

Aquila iMX95 PRODUCT BRIEF



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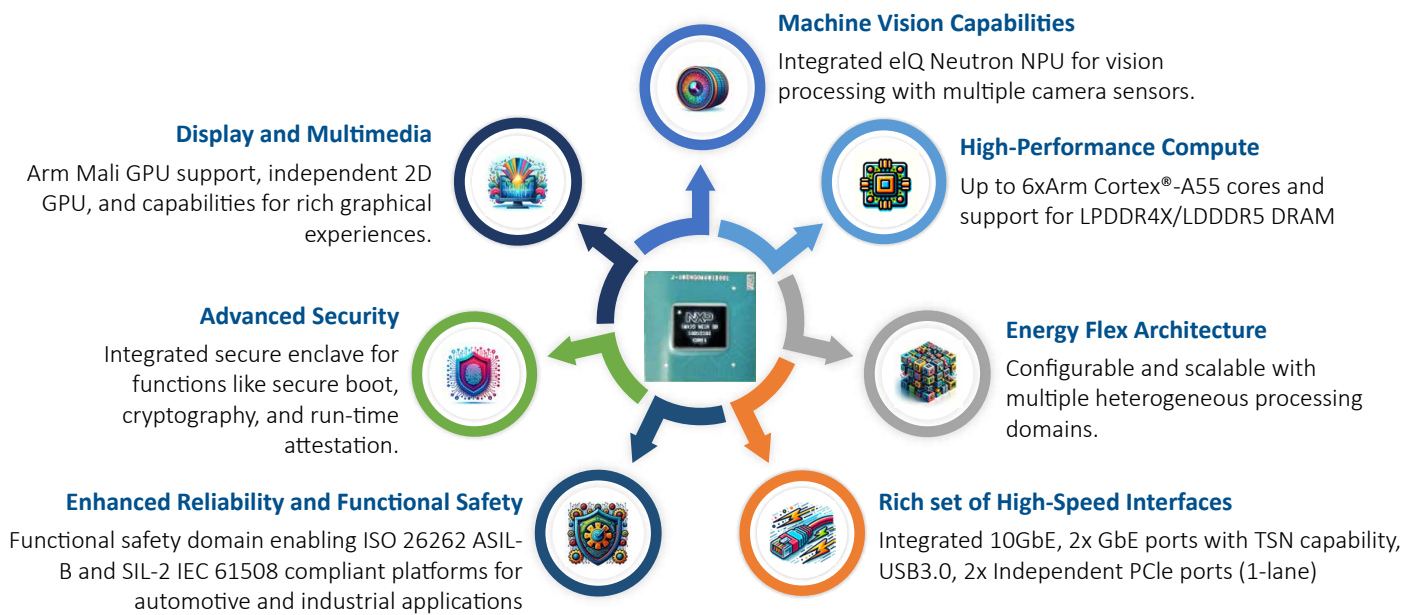
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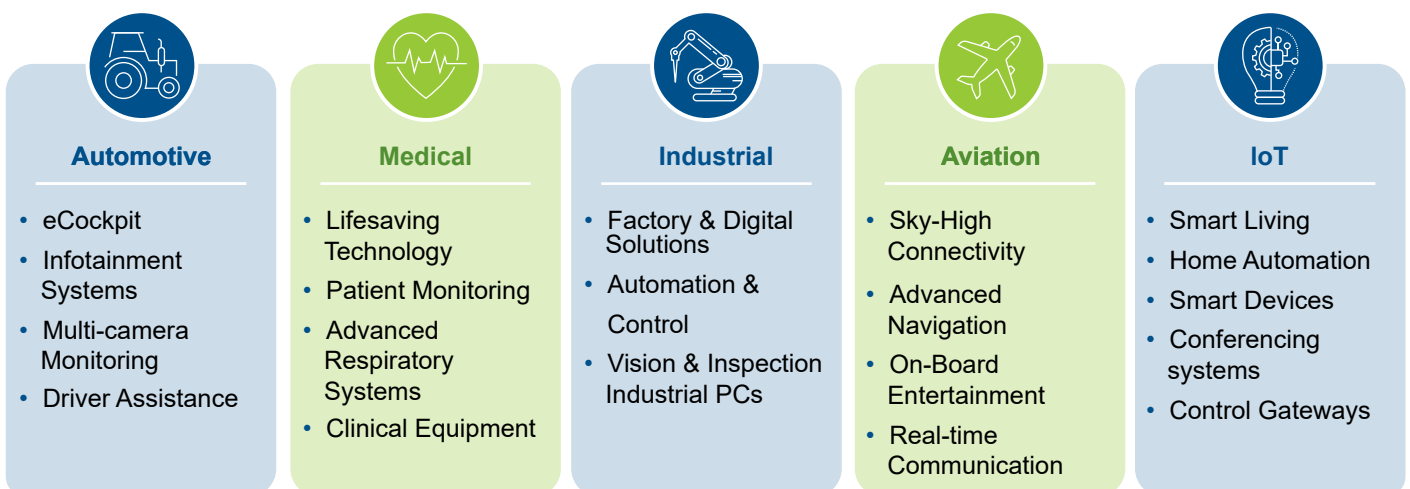
Aquila iMX95 Product Brief

