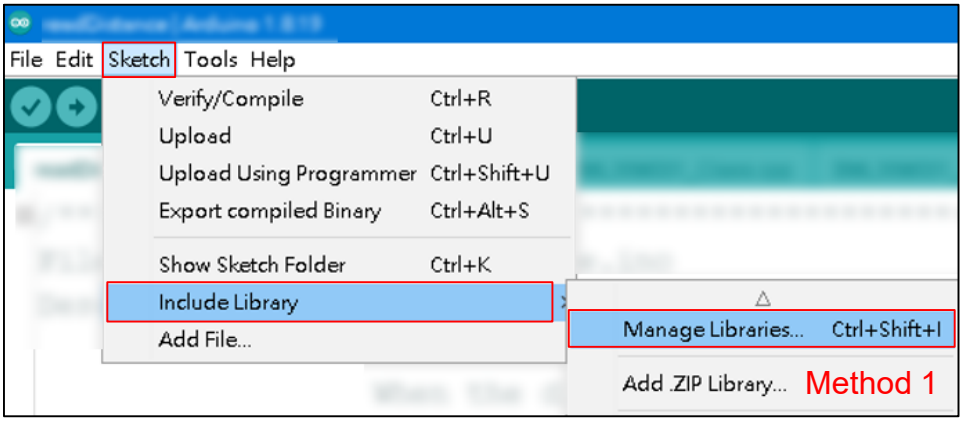
6	void setThermocoupleType(uint8_t type=Type_K)	
	Description	Select the compatible thermocouple type
	Parameter	type: Thermocouple type 0x01(Type_K): K-type thermocouple (default) 0x02(Type_N): N-type thermocouple 0x03(Type_E): E-type thermocouple 0x04(Type_J): J-type thermocouple 0x05(Type_R): R-type thermocouple
	Return Value	void
	Note	—
7	void sleep()	
	Description	Module sleep
	Parameter	—
	Return Value	void
	Note	—

Arduino Lib Download and Installation

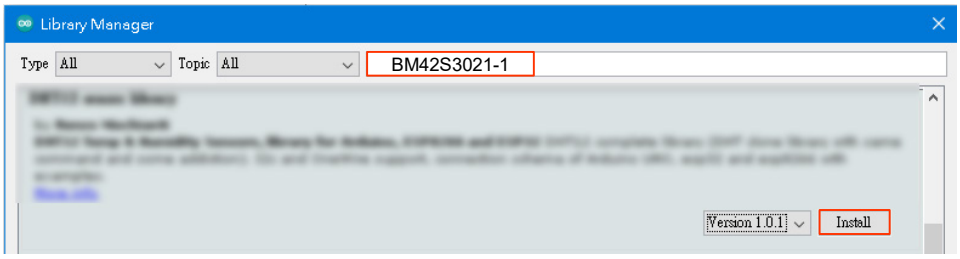
BM42S3021-1 Library: Refer to the following two methods to install the BM42S3021-1 Arduino Library.

Method 1: Search for installation

Search for installation: Arduino IDE → Sketch → Include Library → Manage Libraries...→ Search BM42S3021-1 → Install



