onics.

Connecting technology with life

Squid.link gateways

2nd generation Squid.link

Insurtech · Care · Security · Energy

Great interoperability

Modular platform

With the 2nd generation of Squid.link gateways as the heart of your IoT solution, you have a mature, reliable, and secure platform. The gateways are modular, meaning that they can be configured to match your needs.

The Squid.link gateways are open Linux platforms and can handle numerous wireless protocols at the same time.
You are no longer dependent on one vendor of IoT devices but can combine your Home Area Network exactly the way you prefer.

Edge computing

Edge computing is transforming the way IoT data are being handled, processed, and delivered. As the Squid.link gateways enable edge computing, you can benefit from a range of advantages including:

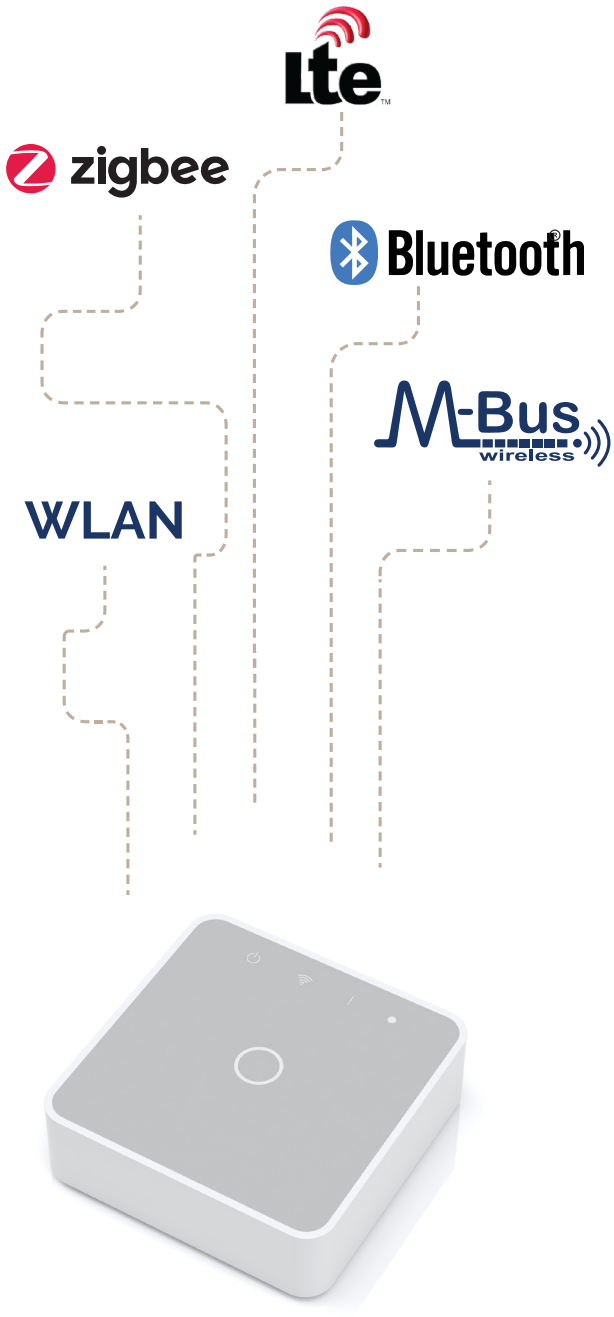
- Improved data security and privacy
- Increased cost-effectiveness
- Enhanced reliability
- Low latency

Multiple protocols

The gateways support Zigbee 3.0, Z-Wave Plus*, Wireless M-Bus, Bluetooth Low Energy, Bluetooth 5, and WLAN HAN networks. Communication with servers and e.g. smartphones can be established via WLAN, Ethernet (to local modem), or cellular networks.

Flexible solution

The Squid.link gateways include processor power to implement complex local intelligence. The memory options leave room for data storage and logging.
The prices are extremely competitive since you will only pay for your selected modules.



Fast time to market

Scalability

Low up-front investment

Configuration options

White label possibilities

Get a gateway that fits the visual identity of your business seamlessly by adding your brand to the product. You have the opportunity to customize the packaging, installation manual, and labels.

