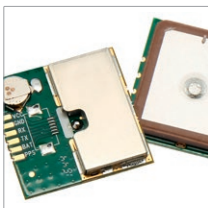
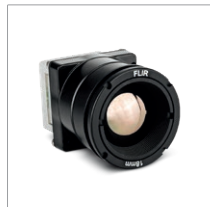
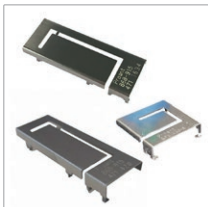




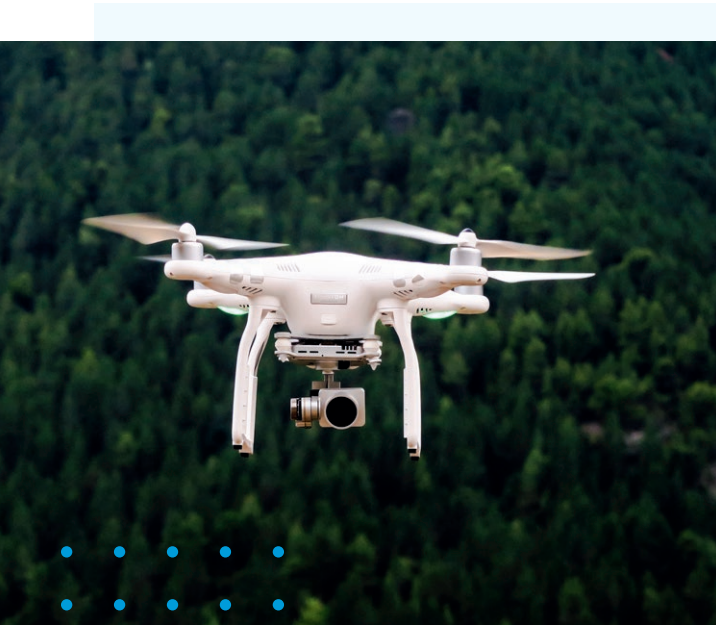
Unmanned Aerial Vehicles (UAV)

Components and technical solutions



Finding the right technology for a UAV application in a complex market

Unmanned Aerial Vehicles or UAVs, refer to pilotless aircraft and drones either remotely controlled by an operator, or autonomously by an onboard computer.



Specialist UAV components

This brochure presents recommended market-leading technologies and solutions from Acal BFi and our specialist partners for demanding UAV applications, delivering compact, robust, and high-performance solutions. As a **complete solutions provider**, Acal BFi's experienced engineers help you select the right technologies for your project. Through strong supplier partnerships, we provide access to advanced sensing, imaging, power, connectivity, and embedded processing solutions.

Our in-house **Technology Centres** support prototyping, testing, custom design, and low-to-medium volume manufacture, addressing complex and high-performance UAV requirements. Dedicated engineering expertise from concept and design-in through qualification and production ensures you meet performance targets, regulatory demands, and time-to-market objectives.

The global UAV market is expanding rapidly, driven by growing civil and commercial adoption and sustained defense investment. Applications such as infrastructure inspection, environmental monitoring, precision agriculture, mapping, logistics, and emergency response are accelerating demand, while defense and security rely on UAVs for intelligence, surveillance, reconnaissance (ISR), and situational awareness. UAVs provide a flexible, lower-risk, and cost-effective alternative to manned platforms. As capabilities advance, platforms must fly longer, carry advanced sensor payloads, process data at the edge, and operate reliably in harsh, contested environments, increasing the complexity of technology selection — from power management and connectivity to sensing, imaging, and embedded processing. Acal BFi delivers market-leading technologies for modern UAV applications, combining lightweight, low-power components with high-performance, reliable solutions that ensure the accuracy, resilience, and data quality required for autonomous and mission-critical systems.

Three types of UAVs



0 - 20 kg

Small UAV (group 1 UAVs)



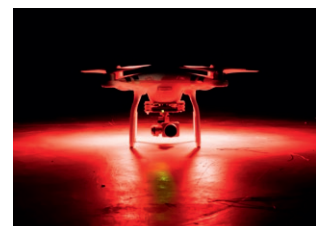
21 - 55 kg

Medium UAV (group 2 UAVs)



55+ kg

Large UAVs (group 3, 4 & 5 UAVs)





pp. 4-5

Infrared imaging

- Longwave(LWIR) cameras
- Medium (MWIR) cameras
- Short (SWIR) cameras

Visible imaging video analytics

- Block and high-definition visible (VIS) cameras
- Video analytics and interface boards



pp. 6-7



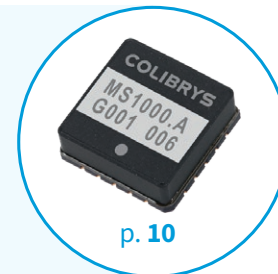
pp. 8-9

Power supplies

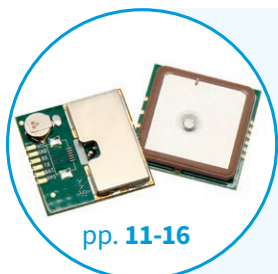
- Power for signal transmission
- AD/DC & DC/DC High-voltage converters
- Charging solutions
- Configurable power supplies

Sensing / Positioning

- Accelerometer
- Gyroscope



p. 10



pp. 11-16

Connectivity solutions

- System on Module (SoM)
- Low power Cellular
- Bluetooth & wireless modules
- GPS & GNSS modules
- Antennas

Frequency control

- TCXO's
- Clock oscillators
- Crystals



p. 17



pp. 18-19

Fibre optics

- Transceivers
- Cables
- Assemblies

E-mech solutions

- Connectors
- Shielding
- Housing



pp. 20-21



pp. 22-23

Technology | Network

Seven specialised Technology Centres

Infrared imaging

Infrared imaging solutions that give UAVs enhanced thermal vision, improved detection, situational awareness and reliable performance in challenging environments.



Longwave infrared (LWIR) camera cores

We offer a range of industry-leading, high-performance LWIR cameras (7-12 microns) provide incredibly accurate images for UAV operators, because of the minimal atmospheric absorption gained from long-wave infrared imagery and the advanced image processing software available.

