# Spresense Device Introduction

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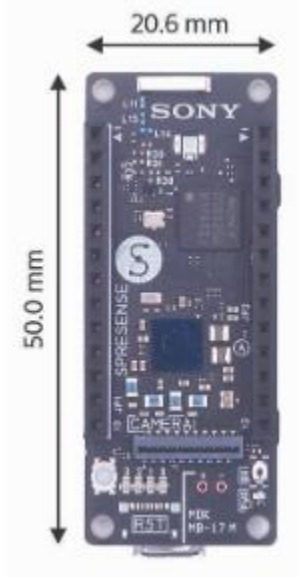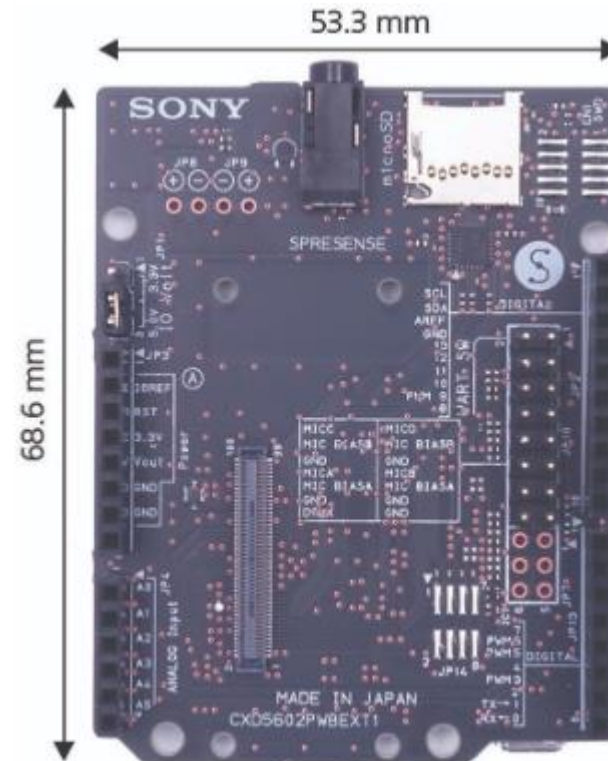
# Spresense Products
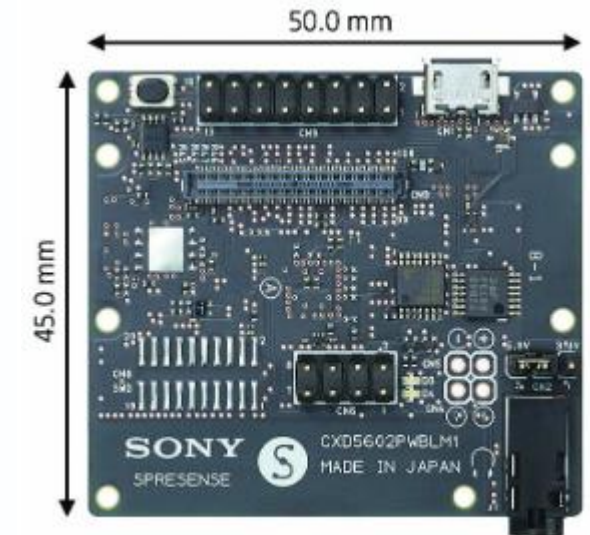
Camera Board

HDR Camera Board

Main Board

Extension Board

LTE Extension Board



- The Main Board has an embedded GNSS Receiver with built-in Antenna.
- The GNSS Receiver outputs position data in NMEA format
- Provides QZSS Early Warning Message during disasters
- Arduino compatible interface

# Application Development

Spresense is open source and comes with full documentation, tutorials and sample projects.
- C/C++ based Spresense SDK
- NuttX real-time OS (POSIX compliant)
- Multicore application support
- Optional add-on boards (BLE, Wi-Fi, sensors etc.)
- Arduino IDE support for quick prototyping
- Support for TensorFlow, NNC and Edge Impulse for professional machine learning development

