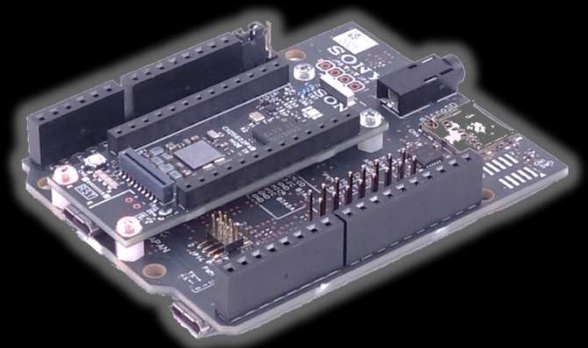
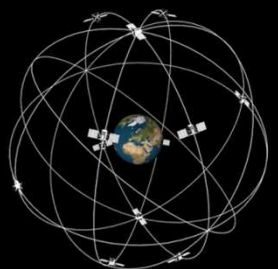
Rev. 5.1

SPRESENSE

SPRESENSE



CPU	ARM® Cortex®-M4F x 6
Clock	Up to 156MHz
SRAM	1.5MB
Flash Memory	8MB
Digital I/O	GPIO, SPI, I2C, UART, PWM
Analog Inputs	6ch (3.3V range)
Audio I/O	8ch Digital MICs or 4ch Analog MICs, Stereo Speaker
GNSS	GPS, GLONASS, BeiDou, Galileo
Others	Camera IF, SD CARD, I2S



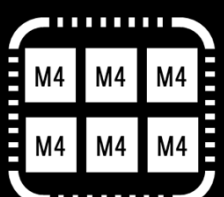
Positioning Features

- Ultra low power consumption
- GPS, GLONASS, BeiDu*2, Galileo*2 Multiple GNSS systems supported

*2 The firmware will support them in the future release

Audio Products for Music Lovers Provide New User Experience

- 192kHz/24bit High-Resolution audio
- 4 analog or 8 digital microphone inputs
- Class-D full digital amplifier

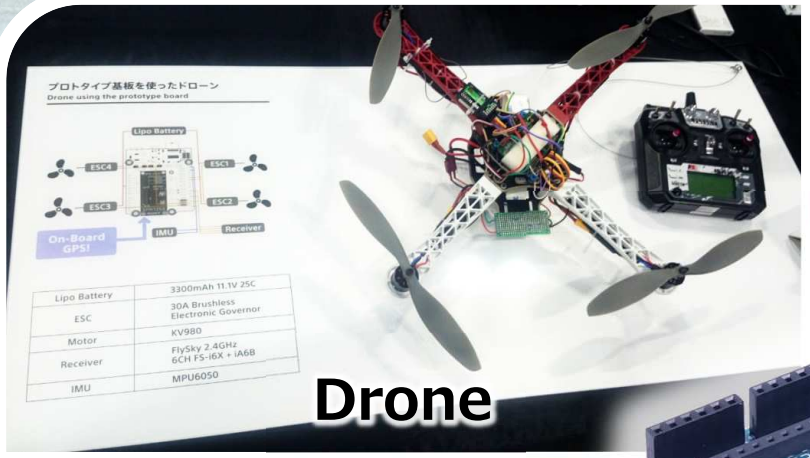


Low Power Multi Processor

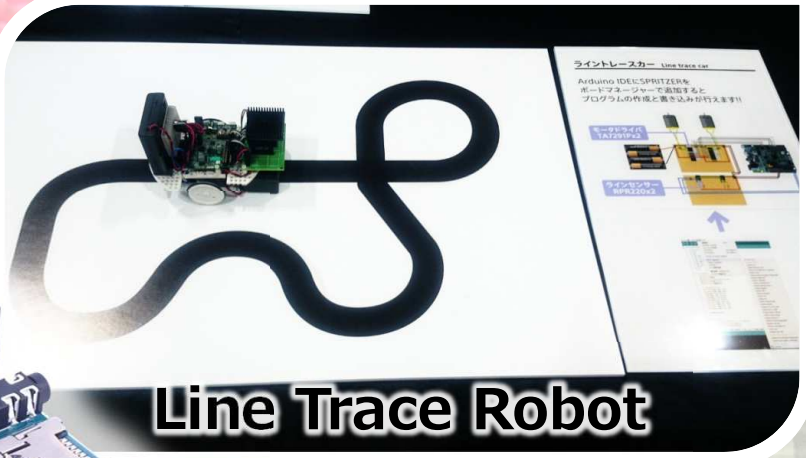
- 28nm FD-SOI*3 technology
- 0.7V core voltage
- ASMP framework*4 for the multi processor

*3 Fully Depleted Silicon-On-Insulator to enable ultra-low-power features
*4 Software Framework to make communication between processors