These specialist products are small-sized, have enhanced sensitivity and are simple to integrate, so they are ideal for UAV applications such as surveillance, agriculture and electrical-building inspection or indoor applications such as monitoring pipes, subways and sewers.

Our IR specialists offer personalised and responsive support to customers at every stage of a project providing samples and technical support. We also offer an exclusive range of specialist lenses which can be integrated and configured by our custom services centre in Germany.



Teledyne FLIR - BOSON®+

- Resolution: 640x512 pixels
- Pixel pitch: 12µm
- Industry-leading Sensitivity: NETD < 20mK
- Spectral range: 7.5 – 13.5µm
- Temperature measurement option (Radiometry)
- Size (LxWxH): Varies by configuration, as small as 21 x 21 x 11 mm
- Weight: Varies by configuration, as light as 7.5g
- Compatible with: Sightline video processing boards



Teledyne FLIR - HADRON™ 640R Dual Thermal & Visible OEM core

- Thermal Channel: 640x512 pixels 32° HFOV
- Visible Channel: 9248 x 6944 67° HFOV
- Temperature Accuracy: +/- 5°C or less
- IMU: ICM20602
- AI at the Edge: NVIDIA Jetson Nano or Qualcomm RB5
- Sealed (IP54) and Low SWaP (35x49x45mm, 56g, 1.8W)



Teledyne FLIR BOSON®+ CZ 14-75

- Resolution: 640 x 512 pixels, pixel pitch: 12µm
- Industry-leading Sensitivity: NETD < 20mK
- 15-75 mm f/1.2 high aperture 5x zoom lens (29.9° - 5.8° HFOV)
- Low SWaP (101 x 77 x 77 mm, 390 g, 12V)
- Compatible with: Sightline video processing boards

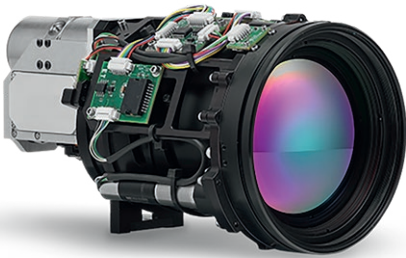
Infrared imaging

Infrared imaging solutions that give UAVs enhanced thermal vision, improved detection, situational awareness and reliable performance in challenging environments.

Midwave infrared (MWIR) camera cores

Our range of mid-wavelength cameras (3-5 microns) are chosen to deliver reliable, accurate thermal imagery over a wide operating temperature. These rugged, compact and configurable units are ideal for long-distance, complex security and surveillance.

We can help you tailor your controls and settings for each unique application. Including helping you to synchronise and trigger the camera from external events and devices. Demo/samples products are available to trial and test when you are designing a new UAV or if you want to change camera.



Teledyne FLIR – Neutrino SX8 – ISR 15-300

- Resolution: 1 280 x 1 024 pixels
- Pixel pitch: 8 μm
- Cooler MTTF: Up to 27,000 Hours
- MWIR band: 3.4 - 5 μm
5-300mm F/4.0 20x Continuous Zoom
- HFOV 39.1° to 2.0°
- Size (LxWxH): 20.3 x 9.6 x 9.6 cm
- Weight: 1.5 kg
- Power: 12.5VDC @ 0.7A nominal, 1.1A @ cooldown

Teledyne FLIR – Neutrino LC - ISR 20-420

- Resolution: 640x512 pixels
- Pixel pitch: 15 μm
- Cooler MTTF: Up to 27,000 Hours
- MWIR band: 20-420mm
F/5.5 21x Continuous Zoom
- Size (L x W x H): 20.3 x 8.9 x 8.9 cm
- Weight: 1.2 kg
- Power: 12.5VDC @ 0.7A nominal, 1.1A @ cooldown

Short wave infrared (SWIR) camera cores

All our specialist short-wavelength infrared cameras (0.9-1.7 microns) deliver high-resolution images. These cameras offer similar shadow contrast and detail to the visible light spectrum, but with the additional detail and visibility provided by thermal imaging. Providing you with high-quality images and clear visibility without being affected by environmental factors. This range of cameras is ideal for active imaging and applications requiring precise details, for example, identifying unique people through fog or smoke. We work with market-leading suppliers to offer custom lens mounts, casing options to integrate the latest advanced SWIR cameras seamlessly into your design.



Allied Vision – Alvium 1800 – C-530 VSWIR

- Digital interface: MIPI CSI-2 camera
- Sensor model: Sony IMX992 SenSWIR InGaAs global shutter sensor
- Sensor model: SWIR, Visible SWIR
- Resolution: 2,592 x 2,056 (5.30 MP)
- Pixel size: 3.45 μm x 3.45 μm
- Bare board, C-Mount, CS-Mount
Body dimensions (L x W x H in mm): 26 x 29 x 29 (C or CS mount)
- 40g (C or CS mount)

Visible imaging

High-performance visible imaging for UAVs, enabling clear, accurate data capture and real-time insights.



Block and high-definition visible (VIS) cameras

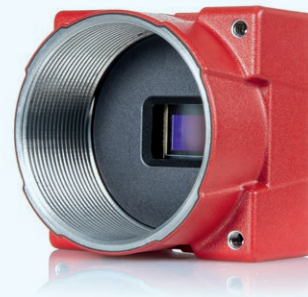
We offer a range of unique VIS camera modules specifically designed to provide the compactness, low weight, vibration limitation and high optical performance essential for UAVs. We offer cameras with optical vibration compensation, assuring high-quality image stabilisation when images are captured in a vibrating environment.

To help you you find the right VIS camera for your application, we provide personalised support including advice with product selection, offering block and high definition camera available to try and test and providing technical support with technology integration.