To make your design process as smooth as possible, we provide you with a set of templates and guidelines.

Numerous opportunities

For high-volume solutions, you can choose the protocols you need for your Home Area Network (HAN) and for your Wide Area Network (WAN). The gateways are configured when they are put into production.

If you want to order lower volumes, you can choose between a range of standard models. Find an overview on page 5.

Design options

You can design the appearance of the Squid.link gateways the way you want it. Choose the color of the top label and add your logo. Define your LEDs, button, and functionality - and you are ready.

Internet connection (WAN) options

- Ethernet
- Cellular network (LTE)
- 2 LTE antenna options:
  - Internal
  - External
- WLAN (b/g/n) shared with HAN
- Custom module

Local network (HAN) options

- Zigbee 3.0
- Matter/Thread
- Wireless M-Bus
- 869 MHz care network
- Sub 1 GHz proprietary
- Bluetooth / BLE 5
- WLAN 2.4 GHz
- Custom module

Expansion & power supply options

- Hardware security chips
- USB port (USB host hidden in compartment under enclosure)
- Micro SD card slot
- SIM card slot
- Two antenna connectors
- Power supply:
  - External adapter
  - Power over Ethernet (Squid.link 2B only)

Design options

- Label colors
- Label design
- LED colors
- Button in the middle
- Packaging
- Manuals

2nd generation Squid.link

With the 2nd generation of Squid.link gateways, you can choose between two versions: The basic version, Squid.link 2B, and the extended version, Squid.link 2X.

Squid.link 2B

Squid.link 2B has an ARM9 CPU that allows you to run your solution with high performance. Choose between two memory configurations for the gateway to match the requirements of your solution:

- 128 MB RAM + 256 MB Flash
- 256 MB RAM + 512 MB Flash

The optional 2-4 hour battery backup will ensure that your solution works in the eventuality of power loss.

Squid.link 2X

Squid.link 2X is a highly powerful gateway suitable for large IoT solutions. Its powerful ARM Cortex-A7 1.0 GHz Dual-Core CPU allows you to run complex applications, such as artificial intelligence-based applications, or multiple applications at the same time. Squid.link 2X offers two memory options:

- 512/1024 MB RAM
- 4 GB Flash

Squid.link 2X has an optional 1-3 hour battery back-up, but can last up to 12 hours in low-power mode (wake-on-Zigbee Alarm, Mains ON, or LTE).

Tamper protection and installation debugging

Enhance the security of your solution with tamper protection. By adding an accelerometer, the gateway can warn you if someone is tampering with it. The accelerometer can also be used to check the orientation of the gateway, e.g. in relation to installation debugging.

Standard models

Reduce the time to market with standard models

We offer multiple off-the-shelf standard models for the Squid.link gateways that fit most IoT solutions. They come with pre-selected protocols and features, but the packaging design, installation manuals, and labels can be customized to fit your brand. The standard models enable an extremely quick launch of your solution.

For high-volume solutions (MOQ 10 000), you are able to customize the gateways to include only the modules you need and minimize costs.

Squid.link 2B

The gateway fitting your solution

DP24

256 MB RAM / 512 MB
Flash
ZigBee
WLAN
Wireless M-Bus
Bluetooth
BLE Pro

Squid.link 2X

Run your IoT solution at top performance

DP44

1 GB RAM/4 GB Flash
ZigBee
WLAN
Wireless M-Bus
Bluetooth, BLE Pro

DP47

1 GB RAM/4 GB Flash
ZigBee
WLAN
Wireless M-Bus
Bluetooth, BLE Pro
Cellular LTE Cat1 (EU)
Battery Backup

DP48

1 GB RAM/4 GB Flash
ZigBee
WLAN
Wireless M-Bus
Bluetooth, BLE Pro
Power over Ethernet

DP49

1 GB RAM/4 GB Flash
ZigBee
WLAN
Bluetooth, BLE Pro
Cellular LTE Cat4 (US)
Dual Sim
Whip antenna
External diversity antenna
Battery Backup

DP52

1 GB RAM/4 GB Flash
ZigBee
WLAN
Wireless M-Bus
Bluetooth, BLE Pro
Cellular LTE Cat1 (EU)
Whip antenna
Battery Backup
Power over Ethernet

Extended features

Expand functionalities

With custom hardware options, you can expand the functionalities of your gateway.

