



4-Digit Digital Tube Module

BMD11M134

Arduino Library V1.0.2 Description

Revision: V1.20 Date: September 05, 2024

www.bestmodulescorp.com

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Introduction

The Best Modules BMD11M134 is a 4-digit digital tube module, which uses the I²C communication method. This document provides the description of the BMD11M134 Arduino Lib function and how to install the Arduino Lib. The example demonstrates the function of displaying characters by using digital tubes.

Arduino Lib Functions

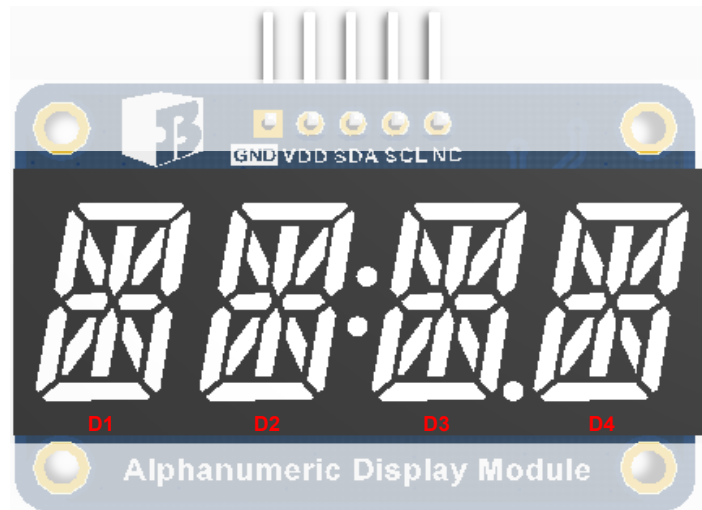
Arduino Lib Name: BMD11M134		Lib Version: V1.0.21
Constructor & Initialisation		
1	BMD11M134(TwoWire *theWire=&Wire)	
	Description	Constructor
	Parameter	*theWire: Select the I ² C interface
	Return Value	—
	Note	—
2	void begin()	
	Description	Module initialisation
	Parameter	—
	Return Value	void
	Note	—
Performance Functions		
3	uint8_t getNumber()	
	Description	Get the cascade module number
	Parameter	—
	Return Value	Cascade module number
	Note	—
4	uint8_t clear()	
	Description	Clear the display of the specified module
	Parameter	—
	Return Value	Execution result: 0x00: Succeeded 0x40: Checksum wrong 0x80: Instruction is not supported 0xA0: Cascade slaves do not respond
	Note	—
5	uint8_t decimalOnSingle(uint8_t displayNumber)	
	Description	Turn on the specified module's decimal point
	Parameter	displayNumber: Module ID
	Return Value	Execution result: 0x00: Succeeded 0x40: Checksum wrong 0x80: Instruction is not supported 0xA0: Cascade slaves do not respond
	Note	ID: Refer to the multi-board cascade section in the relevant module user guide

6	uint8_t decimalOffSingle(uint8_t displayNumber)	
	Description	Turn off the specified module's decimal point
	Parameter	displayNumber: Module ID
	Return Value	Execution result: 0x00: Succeeded 0x40: Checksum wrong 0x80: Instruction is not supported 0xA0: Cascade slaves do not respond
	Note	ID: Refer to the multi-board cascade section in the relevant module user guide
7	uint8_t decimalOn()	
	Description	Turn on all the cascade modules' decimal points
	Parameter	—
	Return Value	Execution result: 0x00: Succeeded 0x40: Checksum wrong 0x80: Instruction is not supported 0xA0: Cascade slaves do not respond
	Note	—
8	uint8_t decimalOff()	
	Description	Turn off all the cascade modules' decimal points
	Parameter	—
	Return Value	Execution result: 0x00: Succeeded 0x40: Checksum wrong 0x80: Instruction is not supported 0xA0: Cascade slaves do not respond
	Note	—
9	uint8_t colonOnSingle(uint8_t displayNumber)	
	Description	Turn on the specified module's colon
	Parameter	displayNumber: Module ID
	Return Value	Execution result: 0x00: Succeeded 0x40: Checksum wrong 0x80: Instruction is not supported 0xA0: Cascade slaves do not respond
	Note	ID: Refer to the multi-board cascade section in the relevant module user guide
10	uint8_t colonOffSingle(uint8_t displayNumber)	
	Description	Turn off the specified cascade module's colon
	Parameter	displayNumber: Module ID
	Return Value	Execution result: 0x00: Succeeded 0x40: Checksum wrong 0x80: Instruction is not supported 0xA0: Cascade slaves do not respond
	Note	ID: Refer to the multi-board cascade section in the relevant module user guide
11	uint8_t colonOn()	
	Description	Turn on all the cascade modules' colons
	Parameter	—
	Return Value	Execution result: 0x00: Succeeded 0x40: Checksum wrong 0x80: Instruction is not supported 0xA0: Cascade slaves do not respond
	Note	—