Reference: https://developer.sony.com/develop/spresense/
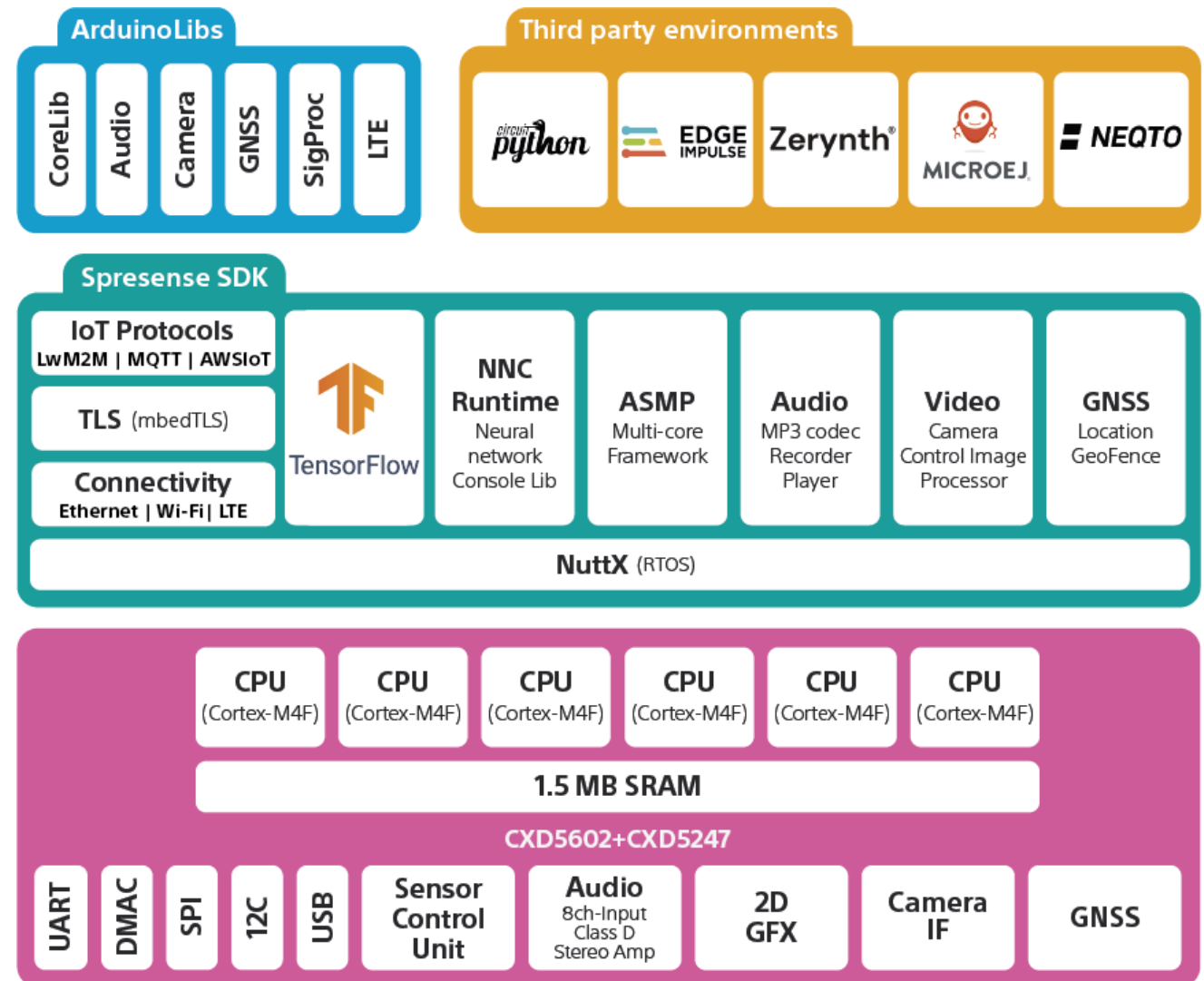
# Spresense Documents and Tutorials

https://developer.sony.com/develop/spresense/webinars

## Spresense Overview

Welcome to Spresense!
Introduction to Spresense and how to use the Spresense board.

- Introduction
- Spresense Tutorials
- Spresense Hackster's Projects

## Spresense Arduino

The Spresense Arduino is for developing application software for Spresense using the Arduino IDE.

- Getting Started Guide
- Examples & Tutorials
- Developer Guide
- API references

## Spresense SDK

The Spresense SDK is Sony's original development environment based on NuttX.

- Getting Started Guide (CLI)
- Getting Started Guide (IDE)
- Examples & Tutorials
- Developer Guide
- API references

## Spresense CircuitPython

CircuitPython is a programming language with added device libraries and drivers to support Spresense hardware and sensors.

- Getting Started Guide
- Examples & Tutorials
- Hardware Overview

https://developer.sony.com/develop/spresense/docs/home_en.html

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## 1. How to read GPS information using the Arduino IDE

In this tutorial we will explore how to utilize the Spresense positioning features from the Arduino IDE. The built-in Global Navigation Satellite System (GNSS) receiver is one of the main features of the Spresense board, and the Arduino support library is designed to provide easy access to the most commonly used GNSS functionality.