Maker Faire Tokyo 2017



Drone



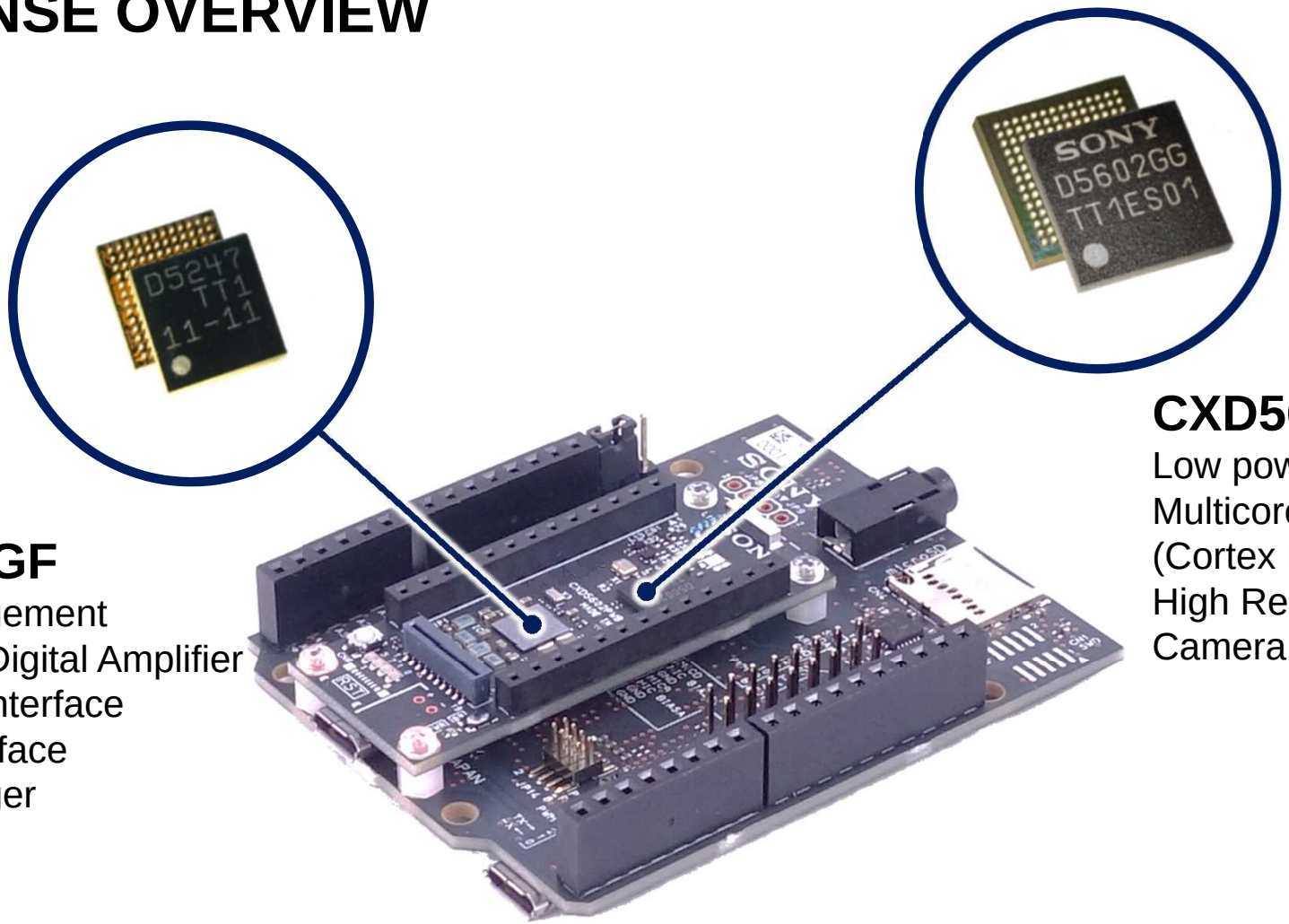
Line Trace Robot

ICE Debugger

Smart Speaker

IoT Camera

SPRESENSE OVERVIEW



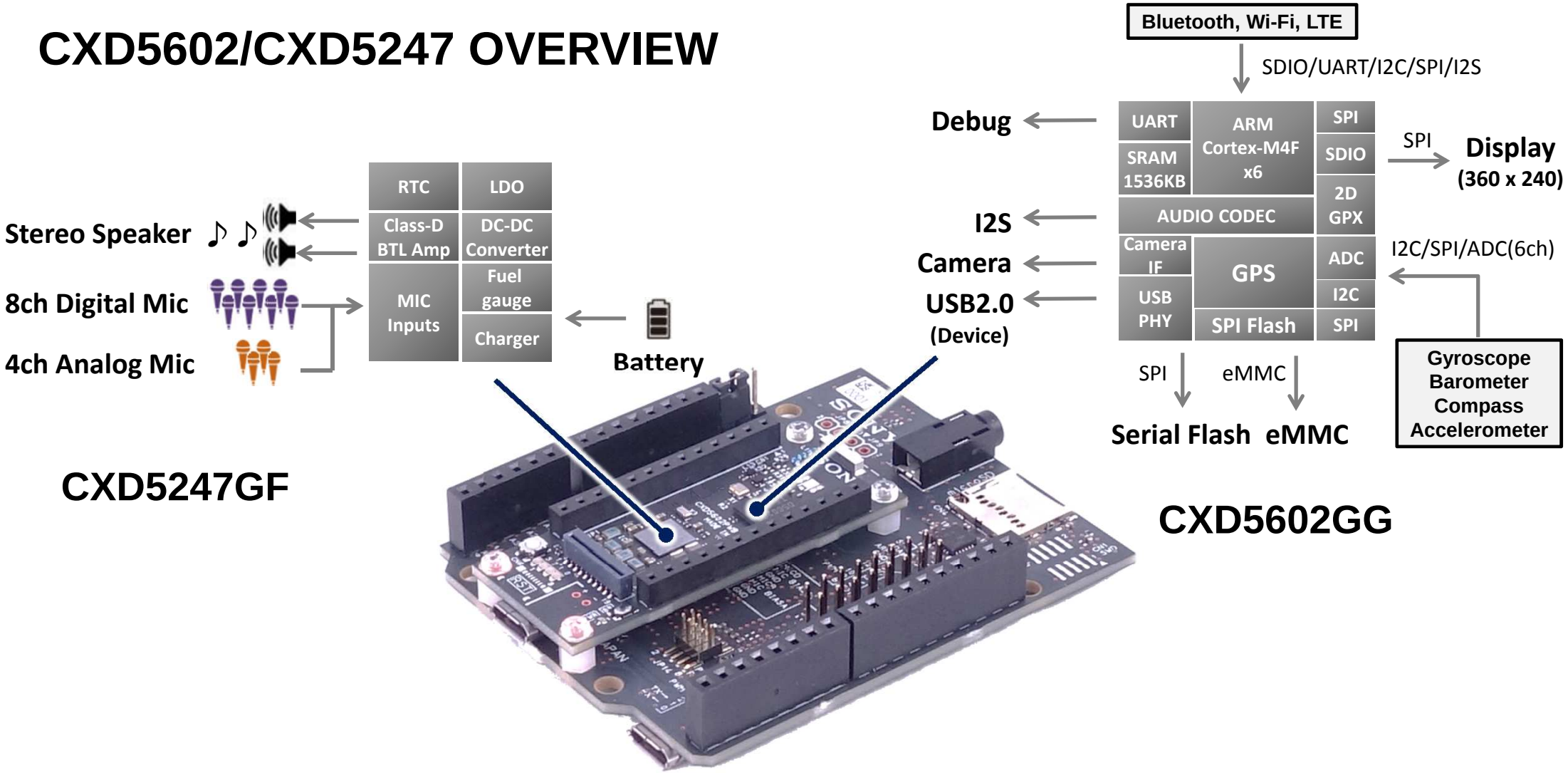
CXD5247GF

Power Management
Class D Full Digital Amplifier
Microphone Interface
Speaker Interface
Battery Charger

CXD5602GG

Low power GNSS functions
Multicore processor
(Cortex M4F x 6)
High Resolution Audio Codec
Camera Interface

