IQS7222A Arduino Example Code

Table of Contents

Introduction

This Arduino example code demonstrates how set-up and use the IQS7222A Integrated Circuit (IC). The IQS7222A is a 12 Channel Mutual/ Self-Capacitive, Inductive force and Hall sensing controller with Configurable GPIOs and low power options. This example code is specifically aimed at the IQS7222A Evaluation Kit (PCB number *AZP1195A4*).

This example code is intended for an Arduino Compatible board that uses 3.3 V logic, such as Sparkfun's Pro Micro (3.3V, 8 MHz). If a 5V logic Arduino board is used, a logic level translator will be required between the Arduino based board and the IQS7222A.

Arduino Code Configuration

The behaviour and pin assignments of the Arduino code can be configured with the `#define` settings at the start of `iqs7222a-example-code.ino`.

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

```
/*** USER Defines ***/
#define DEMO_IQS7222A_ADDR                    0x44
#define DEMO_IQS7222A_POWER_PIN               4
#define DEMO_IQS7222A_RDY_PIN                 7
```

- `DEMO_IQS7222A_ADDR` is the IQS7222A I2C Slave address. For more information, refer to the datasheet and application notes found on the IQS7222A Product Page.

- `DEMO_IQS7222A_POWER_PIN` can be used to power the IQS7222A directly from an Arduino GPIO. This parameter sets which pin to use. This is an optional setting and can be removed if the IQ7222A is powered from the VCC pin or from an external power supply.

- `DEMO_IQS7222A_RDY_PIN` sets the pin assignment for the IQS7222A ready pin. This must support external interrupts. On the Sparkfun Pro Micro, pins 0, 1, 2, 3, and 7 support interrupts.

> ℹ️ Please note that powering an IQS-device directly from a GPIO is *generally* not recommended. However, the `DEMO_IQS7222A_POWER_PIN` in this example could be used as an enable input to a voltage regulator.

Example Code Flow Diagram
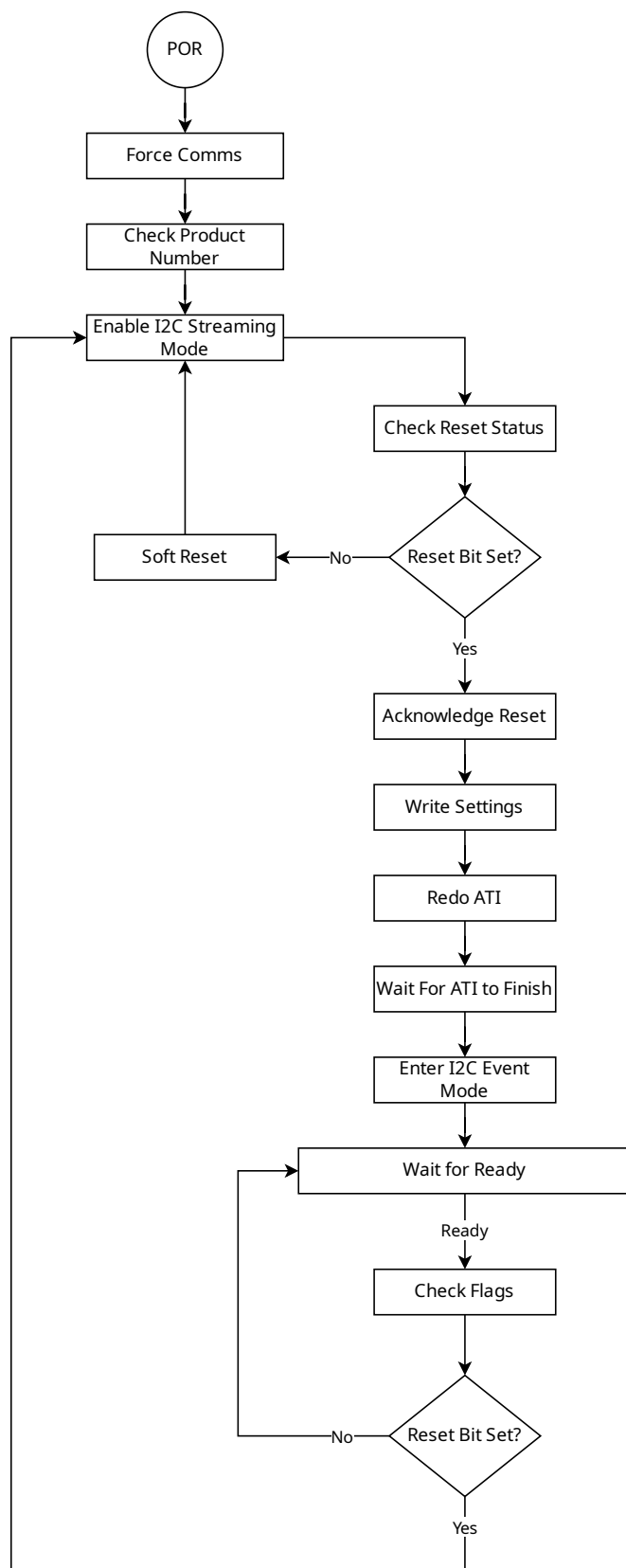
Sparkfun Board Library Installation