For additional flash memory, you can include an optional Micro SD card.

To optimize the radio reception of the cellular networks you are able to include two sim cards in your gateway.

The gateways can optionally have a battery backup with an exchangable Lithium battery to make sure that your solution will continue working in cases of power cuts.

Hardware security

Security is paramount in the IoT. The Squid.link gateways allow you to add hardware-accelerated encryption and secure authentication. By opting in a hardware chip, you can provide your customers with a secure platform for your IoT solution.

The offered hardware chip supports: AES (up to 256), ECC (up to 521), RSA (up to 4096), 3DES, HASH, MAC, TLS and TPM functions.

Strengthen the range

The following antenna options are offered:

- Internal antenna
- External antenna connector including:
  - No antenna (blinded)
  - Whip antenna

Your IoT solution with Onics

Base your solution on proven technology

Benefit from the 100+ man-years we have spent on software development and focus on your core competencies when working with our wireless platform. The platform includes the Squid.link gateway and a number of wireless devices tested and validated in large volumes.

Mature IoT platform
Build a reliable and certified IoT solution based on both our hardware and software services.

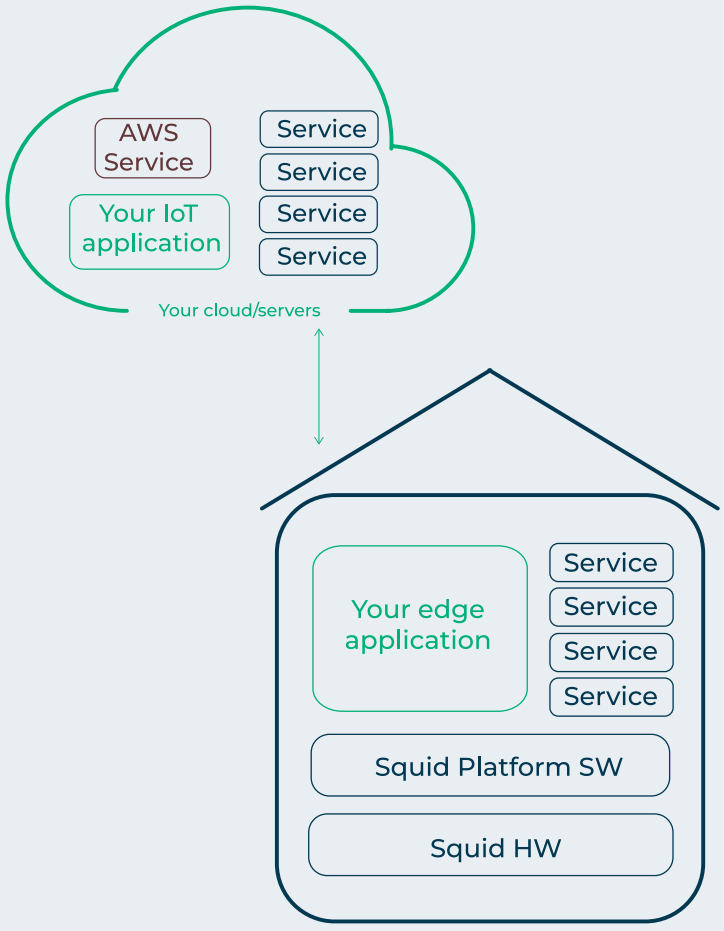
Fast time to market
Get your solution on the market faster without years of product and software development, testing, validation, and certification.

Easy usage
Use high level API for easy configuration of your application. No deep knowledge on communication protocols, product and hardware needed.

Save time on platform maintenance
The entire IoT platform is maintained by Onics by multiple software updates every year.

Great interoperability
Connect 3rd party products to the gateway for your optimal end-to-end solution.

