THALES
Building a future we can all trust

Thales IoT Portfolio Overview
Driving Digital Transformation with the Power of Trusted IoT

Thales IoT Portfolio Overview
Driving Digital Transformation We Can All Trust

Thales is at the heart of the Internet of Things.

For more than a quarter century, we've been pioneering innovative IoT technologies that simplify digital transformation and accelerate business success. We work with global customers across all industries delivering Cinterion® IoT solutions, services, and market-leading Thales expertise that ensures a more intelligent future and improves the way we work, travel, and live.

Connect. Secure. Manage.

Our 360° Thales IoT approach provides customers with essential building blocks needed to simplify design, streamline development, and accelerate time-to-market for new solutions. We help customers choose the right technology to fit any IoT application, whether it's transmitting sensitive medical data, securing smart meters or connecting a massive fleet of autonomous vehicles. Encompassing a wide range of leading edge IoT connectivity solutions and lifecycle management tools as well as engineering support services and easy to use development tools, the **Thales IoT Portfolio helps customers:**

Connect assets to wireless networks and cloud platforms

Secure connected devices and their data

Manage the long lifecycle of IoT solutions

Connecting Everything Everywhere: The Thales IoT Offer

Thales has connected billions of things around the world – from under the sea to the far reaches of outer space. Our comprehensive IoT Connectivity Offer encompasses Cinterion IoT Modules, IoT Gateways, IoT Modems Cards, SIMs and eSIMs, and they deliver wireless connectivity for more than 450 cellular networks globally.

Thales Cinterion IoT connectivity products are valued for their rugged design, unparalleled engineering, highest manufacturing standards, and inherent Thales security features that safeguard IoT solutions across their long lifespan. Our market proven solutions ensure longevity in the most extreme environments and they deliver unparalleled connectivity performance, reliability, and scalability.

Cinterion products come with optional embedded processing power that can lower the Total Cost of Ownership (TCO) while simplifying design and speeding development thanks to flexible Cinterion SDK and Services APIs, without compromising on security with application signing and access control. To protect your IoT investment, an underlying multi-design LGA footprint supports flexible application design and allows seamless migration from heritage 2G and 3G networks all the way through to LPWAN, 4G, and evolving 5G networks.

Whether your IoT solution demands sizzling data speeds with enhanced mobility, ultra-efficiency for data-light applications, or always-on connectivity with powerful edge computing, our Cinterion IoT Connectivity Offer delivers the right features and capabilities for any global IoT application.

Thales, a trusted partner for IoT

Serving Most Demanding Industries and Businesses

- Thales is the reliable trustworthy business partner in IoT
- Dedicated and experienced Quality Management setup
- Leading supply chain stability and flexibility
- Dedicated set up for business continuity and crisis response

Strong Focus on Business Continuity

- Support of long-term projects and critical applications is in the Thales DNA
- Track record of long standing successful partnerships
- Knowledge and resource management to offer continuous lifecycle support
- Product continuity: long term available products, commitment in roadmap

Technological Capabilities

- Broad know how covering Communication, Security, Cloud and AI
- Strong engagement in standardisation, large portfolio of patents
- Global support organisation with local engineering centers and labs

🔗 Cinterion High Speed IoT Offer

Connecting Data-Intensive, High Performance Applications

The **Cinterion High Speed Offer** leverages leading edge cellular technologies to deliver a powerful combination of extraordinary speed, expanded bandwidth, and low latency. Offered in local and global variants that encompass LTE Advanced, LTE Advanced Pro and 5G, they are designed for sophisticated IoT applications that support data intensive, high performance solutions such as industrial gateways, cellular gateways, routers, and high-definition video streaming. High-speed solutions provide advanced features including integrated Thales eSIM, a super-compact form factor, and seamless worldwide coverage from a single SKU.

IoT Use Case

Transforming the World with Gigabit Speed and 5G

Imagine a world where infotainment and immersive media are available wherever you are – at home and on the go; where remote healthcare enables personalised care everywhere, with mobile clinics that can diagnose in real-time; where connected machines, robots and production lines will make factory information flows autonomous and result in dramatic increases in productivity, through real-time automation, data distribution, and predictive maintenance.

The Cinterion High Speed Offer is unleashing a massive IoT ecosystem where cellular networks serve billions of connected devices with the right trade-offs between speed, latency, and cost. High Speed solutions such as the Cinterion PLPS9-W IoT Module (LTE Cat.16), the PLAS9-W IoT Module (LTE Cat. 6), and the award winning Cinterion MV31-W IoT Modem Card (5G) are being integrated in everything from video billboards and industrial Wi-Fi routers to gateways and AI-enabled robots on factory floors.

MV32-W (5G)
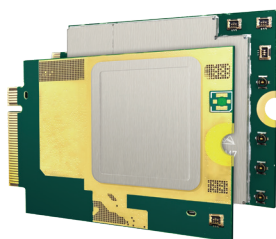
- Next Generation 5G Release 16, Global connectivity
- Thales IoT Suite Connectivity Activation ready
- Enhanced Security features and implementations

MV31-W (5G)

- Access to the entire 5G spectrum with 4G and 3G Fallback
- Most compact plug-and-play M.2 data card
- Flexible Network usage with embedded Thales eSIM inside or external Dual SIM option

Top 5 – Features

1. Superior thermal performance and compact 5G form factor
2. Global Connectivity on Module and standardised M.2/mPCIe card form factors
3. Embedded connectivity with an eSIM
4. Certified by key operators around the globe
5. GPS/GNSS support on all products

🔗 Cinterion Performance IoT Offer

Balancing Speed, Bandwidth, and Complexity

The Cinterion Performance Offer leverages 4G LTE cellular technologies including Cat. 1, Cat. 3, and Cat. 4 to deliver the right balance of speed, bandwidth and capabilities for any industrial IoT application. Offered in both global and regional variants, Cinterion Performance solutions provide 2G and 3G fall back as well as easy migration to next generation technologies as networks and connectivity needs evolve. Performance solutions are packed with a variety of IoT-optimised features to suit any application need including embedded processing, a comprehensive AT command set, a highly efficient FOTA update solution, embedded IP connectivity, VoLTE, GNSS and optional embedded eSIM.