CXD5602/CXD5247 OVERVIEW

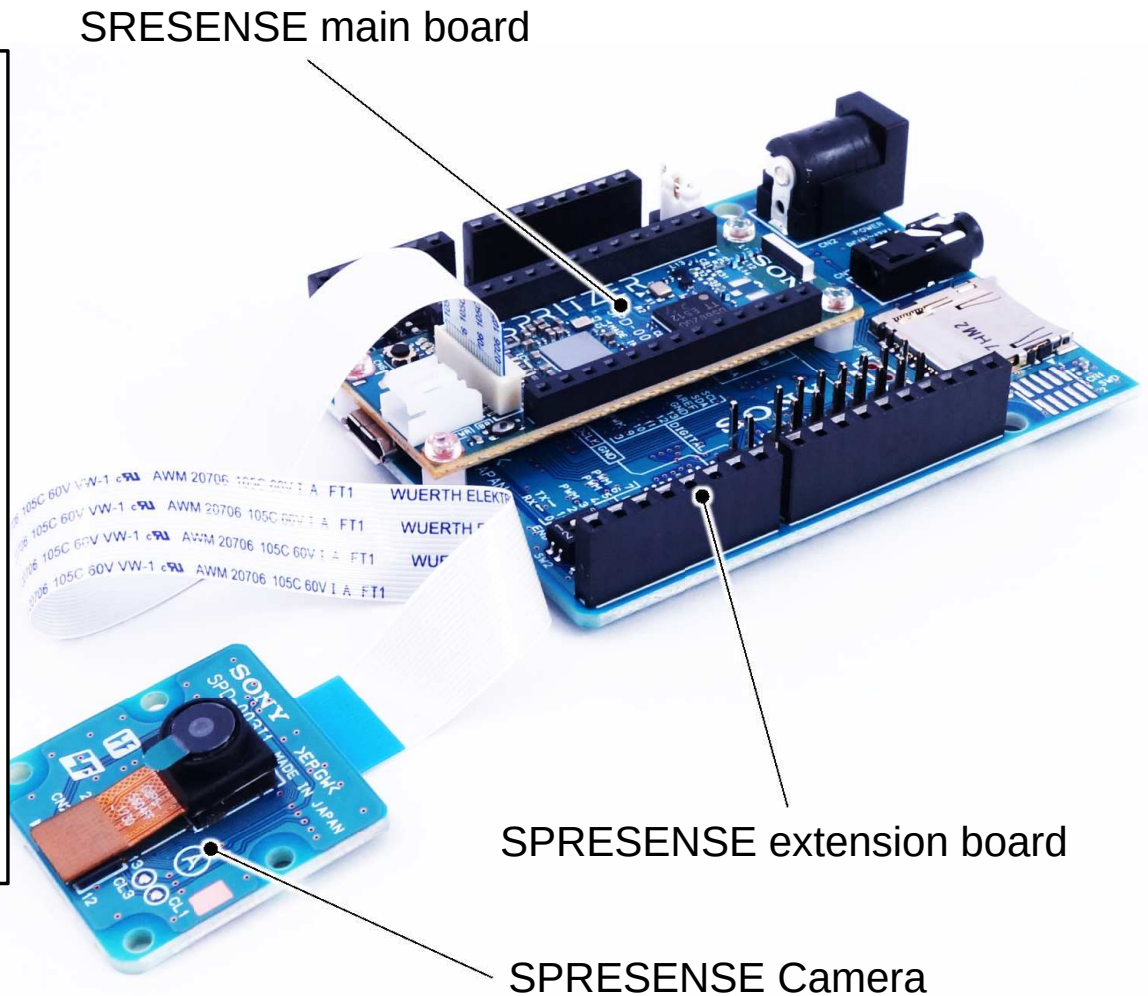


SPRESENSE BOARD CONFIGURATION

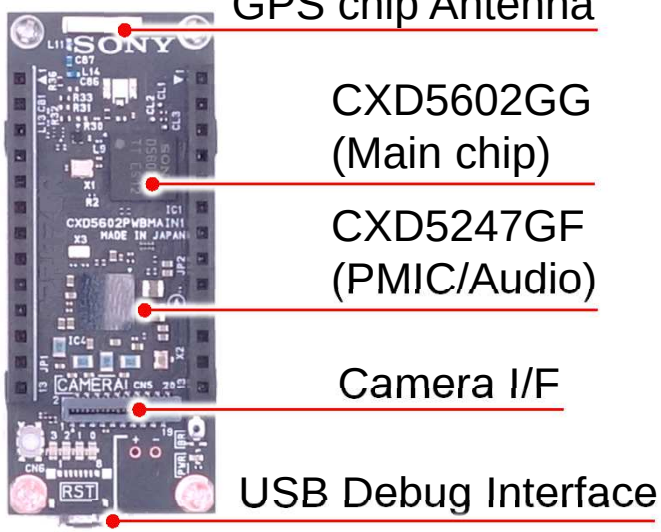
SPRESENSE main board
On board GPS Chip antenna
26pin extension connector
Camera interface

SPRESENSE extension board
SD card slot
Headphone Jack
Pin Header for 4ch analog mic/8ch digital mic
Connector for 3.3V/5.0V Arduino Shield boards

SPRESENSE Camera
5M pixels CMOS sensor*
Y/C RGB RAW and JPEG formats, parallel interface
*) The processed image size will be restricted by application memory size of 1.5MB

