acal bfi

IoT and Wireless Technology Solutions

Developing an enhanced technological future together

Contents

Our purpose

Is to enable innovators to turn ideas and designs into exceptional products.

Unlock the power of IoT and wireless with Acal BFi

In a world where connectivity drives innovation, we are a trusted partner for IoT and wireless solutions. Our comprehensive range of technologies – from sensors and wireless modules to antennas and managed services – empowers you to create smart, reliable, and future-ready designs.

More than just a product reseller

We're backed by our Technology Centres and a team of industry experts, to support at every stage of a project, providing services, solutions and in-depth expertise to help bring a vision to life.

So, whether you're enhancing an existing design or tackling a complex new challenge, discover how we can help you succeed in an ever-evolving IoT landscape.

Our expertise

Deep expertise to support your IoT and Wireless solutions.

For over 50 years, we've built our consultative, design-led approach, dedicated to supporting electronic design engineers with expert solutions – especially for complex and bespoke projects.

With specialists stationed in both the field and our advanced Technology Centres, we offer unmatched knowledge and resources to guide your project from concept through to completion.

Contact us for more information.

Why choose us?

Skilled engineers to support your goals
Our team consists of experienced engineers with deep expertise across a wide range of technologies and applications. Whether collaborating with our field engineers or consulting specialists from our Technology Centres, we focus on understanding requirements and providing tailored support throughout the entire design process.

Comprehensive support for every phase
From component selection and integration advice to prototyping, testing, design, manufacturing, and compliance, we offer a suite of services to meet the demands of your project. Our aim is to ensure seamless support at every stage of development, regardless of complexity.

Advanced facilities for complex projects
For intricate or highly technical challenges, our Technology Centres are equipped with state-of-the-art tools and facilities. Whether it's specialised customisations, integrations, or full-scale design projects, we are equipped to handle demanding requirements with precision and innovation.

Reliable solutions through trusted partnerships
We collaborate with carefully chosen partners to provide high-quality components and solutions that ensure reliability across your product's lifecycle. These partnerships enable us to deliver solutions that meet today's needs while considering future requirements.

Innovative problem-solving for complex designs
We excel in tackling challenging projects. Whether adapting existing technologies or creating custom solutions, our team is dedicated to engineering the most effective outcome for your unique requirements.

More than a service – a collaborative partnership
Choosing us means gaining a partner who contributes value at every stage of your design. Our combination of end-to-end services, technical expertise, and practical support ensures you can bring robust, high-quality designs to market efficiently and effectively.

Our Technology Centres

Blend specialist expertise and dedicated facilities to support semi-custom and custom designs for full turnkey value-added service.

Expert hubs for solving complex design challenges

We provide the full package – from design and prototyping to testing, pre-production, and manufacturing – all under one roof, guided by seasoned engineering experts, to ensure a speedy journey to success.

We have seven state-of-the-art centres each specialising in a different field. Inside these facilities, our engineers are ready to support and consult on everything from choosing components to tackling the trickiest project challenges. Providing access to a large range of services and capabilities across our technologies, you can develop the perfect solution for even the most complex designs.

What services does a Technology Centre offer?

Expertise across multiple technologies
Access specialised knowledge across key technology areas. Centres collaborate or work independently based on project needs.

Custom and standard offerings
Solve design challenges by offering standard services or custom solutions that fit specific requirements.

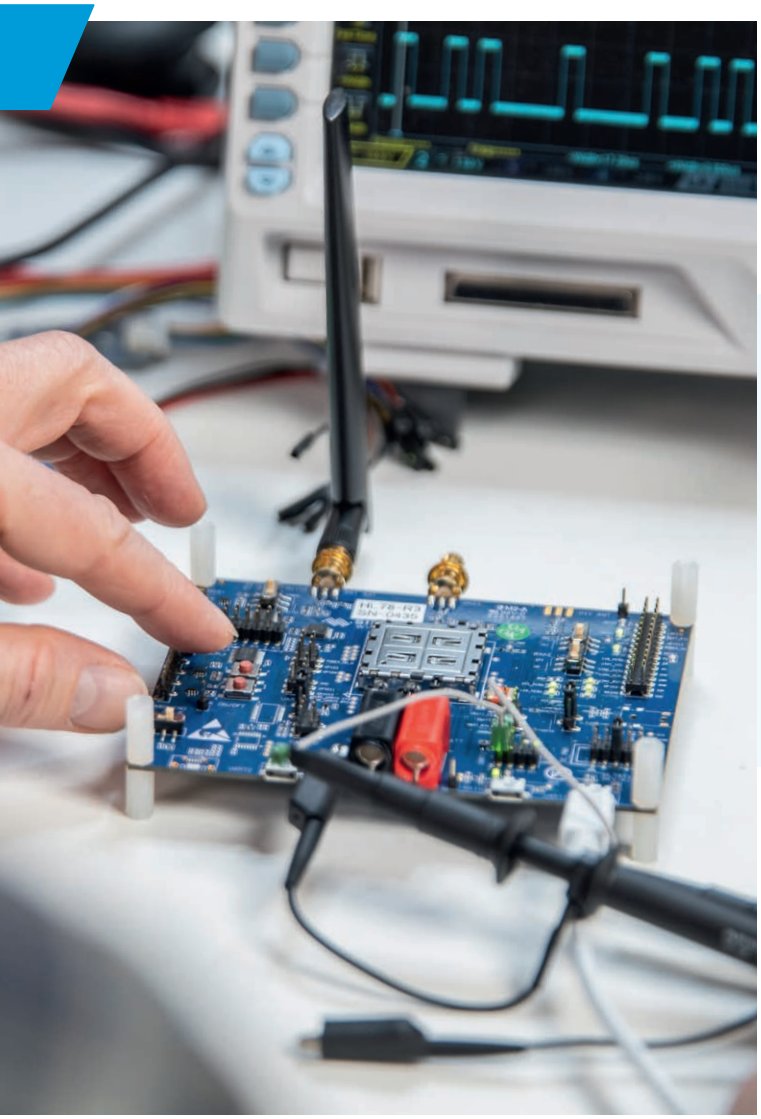
Engineering support
Experienced engineers assist with component selection, design challenges, and more.

Partnership approach
Support customers at every stage, from design, project planning to production.

Faster time to market
Help customers deliver projects quickly and efficiently with expert support.

Centres for IoT support

These Technology Centres will work together with in-depth knowledge and support for developing tailored IoT solutions.



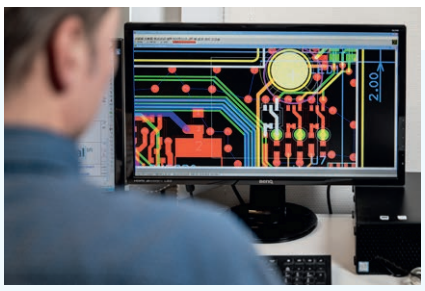
The IoT & wireless Technology Centre

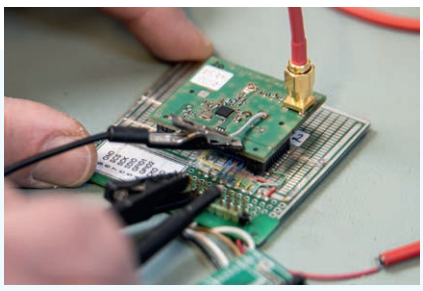
Specialises in supporting complex discrete component design, from bespoke System on Chip (SoC) solutions to fully integrated, certified, and application-ready modules.

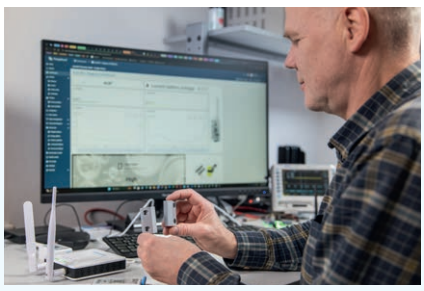
- **Technical expertise** – Specialises in wireless hardware, module and chip-level development, and proprietary and standard protocols
- **Custom design and prototyping** – Offers system design, hardware and software development, and working prototypes
- **End-to-end support** – Provides system design, pre-production builds, type approval support, and assistance for customers with production through contract manufacturers
- **Customer collaboration** – Delivers consultation, design reviews, and field application support

Our team of experienced hardware design and software application engineers excel in a variety of state-of-the-art technologies, including RF, wireless, and cellular systems. With extensive expertise in integration, complex challenges and developing custom solutions, we have everything you need to turning your concepts into reality and ensure seamless connectivity for your applications.

Find out more or contact the centre here.