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 pasting 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
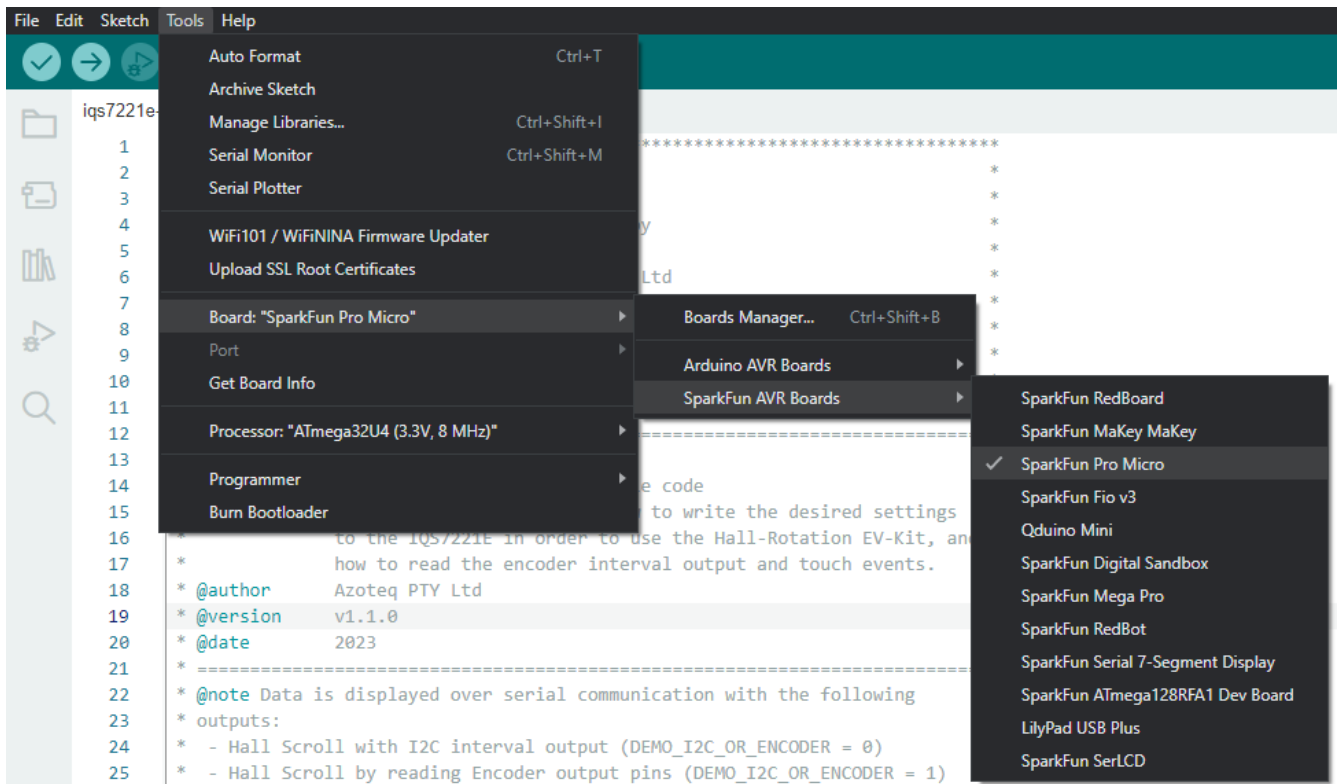

