



# IQS324 Arduino Example Code



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# Introduction

This Arduino example code demonstrates how to set up and use the IQS324 Hall encoder using I2C. The Arduino can be configured to emulate a mouse scroll wheel using the [Mouse](#) library by providing mouse scroll commands over HID. This example code is specifically aimed at the IQS324 Evaluation Kit (PCB number AZP1400A1).

The following external Arduino libraries are needed to compile the example pack:

- [Mouse](#)

This requires an Arduino board that supports HID over USB and 3.3 V logic, such as [Sparkfun's Pro Micro \(3.3V, 8 MHz\)](#).



# Arduino Code Configuration

The behaviour and pin assignments of the Arduino code can be configured with the `#define` settings at the start of `iqs324-example-code.ino`.

Change the following pin assignments and parameters to suit your hardware:

```
/** Defines **/  
#define DEMO_IQS324_ADDR 0x54  
#define DEMO_IQS324_POWER_PIN 4  
#define DEMO_IQS324_RDY_PIN 7  
  
/* UI Selection */  
#define DEMO_HID_ON 1 // Turn on HID and give mouse scroll commands over USB.
```

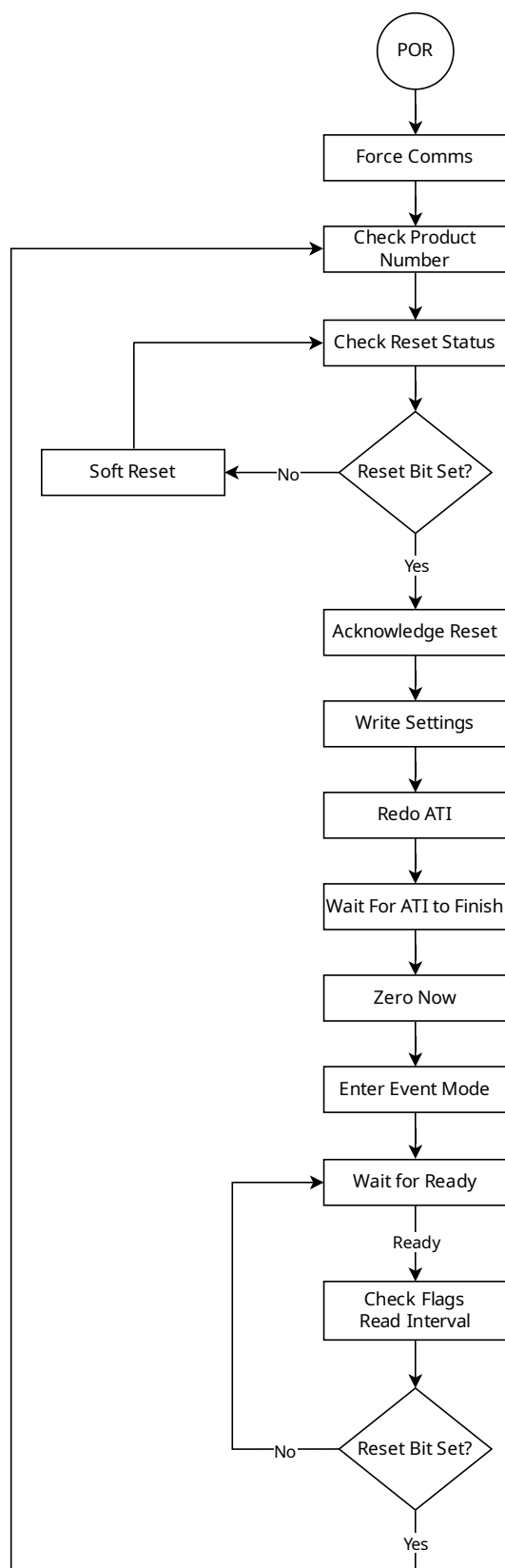
- `DEMO_IQS324_POWER_PIN` can be used to power the IQS324 directly from an Arduino GPIO. This parameter sets which pin to use. This is an optional setting and can be removed if the IQS324 is powered from the VCC pin or an external power supply.
- `DEMO_IQS324_RDY_PIN` sets the pin assignment for the IQS324 ready pin. This must support external interrupts. On the SparkFun Pro Micro, pins 0, 1, 2, 3, and 7 support interrupts.
- `DEMO_HID_ON` sends mouse scroll events over USB HID to the computer to emulate a mouse wheel. Enabling this requires the [Mouse](#) library.