Centres for IoT support

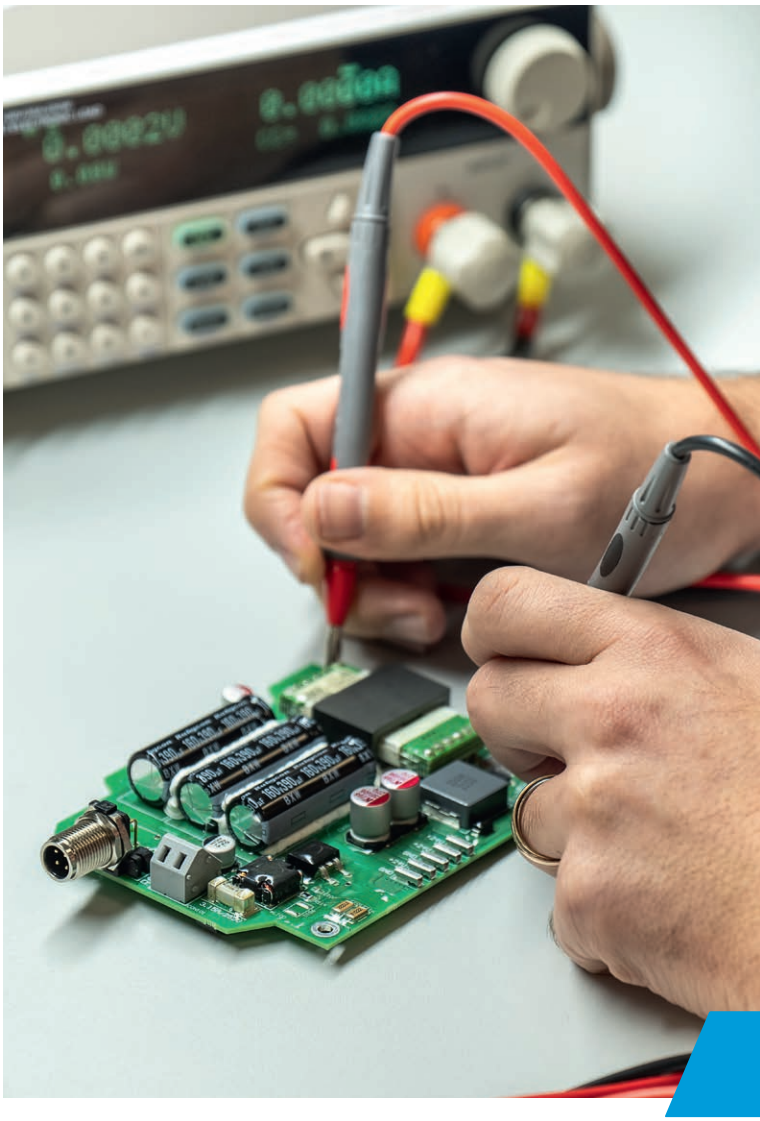
These Technology Centres will work together with in-depth knowledge and support for developing tailored IoT solutions.

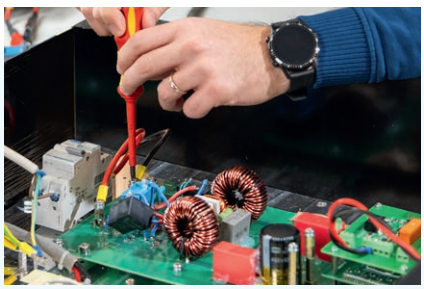
Power supplies Technology Centre

Focuses on delivering reliable, high-performance power supply solutions for various industries. They design custom power systems to meet specific energy requirements and ensure efficient, stable performance.

- **Custom solutions** – Designs and produces tailored power supplies for diverse applications
- **Flexible offerings** – modifies, configures, and designs custom power solutions from 1W to 25kW
- **Comprehensive capabilities** – Modifying standard products or creating fully custom designs, engineering, electronic, magnetic, and mechanical design, pre-compliance testing and certification to reduce time to market and costs
- **Production and obsolescence management**
- **Collaborative expertise** – Works with Magnetics and Interconnect teams to deliver integrated solutions incorporating magnetic, power, wireless, sensor, and imaging technologies

Find out more or contact the centre here.





Centres for IoT support

These Technology Centres will work together with in-depth knowledge and support for developing tailored IoT solutions.

Embedded computing Technology Centre

Specialising in developing customised computing solutions for industrial, medical, and defence applications. The team integrates processors, storage, and connectivity to create robust, reliable embedded systems.

- **Design support** – Provides custom design solutions, from initial concepts to fully built products, including mechanical, electronic, and firmware design
- **Integration and assembly** – Offering box builds, partial builds, and component integration with testing and packaging solutions
- **Testing and compliance** – Conducts in-house and partner-supported testing for electronics, environmental factors, and EMC (e.g., CE, UKCA, defence). Provides regulatory compliance support
- **Lifecycle management** – Supports EOL/obsolescence management, reverse engineering, and equipment upgrades

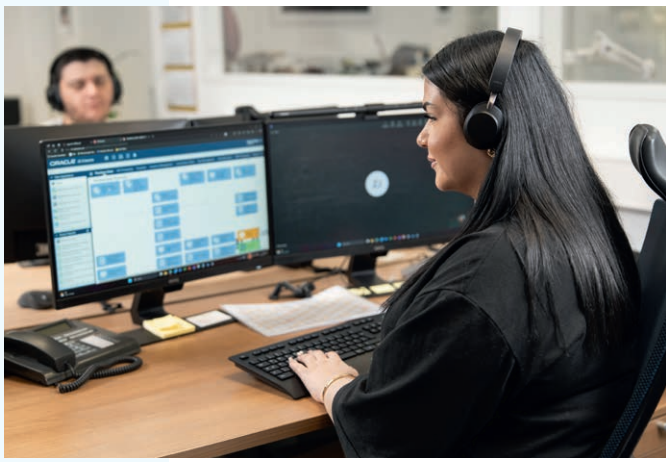
Find out more or contact the centre here.

Complete support

Whether you're navigating tight budgets or tackling complex projects, our expert team is here to provide the technical support and insights you need to succeed.

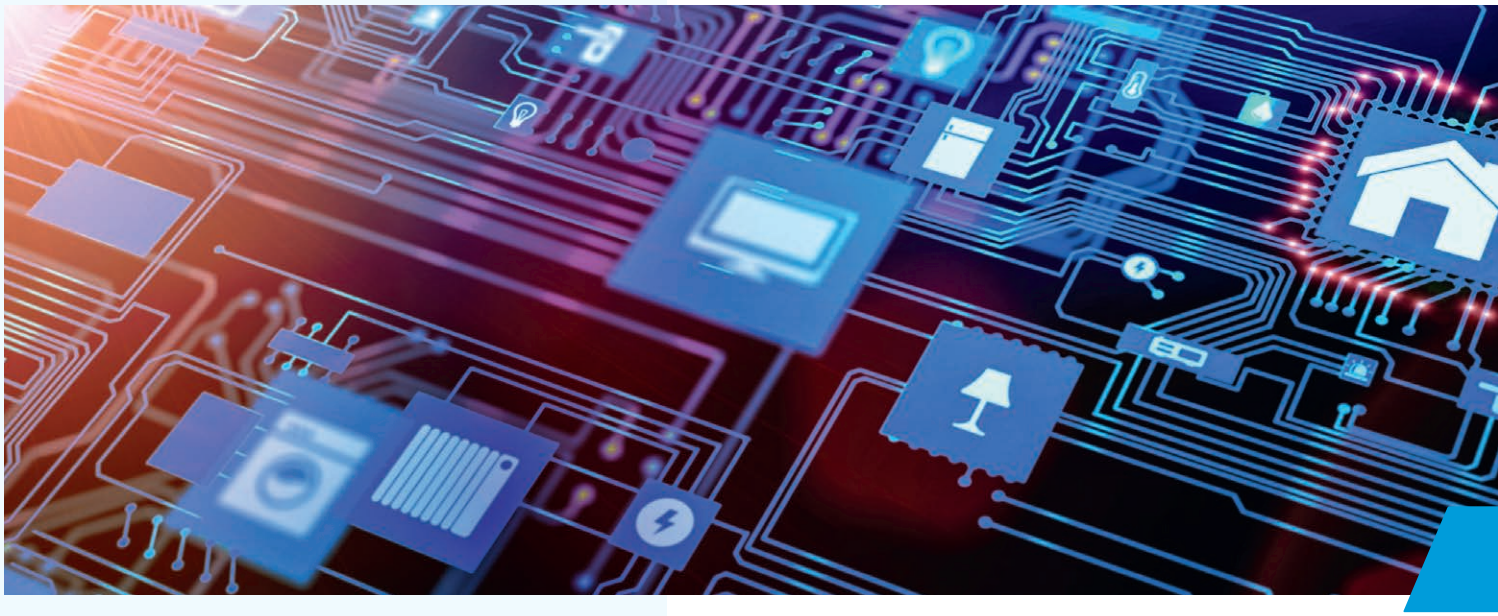
We also have Technology Centres to support Fibre Optics, Interconnect solutions, Infrared imaging and Magnetics. Discuss your needs with our field sales experts, who will connect you with the right centre for support.

Contact us today to learn how our Technology Centres can empower your next project.



Key technologies for IoT and wireless designs

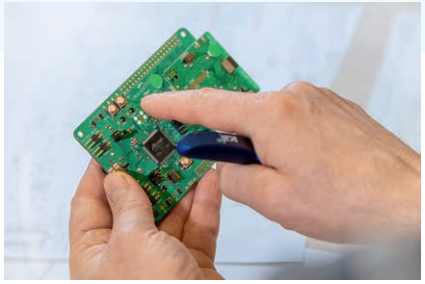
In the world of IoT, connectivity is key. Sensors, secure wireless, and managed services are powering a new digital universe, where devices communicate seamlessly with each other, the cloud, and beyond.



As a trusted partner, we provide the expertise, components, and tailored solutions to unlock the full potential of IoT in your field.

Our extensive portfolio – featuring high-performance modules, sensors, antennas, and connectivity solutions from top manufacturers – ensures seamless integration and reliable communication for diverse applications.

Designed with future-proofing in mind, our solutions enable electronic engineers to build scalable, adaptable designs for today's evolving needs. From industrial automation and healthcare to environmental monitoring and smart cities, we help optimise connectivity and drive innovation across sectors.



Strategic partners:

Our strategic partners bring industry-leading products and innovations, allowing us to offer a broad range of high-quality, reliable technologies.

Our strong partnerships with our suppliers ensures we are highly knowledgeable through in-depth training work-shops and application expertise.

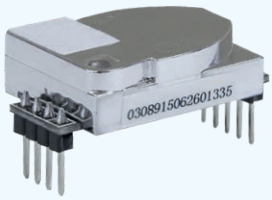
We're here to support you at every stage of your project, from selecting the ideal components to tackling complex design challenges and seamless integration. Our experts ensure you're working with the best technology for your application, tailored precisely to your unique requirements.

Sensors

Smart sensing: the foundation of IoT innovation.