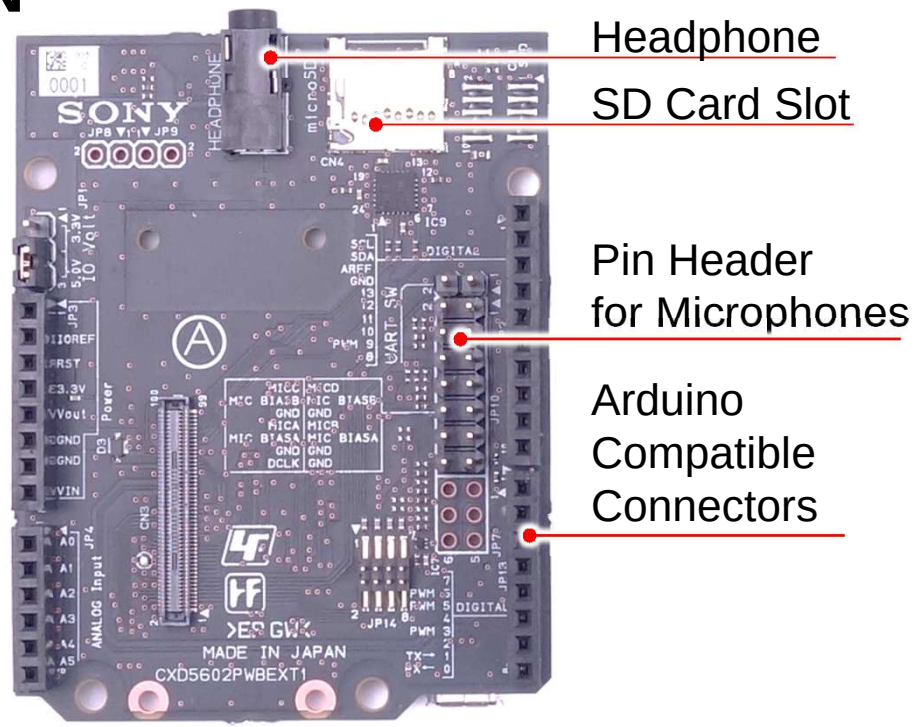


SPRESENSE BOARD CONFIGURATION



SPRESENSE main board

Size	50.0 mm x 20.0 mm
GNSS	GPS, GLONASS
IO(1.8V)	GPIO, UART, I2C, I2S, SPI (16 Shared Pins)
Others	4 Application LEDs

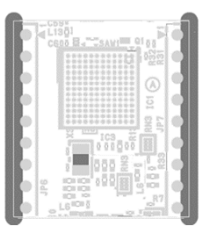


SPRESENSE extension board

Size	68.58 mm x 53.34 mm
Audio	Pin Header for 4 analog or 8 digital mics Headphone Jack
IO(3.3/5V)	Arduino compatible digital pins 5V range analog inputs

SPRESENSE Product Configuration

SPRESENSE covers Audio/Video/Communication those are the key factor of IoT technology