Search for Installation Step 1

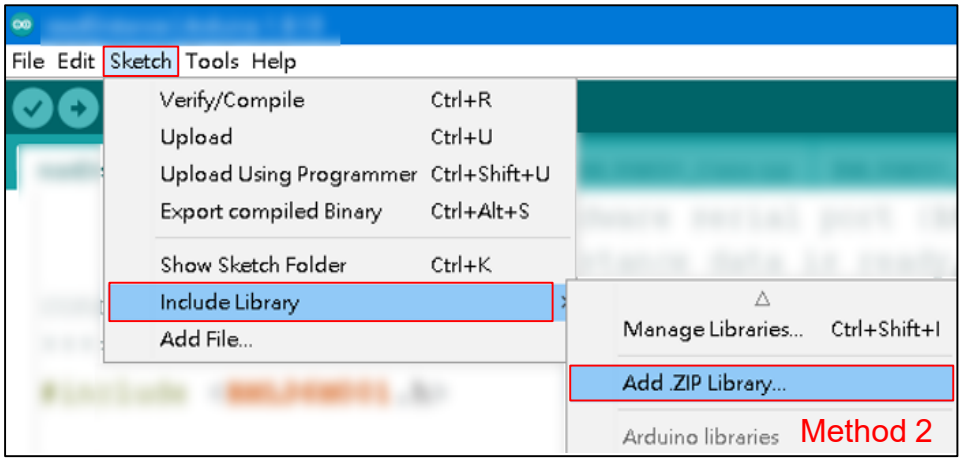


Search for Installation Step 2

Method 2: Download the .ZIP library before adding it

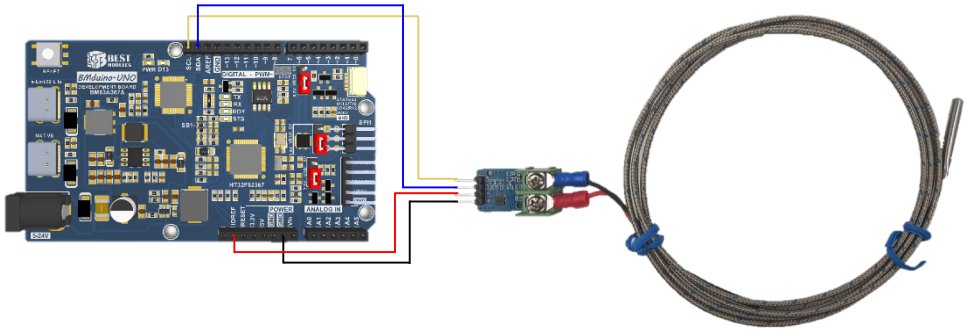
Download method: Open the Best Modules official website (https://www.bestmodulescorp.com/bm42s3021-1.html) and download the BM42S3021-1 Library from "Arduino example program" under the "DOCUMENTS" menu.

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



Arduino Example

Example: readTemperature



Physical Connection Diagram

Example function: Select the K-type thermocouple, read the temperature every 200ms and display it in the serial monitor.

1. Open the example: Arduino IDE → File → Examples → Select Lib (BM42S3021-1) → Select example (readTemperature)

2. Example description:

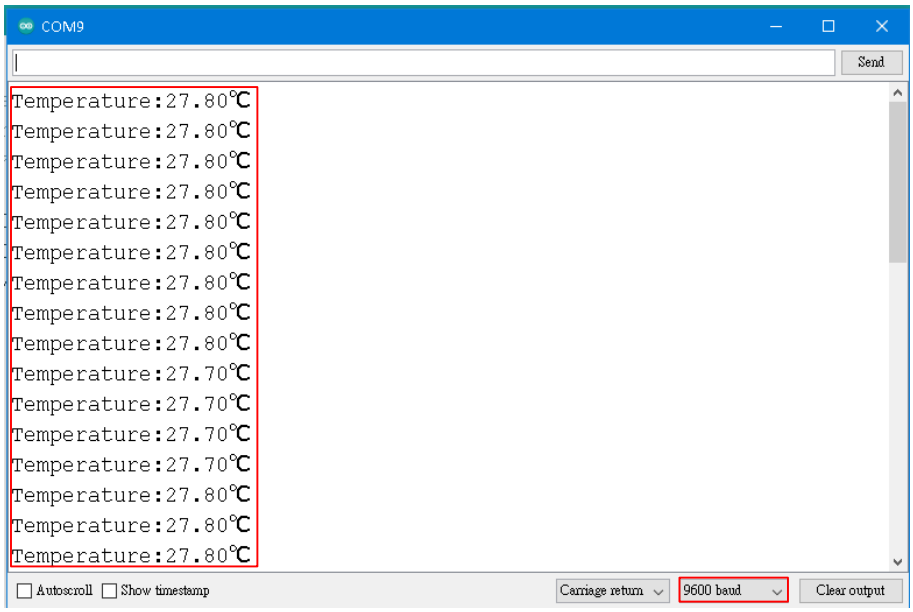
a. Create object & initialise the module

```
#include "BM42S3021-1.h"
BM42S3021_1    BM42(&Wire); // Create an object, SDA pin is connected
                            // to the development board D18. SCL pin is also
                            // connected to the development board D19.
void setup()
{
  Serial.begin(9600); // Serial monitor configuration
  BM42.begin();       // Module initialisation
}
```

b. Read the temperature every 200ms and display it in the serial monitor

```
void loop()
{
  Serial.print("Temperature:");
  Serial.print(BM42. readTemperature()); // Display the read
                            // temperature in the serial monitor
  Serial.println("°C");
  delay(200);
}
```

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



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