In every IoT application, the journey begins with data – its generation and collection. Sensors form the foundation of this journey, enabling accurate, reliable data capture that drives robust IoT solutions.

Our portfolio of compact, low-power sensors delivers precise measurements across nearly every physical parameter, empowering applications across sectors including domestic, industrial, automotive, and consumer environments. From classrooms and offices to factories and vehicles, our sensors enable seamless monitoring and control in diverse locations.



Environmental

Gas

- CO_2, VOC, CO, HVHO and air-quality monitoring
- Wall-mounted, duct-mounted, handheld and PCB-mount versions for domestic and industrial applications
- High-accuracy, wide measurement range

Dust, smoke and particle

- PM1.0, PM2.5 and PM10.0 sensors

Temperature

- Thermistor sensors, Resistance Temperature detectors (RTD), Infrared Sensors (IR) and thermocouples for wide range of applications including harsh environments requiring high reliability and accuracy
- Over-moulded temperature probes, waterproof to IP68

Humidity

- Compact and lightweight solutions with analogue or digital output
- Low-power variants for extended operation in IoT systems
- Interface options: HMI and External display

Combination

- Integrated sensing solutions combining relative humidity (RH) and temperature
- Advanced units measuring dust, CO_2, VOC, HCHO, RH, and temperature, with Wi-Fi connectivity for cloud integration
- Customised digital / analogue interfaces available to integrate into measurement systems and data analysis

Sensors

Smart sensing: the foundation of IoT innovation.

Pressure

- Board-mount through to heavy-duty industrial solutions
- Configurations: absolute, differential, and gauge pressure sensors
- Amplified and unamplified options with analogue or digital outputs
- Wide range of port and termination styles for seamless integration

Position, movement and location

Accelerometers

- Low-power MEMS-based, three-axis sensors for motion, tilt, shock and vibration detection
- Miniature LGA packages with exceptional long-term bias stability
- Long-term stability in harsh environments with a wide temperature range (-40 to +175°C)
- Shock-resistant, low-noise solutions requiring no recalibration or maintenance

Position

- Linear and rotary position sensors, including non-contact Hall-effect solutions
- Cable-extension transducers for industrial applications

Gyro/angular rate

- High-performance MEMS inertial sensors with industry-leading bias stability
- Multi-axis inertial solutions for precision angular rate measurement

Sensors

Smart sensing: the foundation of IoT innovation.

We are your partner in sensor solutions

Our sensors offer high precision, reliability, and flexibility for a wide range of IoT applications. From environmental monitoring to motion detection, our portfolio is designed to meet the unique challenges of IoT designs, ensuring seamless data integration and enhanced decision-making capabilities.

With our expertise, we work closely with you to select the right sensor solution for your specific needs. We also specialise in creating custom and bespoke solutions, offering a variety of options for housings, mounting elements, and electrical connections. Our team collaborates with you every step of the way to deliver tailored sensor assemblies that perfectly align with your application requirements.

Whether you need off-the-shelf products or fully customised solutions, we are committed to providing high-quality, reliable sensor solutions that support your innovation.

Explore our sensor portfolio

Discover the full range of sensor solutions tailored for your IoT needs here

Wireless Probes

Custom wireless meat probes – precision temperature sensing

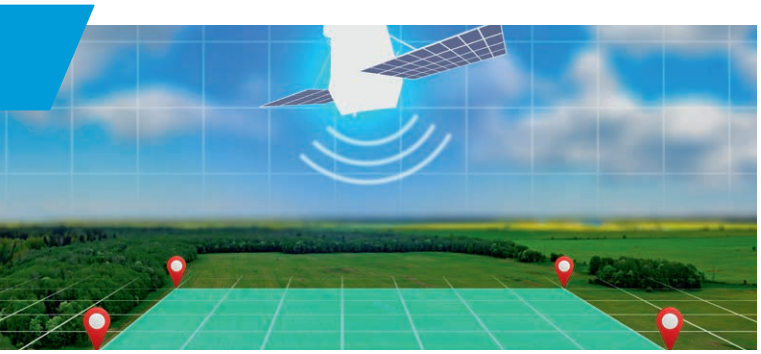
Designed for seamless integration into modern cooking systems, our wireless cooking thermometers enable remote monitoring and precise temperature control via Bluetooth connectivity. Equipped with multiple NTC sensors (up to 5), these thermometers provide real-time food and ambient temperature data, ensuring perfect cooking results. Ideal for conventional ovens, steam ovens, and grills, they offer configurable communication protocols for compatibility with ovens and smartphone apps.

Key features

- **Multi-sensor precision** – Up to 5 temperature sensors for detailed profiling
- **Wireless communication** – Configurable Bluetooth protocol, supporting multiple probes in parallel
- **Customisation options** – Adjustable handle material (ceramic, PEEK, silicone), shape, markings, and colour
- **Robust design** – Waterproof (IP67, dishwasher safe) with a 5mm minimum probe needle diameter
- **High-temperature performance** – Supports +100°C core temperature / +300°C oven temperature
- **Flexible power solutions** – Rechargeable via separate charger (battery, USB) or integrated oven system

Outdoor location/GNSS

Global Navigation Satellite System (GNSS) is a satellite network that provides positioning and timing signals to enable precise location and time synchronisation for various applications.



With our partner **Allystar,** we provide a range of GNSS solutions, including modules, antenna modules and SoC (System on Chip) solutions to meet your exact requirements, be it adding a beneficial feature to being an essential part of your design.

The performance of GNSS is assessed using three critical points

- **Accuracy** – the difference between a receiver's measured and real position, speed or time
- **Continuity** – a system's ability to function without interruption
- **Availability** – the percentage of time a signal fulfils the above accuracy, integrity and continuity criteria

Key features for our solutions

- Very small, SMT form factors with or without antenna
- Industrial standardised form factors
- Accuracy range from 'meter', 'sub-meter' up to 'centimetre'
- Band range: L1, L2, L5 and even L6 (raw data) versions

L1 / L5 GNSS module solutions

Our comprehensive portfolio consists of single-band (L1) and multi-band (L1/L5) low power GNSS chips and modules.

GNSS and GPS

We partner with a leading supplier of GNSS receivers to the IoT sector, aftermarket telematics, consumer and industrial applications. Pioneering the use of dual-band receivers for industrial applications. With a comprehensive portfolio, Acal can address the needs of mass market applications where performance, low power, small size and cost efficiency are equally important. Modules come in an industry standard pinout and formfactor, which makes it very straightforward to integrate and test those modules in existing designs without a total redesign of the PCB.

The product ranges include:

- Meter-level and submeter-level GNSS solutions
- Industry standard pinout in 10.1 mm x 9.7 mm and 12.2 mm x 16.0 mm
- On-chip flash enables ultra-fast both cold and warm starts
- Easy migration to TAU120x for submeter accuracy
- Submeter accuracy thanks to dual-band reception
- High sensitivity at a minimal power consumption
- Free of charge Evaluation Software
- Evaluation Board small size: only 48 mm x 23 mm

Outdoor location/GNSS

Global Navigation Satellite System (GNSS) is a satellite network that provides positioning and timing signals to enable precise location and time synchronisation for various applications.

GPS modules

Our modules range is easy to integrate from both hardware and software perspectives. It includes the smallest, fully integrated solutions on the market for both navigation and timing, suitable for a wide range of end markets from tracking to wearables and drones to smart cities.

The Allystar portfolio comes with industrial standardised form factor (10 x 10 mm and 12 x 16 mm) which allows customers to integrate these modules into existing designs without the need for any hardware and software changes.

System-on-Chip

For high-volume applications an integrated SoC solution maybe more beneficial. We can provide unique access to the portfolio of chip-based, location intelligence solutions from Allystar, supporting customers with the technical expertise to integrate this innovative technology into new designs.

Allystar's SoC chip portfolio consists of highly integrated, GNSS receiver chips. They are multi-band, multi-system SoC chips which support BDS-3. They are capable of tracking all global civil navigation systems (BDS, GPS, GLONASS, Galileo, IRNSS, QZSS and SBAS) in all bands (L1, L2, L5).

Highlights

- Concurrent multi-band GNSS reception
- Supports all civil GNSS signals
- Ultra-low power RTC mode
- Built-in AES/DES/SM4 data encryption engine
- Smart jammer detection and suppression

Please see also our antenna portfolio and discover how we can support integrating antenna into your design **(see page 36).**

Bluetooth

One of the most popular wireless technologies for short-range communications.

In collaboration with our partners, we offer a versatile range of Bluetooth® Low Energy (BLE) solutions deliver-cost effective and ultra low-power wireless connectivity. The following solutions in this section are designed to support energy-efficient, compact, and reliable wireless communication, making them ideal for a wide range of applications, from smart devices to industrial automation.

Compact, high-performance BLE modules for seamless integration

Insight SiP modules are based on Nordic Semiconductor's chips, these compact modules include an integrated antenna, RF matching, decoupling components, and crystal oscillators – all within pin-to-pin compatible packages.

Key features

- Pin-to-pin compatibility over the different SiP families
- All modules include antenna, RF matching, decoupling, crystals and capacitors for simple HW integration
- Module range from high-end dual-core 5.2, low cost, easy-to-integrate, up to the latest Bluetooth direction finding solutions and state-of-the-art digital Bluetooth LE audio solutions

Certified and ready to integrate

These modules are fully certified by the Bluetooth SIG and by global regulatory bodies such as the FCC, CE and Telec, meaning they streamline regulatory compliance and can be deployed immediately in your projects.

Flexible solutions for diverse applications

These modules are specifically designed for PC, smart phone peripherals, IoT smart objects and M2M applications in the following fields: domestic/home automation, fitness, healthcare, industrial, sport, wearable devices. Ultra-low power consumption and advanced power management enables a battery lifetime of up to several years on a coin cell battery.