SPRESENSE
LTE module

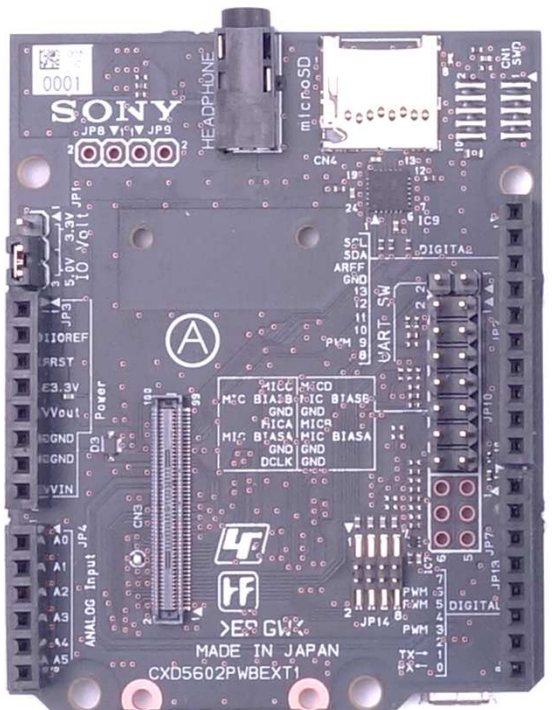
Planning to release
end of 2018

SPRESENSE
CAMERA

Release in
2018 Summer

SPRESENSE
Main board

Release in
2018 Summer

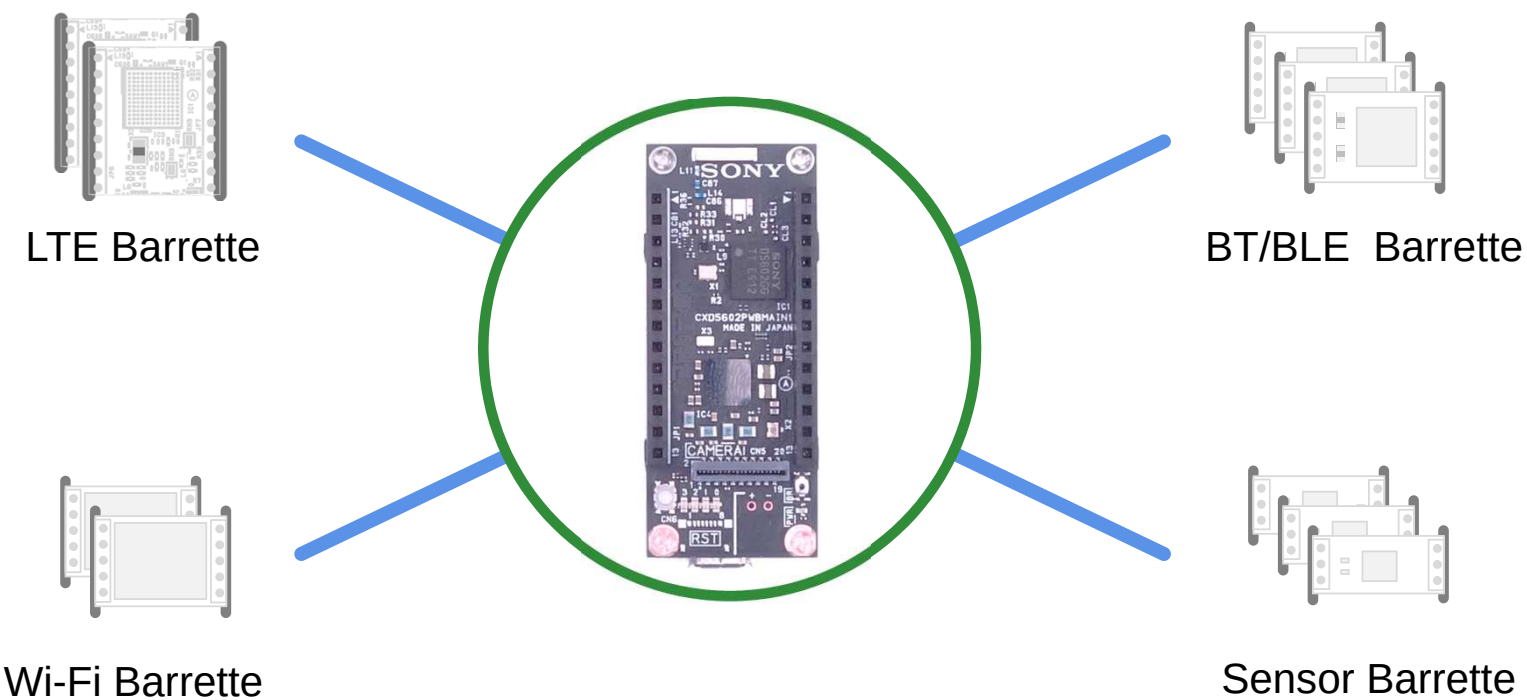


SPRESENSE
Extension board

Release in
2018 Summer

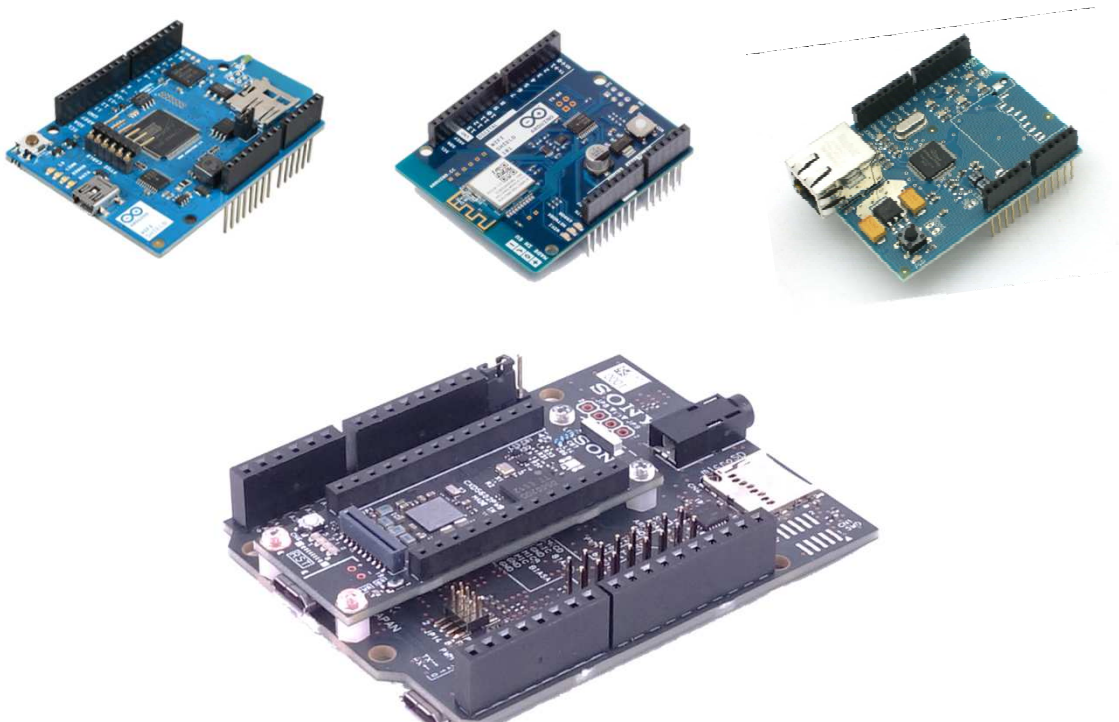
SPRESENSE FOR OPEN PLATFORM

SPRESENSE will realize a small IoT prototype system with Barrette

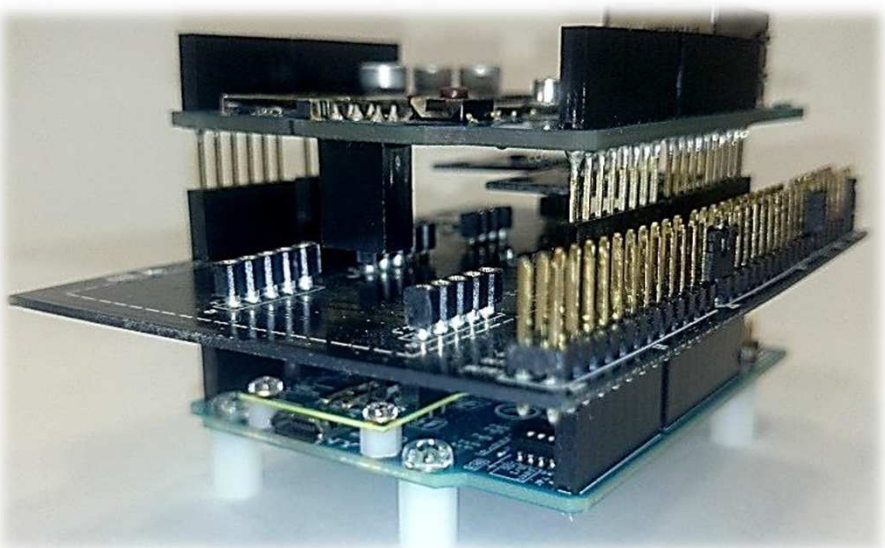


SPRESENSE FOR OPEN PLATFORM

Arduino Shields



EASY PROTOTYPING WITHOUT SOLDERING



SPRESENSE extension board is designed to connect most Arduino Shields

SPRESENSE SYSTEM OVERVIEW

Core System

Functions

Battery

Output

Display

Speaker