Please note that powering an IQS device directly from a GPIO is *generally* not recommended. The `DEMO_IQS324_POWER_PIN` can be used as an enable input to a voltage regulator.



## Example Code Flow Diagram





# SparkFun Board Library Installation

To use the SparkFun Pro Micro, the SparkFun Board Library must be installed in the Arduino IDE.

Add the SparkFun Board Library by opening Preferences (**File > Preferences**), and paste the following URL into the "Additional Board Manager URLs" text box.

```
https://raw.githubusercontent.com/sparkfun/Arduino_Boards/master/IDE_Board_Manager/package_sparkfun_index.json
```

Preferences

Settings Network

Sketchbook location: c:\Azoteq\Arduino **BROWSE**

☐ Show files inside Sketches

Editor font size: 14

Interface scale: ☒ Automatic 100 %

Theme: Light (Arduino)

Language: English (Reload required)

Show verbose output during ☐ compile ☐ upload

Compiler warnings: None

☐ Verify code after upload

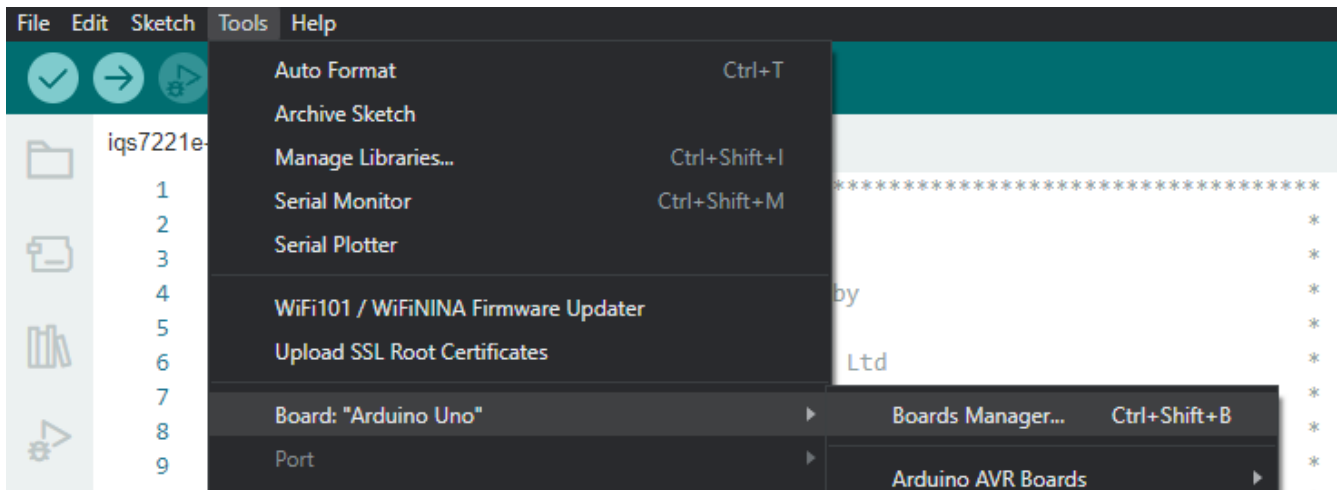
☒ Auto save

☐ Editor Quick Suggestions

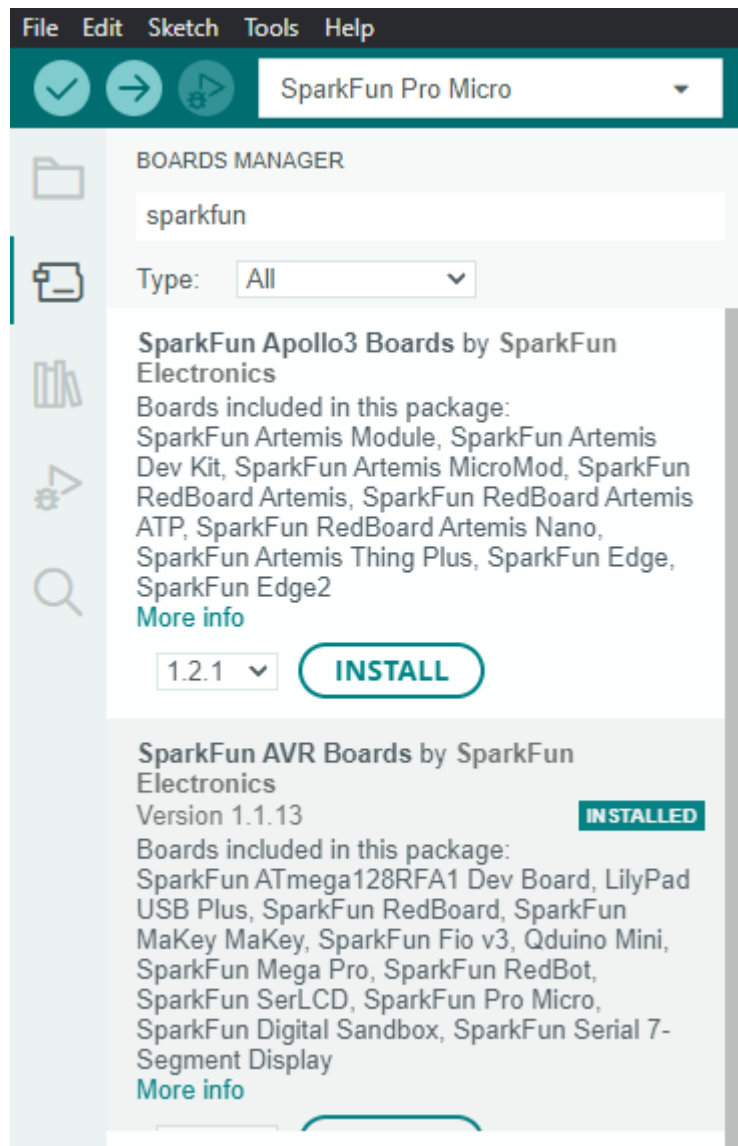
Additional boards manager URLs: https://raw.githubusercontent.com/sparkfun/Arduino\_Boards/master/IDE\_Board\_ **+**

**CANCEL** **OK**

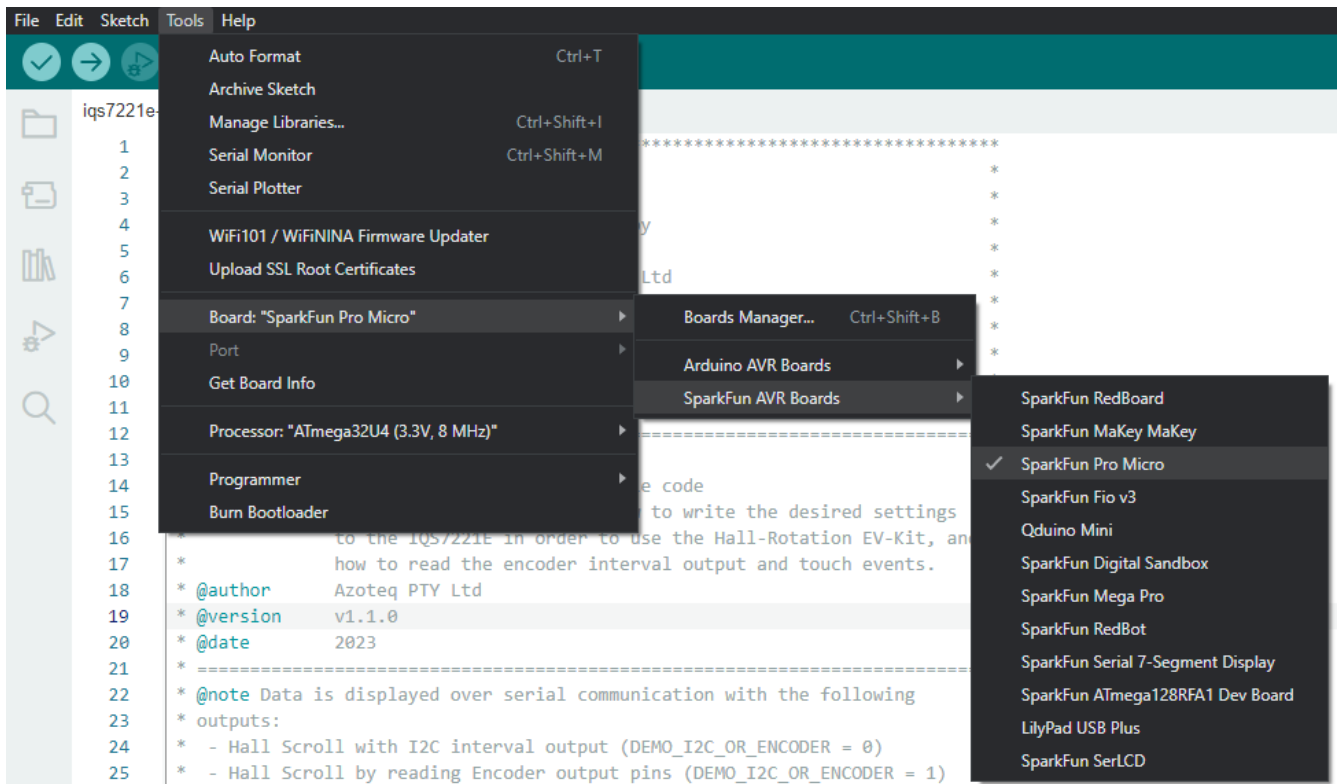
Click "OK". Then open the Board Manager under **Tools > Board > Boards Manager...**