iMX95 SoC overview

The NXP i.MX 95 is a next-generation applications processor designed to power a wide range of intelligent edge applications. Combining up to six Arm Cortex-A55 cores, integrated machine learning acceleration with the eIQ Neutron NPU, and a robust multimedia pipeline, it delivers scalable performance, advanced graphics, and functional safety in a single industrial-grade platform. Built for demanding use cases, the i.MX 95 enables rich user experiences, vision-based AI, and secure, connected systems across diverse markets.



Designed to meet the complex demands of modern embedded systems, the i.MX 95 SoC supports diverse applications across multiple industries. From automotive eCockpit and advanced driver assistance systems, to smart medical devices, industrial automation, and high-performance IoT gateways – the i.MX 95 brings powerful processing, edge intelligence, and long-term reliability to market. Its modular architecture and scalability make it ideal for evolving product lines and mission-critical use cases.



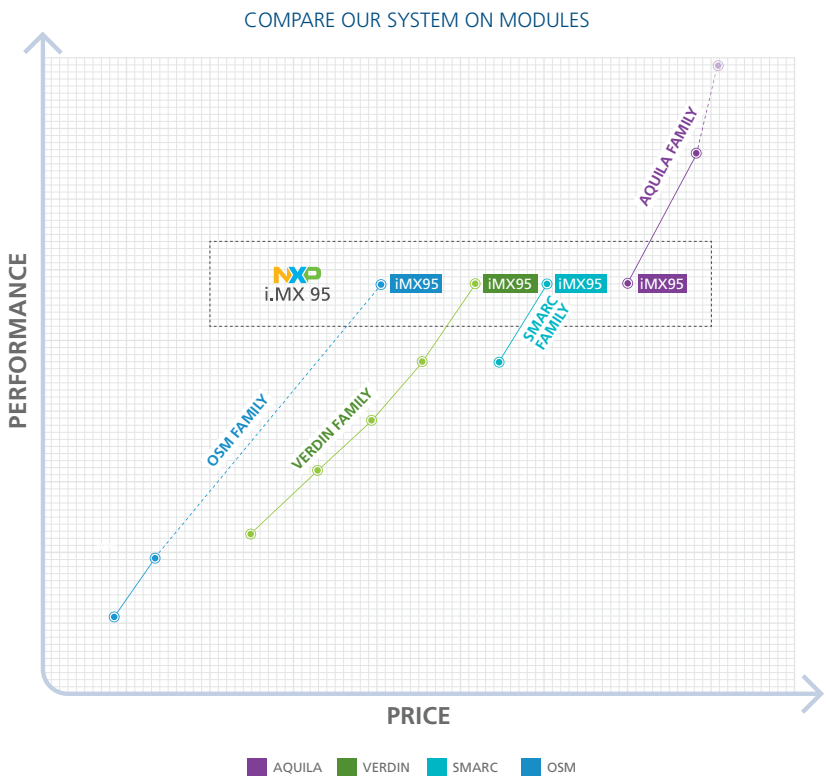
Aquila iMX95 Product Brief

Toradex iMX95 SoMs comparison

Toradex offers a versatile lineup of i.MX 95-based System on Modules (SoMs) to address a wide range of design requirements. Whether your priority is maximum performance and interface availability, a compact and cost-effective design, or adherence to industry standards like SMARC or OSM, there's an option tailored to your needs. The Aquila, Verdin, SMARC and OSM form factors provide flexibility in connectivity, mechanical layout, performance scalability and production requirements.

Features / SoMs	Aquila iMX95	Verdin iMX95	SMARC iMX95	OSM iMX95
Form Factor	Aquila	Verdin	SMARC	OSM Size-L
SoM Physical Size	85.0 × 55.0 mm	69.6 × 35.0 mm	82.0 × 50.0 mm	45.0 × 45.0 mm
SoM Connector	400 pin Board to Board	DDR4 SODIMM 260 pin Edge Connector	MXM 314 pin Edge Connector	662 BGA pins
Package Type	19 mm × 19 mm	15 mm × 15 mm	19 mm × 19 mm	19 mm × 19 mm
RAM Technology	LPDDR5 (6.4 GT/s)	LPDDR4x (4 GT/s)	LPDDR5 (6.4 GT/s)	LPDDR5 (6.4 GT/s)
GbE with onboard PHY	1x	1x	2x	-
ETH RGMII	1x	1x	-	2x
10GbE	Yes	No	Yes	Yes
PCIe Instances	2x	1x	2x	2x
Keywords	- High performance - Interface availability	- Low cost - Compact design	SMARC 2.2 standard	- Solderable - High Volume