Secure data communication
Ensure data privacy in your solution with our multi-layered security with high encryption standards.



Fleet Management Services

The Fleet Management Services are a range of software services that make it a lot easier for you to monitor, maintain, and debug Squid.link gateways and devices across your IoT solution. They enable you to always stay on top of potential technical issues and reduce maintenance costs for your solution.

Monitoring

Get real-time status of all IoT devices in your network, such as wireless connection quality and battery status, to know if anything needs maintenance.

Access rights

Enable different access rights for different people across your IoT network to administer individual rights in sections, for support lines, geographical areas etc.

Software/firmware upgrade

Easily update software in your devices over-the-air, simplifying and reducing your maintenance costs.

Provisioning

Enables a fast and easy way to provision and manage your IoT gateway fleet to enable secure cloud connectivity.

Backup/Restore

Easily backup and restore gateway data and configurations in case you need to exchange or upgrade a gateway in the system.

Remote debug

Enables fast and secure access to debug data from connected gateways for remote debugging.

Getting started

All starter kits from Onics are connected to Onics' Fleet Management demo server. You can get access to the gateway(s) included in your starter kit through the Fleet Management access right module.

For your projects, you can gain access to all gateways via the demo server from which you can develop a customized user interface to the specific needs of your solution. Onics can also help you develop a customized user interface.

Edge services

The Edge services offered by Onics help you optimize data communication by storing and processing data locally rather than in a cloud. This increases the security, privacy, and stability of you solution and reduces latency and costs. They are fully developed software modules that reduce your time spent on application development.

Edge (gateway) services

Choose the services you need for your solution and add functionalities in a cost-effective way.

Access module

Manage local access control to homes or buildings.

Voice over IP module

Make SIP calls from the gateway and connect your solution to Alarm Receiving Centers to validate alarm calls in care and security solutions.

Alarm module

Home or small business alarm system, managing arming in 3 modes (away, home, and night). using sensor data from alarm capable devices, alarm user validation, event logging etc. all running locally on the gateway.

DVR

Record data from multiple cameras and store only the relevant clips locally on the gateway. The DVR can store footage surrounding other system events (e.g. an alarm or door opening). Local storage provides a high level of privacy.

Logic rule module

Using any available data point on the gateway or from a connected device and even remote internet resources, logic rules can be defined in a “if-this-then-that” style.

Cloud connectivity modules

Generic MQTT client module, MS Azure IoT hub module, AWS IoT core module.

Software/firmware download and upgrade

Easily download software upgrades for the gateway and IoT devices connected.

IoT device connectivity modules

Zigbee, BLE module, Bluetooth, Wireless M-Bus, Care device (869MHz), Thread, Matter.

Squid platform software

Configuration options

The software architecture of the Squid.link gateway offers numerous configuration options, providing you with the opportunity to get a tailored wireless solution. The possibilities include:

Internet connectivity (WAN)

For the Wide Area Network (WAN) connection, the gateway allows you to choose between several wireless technologies. These include WiFi and cellular networks. Alternatively, a custom wireless technology can be used for the connection. Another option is to establish the WAN connection via an Ethernet cable.

IP communication (cloud connection)

Depending on your needs, you can choose between using MQTT, Web Services, or custom IP communication protocol to deliver data collected by the Squid.link gateways to the backend of your solution.
You can integrate 3rd party cloud services with the Squid.link gateways making it possible for you to develop applications without investing in the underlying infrastructure.