12	uint8_t colonOff()	
	Description	Turn off all the cascade modules' colons
	Parameter	—
	Return Value	Execution result: 0x00: Succeeded 0x40: Checksum wrong 0x80: Instruction is not supported 0xA0: Cascade slaves do not respond
	Note	—
13	uint8_t shiftRight(uint8_t shiftAmt=1)	
	Description	Make the module's string shift right
	Parameter	shiftAmt: Shift amount
	Return Value	Execution result: 0x00: Succeeded 0x40: Checksum wrong 0x80: Instruction is not supported 0xA0: Cascade slaves do not respond
	Note	—
14	uint8_t shiftLeft(uint8_t shiftAmt=1)	
	Description	Make the module's string shift left
	Parameter	shiftAmt: Shift amount
	Return Value	Execution result: 0x00: Succeeded 0x40: Checksum wrong 0x80: Instruction is not supported 0xA0: Cascade slaves do not respond
	Note	—
15	void printChar(uint8_t displayNumber, uint8_t displayChar, uint8_t digit)	
	Description	Make the specified module's digital tube digit display a character
	Parameter	displayNumber: Module ID displayChar: Display the ASCII code corresponding to the character digit: Digital tube digit, ranging from 0 to 3 ^(Note)
	Return Value	void
	Note	ID: Refer to the multi-board cascade section in the relevant module user guide After the updateDisplay() is executed, the character can be displayed.
16	uint8_t updateDisplay()	
	Description	Update the specified module's digital tube display
	Parameter	—
	Return Value	Execution result: 0x00: Succeeded 0x40: Checksum wrong 0x80: Instruction is not supported 0xA0: Cascade slaves do not respond
	Note	—
17	uint8_t printStr(char buffer[])	
	Description	Make the module display a string
	Parameter	buffer[]: An array which is used to store the characters to be displayed
	Return Value	Execution result: 0x00: Succeeded 0x40: Checksum wrong 0x80: Instruction is not supported 0xA0: Cascade slaves do not respond
	Note	The input string length should be no more than 4×cascade module number

18	<code>uint8_t setBrightness(uint8_t displayNumber, uint8_t brightness)</code>	
	Description	Set the module brightness
	Parameter	displayNumber: Module ID brightness: Brightness level parameter, ranging from 0 to 2 0: Level 1 (Darker) 1: Level 2 2: Level 3 (Lighter)
	Return Value	Execution result: 0x00: Succeeded 0x40: Checksum wrong 0x80: Instruction is not supported 0xA0: Cascade slaves do not respond
	Note	ID: Refer to the multi-board cascade section in the relevant module user guide
19	<code>uint16_t getFWVer(uint8_t displayNumber)</code>	
	Description	Obtain the module firmware version
	Parameter	displayNumber: Module ID
	Return Value	Module firmware version
	Note	ID: Refer to the multi-board cascade section in the relevant module user guide

Note: One module has four digital tube digits(D1~D4) and the digits are 0~3 from left to right