Recommend for	Manufacturers that... ... might need upwards scalability in performance (e.g., TI AM69) or a higher amount of interface availability.	Manufacturers that... ... might need downwards scalability in performance (e.g., NXP iMX8M Plus), a compact design, or lower costs.	Manufacturers that... ... have second sourcing as a hard requirement and need a standardized form factor for that.	Manufacturers that... ... needs automated SMT and reflow processes, for high-volume production and a reduced bill of material cost.

Each Toradex i.MX 95 SoM is strategically positioned within its own product family to offer clear scalability options. The **Aquila iMX95** is the entry-level option in the Aquila lineup, ideal for high-end designs needing strong performance and interface availability, with room to scale up later. The **Verdin iMX95** is the highest-performance Verdin module, bringing more power to a compact and cost-effective form factor. The **SMARC iMX95** follows the SMARC 2.2 standard, offering a standardized option for customers who need second sourcing and mechanical compatibility. The **OSM iMX95** is a solderable module optimized for fully automated SMT (Surface-Mount Technology) and reflow processes, enabling high-volume production with a reduced bill of material cost.



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Aquila iMX95 SoM

Aquila is Toradex's brand-new SoM form factor, purpose-built for modern applications that demand high computational performance and industrial-grade reliability. Designed for intensive edge workloads, Aquila modules combine a future-ready architecture with a high-density board-to-board interface, ideal for scalable and long-lasting designs. Key differentiators include:

- Increased CPU, GPU, NPU, and ISP performance
- Rich, modern feature set built for flexibility and long-term scalability
- Approx. 400-pin board-to-board interface for robust, mechanically reliable integration
- Industrial temperature support and high build quality for harsh environments

Thanks to its strong performance, rugged design, and long-term availability, the Aquila iMX95 is a compelling choice for high-performance edge computing, Industrial IoT, edge AI, machine vision, and real-time control. Its versatility also makes it well-suited for a wide range of industries, including Industrial Automation, Medical, Transportation, Smart Cities, Test and Measurement, and more.