IoT Use Case

Balancing Speed and Efficiency for Healthy Outcomes

When it comes to transmitting sensitive medical data, reliable and consistent connectivity is critical whether your device is deployed in a hospital with a lot of RF noise, at home in a rural area, or on the move as a wearable monitoring device. The Cinterion Performance Offer provides 24/7 cellular connectivity that balances speed and efficiency while delivering low latency and longevity required for design intensive medical devices. Wherever your connected devices are deployed, physicians and patients trust Cinterion Performance solutions to securely deliver a continuous stream of medical data to improve care and clinical outcomes.

PLS63-W (LTE Cat.1)
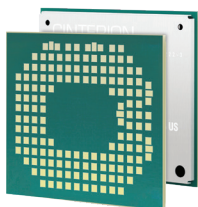
- LTE Cat 1, Global and multiple Regional variants with latest network bonds grouping and 3G and 2G fallback
- Fully featured modem implementation
- Embedded GNSS & Embedded SIM
- VoLTE

PLS83-W (LTE Cat.4)
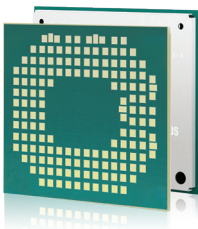
- LTE Cat 4, Global and multiple Regional variants with latest network bonds grouping and 3G and 2G fallback
- Fully featured modem implementation
- VoLTE
- Embedded GNSS & Embedded SIM

ELS62-W (LTE Cat.1bis)

- LTE Cat.1bis standard for single antenna designs with 2G fallback.
- Easy migration from Cinterion 2G/3G/LTE Cat.1 modules
- State of the Art Secure Services
- VoLTE

Top 5 – Features

1. Unified footprint for hardware and software compatibility covering LTE Cat.4 & LTE Cat.1 in both global and regional SKUs
2. Global operator approvals including AT&T, Verizon, T-Mobile, Telstra, KDDI & Softbank, NTT Docomo, DTAG
3. Support Thales IoT Suite Connectivity Activation for simplified MNO subscription management
4. Secure and trusted, with secure boot, secured communication, secure key store and pre-installed certificates for cloud enrollment
5. Cinterion IoT Suite for secure firmware-over-the-air (FOTA) and device management

🔗 Cinterion Efficiency IoT Offer

Expanding Connectivity Reach and Efficiency

Thales leads the market with a wide range of Cinterion Low Power Wide Area (LPWA) technology modules covering LTE-M, NB-IoT with optional fallback to 2G for areas with fragmented LPWAN rollouts. Machine Type Communication (MTC) is a connectivity technology specifically created for low bandwidth IoT applications that require both extreme efficiency coupled with the longevity and stability of cellular IoT networks. Cinterion LPWA modules offer highly efficient, trusted & secure connectivity with extended coverage and optimised power consumption, making them natural choice for Smart Metering or battery-powered applications. To reduce bill of material (BOM) and logistics costs the modules include an optional embedded SIM (eUICC) and GNSS positioning along with an embedded processing environment. And there's more: Thales LPWA modules work seamlessly with the Cinterion IoT Suite providing simplified connectivity activation, module device & performance management functionality, including Software Updates (FOTA), along with with Trusted Identity Services, keeping them secure throughout their expected long life in service.

IoT Use Case

Ultra-Efficiency Meets Extended Coverage

The global demand for smart meters is growing, especially as utilities expand their mix of renewable energy sources such as solar, wind and hydropower. Cinterion Efficiency IoT Modules are deployed at endpoints throughout AMI infrastructures. They transmit both power use and power generation data to Head End Systems where it is further analysed and transformed into business intelligence. This helps grid managers and consumers make smart decisions about power load balance or consumption.

Whether deployed in a remote solar field or in a suburban home basement, energy players trust Cinterion Efficiency IoT Modules to deliver reliable and efficient data while preserving battery life for more than 10 years. What's more, they are protected by Thales security features including digital ID, secure boot, secure credential management that safeguard smart meters and the data they transmit from cyberattacks and fraud.