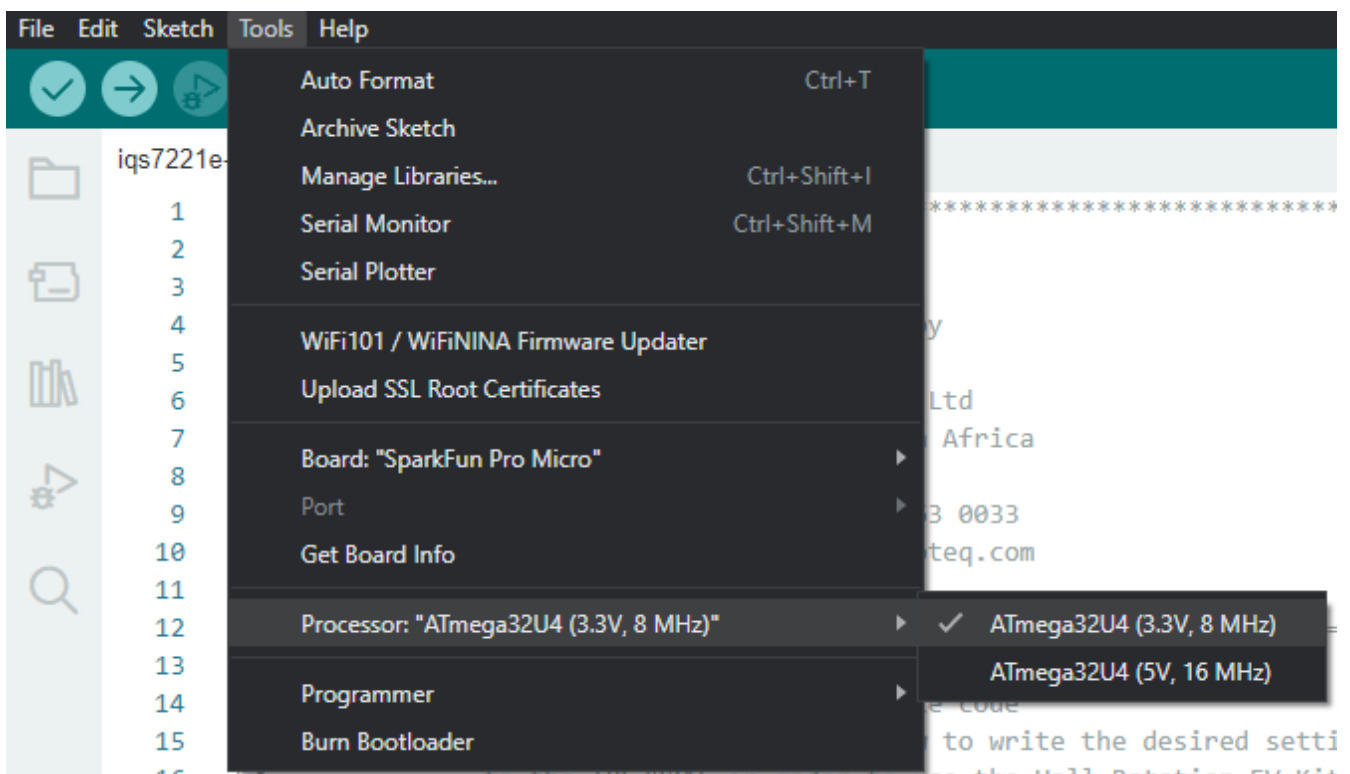
Search for "SparkFun", and install "SparkFun AVR Boards by SparkFun".