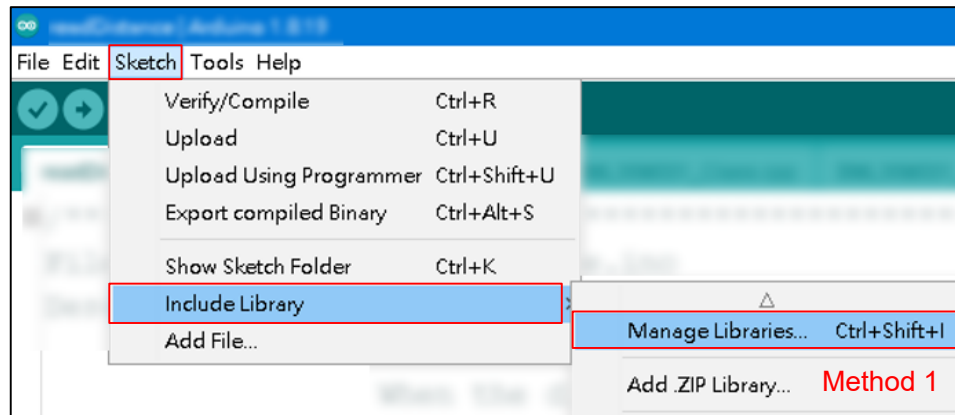


Arduino Lib Download and Installation

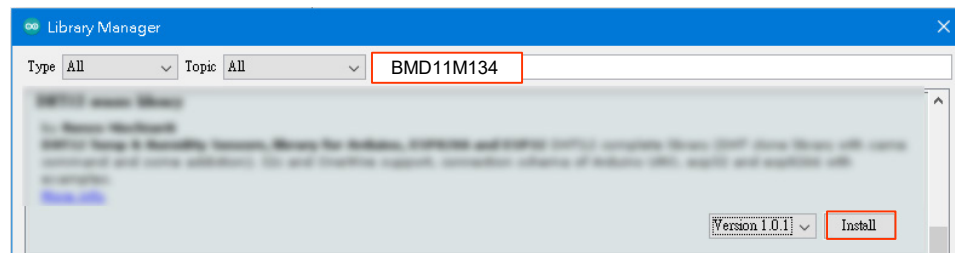
BMD11M134 Library: Refer to the following two methods to install the BMD11M134 Arduino Library.

Method 1: Search for installation

Arduino IDE→Sketch→Include Library→Manage Libraries...→Search BMD11M134→Install



Search for Installation Step 1

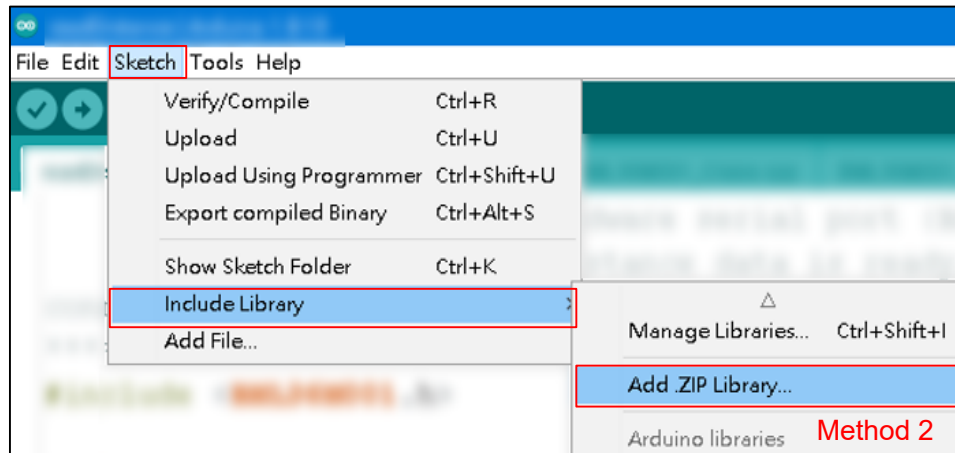


Search for Installation Step 2

Method 2: Download the .ZIP library before adding it

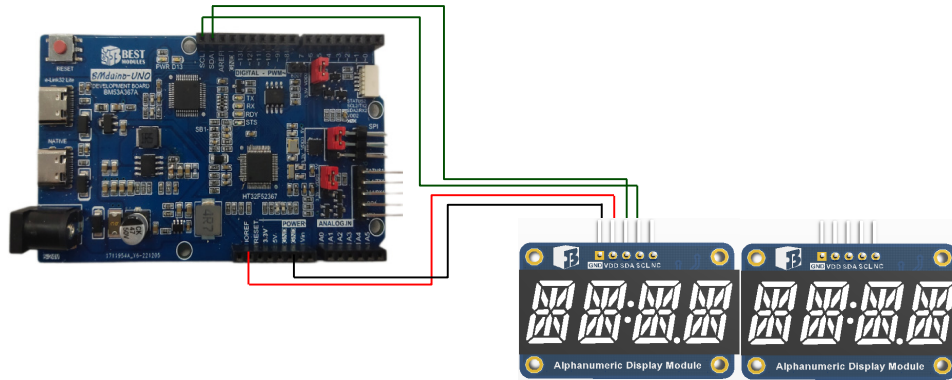
Download the Arduino example (BMD11M134 Library) under the DOCUMENTS menu from the Best Modules website (<https://www.bestmodulescorp.com/bmd11m134.html>).