Videology – 10x to 55x Zoom Block Camera

- Resolution: 1980*1024 to 3840*2160
- Optical zoom: 10x 18x 20x 30x 36x 55x
- High Sensitivity, colour 0.02 Lux @ 1/30sec.
- Size (LxWxH): 44 x 43 x 62.4 mm min.
- Weight: 125g min.
- Power: 250mW min.
- Compatible with: Sightline video processing boards



Allied Vision - Alvium 1800 C-811 4K Global Shutter Board Camera

- Digital interface: MIPI CSI-2, up to 4 lanes
- Sensor model: Sony IMX546 global shutter sensor
- Spectral range: 300 nm to 1100 nm
- Resolution: 2,848 x 2,848 (8.10 MP)
- Pixel size: 2.74 μm x 2.74 μm
- Bare boards, C-Mounts, CS-Mount
- Body dimensions (L x W x H in mm): 26 x 29 x 29 (C or CS mount)
- 40g (C or CS mount)

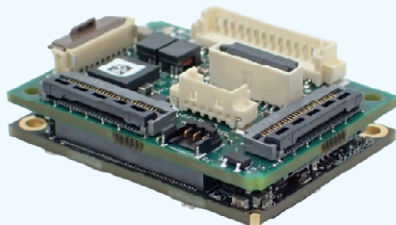
Video analytics

Enabling autonomous UAV decision-making through high-performance computer vision and on-device AI processing.

Embedded edge vision AI

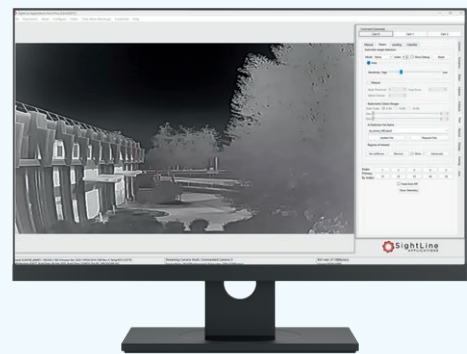
To gain increasingly accurate images from smaller and lighter cameras, the processing and analytics capabilities are very important to optimise processing video images, such as Detection, Classification in both Visible and Thermal bands, Aided Target Recognition, real time tracking and stabilising and then encoding the images coming from your UAV.

Our local engineers are available to help tailor your specification and product, helping you to get fast technical support, no matter the size of your production run when you are integrating a board into your design.



Sightline intelligence 17xx-OEM & 4100-OEM

- Full feature SW dual & tri-channel processing, AiTR (Aided Target Recognition)
- Three digital video inouts supporting up to 4K (1080p/30 for 17xx)
- Weight: 14.7g / 26.5g
- Video outputs: H.264/H.265 IP streamed encoded (multiple streams), Camera Link, HDMI and HD-SDI
- Qualcomm or NXP multi-core ARM based
- SW library available for NVIDIA JETSON platforms



EDGE-AI software library

- Video Capture & Encoding
- Image enhancements
- Image stabilisation
- Object detection
- AI classification (EO/IR classifiers)
- Custom classifier integration
- AI training on the Edge
- Multi-target tracking
- AiTR : Aided Target Recognition, detect, classify, and track objects in real time

Power supplies

Efficient UAV power solutions that reduce weight, maximise payload, and deliver reliable performance.



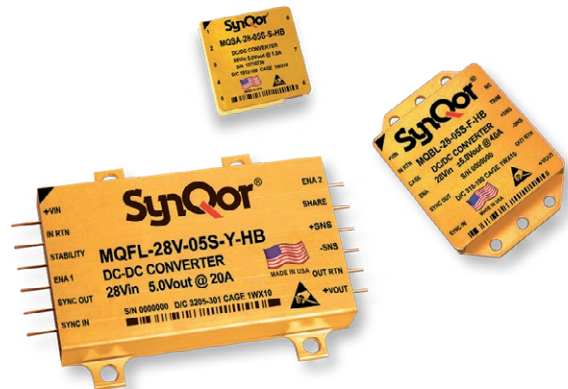
Highly efficient power is critical to reducing the weight costs for power in a UAV. Small, more efficient power supplies enable designers to increase the UAV payload. Our portfolio of highly efficient AC/DC and DC/DC converters includes some of the industry's most respected and innovative power supply manufacturers.

The standard range starts at 1W DC/DC converters, includes open-frame components and goes up to 100kW AC/DC for customised power-supply units. Our in-house design and customisation capabilities and network of expert partners enable us to help you find, optimise or design the right power supply for your UAV's application.



RSG R-Series

- DC/DC converter
- Output power: 0.25 to 24W
- Operating temperature: -40 ~ +125°C
- I/O Isolation: 1000 ~ 6000VDC



SynQor milcots – hi-rel

- DC/DC converter
- Output power: 1.5 to 28W
- Continuous short circuit and overload protection with auto-restart feature
- Continuous and transient options available

Power supplies

Efficient UAV power solutions that reduce weight, maximise payload, and deliver reliable performance.



Cincon high-voltage DC-DC converters

Designed for high-energy UAV platforms, the CFB750-300S / CFB750-300S_CMFD and CHB300-300S / CHB300_300S_CMFC(D) provide efficient, isolated power conversion from 300 VDC battery systems to regulated low-voltage rails for avionics and payload electronics.

- 300 VDC nominal input for high-voltage UAV battery architectures
- High power density (300 W / 750 W) in compact half- and full-brick formats
- 3 kVAC isolation with full protection suite (OVP, OCP, OTP, UVLO)
- High efficiency with remote control for reduced thermal load and system flexibility



P-Duke SD505W / SDH05W

- Ultra small SMD and DIP package, 0.52 x 0.36 x 0.40 inch
- No minimum load required
- Continuous short circuit protection
- 1600 Vdc input-to-output isolation, 3000 Vdc isolation test voltage
- Safety meets IEC/UL/EN 62368-1



Advanced Energy unethered drones and UAV charging solutions

48 V Isolated DC-DC Brick Converters • LGA50D • LGA C

Reliable, high-efficiency power conversion solutions designed to keep advanced UAV and unethered drone platforms operating longer, safer, and more efficiently.

- 48 V isolated DC-DC brick converters for robust, high-density power architectures
- Compact, high-performance LGA50D modules for demanding UAV applications
- Flexible LGA C series solutions optimised for lightweight, space-constrained designs

Sensing / Positioning

Advanced accelerometer and gyroscope technologies for UAVs, enabling precise navigation, reliable control, and accurate data collection in challenging environments.



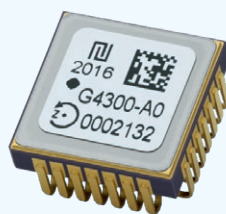
Unmanned Air Vehicle applications demand high sensor performance in terms of size, cost, and accuracy. Different platform sizes and dynamic behaviour place varying requirements on inertial sensors. We supply advanced tactical-grade inertial accelerometers and gyroscopes for demanding UAV applications. These sensors precisely detect changes in direction, orientation, and speed, providing accurate measurements for guidance and navigation control, as well as altitude and heading reference, with outstanding performance, reliability, and stability.