Industrialised discrete design		Module based design
Design efforts + 3 to 6 months		Time to market 3 to 9 months saving no NRE
Certification 3 months + 30-50k$ cost		
PCB requirement larger dimension	Versus	Size optimisation
Purchasing about 20 components		Unique component
Yield rework needed		100% tested
Technical risk management		Modules are proven components

Bluetooth

One of the most popular wireless technologies for short-range communications.

Revolutionising IoT with battery-free Bluetooth solutions

Atmosic's ultra-low-power Bluetooth SoCs, featuring on-demand wake-up and managed energy harvesting, are transforming IoT devices with unmatched energy efficiency. These advancements enable developers to create products with extended battery life or even operate without batteries, catering to a wide range of applications from smart homes to industrial sensors while significantly reducing power consumption.

Atmosics's Wireless energy harvesting (WEH) techniques, a corner-stone of Atmosic's modules, harness energy from external sources such as photovoltaic, thermal, or mechanical/kinetic harvesting and RF signals providing nearly perpetual communication and enhancing the reliability and lifespan of energy-constrained wireless networks, including IoT and wireless sensor systems.

ATM2 Series

Atmosic's ATM2 built on the Bluetooth® 5 standard and features ultra-low power consumption with Lowest Power Radio and On-demand Wake Up technologies.

Offering flexible memory and package options, the ATM2 can be tailored to meet the specific requirements of different applications, making it a versatile and high-performance choice in the realm of Bluetooth enabled devices.

ATM3 Series

The Atmosic ATM3 Series is based on the ATM2 adding advanced features for managing energy harvesting, storage and power distribution, significantly extending battery life or enabling battery-free operation in various applications. Offering substantial extension of battery life or facilitating battery-free operation across various applications.

The ATM2 and ATM3 come with diverse memory and package configurations, allowing it to seamlessly adapt to the specific needs of various applications.

Bluetooth

One of the most popular wireless technologies for short-range communications.

ATM33 series

Elevating IoT performance

The ATM33 series represents a significant leap forward in IoT technology, setting a new standard for high-performance connected devices. At its core, the ATM33 harnesses the power of a 64 MHz ARM® Cortex®-M33 processor, delivering exceptional computing capabilities for demanding IoT applications.

Built on Bluetooth 5.3, it ensures reliable, long-range connectivity with +10 dBm RF transmit power. Security is paramount, featuring AES-256 encryption and ARM® TrustZone® for robust cyber protection. Designed for diverse IoT use cases – smart homes, industrial sensors, wearables, and remote controls – the ATM33 combines high performance, cutting-edge connectivity, and advanced security, making it a cornerstone for next-generation connected devices.

ATM34 series

Next-generation IoT performance

The ATM34 series builds upon the robust foundation of the ATM33 platform with a powerful 64 MHz ARM® Cortex®-M33F processor, delivering exceptional performance for connected devices. Featuring Bluetooth LE 5.4 with +10 dBm RF transmit power, it ensures reliable, extended wireless communication. Security remains a priority with AES-256 encryption and ARM® TrustZone®. With ultra-low power consumption – less than 1 mA in receive mode – the ATM34 excels in energy efficiency.

Supporting Thread and Matter protocols, it is ideal for smart homes, industrial IoT, healthcare monitoring, and remote controls. Combining high performance, strong security, and outstanding efficiency, the ATM34 sets a new IoT benchmark.

ATM33e and ATM34e series: energy harvesting option

The Atmosic ATM33e and ATM34e series includes groundbreaking energy harvesting technology with energy harvesting option to the ATM33 and ATM34 variant, which enhances the already impressive power efficiency of the base model. These devices feature on-chip RF energy harvesting capabilities and support for various other energy harvesting technologies, including photovoltaic, thermal, and motion. Ideal for IoT applications where battery replacement is impractical, these devices also feature advanced wake-up mechanisms for ultra-low power consumption.

Bluetooth

One of the most popular wireless technologies for short-range communications.

IOT747: Bluetooth excellence for next-gen audio solutions

IOT747 is a leading provider of Bluetooth modules and solutions based in the UK. Their IDC777 is a fully integrated dual-mode Bluetooth module that utilises the latest generation Bluetooth 5.3 Qualcomm Audio chip, offering long life expectancy and shorter lead times.

IDC777: unleash audio excellence with dual-mode Bluetooth 5.3

The IDC777 is a compact Bluetooth 5.3 module (11.8 mm x 22.2 mm) with dual-mode support for Bluetooth LE Audio and Classic. Measuring just 11.8 mm x 22.2 mm with an integrated antenna, it's ideal for space-constrained applications.

Featuring an integrated antenna, LC3 Codec, and Qualcomm Snapdragon Sound, it delivers superior audio performance Highly energy-efficient, it consumes <4 mA during music streaming and <0.1 mA in pairing mode, with a 25 m range.

Ideal for wireless speakers, headsets, automotive infotainment, industrial applications, and consumer electronics, the IDC777 ensures seamless, high-quality Bluetooth connectivity.

Discover how our Bluetooth solutions can enhance your wireless connectivity with reliable performance and seamless integration.

Get in touch with our experts to learn more about the right options for your design needs.

Bluetooth

One of the most popular wireless technologies for short-range communications.

Indoor positioning systems (IPS)

For reliable indoor positioning, GNSS faces limitations in accuracy and signal penetration. As it's a satellite-based positioning system the signal cannot penetrate solid walls or structures. Moreover, the accuracy achieved with GNSS is limited and is not suitable for applications that need sub-meter accuracy.

These shortcomings of GNSS have given rise to the Indoor Positioning Systems (IPS) to meet the demands of applications such as warehouse management, personnel tracking, and care-home monitoring, providing powerful, high-precision solutions.

Ready to enhance your indoor positioning systems?

Contact us to explore how Insight SiP's Bluetooth and UWB solutions can meet your design needs with maximum precision and efficiency.

Advanced indoor positioning solutions with Bluetooth & UWB

Bluetooth

Newer Bluetooth Low Energy standards have introduced the direction-finding capabilities using Angle of Arrival (AoA) and Angle of Departure (AoD) techniques. These techniques have made it possible to achieve around 0.1-meter accuracy. Moreover, the locating anchor (Bluetooth 5.1+) is backward compatible with all Tags with Bluetooth 4.0 and above. We enable this using Insight SiP's modules based on nRF52 Nordic.

The advantages of Bluetooth based localisation are that it is low-cost, energy efficient and easy to deploy. The biggest benefit is that it integrates into the existing Bluetooth ecosystem, thus enabling localisation with existing Bluetooth devices without the need for a new technology. Semiconductor 2.4GHz wireless System on Chip (SoC).

Ultra-Wideband (UWB)

UWB is a short-range, low power, secure communication protocol with ultra-wide 500 MHz bandwidth and nano-second pulse timing for unmatched accuracy within a few centimetres. Revolutionising wireless communication with its ability to transmit across a wide bandwidth. Using Time-of-Flight (ToF) measurements, UWB delivers centi-metre-level indoor localisation, outperforming traditional RSSI-based systems.

Our partner **Insight SiP** offers the smallest UWB modules on the market, combining UWB with Bluetooth 5.3 in an ultra-low-power SiP, powered by the nRF52833. This compact solution allows seamless integration of cutting-edge wireless technologies into space-constrained applications. This remarkable capability has opened up a world of exciting applications, from Apple AirTags to cutting-edge automotive features.

LoRaWAN

LoRaWAN - Low power, long range, wide area network solutions.

LoRaWAN™ provides an ideal communication solution for low-power devices, like battery-powered sensors, at regional, national, and global levels. It offers secure, bi-directional communication between end devices and gateways via multicast, allowing for flexible configurations in data rate, distance, and power optimisation.

With an adaptive data rate (ADR) managed by the LoRaWAN network server, devices benefit from enhanced battery life and efficient network capacity.

We support all levels of LoRaWAN integration, from end-node modules to indoor/outdoor gateways, enabling rapid market entry for LoRaWAN- enabled devices.

LoRaWAN gateways

As the backbone of any LoRaWAN network, gateways manage high volumes of LoRaWAN enabled end devices transferring information from private or public networks to the Cloud via either wired or wireless interfaces.

Available in multiple form factors including durable IP67-rated enclosures for outdoor usage. The modules can be preloaded with firmware to your requirements/ configurations.

With customisable firmware and flexible network connectivity, these gateways support a variety of options, including Ethernet (with PoE), 4G cellular, and GNSS for location-based services. Tailored to meet unique requirements, our LoRaWAN gateways enable robust, scalable solutions for IoT deployments.

LoRaWAN modules end-note applications

Most end devices in LoRaWAN networks are located remotely, with only a battery source for power. Their situation often requires data to be transferred over a long distance for extended periods of time – sometimes years or even decades.

Our range of compact, low-power solutions include modules, for quick and easy deployment and SiPs, to give designers an even more compact, volume-cost effective solution.

Wi-Fi

High-performance Wi-Fi solutions for IoT applications.

As IoT demands for reliable, high-speed data transfer grow, we offer Wi-Fi solutions designed for seamless integration across industrial, professional, and high-end consumer applications. We provide a range of solutions for all levels of integration, from industrial and professional-grade Wi-Fi modules that are quick and easy to integrate with on-board software stacks and device servers, to some of the most compact and advanced solutions in the world including cutting-edge SiP's, mini cards and embedded modules solutions from industry leaders **SparkLAN,** **USI** and **Lantronix.**

Contact us for more information.

Our product range in a nutshell

Key features

- Plug and play modules for Windows, Linux and Android operating systems
- Wi-Fi 4, Wi-Fi 5 up to Wi-Fi 6/6E
- USB, SDIO, Mini-PCIe, M.2 and SiP modules
- Modular RF certification – FCC Class B, UL and EN EMC certification, CE RED
- Integrated and external antenna versions

Plug and play modules for any design From compact SiPs to embedded modules from SparkLAN, USI, and Lantronix, our plug-and-play modules and embedded solutions make adding Wi-Fi connectivity to any design quick and straightforward, with support for standard industrial interfaces. We provide a range of solutions tailored for industrial and professional applications, as well as high-end consumer products where reliability is essential, including devices like thermostats and wireless projectors.