The Aquila iMX95 offers cutting-edge connectivity tailored for demanding edge and networking applications.

It supports optional Wi-Fi 7 and Bluetooth 5.3, and provides a broad set of industrial and high-speed interfaces for flexible system integration:

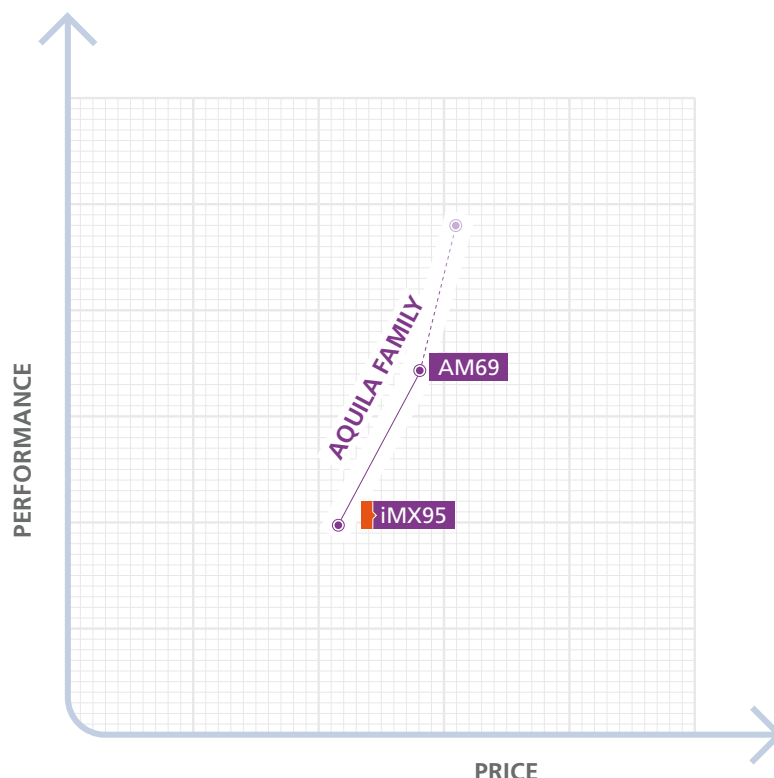
- GPIOs, I2C, I3C, SPI, USB, CAN FD, UART
- MIPI CSI for cameras
- MIPI DSI for displays
- PCIe Gen3 x1 for high-speed expansion

Robust Ethernet capabilities further extend the module's flexibility:

- Integrated Gigabit Ethernet PHY with IEEE1588 support on the SoM
- Second Ethernet MAC via RGMII for carrier-side PHY integration
- Third Ethernet MAC via SGMII/USXGMII, allowing integration of a 2.5 or 10-Gigabit Ethernet PHY on the carrier board