The first two steps of this tutorial show how to get a basic application for receiving GPS data up and running. Subsequent steps add guidelines showing how to optimize signal coverage and decrease start-up time.

### 1.1. Basic setup for GPS

The GNSS module is initialized by creating an `SpGnss object` and calling its `begin()` method. This powers on the hardware block and prepares it for positioning. Then, for a basic example that uses GPS only, we call the start method without any parameter in the applications setup:

```
#include <GNSS.h>
static SpGnss Gnss;

void setup() {
    /* Setup serial output for printing. */
    Serial.begin(115200);

    /* Initialize GNSS. */
    Gnss.begin();
    Gnss.start();
}
```
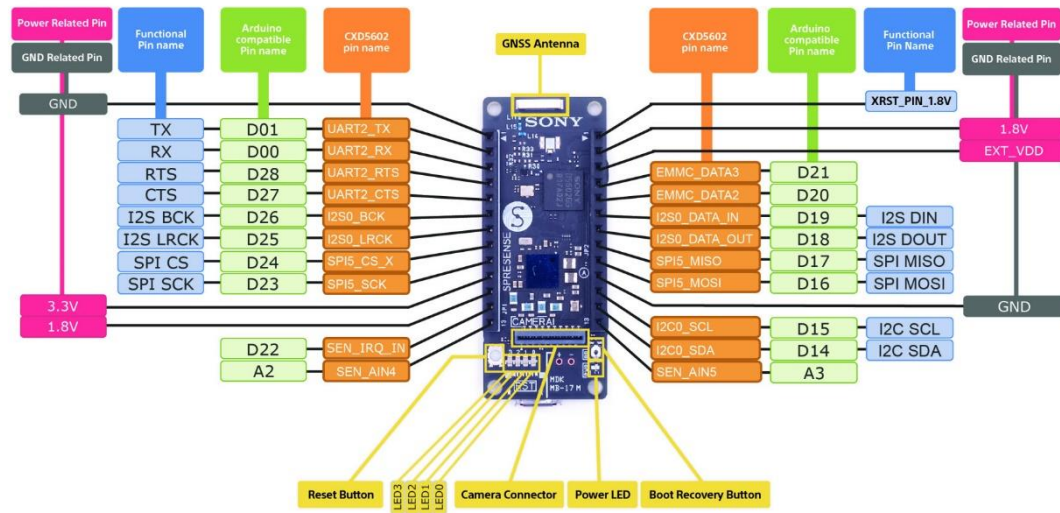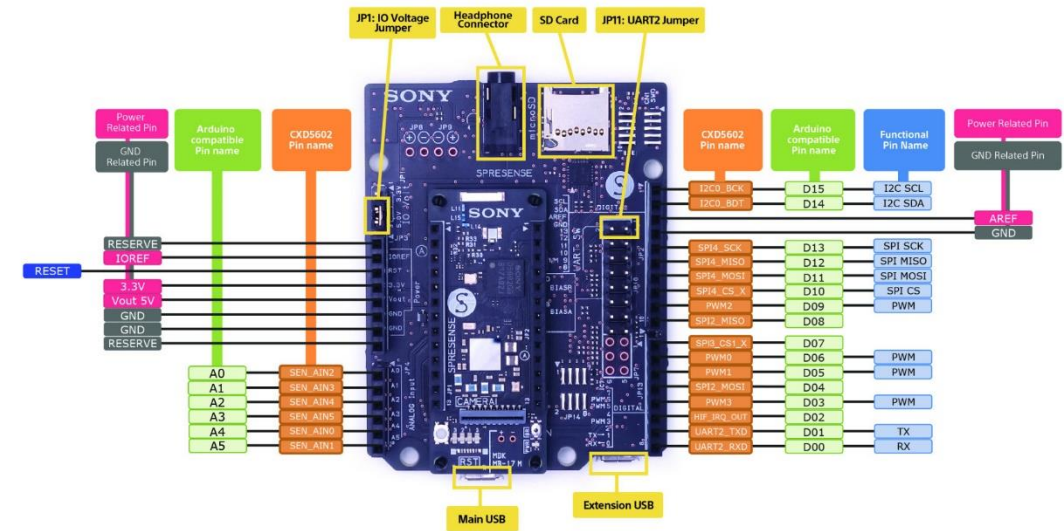
This causes the GNSS module to look for satellites. When a fix is established, positioning information is acquired.