We design and assemble single or multi-sensor systems meeting strict standards for accuracy, repeatability, and long-term reliability. With access to leading R&D expertise, we deliver custom sensor assemblies for harsh and high-end applications, enabling advanced UAV designs.



Safran Colibrys MS1000
Tactical grade MEMS accelerometer

- Long Term Bias Repeatability: 1.2 mg (+/10g, typ)
- Residual Bias Modeling error: 0.7 mg (+/10g, typ)
- Non Linearity (IEEE Norm, % of full scale) : 0.3 %



Tronics Gypro 4300
High-performance MEMS gyro

- Z-axis angular rate sensor
- 0.4°/h bias instability
- 0.07°/sqrt (hour) ARW
- Built-in temperature compensation (-40°C to +85°C)



Silicon Sensing CRM (PinPoint)
Smallest, low cost MEMS gyro

- 12°/hr bias instability
- 40°C to +105°C Operating Temperature
- +/- 75°/sec to +/-900°/sec digital dynamic range
- +/-0.14°/s bias repeatability

AI-Powered System-on-Module (SoM) technology

A single-SOM architecture designed to simplify UAV development while maximising performance, security, and efficiency.

Driving the future of drone technology with Edge AI

Lantronix provides the computing power that enables today's most sophisticated drone platforms. Powered by Qualcomm® Snapdragon processors, the Open-Q™ System-on-Module (SOM) solutions deliver advanced AI capabilities, strong security, and high-performance processing. This enables OEMs to develop, manufacture, and deploy next-generation drones and Unmanned Autonomous Vehicles (UAVs) more rapidly and cost-effectively. Whether you're developing intelligent cameras, edge AI gateways, UAVs, industrial automation systems, or interactive devices, Lantronix SOMs allow you to concentrate on innovation instead of rebuilding core technology from scratch.

At a glance

- Edge AI processing for real-time perception and decision-making
- Single gateway SOM approach to simplify UAV architectures
- Designed to reduce weight and power draw for longer missions
- Development kits and reference material to speed up integration

Key benefits

- Rapid development cycles with effortless platform integration
- Quicker product launches with reduced engineering effort and cost
- Certified NDAA/TAA compliance for secure government and defense applications
- Robust, mission-critical-grade performance built for demanding environments
- Expandable compute capabilities across a wide range of UAV product lines
- Developer kits that accelerate prototyping and turn concepts into deployable solutions

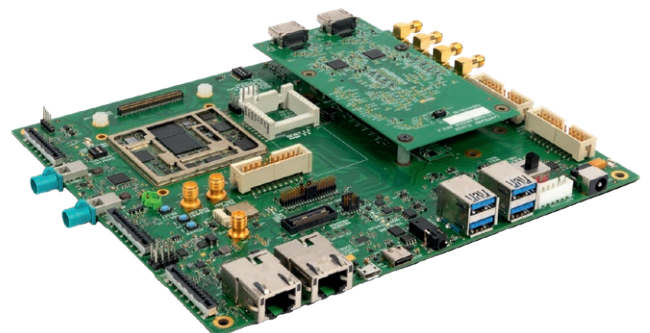
Typical applications

- Defense UAVs and mission-ready unmanned systems
- Public safety and first-responder drones
- Critical infrastructure inspection and utility monitoring
- Smart agriculture (multispectral analysis and field insights)
- Logistics / e-commerce and supply-chain operations



Key features Open-Q™ 8550CS SOM (System on Module)

- Qualcomm® 8550 SoC
- Up to 16GB LPDDR5 RAM + 128GB UFS Flash
- Android™ 13 and Linux Yocto Kirkstone
- On-device AI Engine with Qualcomm Hexagon™
- Dedicated Computer Vision Engine
- Multiple MIPI camera and display ports
- Multiple high speed connectivity options



Cellular for low power UAV applications

Low-power cellular solutions for UAVs, enabling reliable connectivity, extended flight time, and efficient data transfer in remote or challenging environments.

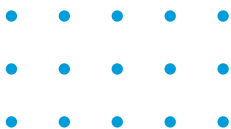


Seamless UAV communication

Cellular technology is transforming low-power UAV applications, providing reliable, wide-area connectivity for real-time data transmission, remote monitoring, and autonomous operations. Our portfolio includes leading low-power cellular modules and solutions, supported by our Technology Centres for custom integration, optimisation, and design services. Whether you need off-the-shelf components or tailored solutions, we help you deploy cellular connectivity that meets the performance, range, and power requirements of modern UAV systems.

Implement remote management and collect data for UAV applications across locations by overcoming the difficult coverage, capacity and cost barriers for battery-operated devices using LPWA modules and 5G modules for higher data rates. Bringing together all the benefits of cellular, with long battery life (up to 10 years) and 20dB increased coverage compared to broadband LTE within urban/condensed areas.

This range is designed specifically for remote device deployment, with best-in-class performing dual-mode modules providing low-cost and extremely low-power technology for low-bandwidth applications covering worldwide 4G/5G and NTN networks. Fully compliant with 3GPP releases 14/15/16 and 17 to support future features.



Cellular for low power UAV applications

Low-power cellular solutions for UAVs, enabling reliable connectivity, extended flight time, and efficient data transfer in remote or challenging environments.