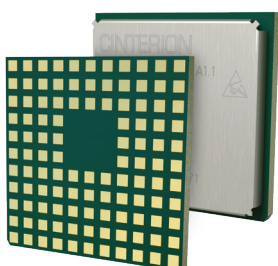### EXS62 (LTE CAT.M / NB-IoT)

- Multiple technologies for global operation
- 3GPP Rel.14 Cat.M1, Cat.NB1, Cat.NB2
- Highly integrated technologies & security with Embedded Processing and eSIM remove connectivity management


EXS82 (LTE Cat.M/ NB / 2G)
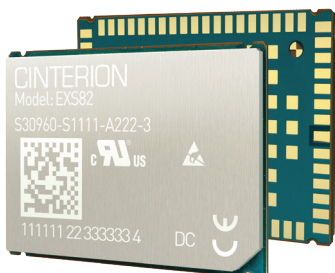
- Multiple technologies for global operation
- 3GPP Rel.14 Cat.M1, Cat.NB1, Cat.NB2 with 2G fallback
- Highly integrated technologies & security with Embedded Processing and eSIM remove connectivity management

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TX62 (LTE Cat.M/ NB)

- 3GPP Rel.14 LTE-M and NB1/NB2 available on both 20dBm and 23dBm power class with a global frequency coverage including 450MHz bands
- Compact Things footprint ideally suited for size constrained devices
- Highly integrated technologies & security with Embedded Processing and eSIM remote connectivity management

TX82 (Cat.M1 / Cat.NB1 / NB2 / 2G)
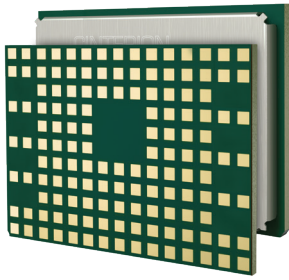
- 3GPP Rel.14 LTE-M and NB1/NB2 with 2G fallback on 20dBm power class with a global frequency coverage
- Features Cinterion IoT Suite services for FOTA update, as well as eSIM remote provisioning with IoT Suite Connectivity Activation
- Highly integrated for host based as well as host-less architecture with Embedded Processing and its SDK

TN23 (LTE Cat.NB1/NB2)

- 3GPP Rel.14 LTE NB1/NB2 on 23dBm
- Optimized power performances for battery operated devices
- Compact Things footprint ideally suited for size constrained devices

Top 5 – Features

1. Compact & scalable form factor with Cinterion® Things footprint
2. Optimised Power Efficiency for long term operation with efficient PSM and eDRX
3. Cinterion IoT Suite single platform for secure cloud platform enrollment, remote update, device management and eSIM remote connectivity activation and management
4. Secure and trusted, with secure boot, secured communication, secure key store and certificates for cloud enrollment
5. Integrated IoT Solution with Embedded Processing and SDK

Thales Smart IoT Gateways

Out of the Box IoT Connectivity

Thales Smart IoT Gateways are designed to jumpstart new IoT solutions by delivering easy, plug-and-play IoT connectivity for new and small- to mid-scale implementations. With virtually zero design time, no added approvals, and minimal integration effort, Gateways connect to industrial applications through a wide variety of interfaces and easy mounting schemes. They come with built-in security and embedded processing for easy and fast application development. With a footprint the size of a credit card, the devices are encased in a durable plastic housing to operate in virtually any environment, providing secure connectivity for 2G, 3G, 4G LTE and LPWA global networks.

Cinterion Smart Gateways provide embedded intelligence. They are programmable and can run a full application independently. Data of interest is derived from prime industrial interfaces such as RS232, RS485, USB, or Ethernet. Alternatively, Analogue, SPI, I2C, and GPIO interfaces can be used to connect to peripheral components via a side expansion slot.

Cinterion Efficient Gateways are designed to receive commands from an external device. AT commands are used to control Efficient Gateways re-order via RS232 or USB as the primary comms interface.

The Cinterion Device Gateway provides a transparent connection from USB to cellular. After some initial configuration, the Device Gateway gives the host equipment convenient and simple access to the internet via cellular connectivity.

Smart Gateway	SGX31 SGL81	Rugged cellular IoT gateways with embedded processing
Efficient Gateway	EGX82	Configurable cellular IoT gateways with flexible interfacing options
Device Gateway	DGL61	Plug-and-play IoT connectivity options for industrial asset retrofitting

SGX31 & EGX82
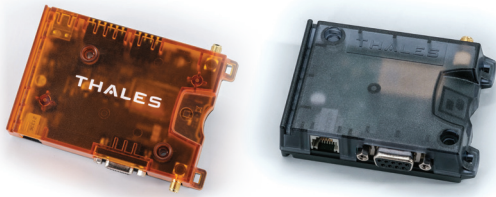
- Next generation plug-n-play IoT gateway
- Out-of-the-box worldwide Cat-M and NB-IoT with 2G fallback
- USB and Serial ports
- 20-pin GPIO header
- GNSS
- Embedded processing (Cinterion SDK)

SGL81
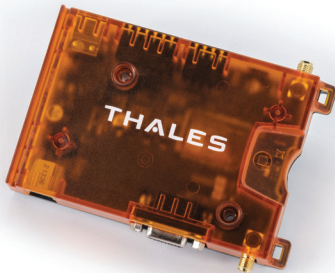
- Next generation plug-n-play IoT gateway
- Out-of-the-box worldwide Cat-4 with 3G/2G fallback
- USB, RS-232, RS-485 and LAN ports
- 20-pin GPIO header
- GNSS
- Embedded processing (Cinterion SDK)

SECURE

🔒 Thales IoT SIMs and eSIMs

Optimised for industrial applications, **Cinterion Industrial SIMs and embedded SIMs** (eSIMs) secure the digital identity of IoT devices. They provide world-leading authentication and ciphering technology and enable secure Over-The-Air (OTA) downloading of mobile network operator profiles. Available in various form factors, either plugged-in or soldered, SIMs and eSIMs play a key role in provisioning cellular connectivity for any MNO and remotely managing network subscriptions for the lifespan of devices.

Our HSMs (Hardware Security Modules) generate highly diversified IDs for huge fleets, and for each device to avoid cloning and firmly control device access. These IDs are provisioned in a secure way into the core of our modules, and can be kept inside tamper-resistant locations such as SIM and eSIMs.