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



Arduino Example

Example1: printString



Physical Connection Diagram

Function: Obtain the cascade module number and display it on the serial monitor. In addition, display the string "HOLTBEST" on the 4-digit digital tube modules.

1. Open the example: Arduino IDE→File→Examples→Select Lib (BMD11M134)→Select example (printString)
2. Example Description:
 - a. Create the object & Module initialisation

```
#include "BMD11M134.h"
BMD11M134 Display(&Wire);
char cdata[100]; // An array which is used to store the information
                // to be displayed
String sdata; // A string which is used to store the information
              // to be displayed

void setup()
{
  Serial.begin(9600); // Initialise the serial monitor
  Display.begin(); // Initialise the module
}
```

- b. Obtain the cascade module number and display it on the serial monitor. In addition, display the string "HOLTBEST" on the 4-digit digital tube modules.

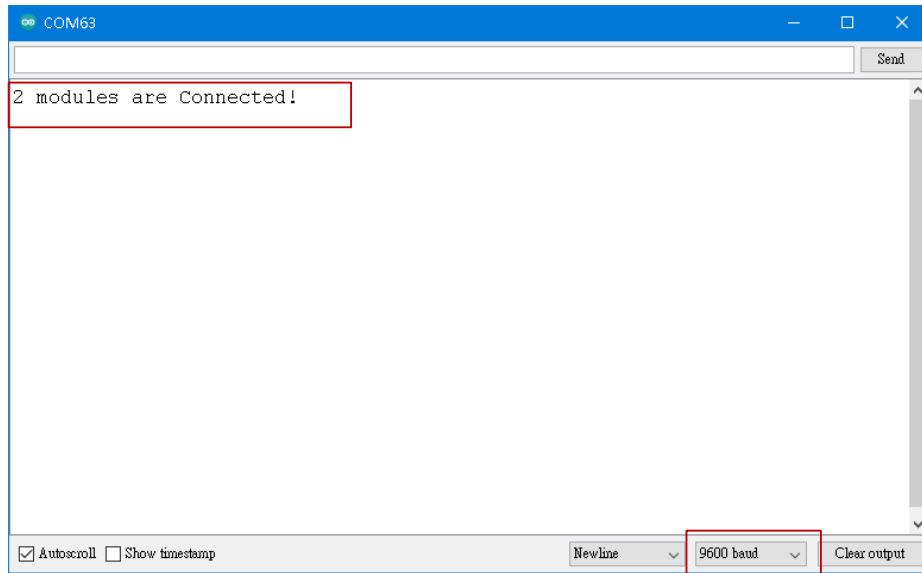
```
Serial.print(Display.getNumber()); // Display the connected module
                                  // number on the serial monitor

Serial.print(" modules are ");
Serial.println("Connected!");
sdata="HOLTBEST"; // A string to be displayed
sdata.toCharArray(cdata,9); // Transform the string format
                             // into the array format

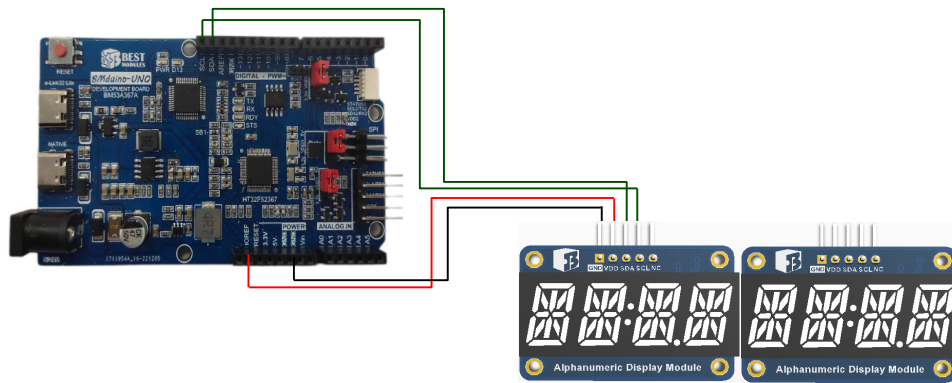
Display.printStr(cdata); // Display the information on the
                          // 4-digit digital tube modules

}
void loop()
{
}
```

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



Example2: printChar



Physical Connection Diagram

Function: Display the “HOLTBEST” on the 4-digit digital tube modules.