Semtech EM9293 (5G NR Sub-6 GHz, high-speed “gigabit”)

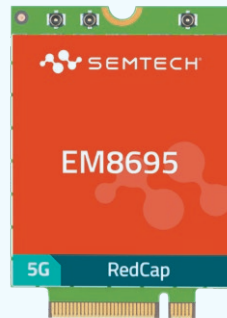
- M.2 form factor (CF3-style embedded module)
- Ultra-performance 5G – 5G NR Sub-6 with automatic 4G/3G fallback for robust connectivity
- Industrial grade & global – Designed for harsh environments
- Global coverage
- FOTA upgrades
- High throughput – Up to ~4.9 Gbps downlink, ~1.3 Gbps uplink (approx) via 5G NR Sub-6
- Covering bands:

5G NR:

n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n25, n26, n28, n29, n30, n38, n39, n40, n41, n48, n66, n70, n71, n75, n76, n77, n78, n79

4G LTE:

B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B18, B19, B20, B21, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66, B71



Semtech EM8695 (5G RedCap)

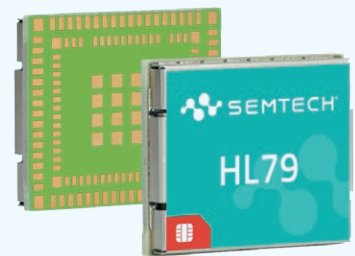
- M.2 (CF3) form factor (embedded module)
- Optimised 5G RedCap – 5G NR Sub-6 with 4G LTE fallback, designed for mid-tier IoT connectivity
- Reduced power – Up to ~65% power savings vs LTE Cat-4 modules
- Industrial grade & global – Rugged temperature range
- Global coverage & FOTA upgrades
- Integrated location – GNSS (GPS, GLONASS, Galileo, BeiDou)
- Covering bands:

5G NR Sub-6:

n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n25, n26, n28, n30, n38, n40, n41, n48, n66, n70, n71, n77, n78, n79

4G LTE:

B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B30, B34, B38, B39, B40, B41, B42, B43, B48, B66, B70, B71



Semtech HL7900 (5G LPWA & NTN)

- CF3 form factor (compact IoT-ready design)
- Ultra low power mode – very low eDRX/PSM currents, reducing power for battery solar IoT deployments (up to 80% lower than earlier LPWA modules)
- Industrial grade – Class A/B operation (-30°C to +70°C / -40°C to +85°C typical), global certifications (FCC, CE, ISED, JRF/JPA, NCC)
- Global coverage & FOTA upgrades
- LTE-M/NB2 (LPWA) & NTN support – Cat-M1/NB2 with NB-IoT over Non-Terrestrial Networks for satellite fallback
- Covering bands (LPWA):

B1, B2, B3, B4, B5, B8, B12, B13, B18, B19, B20, B23*, B25, B26, B28, B66, B85, B255*, B256* (*NTN bands)

Bluetooth and wireless modules

Enabling reliable, seamless communication and data transfer between devices and ground control systems – even over extended ranges and in challenging environments.



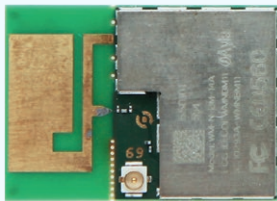
Industrial-grade Wi-Fi modules that are quick and easy to integrate with on-board software stacks and device servers to some of the most compact and advanced solutions in the world – including cutting-edge SiP and SoC solutions from industry leaders USI and Airoha

System-in-Package (SiP) solutions

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

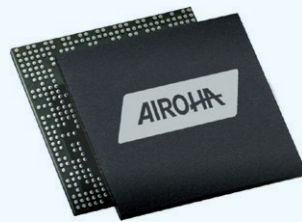
System-on-Chip (SoC) solutions

Medium- and high-volume applications can also benefit from tightly integrated SoC solutions. Airoha increase opportunities for developers to build connected home software and innovative devices through their range of power-efficient Wi-Fi products.



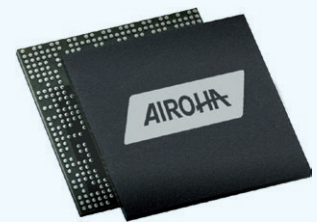
USI SiP solutions

- IEEE 802.11b/g and 802.11n 1x1 single-band 2.4GHz and dualband, with or without Bluetooth
- Advanced security with WEP 64/128, WPA and TKIP, AES, CCX
- WAPI support
- Serial interface to host – SPI, UART and USB
- RF certification – FCC, CE – with metal-lid shielding



Airoha Wi-Fi / Bluetooth SoC solutions

- IEEE 802.11b/g and 802.11n 1x1 single-band 2.4GHz and dual-band
- Build-in ARM CORTEX-M4 application processor for Wi-Fi, TCP/IP stack
- UART, I2C, SPI, I2S, PWM, SDIO, ADC
- 32 GPIO
- 7.1 x 7.1 x 1.05 mm



Airoha GNSS SoC solutions

- Supporting: GPS / GLONASS / Galileo / BeiDou
- Ultra-low-power
- Dual-frequency
- High precision positioning
- 20 Hz Update frequency
- Build-in LNA
- Tracking Sensitivity: -165dBm

GPS, GNSS and RTK modules

For UAV's, delivering precise positioning, accurate navigation, and enhanced flight reliability, even in challenging or remote environments.

We offer a comprehensive range of industry-leading multi-GNSS and GPS solutions, alongside a broad portfolio of GNSS SoC chipsets. Designed for IoT applications, they deliver high accuracy, fast time-to-first-fix, and excellent power efficiency, with high tracking sensitivity to ensure reliable performance even in dense urban environments.

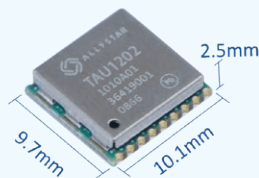
Our module range is easy to integrate from both hardware and software perspectives. It includes the smallest, fully integrated solutions on the market for both navigation and timing, suitable for a wide range of applications from location tracking, wearables, UAV's to smart cities.

We can work with your team to customise GPS/GNSS modules with multiple antenna configurations and to add onboard flash enabling you to quickly integrate GNSS functionality without adding sizeable hardware.



Allystar HD8040 L1/L5 SoC

HD8040 series comprises highly integrated GNSS receiver chips and is the world's first multi-band, multi-system SoC to support BDS-3. It can track all major global civil navigation systems—including BDS, GPS, GLONASS, Galileo, IRNSS, QZSS, and SBAS—across L1, L2, and L5 frequency bands. It is ideal for a wide range of applications, including UAVs, vehicle tracking and management, autonomous driving, car and marine navigation, and engineering surveying.



Allystar TAU 1202 L1+L5 LGA module

The TAU1202 is a compact, cost effective GNSS module supporting all civilian constellations with concurrent L1 and L5 band reception, incl. BDS-3 B2a. It delivers sub-metre accuracy with enhanced multi-path mitigation and includes smart jammer detection for reliable performance in challenging environments.