Application

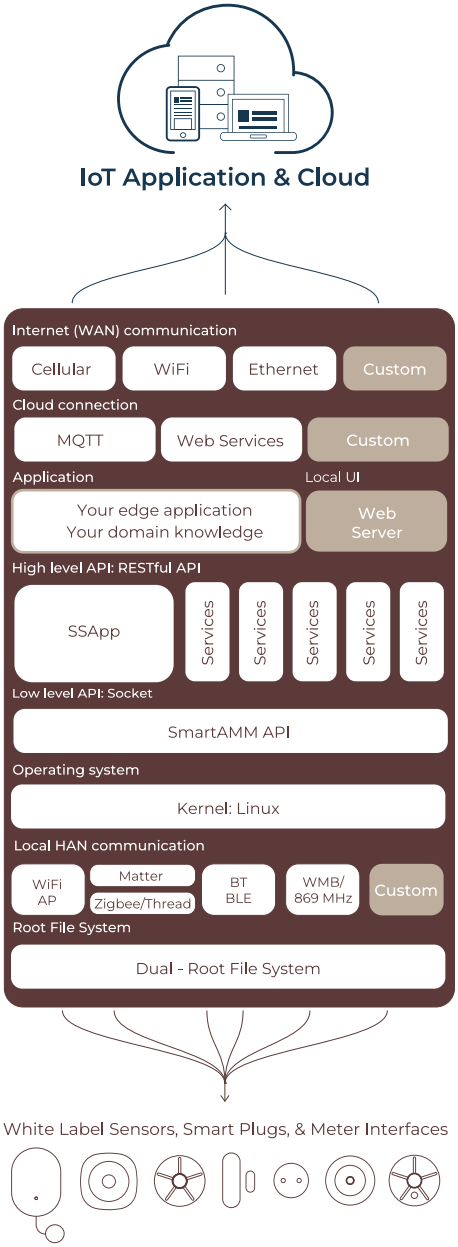
The Squid.link gateways offer 3 options on how to develop your application. You can build the application yourself using one of the gateway APIs; the Squid Smart App or the SmartAMM API. We can also help you find a trusted partner that can develop the application for you.

APIs: high-level or low-level

When developing the application for your solution, you can use a high-level or a low-level API. The high-level API Squid Smart App provides a RESTful API for gateway configuration and control. It is also able to receive data from and send commands to devices in a pre-processed and protocol agnostic way.
When more in-depth or specialized analysis is needed, your custom application can access the low-level Smart AMM API that provides direct access to binary messages received from or transmitting to the connected devices.

Operating system

The Squid.link gateways consists of a Linux platform, including a long-term Linux kernel and a root file system. The root file system contains a number of standard Linux utilities. The Linux platform has been developed to make it as easy as possible for you to include the functionality you want in your solution.



Device connectivity (HAN)

The multiprotocol Squid.link gateways allow you to integrate devices into your solution across wireless technologies. The gateways support Zigbee, BLE, Wireless M-Bus, Z-Wave, WiFi, cellular networks, and the Squid.link 2X is Matter ready. Support for custom wireless technologies is also possible.

Dual Root File System

The Squid.link gateways includes two root file systems. One contains the Linux/system currently active, while the other is available for download of a complete new Linux/system. This allows for safe Root File System updates with support for rollback to the last active Root File System if the new Root File System fails to start correctly. This provides a safe solution preventing gateways being lost due to failed updates.

Wireless platform

Squid Smart App

With the Squid Smart App, application development is simplified remarkably. Squid Smart App includes a RESTful API, providing an interface between applications and connected devices. Squid Smart App includes easy-to-read templates with predefined commands for the devices. This means that you will only have to configure settings and actions of the devices through the templates instead of programming these.

SmartAMM API

With the SmartAMM API, the process of programming your application is simplified. The SmartAMM API is a low-level application API, which can be accessed from applications running on Squid.link and from a hosted application running remotely.
The remote access runs through a separate channel established between the gateway and the server. For easy access, a server middleware (SmartAMM server) is available through which you can debug the wireless communication with the development tool. 3rd party applications connect to the SmartAMM API via a socket connection. The API supports:

IP settings
- DHCP/fixed IP (IPv4/IPv6)
- MQTT settings

System events
- MMI events, tamper, mic

Wireless device access
- Access to ZB, ZW, BLE, and WMB networks

Server settings (URL, port)
- SmartAMM server
- NTP server
- DNS server
- SSH Connect Home

Time sync
- UTC time
- Time zone
- Daylight saving

Support and tools

Support forum

With a starter kit, you get access to the Support forum, where you can find instructions on how to get started with the development. You can also find firmware and technical documentation for products and software as well as templates for white labeling. Use the available development tools to ease the development process remarkably. With a Support Agreement, you can also get support from our helpdesk on any technical issues you are experiencing.