Our field application engineers work with you to find the best match for your performance and budget requirements, making integration into IoT devices effortless and efficient.

Wi-Fi

High-performance Wi-Fi solutions for IoT applications.

System-in-Package

For medium to high volume projects, we offer SiP solutions, which provide excellent power management performance to deliver low-power consumption and extended battery life.

Why and when does System-in-Package make sense?

- Wi-Fi 4 to Wi-Fi 6 options, single or dual band, with or without Bluetooth
- Advanced security: WEP 64/128, WPA, TKIP, AES, CCX
- Functions include client, Wi-Fi direct, and soft AP
- Serial interfaces: SPI, UART, USB
- RF certification: FCC, CE, with metal-lid shielding
- Soldering onto PCB, suitable for shock and vibration applications
- Ultra-slim form factor for space optimisation
- Highly project-oriented, tailored for volume, long- term cost advantages

Industrial and professional grade cards with driver support

Our extensive selection of Wi-Fi cards features robust, industrial-grade solutions from leading manufacturers, available in commonly used form factors.

Our professional-grade options offer similar advantages at a more affordable price for less demanding environments. Partnering with chip manufacturers, we facilitate global certification and provide access to dedicated software teams for custom driver development, including support for open-source drivers.

Our modules are easy to integrate, enabling seamless addition of Wi-Fi capabilities without prior wireless technology expertise.

Plan for Wi-Fi 7 now to capitalise on its advancements

With the adoption of 6GHz spectrum and wider channel widths, Wi-Fi 7 promises unparalleled performance.

It introduces multi-link operation across 2.4, 5, and 6 GHz channels, while supporting up to 16x16 MU-MIMO and multi-RUs bonding for enhanced efficiency.

Wi-Fi 7 represents the pinnacle of wireless evolution, offering optimal user experience with proper planning starting today.

Our experienced Field Application Engineers assist in aligning your Wi-Fi generation choice with project requirements, including form factor, interface, price/performance balance, Bluetooth integration, and product lifecycle needs.

Wi-Fi

High-performance Wi-Fi solutions for IoT applications.

5G RedCap: future-ready connectivity for IoT

Take your IoT projects to the next level with Acal BFi's 5G RedCap solutions. We offer:

- **Modules:** 5G RedCap modules from **Semtech** and **Fibocom** in various form factors
- **Routers:** Advanced 5G router solutions from **Teltonika** Networks

Whether you need standalone, easy-to-integrate devices or components for developing your own solutions, we have the products to meet your requirements.

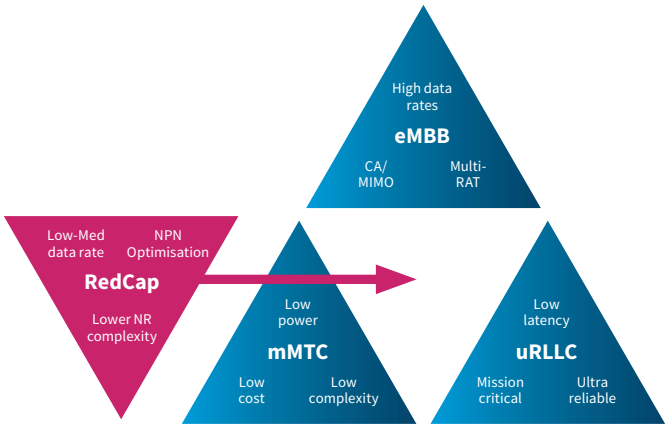
5G Redcap (Reduced Capacity)

Optimising performance for mid-tier IoT applications

The next generation of IoT connectivity is here: With our innovative 5G RedCap products, you can close the gap between 4G and full 5G. This technology offers the perfect balance of performance, energy and cost efficiency – ideal for your medium bandwidth applications.

Bridging the gap in connectivity

5G RedCap fills the gap between eMBB (Enhanced Mobile Broadband), Massive IoT (Low Power Wide Area), and URLLC (Ultra-Reliable Low-Latency Communication). It delivers a balanced blend of moderate data rates, low latency, high energy efficiency, and medium device complexity – perfectly positioned to meet diverse IoT and industrial needs.



Ready for the future of standalone networks

Current 5G networks usually operate in non-standalone (NSN) mode and require a 4G network as an 'anchor' in addition to the 5G network, as a basis for signaling. In contrast, RedCap is based on standalone (SA). Corresponding SA networks are currently in the test phase and will increasingly be put into operation over the course of 2025. This means that now is the right time to make the switch.

Combined technologies

Reduce board space and design complexity whilst improving time-to-market.

Accelerate development with scalable System-on-Module solutions/SoMs

System-on-Module "SoM" solutions offer a highly integrated hardware and software platform designed for rapid development and time-to-market, as well as a full suite of tools and resources for design scalability and easy maintenance.

Acal BFi's solutions support a variety of long-distance communication modes and short-distance 2.4GHz and 5GHz wireless transmission technologies like Wi-Fi/ Bluetooth.

With built-in LNA, it supports GNSS wireless positioning technology. It is based on an open Android operating system with rich extension interfaces such as MIPI/ USB/ UART/ SPI/ I2C, which is the preferred solution for the core system of wireless intelligent products.

SoMs help accelerate development schedules and reduce costs by eliminating the complexity of the computing architecture, allowing developers to focus on solution innovation.

Seamless Integration of Wi-Fi and Bluetooth

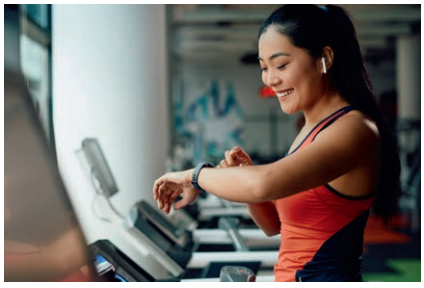
As two of the most innovative wireless technologies in the world, it is often common for designers to integrate both Bluetooth and Wi-Fi into their design. We offer a wide range of solutions for you to be able to integrate multiple Wi-Fi and Bluetooth standards into your design.

Modules offer the quickest and easiest solution of adding these complementary wireless technologies to your design, whilst volume applications could benefit from a SiP solution from USI. Components from **Sparklan** combines the latest technology of both worlds – Bluetooth 5.2 and Wi-Fi 6/6E in various form factors, such as SiP, Mini PCIe and M.2.

Bluetooth and LoRa – dual IoT radio technology in a compact module

Our partner **Insight SiP** offers a unique combination of two leading IoT radio technologies in one class-leading miniaturised package. With integrated BLE and LoRa connectivity, this module offers the long-range capability of LoRa for data transmission over distance.

Combined with the high throughput flexible service of BLE for a more local connection that can be used to carry out configuration, commissioning and update via smartphone or tablet applications.



Industrial networks management/solutions

Optimise and secure your industrial networks with advanced management solutions

Introducing **Teltonika Networks** industrial management solutions. Offering robust and innovative solutions tailored for industrial environments, providing comprehensive management capabilities for critical infrastructure and networks. Optimise operations and drive productivity with reliable, secure, and efficient management tools that offer seamless integration and unparalleled industrial management capabilities.

Modems

Teltonika Networks' modems offer you reliable cellular connectivity solutions, ideal for applications requiring remote data transmission. These modems ensure seamless communication in challenging environments, with support for multiple backup scenarios and a range of connectivity options, such as 4G LTE and 3G.

Gateways

These secure gateways are designed to meet the complex requirements of IoT projects. These devices ensure secure and efficient data transmission between IoT devices and the cloud, with features like protocol translation, security measures, and compatibility with various IoT ecosystems, making them invaluable tools for design engineers in IoT deployments.

Routers

These routers are essential for design engineers seeking robust, secure, and easy-to-use connectivity solutions. These routers offer reliable 4G LTE and Ethernet connectivity with dual SIM support, advanced security features, and remote management through the Teltonika RMS platform.

Switches

Teltonika Networks' switches provide design engineers with versatile, industrial-grade networking solutions. Offering Layer 2 and Layer 3 capabilities, these switches enable efficient network design and management, with options for PoE support, advanced security features, and scalability for various network sizes.

External and network solutions

Reliable external and network solutions for seamless connectivity.

Cellular gateways and routers

Cellular routers and gateways manage all communication for connected devices. Gateways provide translation between different protocols, and typically offer a data path to the Internet or a local network. Our routers are designed for customers who demand the best for mission-critical applications in extremely harsh vehicle, indoor and outdoor applications.

Modems (GL series*)

Modems use an existing serial or USB port to connect to your design and provide direct access to the Cloud in minutes. For products with an ethernet port or Wi-Fi connectivity, gateways provide the same easy access with even greater design flexibility.

Lantronix G520 series

The next generation IoT Cellular Gateways, designed for Industry 4.0, security and transport applications, providing state-of-the-art LTE CAT-4 or even 5G connectivity. The **G520** supports a wide range of interfaces, such as RS232/485, USB, ethernet and Digital I/O's.

Semtech FX30

The smallest LTE-M and LTE CAT-1 cellular gateway in the industry integrates the Legato® Open-Source Linux Platform. It supports Semtech's IoT Connector hardware expansion, facilitating swift, scalable, and global IoT application deployments for any connected machine or infrastructure. Based on the WP series modules running Linux with the Legato framework, the **FX30** is suitable for initial deployments or market trials before developing your own device.