TAU951M-K2 high precision RTK module

The TAU951M-K2 series is designed for dynamic and demanding applications. It is ideal for smart driving and autonomous navigation, surveying and mapping, UAVs (Unmanned Aerial Vehicles), precision agriculture, robotics, and industrial automation.

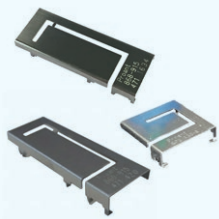
Antennas

High-performance antennas for UAVs, providing reliable connectivity, extended range, and optimal signal quality in demanding environments.



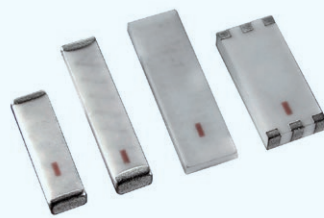
A compact UAV design may need the use of an onboard antenna. These antennas can be chip, patch, PIFA antennas, or embedded into the PCB itself. Many factors affect the performance of these types of antenna including - position of other components, the orientation of the unit, materials used in the outer casing, and proximity to the outer casing. A poorly optimised or tuned antenna will have an adverse effect on the wireless range and power consumption.

Reducing RF interference has enabled multiple wireless technologies to co-exist within a few millimetres of one another. Therefore, antenna efficiency, RF isolation and antenna selection are all critical considerations. We offer a wide range of antennas specifically developed for every wireless technology standard. Through our partners, your RF design can be tested and refined in their anechoic chamber to get the best possible results from your solution, whether it features a standard, modified or fully customised solution.



Abracon OnBoard SMD metal sheet PIPA antennas

- OnBoard SMD metal sheet PIPA antennas
- PCB antennas with cable and connector
- External antenna's
- GSM/UMTS/LTE
- GPS/GLONASS
- WLAN/Bluetooth/Zigbee
- ISM bands: 169/315/434/868/915 MHz



Johanson Miniature RF ceramic chip antennas

- Low-Temperature Cofired Ceramic (LTCC).
- Great detuning resilience and
- Extreme temperature stability (~2ppm)
- GPS/GLONASS
- WLAN/Bluetooth/Zigbee
- ISM bands
- WiMAX
- Ultra-wideband



Sangshin Ceramic patch antennas

- High positioning accuracy
- Support GNSS/GPS/GLONASS/BeiDou protocols Collection includes antennas for L2 and L5 bands, such as L1+L2+L5 stacked patch
- SDARS / RFID / DMB
- WLAN/Bluetooth/Zigbee/ISM
- In-house tuning and matching service to optimise performance
- Custom design service available
- Different mounting options available: through-hole, connector, surface, adhesive, magnetic, and screw

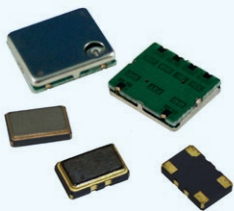
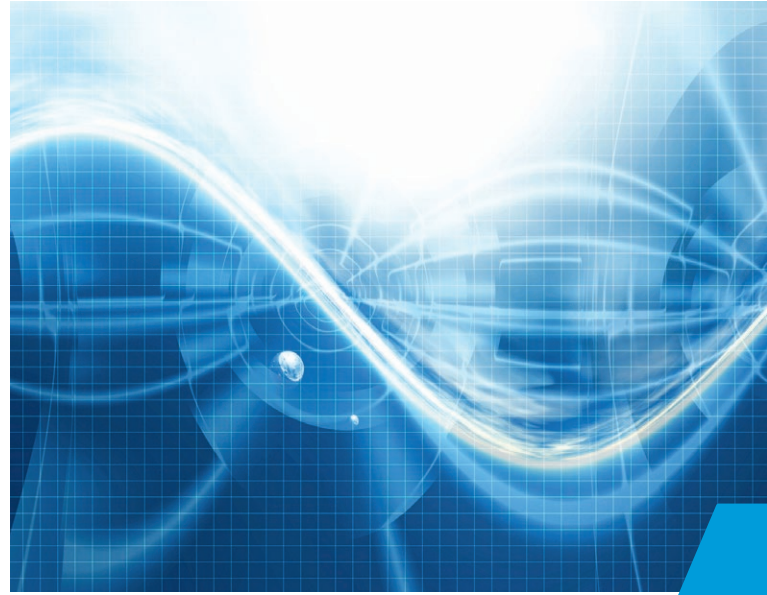
Frequency control

Precision timing and control solutions for UAVs, ensuring stable communications, accurate navigation, and reliable system performance.

Providing accurate positioning and synchronisation for GNSS/GPS timing, frequency control is vitally important to UAV and drones for stability and control through to navigation and autonomous flight.

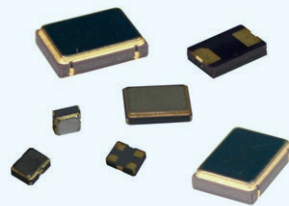
TCXO's , Clock oscillators and crystals from ACT can provide a stable clock signal for the CPU, act as a flexible high speed reference clock or assist High-speed timing for video/voice capture in data acquisition systems. Our extensive portfolio available can be flexible to your specific requirements including varying temperatures, high shock and vibration parameters . Flight control and navigation applications can be catered for via reliable clocking on your IMUs and controllers whilst assisting with motor control, telemetry and any fleet control system requirements. Discover our advanced frequency control solutions designed to deliver ultra-stable clocks and oscillators for critical UAV navigation, communication, and sensor performance.

Contact us today to optimise your UAV's frequency control and ensure precise timing and reliable communication for your UAV Systems.



