# Bifrost Calculator - Arduino Setup Guide

#### Introduction

Alright, so you're ready to get the **Bifrost Calculator** running on your microcontroller? This guide will walk you through **installing the required library (TinyExpr)** and **uploading the sketch to your board**. Let's get started!

### Installing the TinyExpr Library

Before uploading the sketch, we need to install **TinyExpr**, a lightweight math expression parser used in this project.

#### 1. Downloading TinyExpr

• Head over to the TinyExpr GitHub Repository:

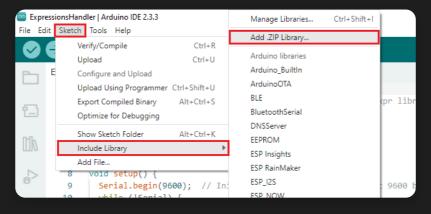
TinyExpr GitHub Repo

• Click "Download ZIP" to get the latest version of the library.

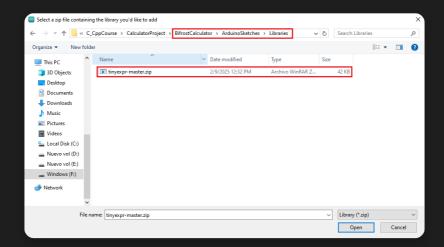
Or you can use the **TinyExpr** library that is already downloaded in 'BifrostCalculator\ArduinoSketches\Libraries'.

#### 2. Adding TinyExpr to Arduino IDE

- Open Arduino IDE.
- Navigate to Sketch o Include Library o Add .ZIP Library....



• Select the TinyExpr zip and click Open.



• The library should now be installed.

To verify, go to **Sketch**  $\rightarrow$  **Include Library** and check if **TinyExpr** is listed.

## Uploading the Sketch to the Microcontroller

Now that the TinyExpr library is installed, let's upload the calculator sketch.

```
ExpressionsHandler | Arduino IDE 2.3.3
File Edit Sketch Tools Help
                 ₹ ESP32 Dev Module
      ExpressionsHandler.ino
         1
              #include <Arduino.h>
              #include "tinyexpr.h" // Ensure you've installed the Tinyexpr libra
             #include <math.h>
             // Global variable for the target buffer size
              int targetBufferSize = 200;
         8
              void setup() {
         9
                Serial.begin(9600); // Initialize serial communication at 9600 ba
         10
                while (!Serial) {
         11
                ; // Wait for serial port to connect (if needed)
         12
                Serial.println("Microcontroller ready to operate.");
         13
```

The microcontroller is now running the Bifrost Calculator firmware.

## Testing the Setup

To ensure everything works as expected:

- 1. Open the **Serial Monitor** in Arduino IDE (**Tools**  $\rightarrow$  **Serial Monitor**).
- 2. Set the baud rate to 9600 (or the rate you configured).
- 3. Type a math expression (e.g., 5+3\*2) and press Enter.
- 4. If everything is working, the microcontroller will evaluate the expression and return the result.

#### **Important Note**

If the Serial Monitor is open in Arduino IDE, the Bifrost Calculator will not be able to connect to the microcontroller. The serial port can only be used by one application at a time, so close the Serial Monitor before trying to use the calculator.



You've successfully **installed TinyExpr, uploaded the sketch, and tested the setup**. Now you're ready to use the **Bifrost Calculator** with your Windows application.

If you encounter issues, check your board's COM port settings, make sure TinyExpr is installed correctly, and try restarting Arduino IDE.