SDK

In the Support forum, you can gain access to the Software Development Kit (SDK), providing you with a framework for building software running on the Squid.link gateway. The framework is based on Buildroot - a simple, efficient, and easy-to-use tool for generating embedded Linux systems through cross-compilation.

Developer Tool

The SmartAMM Developer Tool provides you with a rich set of utilities for interacting with the Squid.link gateway and connected devices across wireless technologies. Use the tool for generating, sending, receiving, and interpreting SmartAMM telegrams. The tool interacts with the Squid.link gateway through a SmartAMM Server, which you are provided with free of charge.

Squid.link 2B

Technical specifications

General

Dimensions (W x H x D)	102 x 102 x 28 mm / 4 x 4 x 1,1 inches
Color	White (or customer specific)
Platform	CPU: ARM926EJ-S @ 454 MHz Memory options: 128 MB RAM + 256 MB Flash 256 MB RAM + 512 MB Flash
Power supply	External netadapter 9V DC, 2 Amp. (EU, UK, and US on multi plug)
Power consumption	Optional: Power over Ethernet (PoE) Typical: 1.2 W Max. : 2.5 W
Battery backup (Optional)	2-4 hours battery back-up 3.7 V 2000mAh Li-Polymer User exchangable
Ethernet	10/ 100 Mbit/s
Expansions	USB port (hidden in compartment) Internal Micro SD card slot
Environment	IP class: IP20 Operation temperature 0 to +50°C (32 - 122°F) Battery temperature 0 to 40°C (32 - 104°F) Relative humidity 5% - 85%, Non condensing

Wireless communication

Zigbee Optional	Frequency: 2.4 GHZ Protocol: Zigbee 3.0 Sensitivity Typ: -99 dBm Output power Typ: +18 dBm (+12 dBm EU)
Wireless M-Bus/ Sub 1 GHz Radio Optional	Frequency: 868/869 MHZ (Europe only) Protocol: WMB TI KCI Mode Sensitivity Typ: -100 dBm Alternative: Other Sub 1 GHZ protocols

WLAN OPTIONAL	Frequency: 2.4 GHZ Protocol IEEE: 802.11 b/g/n (Access Point and/or Station) Sensitivity Typ: -98 dBm Ouput power Typ: +20 dBm
Wireless Module	DevCom module space for custom module
Bluetooth OPTIONAL	Protocol: 5.1 Sensitivity Typ: -94 dBm Transmit power Typ: +12 dBm
BLE Pro OPTIONAL	Protocol: 5.1 Sensitivity: -95dBm (-103 dBm @ 125 KB/s) Transmit power: +19dBm
Cellular Module OPTIONAL	Internal Modem options: LTE Cat1 bis EU LTE Cat 1 bis EU/NA Antenna options: Internal antenna or external antenna
SIM card (Optional)	Micro SIM (single or dual) Embedded SIM (eSIM)

Certifications

Radio	EN 300 328 EN 300 220-1 EN 300 220-2 EN 301 511	EN 301 908-1 EN 301 908-13 RED CE
Safety	EN 62368-1:2014 + A11:2017 EN 62311:2008	
EMC	EN 301 489-1 EN 301 489-17 EN 301 489-3 EN 55032:2015 + A11:2020	EN 55035:2017 + A11:2020 EN IEC 61000-3-2:2019 EN 61000-3-3:2013 + A1:2019 EN 301 489-52
FCC	SAR Evaluation: 47 CFR Part 1.1307 47 CFR Part 1.1310 47 CFR Part 2.1091 Radio Spectrum: 47 CFR Part 15, Subpart C 15.247 47 CFR Part 15, Subpart B 47 CFR Part 15, Subpart C 15.249	
IC	RSS102 Issue 5 March 2015 RSS-247 Issue 2, February 2017 RSS-Gen Issue 5, March 2019 Amendment 1 ICES-003:Issue 6 RSS-210 Issue 10 Dec 2019	