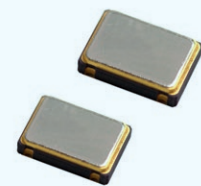
ACT TCXO's

- Popular footprints include 2.5x2.0mm or 2.0x1.6mm 4 Pad. Other sizes available.
- Standard frequencies 19.20MHz, 26.00MHz, 38.40MHz and 52.00MHz. Custom options available on short lead times.
- Example specification: +/-0.5 ~ +/-1.0ppm over -40 +85°C, Clipped Sinewave



ACT Clock oscillators

- HCMOS or differential outputs available (LVDS, LVPECL, HCSL)
- Standard packages 3.2x2.5mm, 2.5x2.0mm and 2.0x1.6mm 4 Pad. Alternative formats can be manufactured.
- Common Frequencies: 12MHz, 20MHz, 24MHz, 25MHz, 27.12MHz, 32MHz, 33.33333MHz, 38.4MHz, 40MHz, 48MHz and 52MHz . Please enquire for any frequency not listed
- Example spec: ±50ppm -40+125, Voltage: 1.8~3.3V

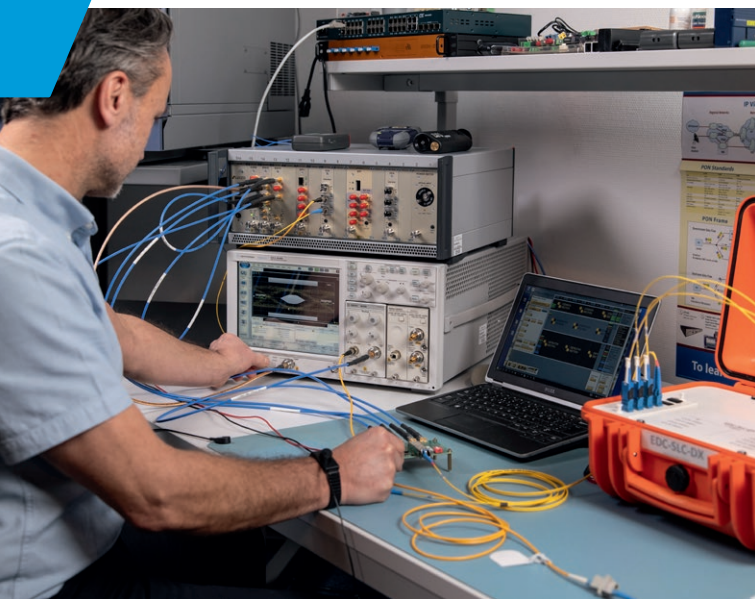


ACT Crystals

- +/-1ppm 1st year aging available for MHz crystals
- Example specification (MHz crystal). +/-15ppm tolerance, +/-50ppm over -40+125, load cap CL: 8~10pF
- Ultra miniature 'light' package footprints. From 1.6x1.2mm ~3.2x2.5mm 4 Pad
- Wide range of frequencies available (size dependant)
- Comprehensive kHz range of crystals available

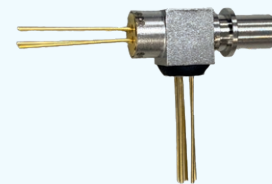
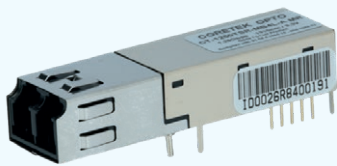
Fibre optic solutions

Transceivers, cables, and assemblies for high-performance fibre optic connectivity and reliable data transmission.



Compact UAV designs increasingly rely on fibre optic technology to meet demanding requirements for high-speed, lightweight, and interference-free data transmission. Fibre optic cables and components — including transceivers, connectors, and assemblies — enable reliable communication and sensor integration while reducing weight and electromagnetic interference. Performance depends on cable routing, connector quality, environmental sealing, and mechanical durability, as poorly selected or installed solutions can compromise signal integrity and mission-critical data transfer. Advances in ruggedisation and miniaturisation allow fibre optics to perform reliably in UAV environments exposed to vibration, temperature extremes, and tight spaces. Fibre reliability, connector ruggedness, and signal fidelity are therefore critical.

We provide a comprehensive range of fibre optic solutions for UAV applications, from standard to customised transceivers, cables, and assemblies. Our partners and technical experts ensure systems are optimised for performance, durability, and ease of integration to meet the specific demands of each UAV platform.



Coretek - Components, modules & custom assemblies

Coretek solutions provide highly reliable, precision fibre optic components engineered for the demanding environments of UAV systems.

- High-performance optical components tailored for rugged UAV use
- Excellent signal integrity with low insertion loss
- Customisable solutions for specialised UAV communication needs

Coretek BOSA – bi-directional optical sub-assembly

The BOSA combines transmit and receive functions in a single compact assembly, enabling efficient bidirectional optical communication over a single fibre.

- Compact design reduces cabling complexity and weight
- Enables high-speed bidirectional data transmission on one fibre
- Optimised for long-range, interference-free UAV communications

Fibre optic solutions

Transceivers, cables, and assemblies for high-performance fibre optic connectivity and reliable data transmission.



Coretek pigtailed optical sub assembly (OSA)

Pigtailed OSAs deliver ready-to-install fibre optic transceiver modules with robust packaging ideal for UAV integration.

- Pre-terminated fibre pigtailed for quick, reliable deployment
- Rugged packaging ensures durability in harsh flight conditions
- Low insertion loss supports high-fidelity data links

Bi-directional single fibre digital transceivers

These transceivers provide efficient digital data transfer by leveraging a single fibre for simultaneous upstream and downstream signals.

- Enables full-duplex communication over a single fibre to reduce weight
- High-speed data rates for advanced UAV sensor and control systems
- Compact and lightweight for tight UAV space constraints



Lightera µlinx® avionics and tether fibre optic cables

µlinx® cables offer rugged, lightweight fibre optic connectivity specifically designed for avionics and tethered UAV applications.

- Lightweight construction minimises UAV payload
- Durable outer jackets protect against abrasion and environmental exposure
- Superior flexibility for dynamic tether and avionics routing

AC Photonics interconnect – fibre optic patch cords

AC Photonics patch cords provide high-quality, custom fibre optic interconnects essential for reliable UAV communication links.

- Customisable lengths and connector types for flexible UAV system design
- Low insertion loss and back reflection for optimal signal quality
- Ruggedised options available for extreme operating conditions

E-mech solutions

Connectors, shielding and housing solutions for reliable performance and protection in demanding applications.



Compact and lightweight UAV designs place unique demands on electro-mechanical components. From connectors and cable assemblies to enclosures, thermal management and motion control, every element must deliver high reliability while meeting strict size, weight and environmental constraints. Vibration, temperature extremes, altitude, and mechanical stress all play a critical role in component selection and long-term performance. As UAV platforms integrate more sensing, processing and power electronics into tighter spaces, mechanical integrity, precision and material choice become increasingly important. Poorly matched or sub-optimal e-mech solutions can lead to signal degradation, premature wear, increased maintenance, or mission failure.