Click "OK". Then open the Board Manager under **Tools** > **Board** > **Boards Manager....**
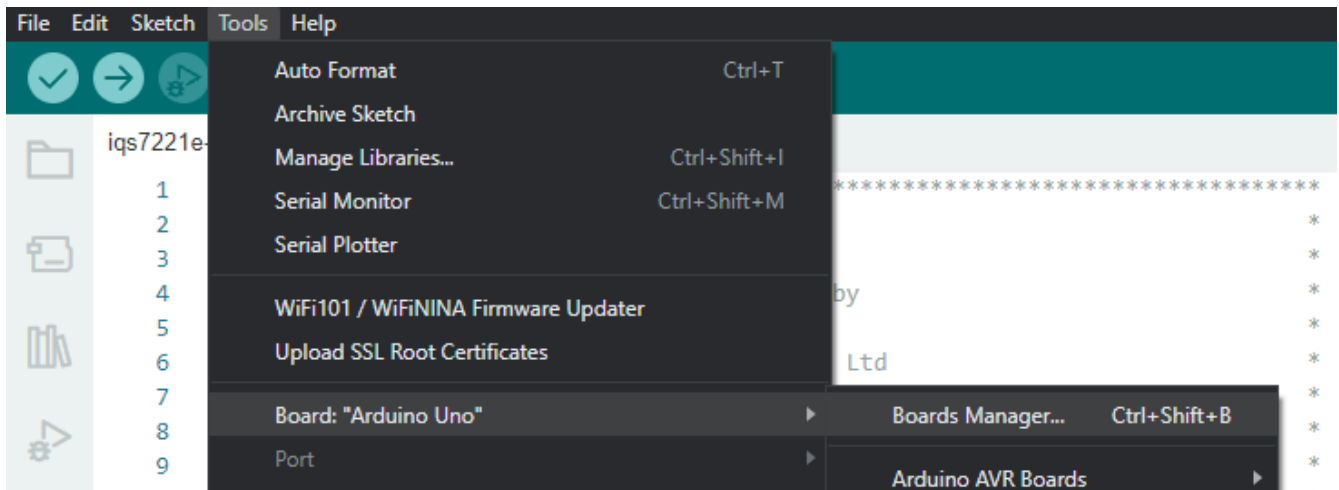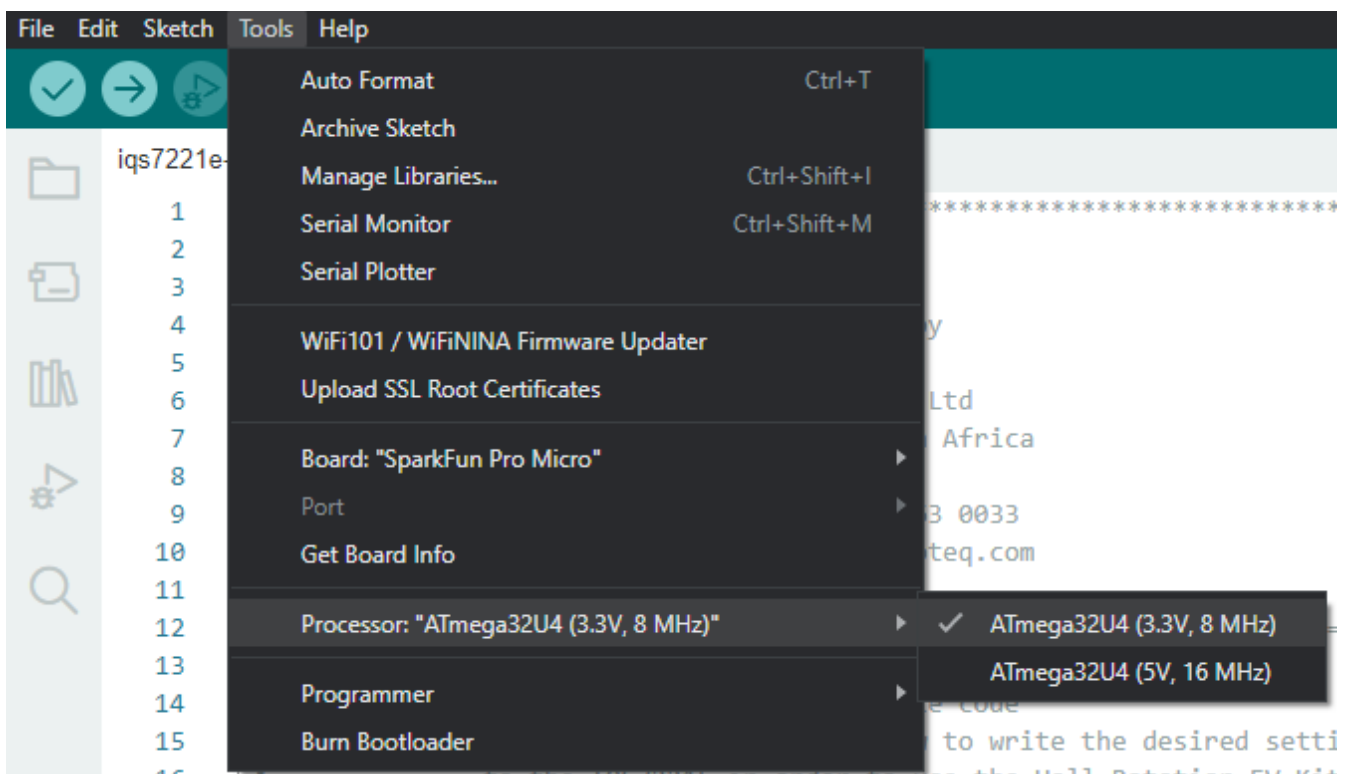