More Key Features include:

- Remote management of credentials that will support remote secure updates (digital signature schemes)
- Secure boot
- Data encryption thanks to enclosed credentials

Cinterion IoT Suite

Today's extraordinary pace of IoT growth presents difficult challenges for the ecosystem including network crowding, service disruption, short software lifecycles and increasing security concerns. The **Cinterion IoT Suite** helps customers keep devices connected, secured and operating continuously at peak performance over long lifecycles. Leveraging more than 25 years of experience in telecom and OTA (Over-The-Air) technology along with unprecedented digital security expertise, the Cinterion IoT Suite optimises IoT projects while strengthening trust, reducing operational costs, and lowering TCO.

The Cinterion IoT Suite is comprised of four service categories to optimise IoT projects:

1. Connectivity Activation

The award-winning Connectivity Activation service simplifies connectivity provisioning and service management for the lifetime of the device. Leveraging traditional external eSIMs or IoT eSIMs integrated into Cinterion IoT modules and devices, the no-touch service:

- **Initiates connectivity** for the first time, whether it occurs during IoT device manufacturing, at a personalisation centre, or at the time of deployment

- **Selects the best subscription** based on pre-defined business rules at the site of installation to meet SLAs

- **Facilitates remote subscription changes** as needed throughout the lifetime of the IoT application to ensure business continuity, connection reliability, and cost-efficiency

2. Device Performance

The Device Performance service monitors and measures device connectivity across entire IoT fleets. It runs connectivity diagnostics and detects device behaviour anomalies in real-time so that corrective action can be taken to optimise performance and maintain service level agreements. Benefits include:

- **Improved visibility** of deployed IoT devices to keep better track of deployments

- **Remote diagnostics** to deliver performance insights and network information

- **Managed remote configuration** to help optimise device and communication settings remotely

3. Software Updates

The Software Update service remotely manages firmware and application updates over the entire lifespan of IoT devices. It securely and efficiently orchestrates massive update campaigns anywhere in the world, which protects your IoT investment. Benefits include:

- **Maintenance updates** to keep devices up-to-date and protected 24-7

- **Managed embedded software updates** to deploy fixes and new features remotely

- **Campaign rollout planning** to optimise data and power use and schedule updates to prevent business interruptions

4. Trusted Identity for IoT

The Trusted Identity service provides an industry-unique solution to secure the device-to-cloud journey. Leveraging digital IDs and security attributes embedded in roots of IoT devices, it provides digital ID maintenance and supports automated, secure enrollment of devices into private and public clouds ensuring data confidentiality and integrity at all times. Benefits include:

- **Streamlined digital ID provisioning** by leveraging trusted device identities pre-injected at Thales secure production facilities

- **Automated certificate-based authentication** and onboarding to private and public IoT clouds

- **Digital ID lifecycle management**, including remote rotation, transfer, or revocation through a single pane of glass

Thales simplifies your IoT journey from A to Z through a secure device lifecycle management framework adapted to the needs of cellular communications and deeply embedded in the Cinterion hardware

Ensure trust in the IoT endpoints

- Secure device provisioning
- IoT cloud enrollment
- Threat detection

Optimise connectivity and customer care

- Remote smart SIM provisioning in the factory and at the installation site
- Connectivity fall-back and resilience in case of network outage

Keep systems up-to-date & improve performance

- Module firmware update (FOTA)
- Fleet & device management
- Application software update

Thales Cinterion Support Packages

Thales knows IoT. We've been innovating IoT technologies and manufacturing devices for decades and we understand the complexities of the design and development process. **Thales Cinterion Support Packages** were designed to share our unrivalled IoT expertise, specialised tools, and high-tech facilities to streamline the development journey, speed time to market and improve cost efficiency. Five specialised support packages ensure customer projects run smoothly, from the design-in stage all the way through production.

Design-in Consulting

From evaluating PCB schematics and layout to reviewing RF design and running basic qualification tests on design samples, Thales experts provide advice and feedback on all critical aspects of design to eliminate design issues further downstream.

Hardware Consulting

Thales IoT experts evaluate the unique hardware requirements of each IoT solution and help developers select, evaluate, integrate and optimise the best components to meet application goals. From antenna strategy to RF design, GNSS testing and more, we ensure each hardware component delivers the performance required while balancing cost, capabilities and complexity.

Software / Application Consulting

Cinterion IoT Modules are used with a variety of Operating Systems, applications, and software platforms to manage device behaviour, deliver mission critical capabilities and protect data and device integrity. Experienced Thales engineers provide support for the software integration and configuration while offering recommendations to improve software design and ROI as well as to ensure device longevity.

Approval Consulting

Thales' Approval Consulting support package aims to streamline the cellular device approval process and speed time to market for new solutions. Our IoT experts explain the basic principles of approval tests such as FCC, GCF, PTCRB, 5G mmWave certification and more. From pre-approval testing to managing MNO certification tests, our experts support customers every step of the way.

Production Consulting

Thales experts along with SMT quality assurance partners closely examine and analyse production integrity to identify and rectify specific issues related to surface mounting technology. After examining warpage, stencil, pasting and many more attributes, our experts provide recommendations to increase product reliability and improving overall lifecycle reliability.

Accelerating Product Integration with Thales Support

Thales supports all steps from design to production with dedicated expert teams!