Operating System

Linux

Squid.link 2X

Technical specifications

General

Dimensions	W 102 x H 102 x D28 mm (W 4 x H 4 x D 1,1 inches)
Color	White (or customer specific)
Platform	CPU: ARM Cortex-A7 1.0 GHz Dual-Core Memory options: RAM 512/1024 MB Flash 4 GB
Power supply **Power consumption** **Battery backup** OPTIONAL	External netadapter 9V DC, 2 Amp. (EU, UK, and US on multi plug) Typical: 2 W Max. : 4 W 1-3 hours / up to 12 hours in low power mode (wake-on-ZigBee) 3,7V 2000mAh Li-Polymer User exchangable
Ethernet	10/ 100 Mbit/s
Expansions	USB port (hidden in compartment) Internal Micro SD card slot
Environment	IP class: IP20 Operation temperature 0 to +50°C (32 - 122°F) Battery temperature 0 to 40°C (32 - 104°F) Relative humidity 5% - 85%, Non condensing
Hardware Security OPTIONAL	Secure element Hardware encryption
Accelerometer OPTIONAL	3-axis, 8-bit

Wireless communication

Zigbee OPTIONAL	Frequency: 2.4 GHZ Protocol: Zigbee 3.0 Sensitivity Typ: -99 dBm Output power Typ: 18 dBm (+12 dBm EU)
Wireless M-Bus/ Sub 1 GHz Radio OPTIONAL	Frequency: 868/869 MHZ (Europe only) Protocol: WMB T1/C1 Sensitivity Typ: -100 dBm Alternative: Other Sub 1 GHZ protocols

WLAN OPTIONAL	Frequency: 2.4 GHZ Protocol IEEE: 802.11 b/ g/ n (Access Point and/or Station) Sensitivity Typ: -98 dBm Ouput power Typ: +20 dBm
Wireless Module	DevCom module space for custom module
Bluetooth OPTIONAL	Protocol: 5.1 Sensitivity Typ: -94 dBm Transmit power Typ: +12 dBm
BLE Pro OPTIONAL	Protocol: 5.1 Sensitivity: -95dBm (-103 dBm @ 125 KB/s) Transmit power: +19 dBm
Cellular Module OPTIONAL	Internal Modem Options: LTE Cat1 bis EU LTE Cat 1 bis EU/NA Antenna options: Internal antenna, external antenna, or both
SIM card OPTIONAL	Micro SIM (single or dual) Embedded SIM (eSIM) Micro + Embedded SIM

Certifications

Radio	EN 300 328 EN 300 220-1 EN 300 220-2 EN 301 511	EN 301 908-1 EN 301 908-13 RED CE
Safety	EN 62368-1:2014 + A11:2017 EN 62311:2008	
EMC	EN 301 489-1 V2.2.3 EN 301 489-17 V3.2.4 EN 301 489-3 V2.1.1 EN 55032:2015 + A11:2020	EN 55035:2017 + A11:2020 EN IEC 61000-3-2:2019 EN 61000-3-3:2013 + A1:2019 EN 301 489-52
FCC	SAR Evaluation: 47 CFR Part 1.1307 47 CFR Part 1.1310 47 CFR Part 2.1091 Radio Spectrum: 47 CFR Part 15, Subpart C 15.247 47 CFR Part 15, Subpart B 47 CFR Part 15, Subpart C 15.249	
IC	RSS102 Issue 5 March 2015 RSS-247 Issue 2, February 2017 RSS-Gen Issue 5, March 2019 Amendment 1 ICES-003:Issue 6 RSS-210 Issue 10 Dec 2019	

Operating system

Linux

onics.

Who is Onics?

Onics is born from the union of two pioneering forces, each with decades of experience in connected technology.

Our journey began with a shared vision: to make complex technology accessible, reliable, and meaningful for providers of care solutions.

Our customers are visionaries, seeking to improve and expand their offering and create more value for their customers as well as end-users.

That's why we focus on delivering adaptable, futureproof solutions that seamlessly integrate into existing ecosystems.

But our story isn't just about technology – it's about people. We are driven by the desire to simplify lives, protect what matters most, and support a sustainable future.

In Onics, we don't just connect devices – we connect technology with life.

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