SPRESENSE

CXD5247

PMIC

+

CXD5602

ARM Cortex M4F
1.5MByte SRAM

Sensor Fusion

Voice

AUDIO

GPS

Sensing

Image Sensor

GPS

Microphone

Motion Sensor

- Accelerometer
- Gyro
- Compass
- Barometer

Heart Rate Sensor

Transaction Certification

NFC
Felica

Comunication

LTE
3G
2G

Wi-Fi

Bluetooth

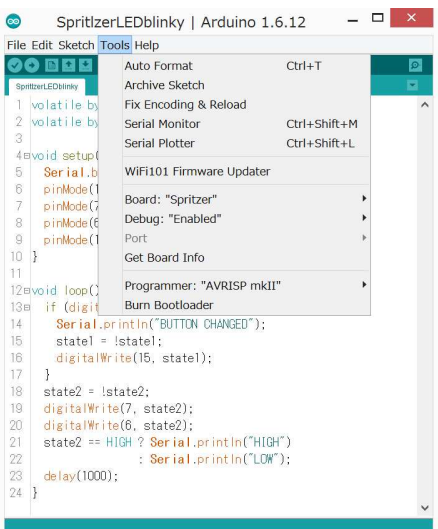
LPWA

Sony's LPWA
LoRa, SIGFOX

SPRESENSE DEVELOPMENT TOOLS

Development tools for the product version may be changed without notice

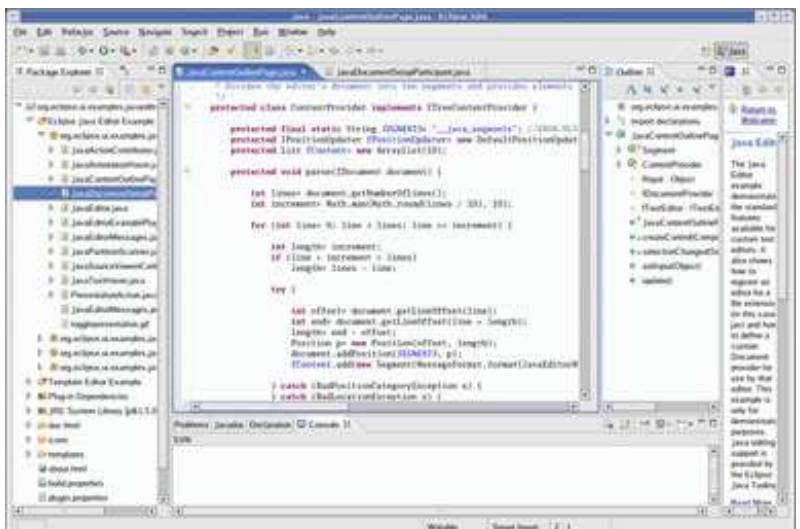
ARDUINO IDE



For amateur developer

Developers can develop with Arduino Reference API and Arduino Library

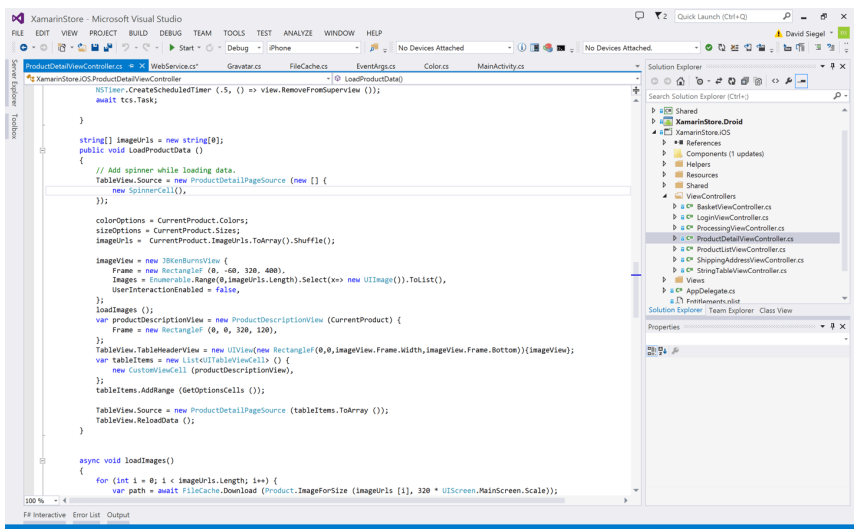
ECLIPSE IDE



For expert developer