https://developer.sony.com/develop/spresense/docs/overview_tutorials_en.html
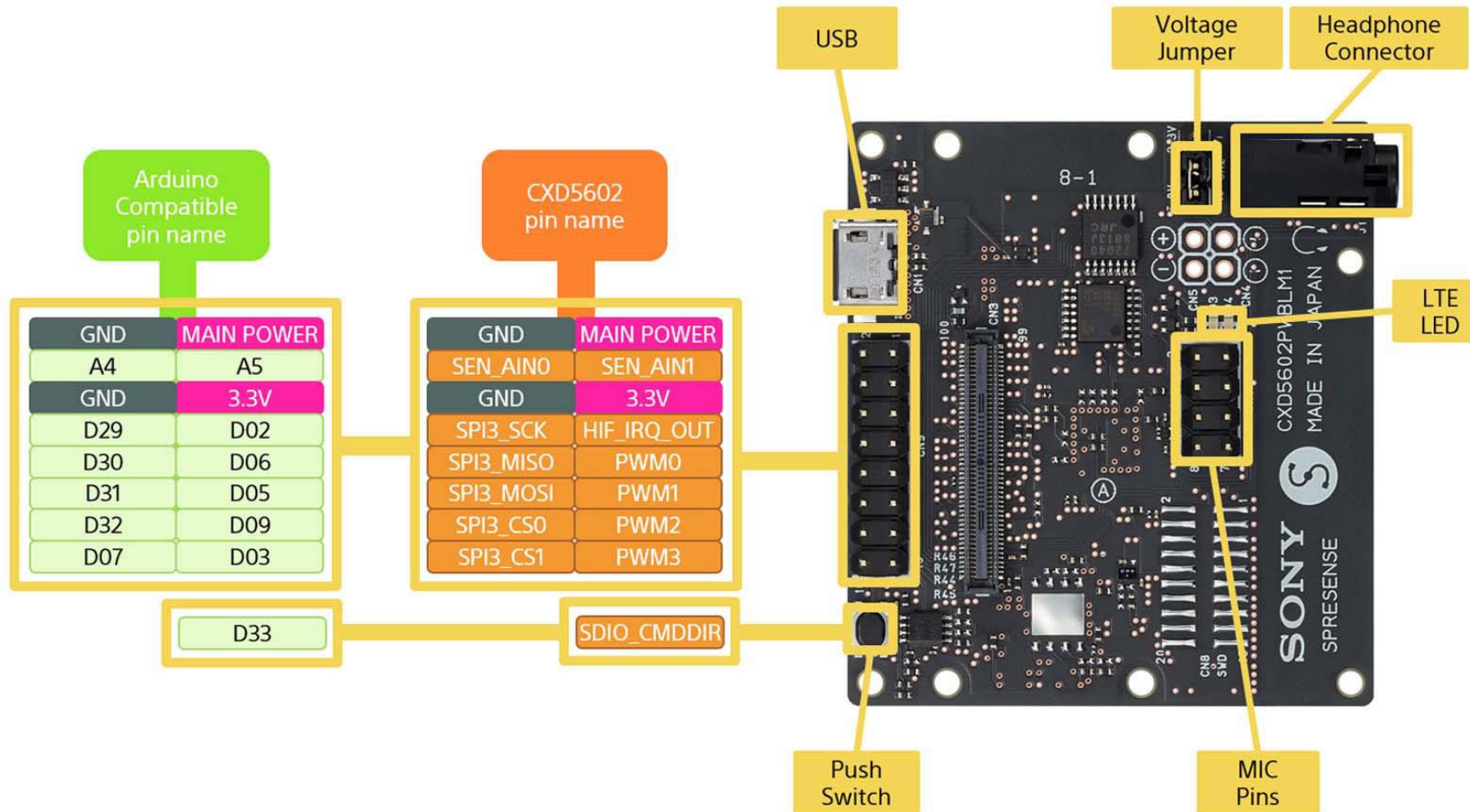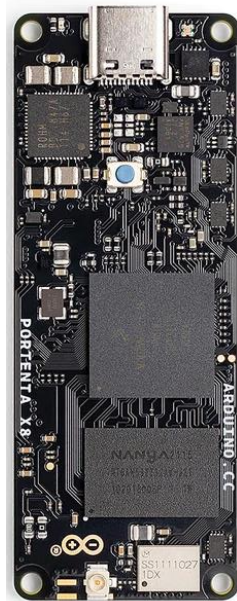
# Spresense Board Interface



Main Board



Main Board with Extension Board

# Spresense Board Interface

# Arduino Device



Industrial grade Arduino