Layout review industrial design — SIM conformance — Software integration — Throughput testing — Protocol conformance — Operator approval

Schematics review — Audio tuning — Antenna validation — ESD testing — RF conformance testing — Certification FCC, PTCRB… — Production support
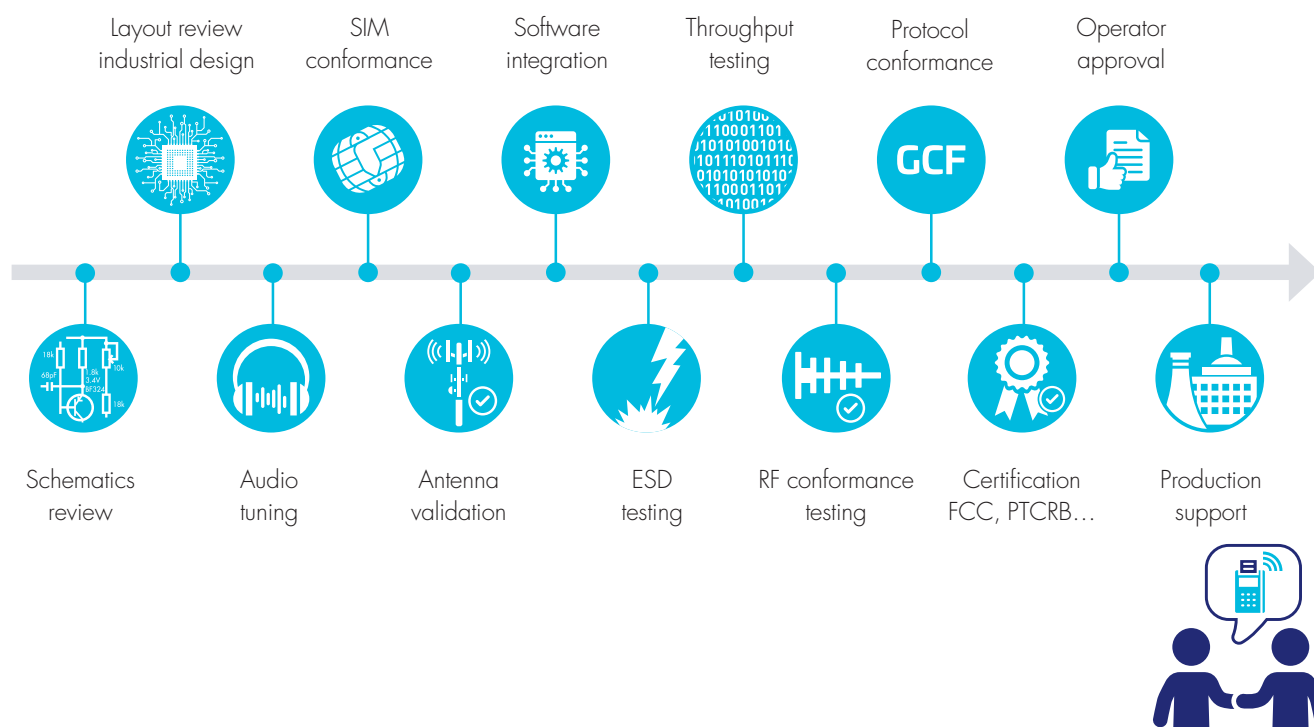
Thales IoT Developer Tools and Support

Successful IoT designs start with a great idea and a sound business case, but it's the development journey that brings ideas to life. Thales provides a wide suite of DevKits, tools, services and support packages across the entire product development cycle to help our customers innovate successful IoT products and realise the full benefits of their investment in IoT. **The Thales IoT Developer Tools and Support Offer** includes:

Cinterion LGA DevKit

The Cinterion LGA DevKit brings simplicity and agility to prototyping providing a generic development adapter for the full range of Cinterion IoT Modules. It leverages a cleverly designed LGA socket to eliminate the need for multiple designs and evaluation boards. The kit works out of the box and allows deep hardware evaluation for a wide range of solutions.

Cinterion Module DevKit

Based on the same board design as the LGA DevKit, the Cinterion Module DevKit allows easy prototyping and evaluation of a dedicated Cinterion IoT Module.

Cinterion Mini PCIe™ DevKit

The Cinterion Mini PCIe™ DevKit plugs into an existing Mini PCIe™ card slot to instantly connect your IoT solutions. It allows easy, plug-and-play evaluation and prototyping using a wide range of LTE Cinterion Modem Cards.

Cinterion 5G M.2 Modem Card DevKit

The Cinterion 5G M.2 DevKit connects via USB or PCIe™ to simplify sophisticated 5G designs and jump start your 5G deployments with the high speed Cinterion M.2 Card product range. Simply plug-in, power up and you're ready to evaluate, prototype, test and deploy!

The Thales IoT Developer Community

Our IoT Developer Community is your definitive source for IoT development information, support and community. The interactive site offers IoT knowledge, tutorials, expert advice, and a forum for discussing development challenges with other developers. It's an ideal place to start your projects and take advantage of benefits including:

❙ A solid IoT knowledge base including terms, definitions, FAQs, tutorials and step-by-step "how-to" instructions for everyday IoT tasks

❙ An online forum to discuss challenges and solutions with Thales experts and peers as well as a place to share your knowledge and expertise and promote your latest innovations

❙ A library of current IoT applications, use cases and best practices

❙ A source for downloading sample code and re-usable drivers to expedite project timeline

🚗 Connected Cars

Thales securely connects vehicles and their infrastructure. Whether you require high-speed, low latency 5G, remote connectivity provisioning or robust cybersecurity, we have a solution.