We offer a comprehensive range of electro-mechanical solutions specifically suited to UAV applications, supporting power, signal, data and mechanical interfaces across the system. With expert guidance and access to proven, high-performance components, we help refine and optimise your design - whether you require standard parts, modified assemblies or fully customised solutions.



Amphenol Luminus lightweight connector

A next-generation connector designed for UAVs where every gram counts, delivering robust electrical performance with minimal weight.

- Ultra-lightweight design reduces overall UAV payload
- High-density contacts enable compact, space-saving installations
- Excellent environmental sealing for reliable operation in harsh conditions



Amphenol Solaris

Engineered for high-reliability UAV missions, Solaris connectors offer durability and superior signal integrity in demanding environments.

- Rugged construction withstands vibration and mechanical shock
- Optimised for high-speed data and power transmission
- Corrosion-resistant materials extend operational lifespan

E-mech solutions

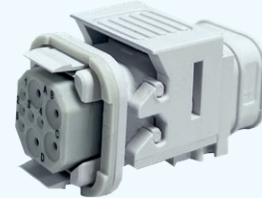
Connectors, shielding and housing solutions for reliable performance and protection in demanding applications.



Amphenol Pegasus EMI Shielded & Nickel plated

Ensures UAV electronics stay protected from interference, maintaining signal clarity and system reliability.

- Superior EMI/RFI shielding for critical avionics systems
- Durable nickel plating enhances corrosion resistance
- Compact design supports tight UAV integration spaces



Amphenol Velok (Lightweight & Robust Ultem Housing)

Velok connectors combine lightweight Ultem housings with robust mechanical strength, ideal for UAV applications requiring durability without added weight.

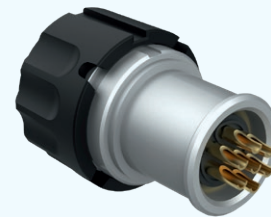
- Ultem housing delivers exceptional strength-to-weight ratio
- Vibration-resistant locking mechanism for secure connections
- Wide temperature range suitability for varied flight environments



Amphenol Rhino (WPTV 38999 Power Connectors)

Rhino power connectors meet MIL-DTL-38999 standards, delivering high-current, secure power connections critical for UAV system performance.

- MIL-DTL-38999 compliant for military-grade reliability
- High-current capacity supports demanding UAV power requirements
- Robust locking and sealing to prevent accidental disconnections



Amphenol WaSP (Based on Terrapin)

WaSP connectors provide reliable, rugged interconnect solutions built on the trusted Terrapin platform, tailored for UAV power and signal needs.

- High contact density for versatile wiring configurations
- IP67-rated sealing for dust and moisture protection
- Easy field assembly reduces maintenance downtime

A Technology Network built for UAV innovation

Connecting expertise, technologies and custom solutions for advanced UAV systems



Our Technology Centres

- Embedded Computing
- Fibre Optics
- Imaging
- Interconnect and Cable Assembly
- IoT and wireless
- Magnetic Products
- Power Supply

Our strength lies in our Technology Network — an ecosystem of seven specialised centres across Europe, that work independently or in unison to support projects from concept through to production. Each centre is dedicated to a specific discipline, and dedicated to solving design challenges in their respective technology fields – but their real strength comes from working together. This collaboration enables us to create solutions tailored to your exact requirements, no matter how wide-ranging or technically demanding your project may be.

Together, we deliver complete UAV solutions across a variety of technologies, supporting even the most complex airborne platforms. Whether you need a proven standard solution or a fully custom design, our Technology Network enables us to scale support, expertise and innovation to match your exact UAV requirements.



A Technology Network built for UAV innovation

Connecting expertise, technologies and custom solutions for advanced UAV systems

Standard services across all centres

Each centre provides a comprehensive range of services tailored to its specific technologies, covering every stage of your project. This includes expert component selection and integration advice, design services and prototyping, testing and pre-compliance certification, production and manufacturing support, and full lifecycle management with upgrades and future-proofing in mind. Aftersales support and obsolescence management ensure your solution continues to perform reliably long after deployment, supporting every technical and production milestone.

Custom solutions

Beyond the standard offerings, each centre provides more advanced solutions tailored to your specific design requirements. Complex projects often involve challenges that cross traditional technology boundaries, requiring expertise from multiple specialised fields. By working together, our engineers can integrate components and systems from different technology areas seamlessly, creating customised, optimised solutions that precisely meet your project's technical and performance goals. Ensure that potential compatibility issues, design constraints, or integration challenges are identified and resolved early, reducing development risk and accelerating time to market. Whether your project involves combining embedded computing with fibre optics, integrating wireless connectivity with power supply solutions, or merging infrared imaging with magnetic components, our Technology Network will deliver end-to-end expertise tailored to your exact needs.

Why choose the Acal BFi Technology Network?

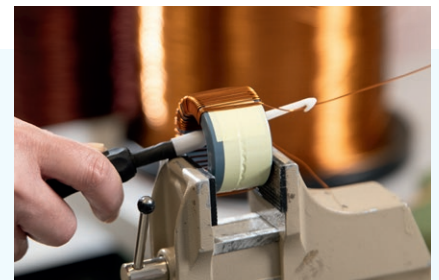
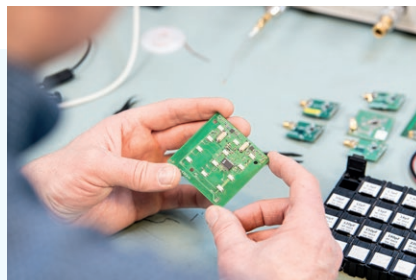
You'll gain more than a service provider — you gain a partner. Our end-to-end support, European reach, and multi-disciplinary collaboration create a powerful advantage for your designs. By working with us, you'll access a network built to accelerate innovation, overcome complexity, and deliver high-quality solutions faster than ever before.

Ready to move your project forward? Explore each Technology Centre to learn more about our capabilities — or speak directly with our specialists for tailored guidance.

Technology Network



[For detailed capabilities, visit the individual centre pages on our website.](#)



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.

Schedule a consultation with one of our experts on the relevant number below, or through the contact form on our [website](#).

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Developing an enhanced
technological future together.

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