Search for "sparkfun", and install "SparkFun AVR Boards by SparkFun".
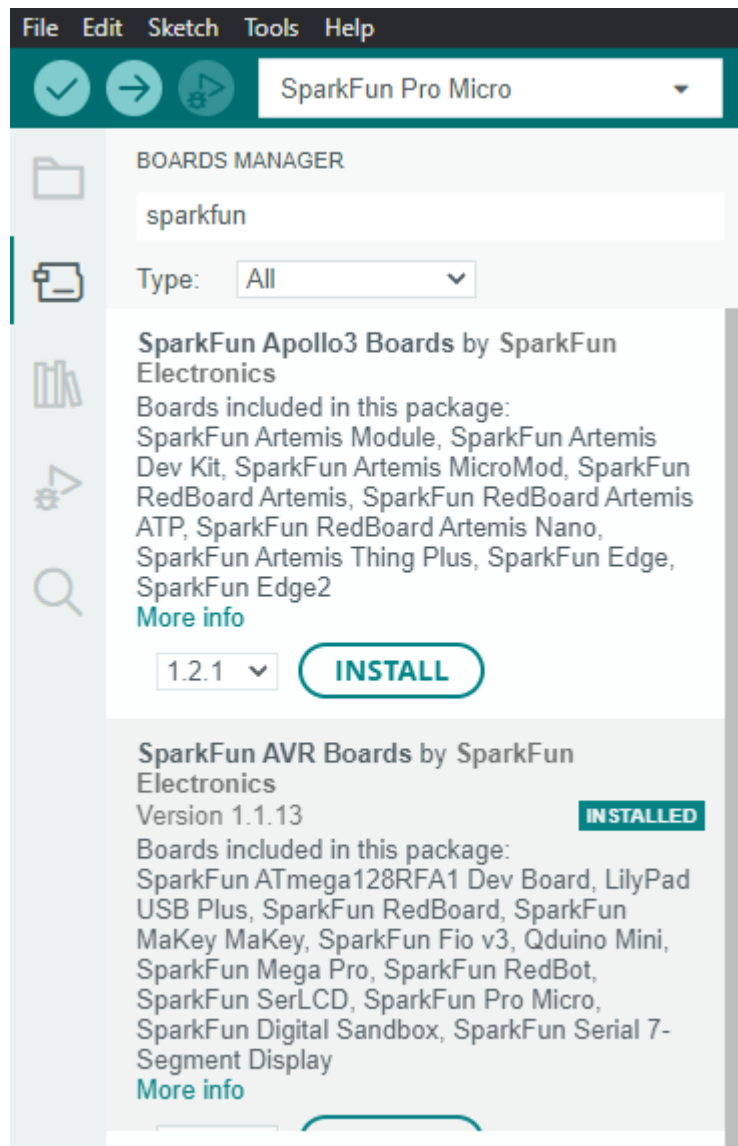
You can now select the "SparkFun Pro Micro" in the Board selection menu.