Built to Last

Vehicles are built to last for decades and so are our automotive IoT solutions. Engineered to withstand the rugged environments of the road (extreme temperatures, excessive vibration or severe humidity), our solutions enable new automotive features and smarter mobility, with secure digital car key or secure electric vehicle (EV) charging systems to name a few.

Thales automotive connectivity solutions are manufactured according to VDA 6.2 and TS16949 quality standards and meet stringent automotive specifications and quality processes including APQP, PPAP, PCN and 8D.

Advanced capabilities and services to enrich the connected car experience:

- Reliable, global cellular connectivity for high-speed networks
- Automotive-grade eSIM for remote connectivity provisioning and seamless subscription updates
- Secure vehicle-to-infrastructure connections
- Robust Digital IDs enabling a variety of use cases (digital car key, secure EV charging, V2X communications)

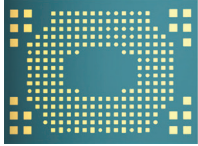- Simultaneous voice and data services
- Embedded processing
- Cybersecurity credentials management

To succeed in the automotive fast-paced market, car manufacturers and Tier 1 suppliers trust Thales to meet the industry's most demanding connectivity and security standards, and to manage steadfast reliability and quality of service over the long lifetime of vehicles.

Portfolio Overview - Facts & Figures
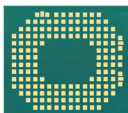
Cinterion High Speed IoT Offer

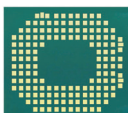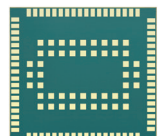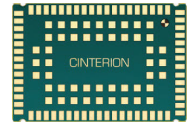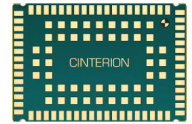| Product	Region	Frequency Bands	Certifications	Dimensions /Mounting	Max. Data Rate (UL/DL)	Interfaces / Special Features
PLPS9-W PLSP9-X (LTE Cat.16)	Global NORAM	PLPS9-W: LTE: B1, 3, 5, 7, 8, 18, 19, 20, 26, 28, B32, 34, 38, 39, 40, 41 3G: B1, 3, 5, 6, 8, 19 2G: Quad Band PLPS9-X: LTE: 3, 4, 5, 7, 12, 13, 28, 29, 66 3G: B2, 4, 5 2G: Quad Band	CE/RED, FCC, ISED, GCF, PTCRB, AT&T	48x36x3mm / LGA	1 Gbps DL / 150 Mbps UL	UART Dual SIM, I2C, PCM/ I2S, GPIO, I2S, GPIO, USB
MV32-W (5G)	Global	FR1 FDD-LTE Bands: n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n66, n71 FR1 TD-LTE Bands: n38, n40, n41, n48, n77, n78, n79	RED (RoHS, REACH), FCC, GCF, PTCRB, ISED, RCM, JATE/TELEC, NCC	30mm x 42mm x 2.5mm/M.2 Card	DL: up to 10.02 Gbps / UL: up to 3.38 Gbps	PCIe3.0/4.0 and USB 3.1
MV31-W (5G)	Global	5G FR1: n1, 2, 3, 5, 7, 8, 12, 20, 28, 38, 41, 66, 71, 77, 78, 79 5G FR2: n257, 258, 260, 261 LTE: B1, 2, 3, 4, 5, 7, 8, 12, 13, 14, 17, 18, 19, 20, 25, 26, 28, 29, 30, 32, 34, 38, 39, 40, 41, 42, 46, 48, 66, 71 3G: 1, 2, 4, 5, 6, 8, 9, 19	CE/RED, FCC, GCF, PTCRB, RCM, JATE/ TELEC, Taiwan AT&T incl. Firstnet, VzW, T-Mobile-US, Telstra, NTT, KDDI, Softbank	30x42mm / M.2	5G FR1: 4.14 Gbps DL / 660 Mbps UL	Smallest 5G M.2 Form factor Unique design to deliver cutting edge performance SIM Flexibility - eSIM embedded or dual external SIM QMI interface Linux/Windows/ Android Drivers USB: Yes
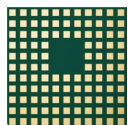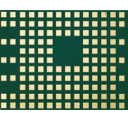
Cinterion IoT Modem Cards

Product	Region	Frequency Bands	Certifications	Dimensions /Mounting	Max. Data Rate (UL/DL)	Interfaces / Special Features
mPLS83-W LTE Cat.4	Global	LTE: 1, 2, 3, 4, 5, 7, 8, 12, 13, 18, 19, 20, 26, 28, 38, 40, 41, 66 3G: 1, 2, 3, 4, 5, 6, 8, 19 2G: Quad Band	GCF, PTCRB, RCM, RED, Anatel, JATE/ TELEC, NTT Docomo, AT&T incl. Firstnet, VzW, TMO-US	30x51mm / mPCIe	150 Mbps DL/ 50 Mbps UL	Global Options with TDD band support VoLTE/CSFB capability eSIM optional Cinterion advanced security
mPLS83-X LTE Cat.4	NORAM	LTE: 1, 2, 3, 4, 5, 7, 8, 12, 13, 18, 19, 20, 26, 28, 38, 40, 41, 66 3G: 2, 4, 5 2G: Quad Band	GCF, PTCRB, RCM, RED, Anatel, JATE/ TELEC, NTT Docomo, AT&T incl. Firstnet, VzW, TMO-US	30x51mm / mPCIe	150 Mbps DL/ 50 Mbps UL	Global Options with TDD band support VoLTE/CSFB capability eSIM optional Cinterion advanced security
mPLS63-W LTE Cat.1	Global	LTE: 1, 2, 3, 4, 5, 7, 8, 12, 13, 18, 19, 20, 26, 28, 38, 40, 41, 66 3G: 1, 2, 3, 4, 5, 6, 8, 19	GCF, PTCRB, RCM, RED, Anatel, JATE/ TELEC, NTT Docomo, AT&T incl. Firstnet, VzW, TMO-US	30x51mm / mPCIe	10 Mbps DL/ 5 Mbps UL	Global Options with TDD band support VoLTE/CSFB capability eSIM optional Cinterion advanced security