1. Open the example: Arduino IDE→File→Examples→Select Lib (BMD11M134)→Select example (printChar)
2. Example Description:

- a. Create the object & Module initialisation

```
#include "BMD11M134.h"  
BMD11M134 Display(&Wire);
```

```
void setup()
{
  Serial.begin(9600);      // Initialise the serial monitor
  Display.begin();        // Initialise the module
}
```

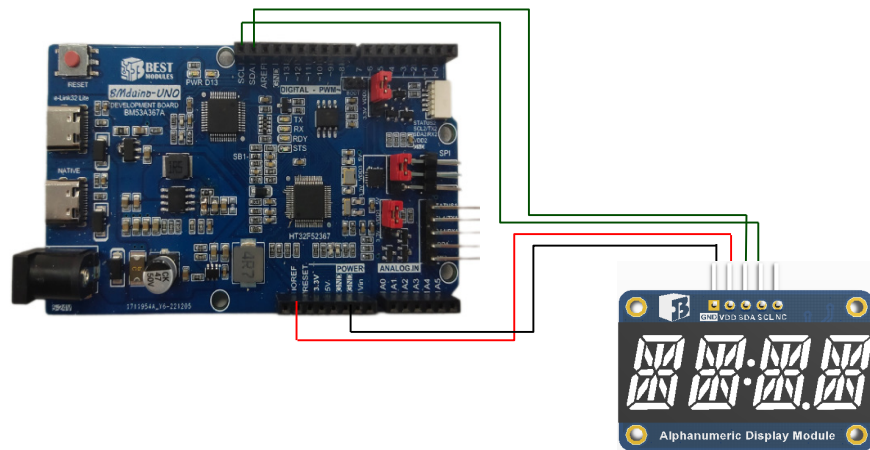
b. Display the “HOLTBEST” on the 4-digit digital tube modules.

```
void loop()
{
  Display.printChar(1, 'H', 0);
  Display.printChar(1, 'O', 1);
  Display.printChar(1, 'L', 2);
  Display.printChar(1, 'T', 3);
  Display.printChar(2, 'B', 0);
  Display.printChar(2, 'E', 1);
  Display.printChar(2, 'S', 2);
  Display.printChar(2, 'T', 3);
  Display.updateDisplay();
}
```

3. Display of the digital tube:



Example3: shift



Physical Connection Diagram

Function: Display the “BEST” on the digital tube and right shift it before left shifting it.

1. Open the example: Arduino IDE→File→Examples→Select Lib (BMD11M134)→Select example (shift)
2. Example Description:
 - a. Create the object & Module initialisation

```
#include "BMD11M134.h"
BMD11M134 Display(&Wire);
```

```
char cdata[100];      //An array which is used to store the
                    //information to be displayed
String sdata;        //A string which is used to store the
                    //information to be displayed

void setup()
{
  Serial.begin(9600); // Initialise the serial monitor
  Display.begin();   // Initialise the module
}
```

- b. Display the “Best” on the digital tubes and right shift it before left shifting it.

```
void loop()
{
  sdata="BEST";
  sdata.toCharArray(cdata,5);
  Display.printStr(cdata); //Display the "BEST"
  for(uint8_t i = 0; i < 4; i++)
  {
    delay(300);
    Display.shiftRight(); //Right shift the "BEST"
  }
  delay(1000);
  sdata="BEST";
  sdata.toCharArray(cdata,5);
  Display.printStr(cdata); //Display the "BEST"
  for(uint8_t i = 0; i < 4; i++)
  {
    delay(300);
    Display.shiftLeft(); //Left shift the "BEST"
  }
  delay(1000);
}
```

3. The following two steps will be executed circularly when this example runs: First, display the “Best” and right shift one digit every 300ms until all the digits have been shifted. Then, redisplay the “Best” and left shift one digit every 300ms until all the digits have been shifted.

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