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Agora Board Overview



Introduction

The Agora platform (EPM2M-AGORA-DEV) enables many applications including remote environment monitoring. Sensors include temperature, humidity, air quality, pressure, audio, inertial measurement, and range finding up to 2 meters. The platform also supports wireless data transport over BLE, LoRa, and/or Cellular (CAT-M1 / NB-IoT).

Agora's on-board features include the following:

Feature	Ref-Des	Description
Processor & BLE	U3	Fanstel BT840 (nRF52840): Cortex M4F 32-bit processor. This is the application processor and facilitates Bluetooth connectivity
Cellular	U1	Quectel EC20 (LTE-M / NB-IoT)
LoRa	U2	SiRF SX1276

Feature	Ref-Des	Description
Cellular Module	U12	Telit ME910C1-WW [CAT-M1, NB-IoT]
6 axis IMU	U9	ICM20602, I ² C 6-Axis Integrated Linear Accelerometer and Gyroscope
9 axis IMU	U6	LSM9DS1, I ² C 9-Axis Integrated Linear Accelerometer, Gyroscope, and Magnetometer
Temperature and Humidity Sensor	U7	Si7021-A10-GM(1)(R) - I ² C Humidity and Temperature Sensor
Air Quality	U2	BME680, Temperature, Humidity, Pressure, Air Quality
Time-Of-Flight ranging	U14	VL53L0X, 2 m laser range finding IC
Microphone	U5	ICS-43432, I ² S Microphone for audio-event detection
NOR Flash	U1	25Q32JVIQ, 4MB external QSPI NOR Flash
Debug	TE1	Tectonic Edge™ programming header
LED	LED1	Red LED
Power	J6/BT1	Connector for rechargeable LiPo battery, plated slots for battery solder tabs, and Tectonic Edge™ programming header



Description

Feature Block Diagram

The block diagram below is an overview of the Agora system. The development kit configuration comes populated with all sensor options & connectivity options as shown in the “PCB Populate Options” block. Application features of the processor are highlighted in the “Application Processor” block. The “Standard Options” block describes the items common to all Agora configurations. The items in the “Tectonic Edge™ Connector” block describe features accessible to the development kit through the Agora board edge connector. The “Common Cellular Modem” block highlights connectivity options for the modem.

PCB Populate Options

Sensor Options

MIC ICS-43432	TEMP TEMP HUM HUM PRESSURE PRESSURE AIR Q AIR Q	RANGE 2m VL53L0X
TEMP TEMP HUM HUM Si7021	IMU ICM-20602	IMU IMU MAG MAG LSM9DS1

Connectivity

Cellular
TELIT ME910C1-WW

CAT-M1 NB-IOT GPS

LoRa
SX1276 NiceRF

SIM Options

Nano SIM card
ESIM

Antenna Options

GPS
NFC
LoRa
Cell

Application Processor

Certified nRF52840 Bluetooth Module: Fanstel BT840

Features

Cryptocell
Cortex M4F
256K RAM
1MB Flash

Connectivity

BT 5
802.15.4
NFC

Standard Options

Red LED
NOR Flash
User Button
Power Switch
Battery Monitor
1.8V - 5.0V Input

Tectonic Edge Connector

ADC I2C GPIO DEBUG UART DEBUG SWD I2S QSPI USB

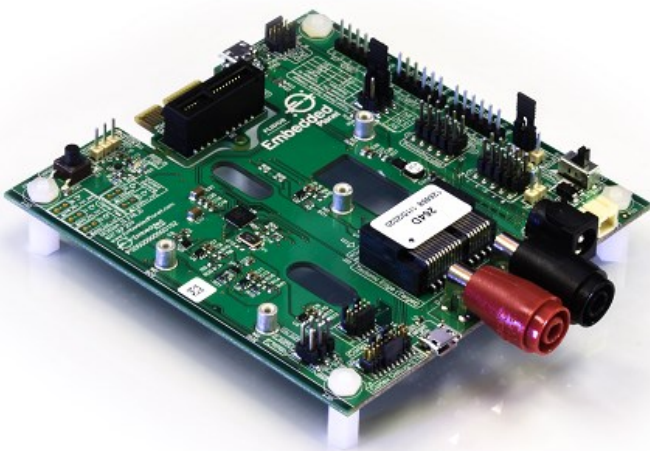
Common Cellular Modem 20 Pin Footprint

CELL USB
CELL UART

Development

For the most up-to-date development information and tutorials, please visit the Mbed product page for the [Agora Development Kit](#).

Flidor | Development Interface Board



Agora application development requires the use of the Flidor development interface board. Flidor is a programmer, debugger, and breakout interface for Tectonic Edge™ compatible target devices designed by Embedded Planet such as Agora. Flidor provides adjustable power to the target MCU and connects it to a computer via USB for debugging in addition to its breakout capabilities.

[Click here for more information about Flidor](#)

Hardware Integration

Antenna Specifications

Impedance: 50ohms

Input power: <24dBm (250mW)

VSWR (absolute maximum): 10:1 [above this limit, permanent damage to the module may occur]

VSWR (recommended maximum): 2:1 [to fulfill all regulatory requirements]

Recommended antennae: Taoglas MFX3.07.0150C

Minimum bandwidth, per LTE frequency band:

Customer Support

Embedded Planet provides complete support for our product line. Embedded Planet technical support includes product assistance for EP firmware and hardware. Technical support can assist with setup, installation, configuration, documentation, product related questions, and expansion guidelines.

Contact Embedded Planet

Embedded Planet
4760 Richmond Road, Suite 400
Warrensville Heights, OH 44128
Phone: 216.245.4180
Fax: 216.292.0561
www.embeddedplanet.com

Company Email

Sales: sales@embeddedplanet.com
Information Requests: info@embeddedplanet.com
Technical Support: support@embeddedplanet.com

Disclaimer

FCC NOTICE: This kit is designed to allow:

- (1) Product developers to evaluate electronic components, circuitry, or software associated with the kit to determine whether to incorporate such items in a finished product and
- (2) Software developers to write software applications for use with the end product. This kit is not a finished product and when assembled may not be resold or otherwise marketed unless all required FCC equipment authorizations are first obtained. Operation is subject to the condition that this product not cause harmful interference to licensed radio stations and that this product accept harmful interference. Unless the assembled kit is designed to operate under part 15, part 18 or part 95 of this chapter, the operator of the kit must operate under the authority of an FCC license holder or must secure an experimental authorization under part 5 of this chapter.

Last updated on 11/10/2020

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