Athen
Sense System

PRODUCT OVERVIEW

Athen Sense System is a fully IoT board for industrial applications, set to be a platform for commercial deployments.

It has 6 operational slots that allow adapting different sensors of the most common protocols.

Athen Sense System supports multiple shields that enable the communication to any cloud system or server with different Low Power Wide Area (LPWA) technologies, such as LTE-M, NB-IoT, and Sigfox.

KEY FEATURES

Reduce time to market	Ready to scale	Years of autonomy	Easy sensor to cloud	Adapt any sensor	Code & libraries

LTE-M

A network with extended coverage that allows deploying complex solutions with long battery life and connectivity in real time.

Technical specifications

Bandwidth: 1.08MHz

Data rate (UL/DL): 375/300kbps

Transmit power: 20dBm or 23dBm

Battery life: >10 years

NB-IoT

A network designed to allow efficient communication and long battery life in massively distributed devices.

Technical specifications

Bandwidth: 180 KHz

Data rate (UL/DL): 65/27kbps

Transmit power: 20dBm or 23dBm

Battery life: >10 years

BUSINESS CASES

LOGISTICS
Take control over your assets, get deeper insights and optimize your operations.

AGRICULTURE
Keep tracked the key variables for decision-making over your fields, to assure quality and improve efficiency.

HEALTH CARE
Get real-time health monitoring to keep patients safe and healthy, enhance operations and drive a better overall experience.

INDUSTRY 4.0
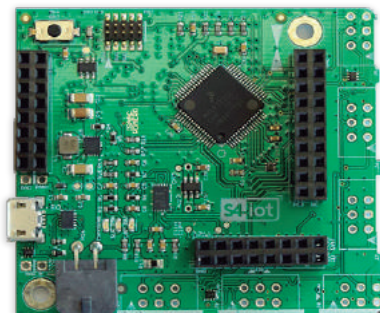Optimize the use of resources and increase productivity.

SMART CITIES
Improve quality of life through innovative solutions that can make our cities safer and more sustainable and livable.

BETTER WORLD
It's time to contribute with something that could change the world forever.

Proccesing Board

General

Dimensions (5.8cm x 5.3cm x 1.9cm)

Operating temperature range (-40°C ~ 85°C) with USB wall adapter supply

Hardware

Operating voltage 3.3v

Microcontroller ARM Cortex-M0+

Max clock speed 48 MHz

Typical current ≤ 300mA in transmission

16 ports for user interfaces divided in 6 operational connections/slots

Power supply and I2C are available for every operational slot

Digital/analog communication interfaces: UART, LPUART, I2C, ADC, GPIO's

Low-Leakage Wakeup Unit Interrupt

General-purpose embedded LED

Software

MCUXpresso Programming IDE

SWD Programming interface

Code & libraries

Consumption

6600mAh Li-ion rechargeable battery

Autonomy ≥ 5 years 1 data/30 minutes

Micro USB battery charger

Battery level indicator & charge status

Solar panel ready

Charge time 2 hours (80% ~ 100%)

Coupling Stages

Additional coupling stages are offered to adapt the following protocols in any slot location:

Modbus RTU_RS-485, RS-485, RS-232, SDI-12, 4-20mA, I2C, UART, ADC, GPIOs, Analog input (1/0, voltaje, current & resistor), OpAmp

LTE-M / NB-IoT Shield

General

3GPP E-UTRA Release 13

3GPP TS27.007, 3GPP TS 27.005

Enhanced AT Commands

Bands Supported

Cat M1 / NB-IoT:
LTE FDD:
B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B26/B28

LTE TDD: B39, (for Cat M1 only)

EGPRS: 850/900/1800/1900 MHz

Consumption

LTE Cat M1
Power Saving Mode: 10.4uA
Standby State: 1.99mA @DRX=1.28s

LTE NB-IoT
Power Saving Mode: 9.8uA
Standby State: 2.77mA @e-I-DRX=20.48s

SMS

Point-to-point MO and MT

SMS Cell Broadcast

Test and PDU Mode

Data

Cat M1: Max. 275 Kbps (DL), Max. 375 Kbps (UL)

Cat NB-IoT: Max. 32 Kbps (DL), Max. 70Kbps (UL)

GPRS: Max. 107 Kbps (DL), Max. 85.6 Kbps (UL)

EDGE: Max. 296 Kbps (DL), Max. 236.8 Kbps (UL)

GNSS

GPS, GLONASS, BeiDou/Compass, Galileo, QZSS

Interfaces

(U)SIM Interface

Main and GNSS Antenna Interfaces

Protocols

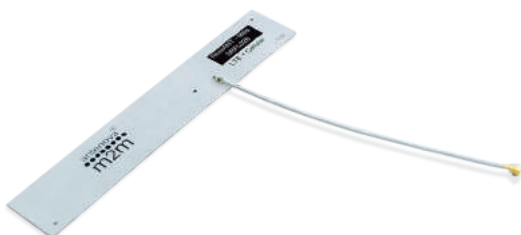PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/MQTT

Programmer

· Athen Programmer is a board dedicated
to program the different boards
from the Athen family
· Debug different Athen boards with SWD

Battery

· Li-Ion rechargeable battery
· Capacity: 6,600 mAh
· Ask for other battery options

Cellular Antenna

· Cellular IPEX antenna for
LTE-M and NB-IoT

GPS Antenna

· GPS IPEX antenna

Micro USB cable

· Cellular IPEX antenna for
LTE-M and NB-IoT