Semtech GL series*

These modems offer immediate connectivity to IoT systems via serial or USB interfaces, providing 4G LTE and LPWA LTE CAT-M1/NB2 with fallback options. The compact, industrial-grade design supports Semtech's **AirVantageTM** Device Management platform, simplifying device deployment and management in the field. Pre-certified and easily integrated with existing products.

***formerly Sierra Wireless**

IoT gateway solutions

Versatile IoT gateway solutions for secure and efficient connectivity.

IoT gateway solutions offer a configurable industrial edge to cloud platform with multiple connectivity options and sensor inputs. These solutions offer a secure and scalable platform seamlessly covering data aggregation, filtering, and transmission at the edge. Our vendors offer a range of solutions from low power ARM to higher performance Atom CPU's ensuring Acal BFi can offer an industry leading range of rugged intelligent systems used in critical applications where reliability is paramount.

Adlink MXA-200 IoT gateway

The compact MXA-200, powered by an i.MX8M Plus Quad-Core processor, is an open-platform IoT gateway designed for industrial applications. Measuring just 127 x 111 mm, it features:

- **Connectivity:** 2 isolated RS-232/422/485 serial ports, 2 Gigabit Ethernet ports, 2 USB 3.0 ports
- **Expansion:** 2 M.2 slots for Wi-Fi/4G/5G modules
- **Durability:** Operates in temperatures from -20°C to +70°C

Ideal for renewable energy, EV chargers, smart cities, and factory automation, the MXA-200 supports rapid application development for data collection, cloud integration, and video monitoring.

EMU-200 series IIoT gateways

The EMU-200 series bridges OT and IT, streamlining data flow and cloud integration for industrial applications:

- **EMU-210:** High-performance IoT gateway with i.MX 8M Plus quad-core processor, ideal for edge computing and AIoT applications
- **EMU-200:** Cost-effective IoT gateway with Arm Cortex-A9 @1.0GHz, supporting Wi-Fi, Ethernet, and serial protocols for seamless device integration

Both models are perfect for renewable energy, EV chargers, and factory applications requiring extensive data collection and cloud-based solutions.

MXE-230 Edge AI gateway

The MXE-230, powered by Intel's latest N Series and x7400 CPUs, is designed for versatile industrial applications, including IIoT. It excels in AI object detection, real-time analysis, and decision-making, making it ideal for:

- **Self-service kiosks:** Reliable, efficient customer interactions and transactions
- **High-performance gateways:** Effective for semiconductor devices and data aggregation applications

With a modular design, it supports Wi-Fi, 4G/LTE, GPS, and M.2 2280 M-key storage, offering flexible communication and expansion options.

Cellular for low-power applications

A brand new category of wireless technology for remote device deployment.

LPWA Network (LPWAN) technologies offer a cost and power-efficient wireless option that leverages existing networks, global reach, and strong built-in security.

Created specifically for M2M and IoT devices, Low Power Wide Area technology is defined by its name – it enables low power consumption and long-range wireless connectivity.

There are essentially two different segments of LPWA technologies available:

- The standard-based LPWA, which includes LTE-M and NB-IoT
- The proprietary ones, such as LoRa/LoRaWAN **(see page 20)**

LTE-M and NB-IoT technologies

LPWA technology supports data transfer in small intermittent data packets ranging in size from 10 to 1000 bytes. This allows improved efficiency and optimised data speed ranging from:

- Upload: from CAT-M 590 kbps to 127 kbps for CAT-NB2
- Download: from CAT-M 1100 kbps to 158 kbps for CAT-NB2

Working closely with Semtech, we offer a wide range of LPWA cellular modules, such as the dual-mode (LTE-M and NB-IoT) HL78 and WP77 families, or the solutions from Fibocom, such as the MA510 and MC905A-GL as a single mode NB-IoT module only.

HL7810/12 (incl. 2G fallback), the MA510-GL and MC905A-GL are fully compliant with the 3GPP release 14, supporting CAT-M1 and CAT-NB2 technologies, while the WP7700/02 supports the release 13 with CAT-M1/NB1.

Cellular – LTE and 5G solutions

Offering higher speed, higher capacity and lower latency, 5G promises to enable many exciting applications.

5G enhances everyday interactions and IoT expansion by improving infrastructure. It enables new applications like high-definition streaming, robotics, AR, VR, and real-time communication for autonomous vehicles. Unlike previous standards, 5G coexists with 4G, facilitating seamless feature updates and leveraging existing investments.

We offer a broad range of 5G modules from our partners **Semtech** and **Fibocom.** Depending on your project requirements, we can offer high-end solutions for worldwide deployments as well as cost-optimised modules for regional use in EMEA and other regions, such as North America and Asia.

Typical data speed

- Peak download rate 3.5Gbps up to 4.9 Gbps*
- Peak upload rate up to 660Mbps up to 900Mbps*

*Data speeds strongly depend on your network and many other circumstances.

Modules are all fully compliant with the latest 3GPP release 16 and are available in an M.2 formfactor. The Semtech EM9291 is available as M.2 whilst we also offer the Fibocom FM/FG160 family as solder-down.

4G/LTE broadband modules

Integrate cellular 4G broadband LTE into your design.

A cost-effective method to integrate wireless connectivity into designs is through embedded cellular modules.

We collaborate with leading providers Semtech and Fibocom, offering a range of high-performance 4G modules. From CAT20 M.2 modules to cost-optimised CAT1 and CAT4 options in M.2, miniPCIe, and LGA solder-down formats, we provide diverse LTE solutions tailored to your design needs.

Cloud services

Regardless of technology, your data needs to be securely stored and analysed. Cloud-based services are a popular choice, providing the benefit of anywhere, anytime access.

We are proud to offer several Cloud-based and Edge services. These purpose-built, high-performance platforms provide you with the tools and development community to get your service to market faster, enabling you to focus on your customer experience without worrying about your IoT and M2M infrastructure, and eventually lowering the total cost of ownership. Uniquely providing all the services needed to create, deploy and manage several devices remotely from one secure cloud-based management application, connecting smart devices via cellular networks. Track, monitor, and manage the movement of high-value assets in near real-time, enabling quick and decisive action should problems occur.

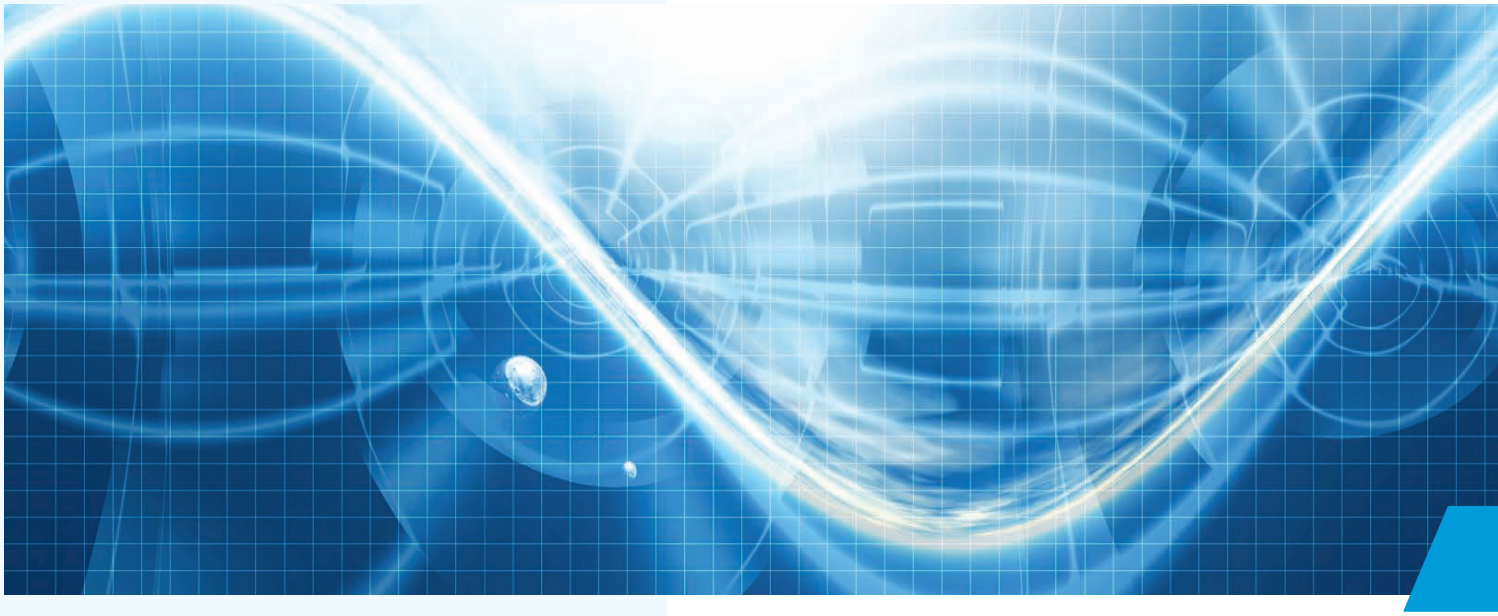
AirVantage and R2C

The AirVantageTM connectivity management interface is the single place to order, track and manage all of your Semtech SIM cards and connectivity subscriptions. Because of our long history of working with all the global operators, AirVantage is also able to manage SIM cards from most of the other operators you may work with.

With a tightly integrated, secure data stream from the device to the cloud, our Ready-to-Connect (R2C) modules, gateways and routers simplify your IoT journey by providing instant access to Semtech Smart Connectivity. Embedded SIMs (eSIMs) pre-integrated inside Ready-to-Connect devices can be activated over-the-air anytime, anywhere, to eliminate individual device provisioning and reduce your total cost of ownership by up to 40%.

Frequency control

Discover our leading range of quartz-based timing-device solutions.



IoT applications often require highly reliable, low-power, cost-effective frequency solutions in small form factors. We offer a leading range of timing device solutions from global leading suppliers – including **ACT,** **Taitien** and **Tai-Saw** – with the engineering expertise to find and integrate the most suitable solution for your application.