You can now select the "SparkFun Pro Micro" in the Board selection menu.



Also be sure to select the "3.3 V, 8 MHz" version under Tools > Processor.

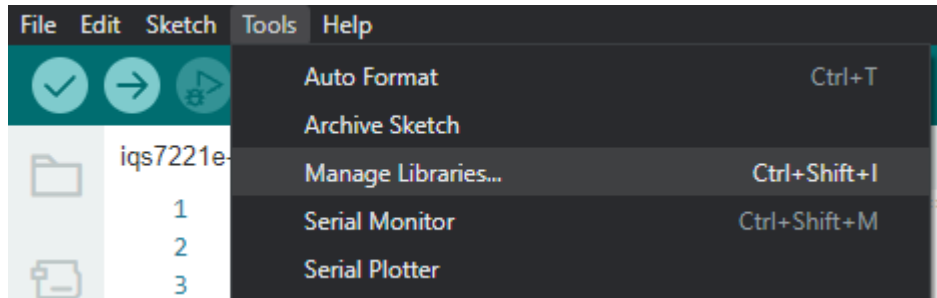


Source: [Pro Micro Hookup Guide](#)

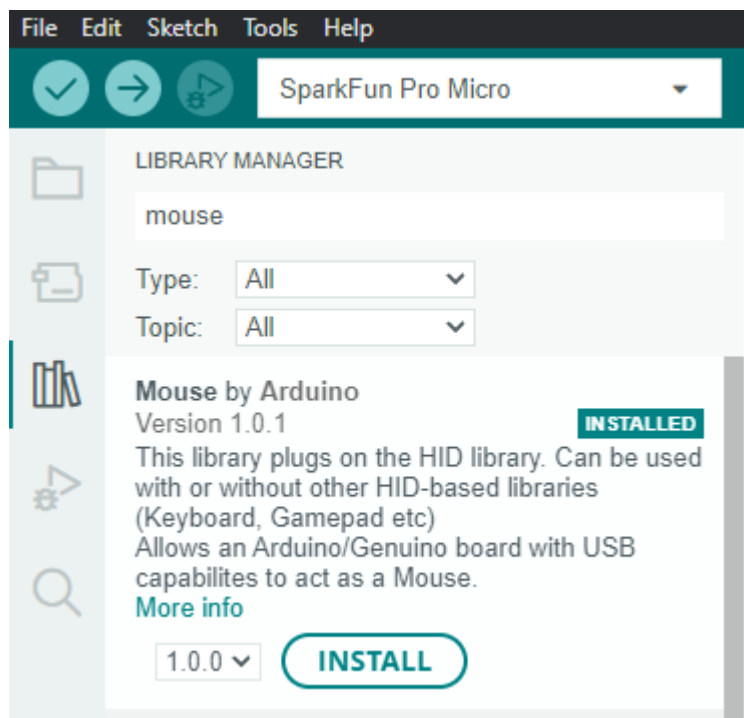


## Install Mouse Library

To install the Mouse library for the example code, open the Library Manager by navigating to Tools > Manage Libraries....



Search for "mouse", and install "Mouse by Arduino".





## Serial Communication and Interface

The example code provides verbose serial feedback to aid in the demonstration of start-up and operational functions.

```
Output  Serial Monitor  X
|Message (Enter to send message to 'SparkFun Pro Micro' on 'COM9')|
Start Serial communication
IQS324 Initialization:
    IQS324_INIT_VERIFY_PRODUCT
        Product number is: 2389 v1.2
        IQS324 Confirmed!
    IQS324_INIT_READ_RESET
        Reset event occurred.
    IQS324_INIT_UPDATE_SETTINGS
        1. Write System Settings
        1. Write Channel 0 Settings
        1. Write Channel ATI Settings
        1. Write Hall Plate Settings
        1. Write Hall Phase Angle Settings
        1. Write Hall UI Settings
        1. Write Hall Interval Settings
        1. Normalisation Settings
    IQS324_INIT_ACK_RESET
    IQS324_INIT_ATI
    IQS324_INIT_ZERO
    IQS324_INIT_READ_DATA
    IQS324_INIT_ACTIVATE_EVENT_MODE
    IQS324_INIT_DONE
IQS324 Initialization complete!

ENC Interval:    Prox:    Power Mode:
0               None     NORMAL POWER
0               None     NORMAL POWER
0               None     LOW POWER
```