If applications requires concurrent programming, Eclipse IDE is usable. It can call SPRESENSE SDK directly and able to use a debugger like GDB.

VISUAL STUDIO



For professional developer

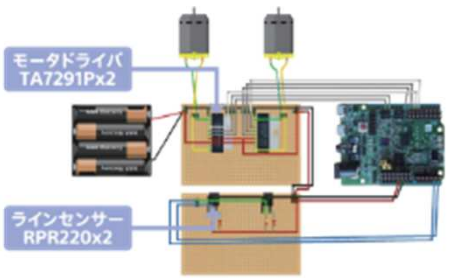
If you want to make a product with SPRESENSE, VISUAL STUDIO with SOLID* is the best choice. It is able to use ICE Debugger efficiently

- https://solid.kmckk.com/SOLID/

Developers can choose the development tool that they like!

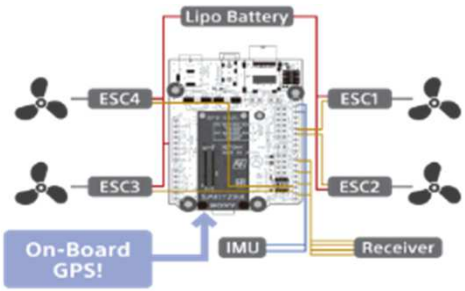
SPRESENSE APPLICATIONS

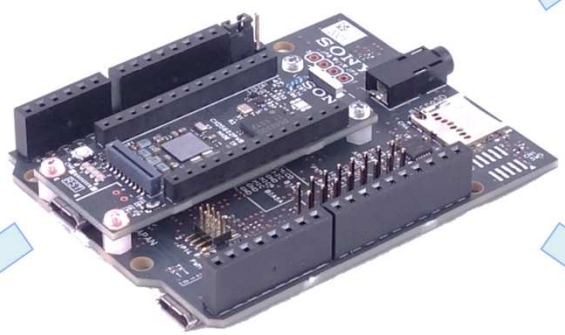
FA/Robotics
High Speed AD converter



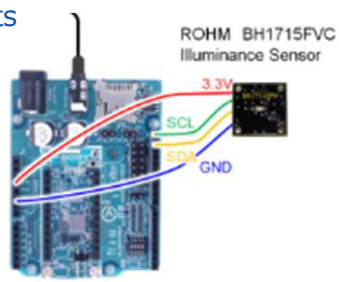
AI Solution
Multi Core Processor
2018 autumn