Cinterion Performance IoT Offer

Product	Region	Frequency Bands (for Global Product Variants)	Certifications	Dimensions /Mounting	Max. Data Rate (UL/DL)	Interfaces / Special Features
PLS63-W PLS63-EP PLS63-J PLS63-LA PLS63-X PLS63-I LTE Cat.1	Global Europe/ Asia Japan LATAM NORAM India	FDD-LTE cat.1: bands 1, 2, 3, 4, 5, 7, 8, 12, 13, 18, 19, 20, 26, 28, 66 TDD-LTE cat.1: bands 38, 40, 41 WCDMA: bands 1, 2, 3, 4, 5, 6, 8, 19 Quad Band GSM: 850, 900, 1800, 1900 MHz	GCF, PTCRB, RED, FCC, IC, UL, IFETEL, UKCA, REACH, Anatel, RCM, JATE, TELEC, CCC, SRRC, NAL, CTIA; AT&T, VzW, T-Mobile, Docomo, KDDI, Telstra, Softbank, DTAG	33 x 29 x 2.5 mm	UL 5 Mbps / DL 10 Mbps	GPIO, SPI, I2C, DAI (Digital Audio interface), status indicator, Dual SIM interfaces, Antenna interfaces for LTE and GNSS
PLS83-W PLS83-EP PLS83-J PLS83-LA PLS83-X PLS83-I LTE Cat.4	Global Europe/ Asia Japan LATAM NORAM India	FDD-LTE cat.4: bands 1, 2, 3, 4, 5, 7, 8, 12, 13, 18, 19, 20, 26, 28, 66 TDD-LTE cat.4: bands 38, 40, 41 WCDMA: bands 1, 2, 3, 4, 5, 6, 8, 19 Quad Band GSM: 850, 900, 1800, 1900 MHz	GCF, PTCRB, RED, FCC, IC, UL, IFETEL, UKCA, REACH, Anatel, RCM, JATE, TELEC, CCC, SRRC, NAL, CTIA; AT&T, VzW, T-Mobile, Docomo, KDDI, Telstra, Softbank, DTAG	33 x 29 x 2.5 mm	UL 50 Mbps/ DL 150 Mbps	GPIO, SPI, I2C, DAI (Digital Audio interface), status indicator, Dual SIM interfaces, Antenna interfaces for LTE and GNSS
ELS62-W LTE Cat.1bis	Europe/ Asia Japan LATAM India	FDD LTE: Band 1, 2, 3, 4, 5, 7, 8, 20, 28, 66; TDD LTE: Band 38, 40, 41; Quad Band GSM: 850, 900, 1800, 1900 MHz	GCF, RED, RCM, Anatel, RoHS, CCC, SRRC, NAL, CTIA, DTAG, Orange	27.6 x 25.4 x 2.2 mm	UL 5 Mbps/ DL 10 Mbps	GPIO, SPI, I2C, DAI (Digital Audio interface), status indicator, Dual SIM interfaces, Antenna interface for LTE

Cinterion Efficiency IoT Offer

Product	Region	Frequency Bands (for Global Product Variants)	Certifications	Dimensions /Mounting	Max. Data Rate (UL/DL)	Interfaces / Special Features
EXS62 LTE CAT.M/ NB-IoT	Global	1, 2, 3, 4, 5, 8, 12, 13, 17, 18, 19, 20, 25, 26, 27, 28, 66, 85. (20 dBm)	RED, FCC, IC, UL, Anatel GCF, PTCRB AT&T, Verizon, T-Mobile, CTIA	27.6 x 18.8 x 2.3 mm	LTE M1 DL/UL: max. 300 kbps/ 1.1 Mbps LTE NB1 DL/UL: max. 27 kbps/ 63 kbps LTE NB2 DL/UL: max. 124 kbps/ 158 kbps	SIM, SPI, I2C, ADC,GPIO
EXS82 LTE Cat.M/ NB/2G	Global	1, 2, 3, 4, 5, 8, 12, 13, 17, 18, 19, 20, 25, 26, 27, 28, 66, 85. (20 dBm)	RED, FCC, IC, UL, Anatel GCF, PTCRB AT&T, Verizon, T-Mobile, CTIA	27.6 x 18.8 x 2.3 mm	LTE M1 DL/UL: max. 300 kbps/ 1.1 Mbps LTE NB1 DL/UL: max. 27 kbps/ 63 kbps LTE NB2 DL/UL: max. 124 kbps/ 158 kbps	SIM, SPI, I2C, ADC,GPIO
TX62 LTE Cat.M/NB	Global	1, 2, 3, 4, 5, 8, 12, 13, 17, 18, 19, 20, 25, 26, 27, 28, 66, 85 20 dBm & 23 dBm 450 MHz	20 dBm: RED, FCC, Anatel GCF, PTCRB AT&T, Verizon, 23dBm: RED, GCF, SKT, KDDI, J/TELEC, Telstra*	TX62 20dBm: 15.3 x 15.3 x 2.9mm TX62 23dBm: 20.9 x 15.3 x 2.28mm TX62 450MHz: 20.9 x 15.3 x 2.9mm	LTE M1 DL/UL: max. 300 kbps/ 1.1 Mbps LTE NB1 DL/UL: max. 27 kbps/ 63 kbps LTE NB2 DL/UL: max. 124 kbps/ 158 kbps	SIM, SPI, I2C, ADC,GPIO