Wide operating temperature from -40 to +125°C

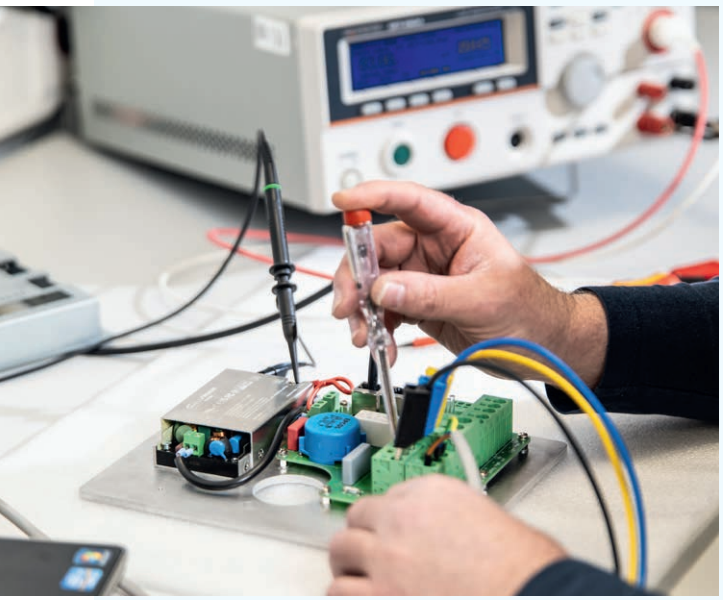
Our portfolio includes leading-edge solutions from Tai-Saw, which operate across an extended temperature range from -40 to +125°C. Ideal for demanding applications, these ultra-small, ultra-low-power, surface-mount crystal oscillators can be optimised for industrial applications and the special requirements of the automotive industry (AEC-Q200).

Our range covers

- 32.768kHz crystals and oscillators
- MHz crystals
- Clock oscillators
- VCXOs/TCXOs/OCXOs
- Real-time clocks
- SAW filters and resonators
- VCO/PLL

Power

Power solutions for next-generation IoT & wireless applications.



We deliver a range of power solutions tailored for IoT and wireless applications, ensuring efficiency, reliability, and innovation. From compact 4–100 W CFM-Series power supplies for smart buildings to advanced 10–600 W LED drivers with DALI and analogue support, our portfolio is designed to power the future. Whether you require fanless, baseplate-cooled solutions for industrial and medical applications or ultra-efficient GaN-based adapters (5–300 W), we provide the perfect fit for your needs.

Comprehensive power solutions

- **AC/DC, DC/DC & DC/AC Converters** – Featuring advanced GaN and SiC technology
- **Custom Power Designs** – Delivering up to 50 kW with multi-voltage capabilities (5–400 V)
- **Standard Power Options** – Scalable solutions from 1 W to 100 kW, covering 5–250 V
- **Flexible Configurations** – Precision 3D design for housings and mechanical components
- **End-to-End Solutions** – From 0.25 W to 100+ kW, offering both standard and bespoke designs

RSG – Powering the future of IoT & remote devices

Power efficiency is at the heart of every IoT device, and RSG, an Acal BFi brand, delivers lightweight, low-power DC/DC converters starting from 0.25 W – perfect for handheld, mobile, and wearable applications.

The R-series portfolio includes various packaging options, providing cost-competitive solutions with minimal power outputs ensuring low heat generation for space-constrained and sealed designs.

Engineered for harsh environments and remote deployments, RSG converters provide reliable performance wherever power efficiency is essential.

Key features

- Broad power rating – from 0.25 to 60 W
- All footprints – SIL3 to SIL12, DIL8 to DIL24, 1x1 to 2x1 inches, THT and SMT
- Various outputs – single, dual, dual-separate, dual- split and triple
- Various load regulations – regulated, semi-regulated and unregulated
- Broad isolation voltages – from 1,000 to 6,000VDC
- Non-isolated, step-down regulators for PoL applications
- CE, UL and other approvals

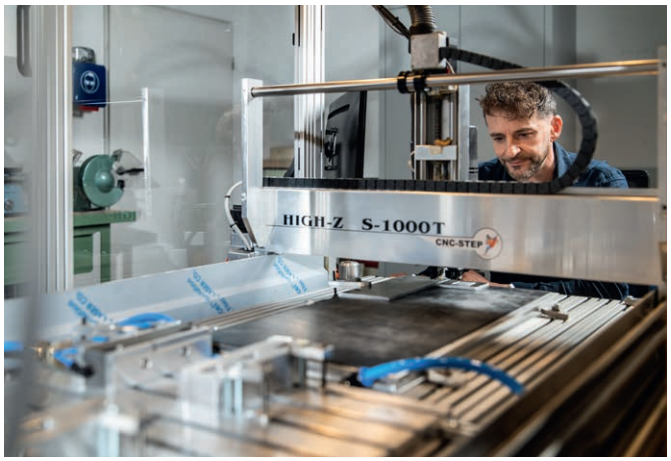
Power

Power solutions for next-generation IoT & wireless applications.

Your trusted partner for innovative power solutions

With over 50 years of experience, we provide both standard and custom power solutions ranging from 1 W to 100 kW, covering voltages from 1.8 VDC to 3,000 VDC. Our solutions power industries including industrial automation, medical, railway, LED lighting, military, and renewable energy. Whether you need a compact power supply for space-constrained applications or a high-power system for demanding environments, we have the expertise to deliver reliable and efficient solutions.

- **Tailored solutions** – Custom-engineered power supplies to meet specific IoT and industrial requirements
- **Expert consultation** – Leverage our deep technical knowledge for optimal power integration and performance
- **Reliable distribution** – Efficient and proactive service across Europe and beyond, ensuring seamless supply chain support
- **Wide product range** – From AC/DC and DC/DC converters to battery chargers and inverters, we offer solutions for diverse applications
- **Compliance & certifications** – We provide power solutions that meet industry standards, including medical, railway, and military approvals



Custom power solutions

Our expert engineers develop custom power solutions tailored to your application, ensuring efficiency, reliability, and optimal performance. From initial concept and design to prototyping, testing, and production, we work closely with you to understand your specific power requirements. Whether you need a compact supply for an IoT device or a robust system for industrial and military applications, we have the expertise to deliver the right solution.

Through partnerships with leading manufacturers, we provide cost-effective, high-performance solutions that meet industry standards. Our Technology Centre offers specialist support, custom design capabilities, and in-house testing to refine and validate your power solution.

See our **Technology centre section** for more details. Contact us today to discuss your project and find the ideal power solution for your application.

Contact us today to find the ideal solution for your application.

RF components

Advanced Radio frequency components & solutions for optimal wireless design.

We offer a broad range of high-quality RF components from leading suppliers to optimise your wireless designs. Whether you are developing communication systems, radar applications, or IoT devices, our extensive portfolio provides the flexibility and performance needed for seamless integration.

Our range includes high-performance switches, custom filters, amplifiers, and FEMs, designed to meet diverse design requirements and enhance signal integrity, efficiency, and reliability. We work closely with industry-leading manufacturers to ensure our components meet the latest technological advancements and regulatory standards.

With expert technical support and tailored solutions, we help engineers select the right RF components to maximise performance and streamline development. Explore our portfolio to find the ideal solution for your wireless application.

For signal transmission, explore our complete antenna solutions, from single to multiband, internal to external, and standard to custom options **(see page 36).**

Additionally, our shielding solutions ensure protection from unwanted interference and help contain emissions for optimal performance **(see page 37).**

RF components

Advanced Radio frequency components & solutions for optimal wireless design.

Filters for high-precision RF applications

Our comprehensive filter range, sourced from industry leaders like Tai-Saw, Johanson Technology, and Sangshin Elecom, are engineered for precise signals and minimal noise.

This selection supports seamless RF integration across diverse IoT applications, combining low insertion loss with high attenuation levels to maximise performance and cost-effectiveness.

Key features

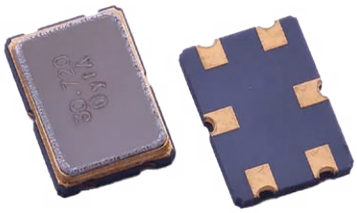
- **Types:** Band pass, high pass, low pass, SAW filters, and duplexers
- **Application Areas:** IoT, automotive, industrial, and communications
- **Benefits:** Reliable signal clarity, low-noise operation, optimised for quick RF integration

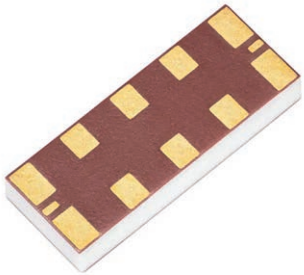
Exceptional performance at extreme temperatures

For environments where thermal stability is critical, our thermally compensated SAW filters excel in temperature resilience, making them ideal for demanding applications in the automotive and industrial sectors. With low temperature sensitivity and enhanced insertion loss, these filters provide stable performance for LTE, GNSS, and digital radio systems across a wide temperature range.

Extensive design options for flexible integration

Our lineup includes over 700 filter designs, ranging from narrow to ultra-wide bandwidths (500 MHz to 6 GHz+), with short lead times and customisation options to meet precise RF requirements. Many options also feature AEC-Q200 automotive qualification, ensuring durability and reliability under automotive standards.





Antennas

Optimised antenna solutions for exceptional performance

Using the right antenna can make or break a design

By partnering with top antenna providers, we ensure a range of optimal antenna solutions tailored to your specific application and frequency. Our field application engineers will guide you through selection, matching RF input/output to maximise range while minimising power consumption.