Drone
GPS functionality
Sensor Fusion

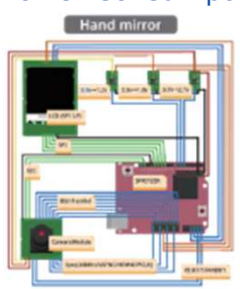




Smart Speaker
High Resolution Audio Codec
Multi Mic. inputs

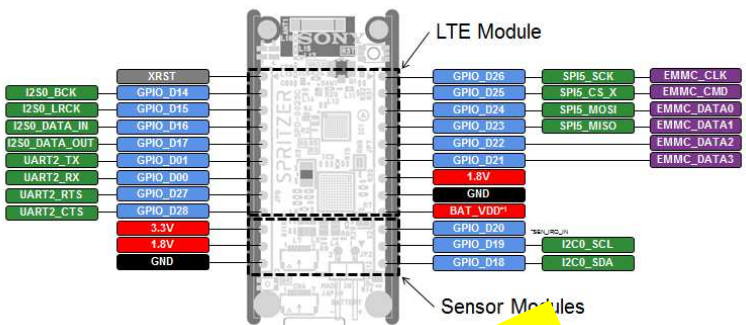


Low Power IoT Camera
Camera interface
Low Power Consumption

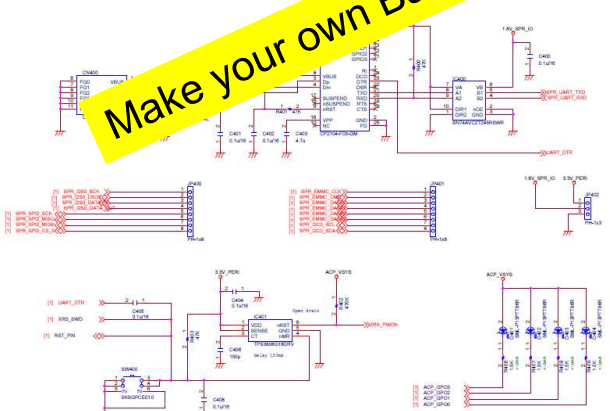


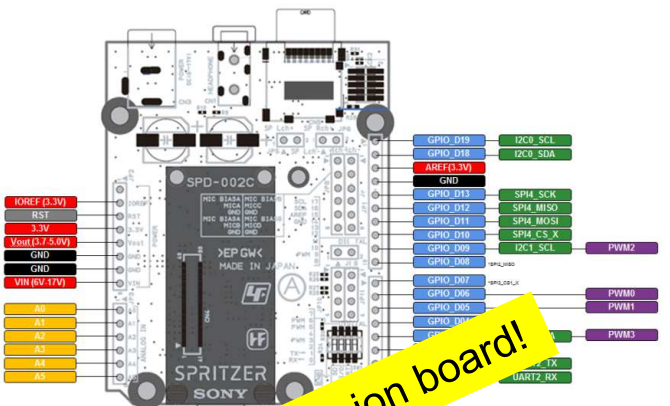
SPRESENSE OPEN PLATFORM

Open Source & Hardware to accelerate Open Innovation!

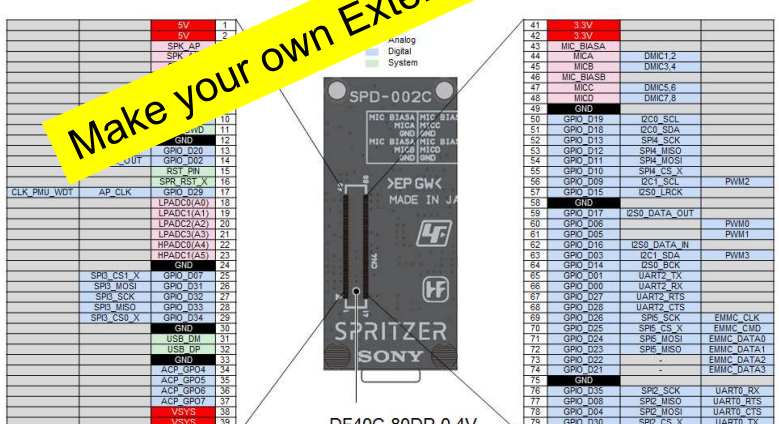


Make your own Barrette!



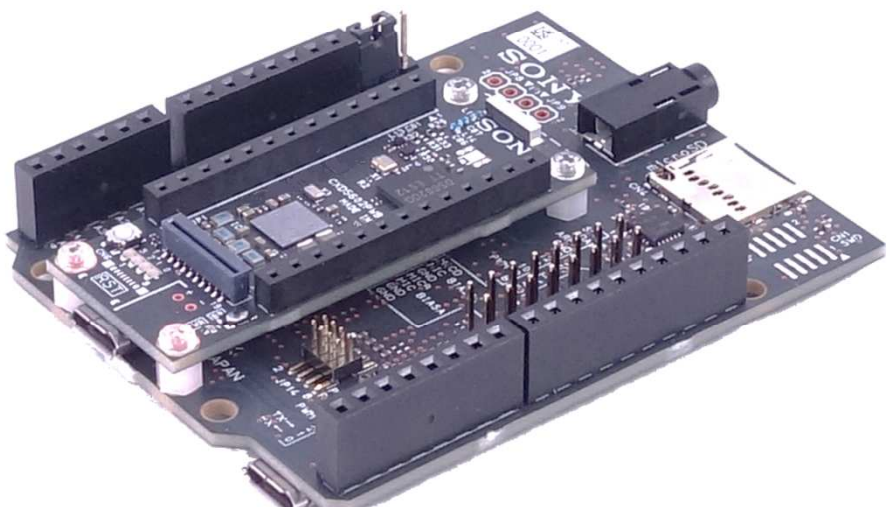


Make your own Extension board!



SPRESENSE

Smart Sensing Processor
making IoT solutions
smarter, more efficient




IoT Solutions Business Division