Cinterion Efficiency IoT Offer

Product	Region	Frequency Bands (for Global Product Variants)	Certifications	Dimensions /Mounting	Max. Data Rate (UL/DL)	Interfaces / Special Features
TX82 Cat.M1 /Cat. NB1 / NB2 / 2G	Global	1, 2, 3, 4, 5, 8, 12, 13, 17, 18, 19, 20, 25, 26, 27, 28, 66, 85. 450 MHz (committed)	RED, FCC, Anatel GCF, PTCRB AT&T, Verizon,	20.9 x 15.3 x 2.28mm	LTE M1 DL/UL: max. 300 kbps/ 1.1 Mbps LTE NB1 DL/UL: max. 27 kbps/ 63 kbps LTE NB2 DL/UL: max. 124 kbps/ 158 kbps	SIM, SPI, I2C, ADC,GPIO
TN23 LTE Cat.NB2	Global	1, 2, 3, 4, 5, 8, 12, 13, 17, 18, 19, 20, 25, 26, 27, 28, 66, 85. (23 dBm)	RED, FCC, IC, UL, Anatel GCF, PTCRB AT&T, Verizon, T-Mobile	15.3 x 15.3 x 2.9mm	LTE NB1 DL/UL: max. 27 kbps/ 63 kbps LTE NB2 DL/UL: max. 124 kbps/ 158 kbps	SIM, GPIO, SPI, I2C, Counter

Thales Smart IoT Gateways

Product	Region	Frequency Bands	Certifications	Dimensions /Mounting	Max. Data Rate (UL/DL)	Interfaces / Special Features
SGX31 LTE-M	Global	FDD-LTE Bands for LTE Cat M1: 1, 2, 3, 4, 5, 8, 12, 13, 18, 19, 20, 25, 26, 27, 28, 66, 85 FDD-LTE Bands for LTE Cat NB1/ NB2: 1, 2, 3, 4, 5, 8, 12, 13, 18, 19, 20, 25, 26, 28, 66, 71, 85 Quad-Band GSM: 850, 900, 1800 and 1900 MHz	RED, CE, FCC, UKCA, IC, UL, CCC, GCF, PTCRB	191 x 143 x 44 mm	DL: max. 300kbps, UL: max. 1.1Mbps	2 Antenna Connectors SMA (female) – Cellular and GNSS Mini-SIM card reader, 1.8V and 3.0V Plug-in power supply connector (6-pole Western jack) V.24 / V.28 RS-232 interface (D-sub 9-pole female socket)
EGX82 LTE-M	Global	FDD-LTE Bands 1, 2, 3, 4, 5, 8, 12, 13, 18, 19, 20, 25, 26, 27, 28, 66 Quad-Band GSM: 850, 900, 1800 and 1900MHz	RED, CE, FCC, IC, UL, CCC GCF, PTCRB Local approvals and major MNO certifications REACH, RoHS and EuP compliant CTIA Cybersecurity	80x55x23mm	DL 300 kbps UL 1.1 Mbps	USB
DGL61 LTE Cat. 1	Global	Twelve Bands FDD-LTE: 700, 800, 850, 900, 1700/2100 (AWS), 1800, 1900, 2100, 2600 MHz (bands 1, 2, 3, 4, 5, 7, 8, 12, 18, 19, 20, 28) Seven Bands UMTS (WCDMA/ FDD): 800, 850, 900, 1700/2100 (AWS), 1800, 1900 and 2100 MHz (bands 1, 2, 4, 5, 8, 9, 19) Quad Band GSM: 850, 900, 1800 and 1900 MHz	RED, GCF, CE, FCC, PTCRB, IC, 3GPP operator approvals, e.g. AT&T RoHS, WEEE compliant	114.5x73.5x19.5mm	UL 5.2Mbps DL 10.3Mbps	USB

Thales IoT Offering

Automotive	High Speed IoT	Performance IoT	Efficient IoT	Modem Cards	Gateways

High data speed, enhanced mobility	High data speed for industrial use	Mid speed data for smart IoT	Efficiency IoT and small data	Integrated computing system	Plug-and-play data cards for IoT	Fully approved, easy roll out

Cinterion IoT Suite

Software Update

Connectivity Activation

Trusted Identity

Device Performance

Thales Consulting and Support

Core Technologies

Design Evaluation

Design-in and engineering

Test, Approval and Rollout

Thales in IoT:
Driving digital transformation with the power of the Internet of Things

Thales delivers innovative IoT technology that simplifies and speeds enterprise digital transformation. For more than 25 years, our customers – in a wide range of industries - trust our IoT solutions to seamlessly connect and secure their IoT devices, maximise field insights, and accelerate their global business success.

Thales solutions:

- **Connect** assets to wireless networks and cloud platforms

- **Manage** the long lifecycle of IoT solutions

- **Secure** devices and their data

Our 360° approach provides the essential building blocks needed to simplify design, streamline development and accelerate time-to-market.

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