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

Source: Pro Micro Hookup Guide

Serial Communication and Interface

The example code provides verbose serial feedback to aid the in the demonstration of start-up and operational functions. It also has two built-in commands to demonstrate the IQS7222A's functionality. To use these built-in commands, the Arduino code simply sends an 'f' or 'r' over the serial interface.

```
1 - "f\n" - Force open a communication(RDY) window
```

```
2 - "r\n" - Request a Software Reset during runtime
```

It is important to take note of the newline ('\n') character that is needed to complete any serial request. It can be activated in the built-in Arduino IDE Serial monitor and is shown inside the blue rectangle in the figure below.

```
                                                                    Send

Start Serial communication
Device Ready
IQS7222A Initialization:
        IQS7222A_INIT_VERIFY_PRODUCT
                Product number is: 840 v1.15
                IQS7222A Release UI Confirmed!
        IQS7222A_INIT_READ_RESET
                Reset event occurred.
        IQS7222A_INIT_UPDATE_SETTINGS
                1. Write Cycle Settings
                2. Write Global Cycle Settings
                3. Write Button Settings 0 - 4
                4. Write Button Settings 5 - 9
                5. Write Channel 0 Settings
                6. Write Channel 1 Settings
                7. Write Channel 2 Settings
                8. Write Channel 3 Settings
                9. Write Channel 4 Settings
                10. Write Channel 5 Settings
                11. Write Channel 6 Settings
                12. Write Channel 7 Settings
                13. Write Channel 8 Settings
                14. Write Channel 9 Settings
                15. Write Filter Betas
                16. Slider/Wheel 0 Settings
                17. Slider/Wheel 1 Settings
                18. GPIO 0 Settings
                19. System Settings
        IQS7222A_INIT_ACK_RESET
        IQS7222A_INIT_ATI
        IQS7222A_INIT_WAIT_FOR_ATI
                DONE
        IQS7222A_INIT_READ_DATA
        IQS7222A_INIT_ACTIVATE_STREAM_IN_TOUCH_MODE
        IQS7222A_INIT_DONE
IQS7222A Initialization complete!

☑ Autoscroll  ☐ Show timestamp          Newline ⌄   115200 baud ⌄   Clear output
```