Our range includes:

- Single and multiband antennas
- External connectorised antennas
- Internal chip, patch, PIFA and PCB antennas
- Customised antennas

Antennas for all technologies

Reducing RF inference has enabled multiple wireless technologies to co-exist within a few millimetres of one another, therefore antenna efficiency, RF isolation and antenna selectivity are all critical considerations. We offer a wide range of antennas specifically developed for every wireless technology standard.

- Cellular (2G, 3G, 4G LTE)
- Wi-Fi, Bluetooth
- ISM bands including LoRaWAN, SIGFOX and Zigbee
- GNSS (including BeiDou, Galileo, GLONASS and GPS)
- NB-IoT – Band 8 (880 to 960MHz) / Band 20 (791 to 862MHz)
- Custom designs for non-standard frequencies

Expert RF design support

Reducing RF interference is essential for efficient wireless operation in compact designs. Our state-of-the-art RF testing, including anechoic chamber testing, ensures your design achieves optimal antenna efficiency, RF isolation, and selectivity.

Embedded & miniaturised antennas for IoT

In compact data-gathering and wearable IoT applications, space constraints often require on-board antennas, such as chip, patch, PIFA, or PCB-embedded antennas. The performance of these antennas can be influenced by factors like ground plane size, component placement, unit orientation, outer casing materials, and proximity to the casing itself. Without proper optimisation and tuning, the antenna's wireless range and power efficiency can be significantly compromised.

We provide expert guidance to optimise antenna placement, minimise interference, and refine wireless performance for embedded antennas.

Ready to optimise your RF design?

Work with us to access industry-leading expertise and resources for achieving peak performance from your antenna solutions. Contact our field application engineers for specific components and customisable options.

EMC protection and shielding

Enhance the performance of your design with EMC shielding.

Wireless solutions use radio frequencies to communicate and transfer data, however these frequencies can interfere and impede the performance of other components within your design. Similarly, other components can generate heat or unwanted frequencies, impacting the overall effectiveness.

No matter how big or small your design, managing radiation, heat and other radio magnetic frequencies is essential to the overall performance of your final product.

EMC chamber

Our EMC Chamber Service provides a controlled environment for precise electromagnetic compatibility (EMC) testing, essential for ensuring your products meet stringent regulatory standards and perform reliably in real-world conditions.

Equipped with advanced measurement tools, our EMC chamber can simulate various electromagnetic environments, allowing us to assess your design‘s resilience against interference and ensure compliance across a range of standards. With expert engineers on hand, we offer comprehensive testing support to help you refine and validate your designs efficiently.

Ensure your product meets the highest EMC standards. Contact us today to schedule your EMC testing and take the next step toward reliable, compliant design.

Protection against high-frequency electromagnetic interference and thermal influences

MTC (Micro Tech Components GmbH) specialises in high-quality electromagnetic shielding and heat dissipation solutions. They offer personalised support, from consulting and development to custom production. Whether you’re managing heat at the concept stage or preventing unwanted frequencies before production, MTC provides solutions for projects of any size and scope.

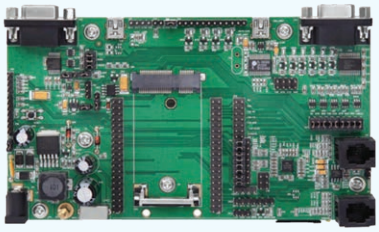
Protection for your design

- Fabric-over-foam gaskets
- Conductive foams, elastomers and tapes
- Metal contact strips for chassis shielding
- Board-level shields
- SMD contacts
- Shielding clips
- Thermal conduction solutions
- Custom solutions

Evaluation kits

Our solutions are supported by a range of development kits to kick-start your design.

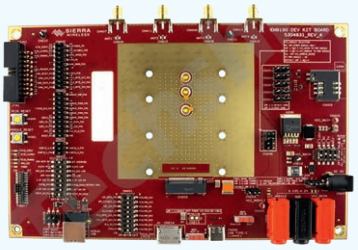
Our evaluation kits streamline testing and evaluation of technology and design concepts, eliminating the need for costly and time-consuming custom PCB development at the initial stage, offering cost advantages at mid to high volumes, and often operating via standard ports like USB or UART for easy configuration and programming.



Fibocom LPWA MA510

One EVK base board for multiple cellular standards

The GT8230-NL evaluation kit by Fibocom aids 4G and LPWA module development, comprising the GT8230-NL, RF cable, antenna, and micro-USB cable, with adapter board and MiniPCIe interfaces. Completing the platform, the MA510 adapter board, with the MA510 module, enables CAT-M1 and NB2 connectivity, streamlining evaluation and design phases.



Semtech 5G EM9291

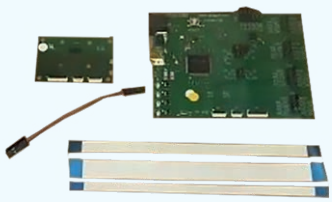
All-in-one 5G M.2 development kit

The Semtech M.2 Development Kit aids in application development with AirPrime® EM9/EM76 series modules like EM9190, EM9191, and EM7690. It features an evaluation board with an M.2 interface, antennas, and a power supply. The kit also offers SIM sockets, debugging ports, and system interfaces for enhanced functionality.

Atmosic ATM3325 SoC

Development / evaluation kit

The kit is designed to provide developers with the hardware and software to evaluate the performance of and develop applications for the non-Energy Harvesting ATM3325. Atmosic offers several kits to support product developers through the various stages in their product design when using the Atmosic family of Energy-Harvesting and non-Energy-Harvesting Wireless Connectivity SoCs and modules.



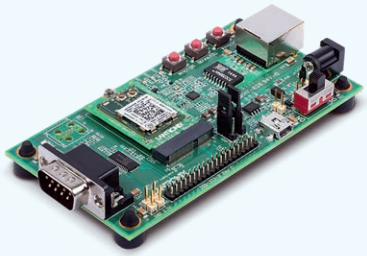
Insight SiP: ISP2053-AX-EB board

Dual-core Bluetooth 5.2 BLE Module

The ISP2053-AX development tool includes an interface board, a test board with the ISP2053-AX module, and all required cables. Simply connect the components, download the tools and SDK, and commence application development. Easily create applications for Bluetooth LE 5.2, BT 5.2 LE Audio, Direction Finding, Long Range, BT Mesh, Thread, Matter, Zigbee, 802.15.4, ANT, and NFC.

Evaluation kits

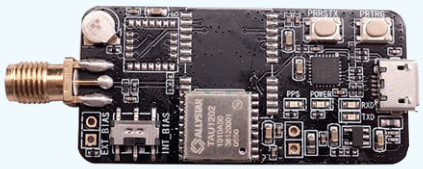
Our solutions are supported by a range of development kits to kick-start your design.



Lantronix: xPico 240 evaluation kit

Connect and control via Wi-Fi

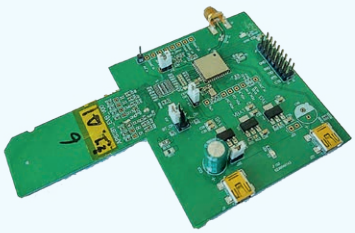
The xPico 240 evaluation kit comprises the evaluation board, two u.fl to RP-SMA adapter cables, antennas, and power adapters. It facilitates swift connection to the xPico 240 module for data sharing via dual-band Wi-Fi/ ethernet. The board features a 10/100 ethernet port, USB port, peripheral I/O header, 3.3V header, and DB9 RS232 serial port for diverse design interfaces.



Allystar: TAU1202 evaluation board

Evaluate ALLYSTAR GNSS modules with TINY-EVK

The TINY-EVK is a straightforward demo kit for assessing Allystar GNSS modules. It features a Micro-USB interface for power and PC communication, with an SMA connector for passive or active antennas. Connect the EVK to a PC via USB, install Satrack for Windows, and begin evaluating GNSS functionalities and features.



SparkLAN: AP6281 evaluation board

Evaluate the Wi-Fi 6+BT 5.2 Combo SiP Module

The AP6281 evaluation board showcases the capabilities of the SparkLAN SiP module, offering Wi-Fi and Bluetooth functions for separate testing. It supports an SDIO interface to connect to the host on the target platform, with options for SD Card Slot or Micro SD card slot, facilitating straightforward evaluation.

Accelerate your design process with evaluation boards

Find the ideal evaluation board for your next project. With our range of high-quality boards, you can easily assess and prototype your designs, accelerating your development process.

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Contact Information & Locations

Leverage our expertise and in-house capabilities by involving us early in your design process. Our team specialises in crafting tailored solutions for complex designs, ensuring you meet requirements, stay within budget, and accelerate your market delivery. With your initial project details we can provide design proposals, budget quotes, and prototypes within a few days.

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Belgium	Zaventem	+32 (0) 2720 5983	sales-be@acalbfi.be
Denmark	Roskilde	+45 (0) 7026 2225	info@acalbfi.dk
Finland	Vantaa	+358 (0) 207 969770	info@acalbfi.fi
France	Évry-Courcouronnes	+33 (0) 1 60 79 59 00	sales-fr@acalbfi.fr
Germany - Frankfurt	Dietzenbach	+49 (0) 6074 4098 0	sales-de@acalbfi.de
Germany - Munich	Gröbenzell	+49 (0) 8142 6520 0	sales-de@acalbfi.de
Italy - Milan	Assago (MI)	+39 (02) 53583.1	sales-it@acalbfi.it
Italy - Rome	Roma	+39 (06) 86894259	sales-it@acalbfi.it
Netherlands	Eindhoven	+31 (0) 4 0250 7400	sales-nl@acalbfi.nl
Norway	Hønefoss	+47 (0) 3216 2060	info@acalbfi.no
Spain	Madrid	+39 (02) 53583.1	enquiries-es@acalbfi.it
Sweden	Sundbyberg	+46 (0) 8 5465 6500	info@acalbfi.se
UK	Wokingham	+44 (0) 1189 788 878	sales-uk@acalbfi.co.uk

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