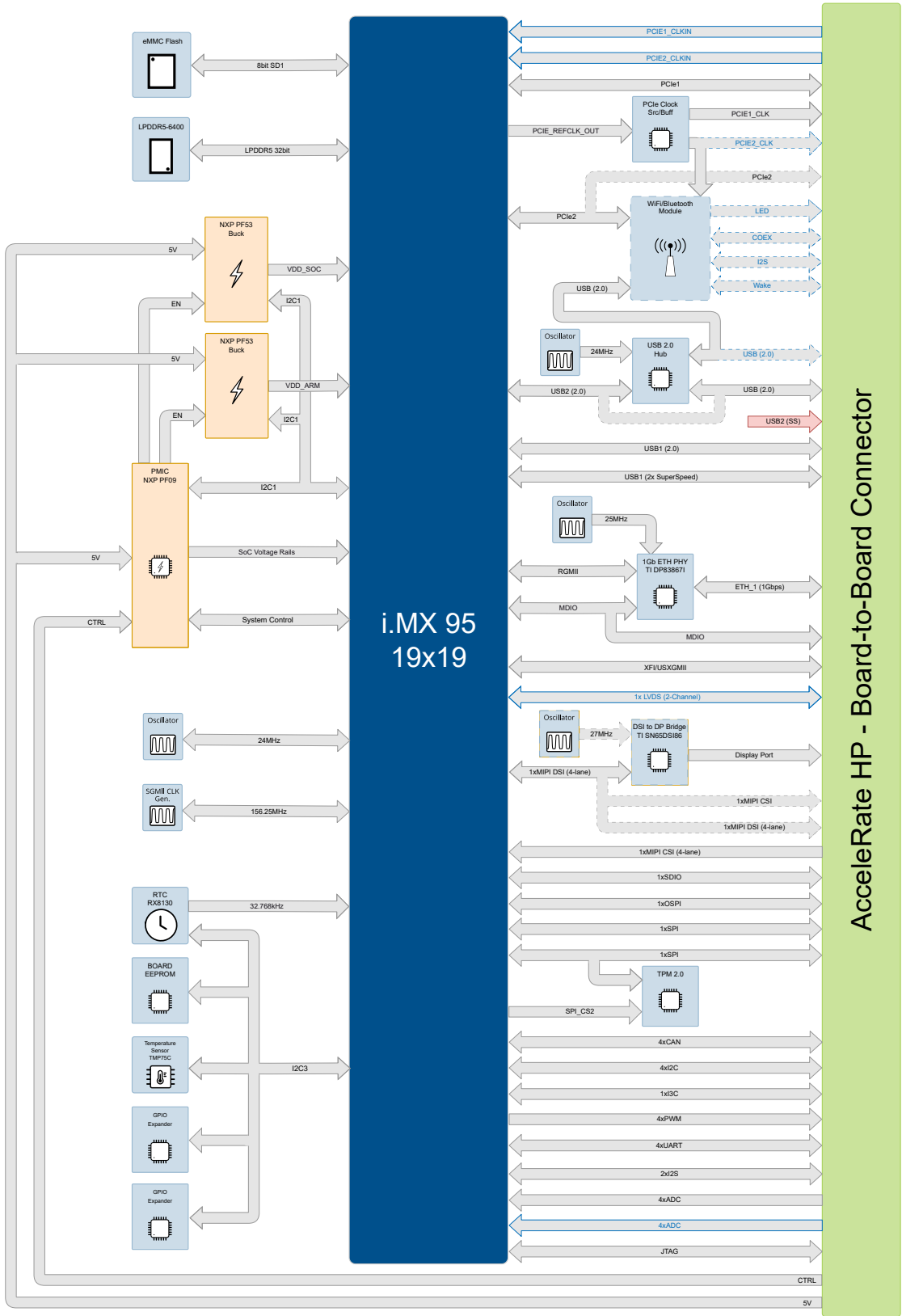
For safety-critical applications, a dedicated Build-to-Order (BTO) configuration of the Aquila iMX95 will be available. It leverages the i.MX 95's integrated Functional Safety domain to meet compliance with ISO 26262 ASIL-B and IEC 61508 SIL-2, making it a reliable choice for automotive, industrial, and medical systems.

In essence, the Aquila iMX95 delivers a complete platform – combining advanced interfaces, robust connectivity, high-performance compute, and the flexibility needed for a wide range of demanding edge applications.



Aquila iMX95 Product Brief

Block Diagram



Legend

- - - - - Dashed line. Assembly option.
- Blue line. Interface is available on the MSP pins.
- Red line. Interface is not available.

Aquila iMX95 Product Brief

Interfaces Overview

The Aquila module interfaces are organized into three categories: Always Compatible, Reserved, and Module-specific. Always Compatible interfaces are present on every Aquila SoM, ensuring scalability and easy upgrades. Reserved interfaces are defined and electrically compatible but may be absent on some models depending on SoC features or cost-optimized configurations. Module-specific interfaces can vary between modules and may limit upgradeability if used in a carrier design.

In addition, certain pins can serve alternate functions, such as GPIOs, when their primary role is not in use. The table below shows the Aquila iMX95 interfaces and their classification.

For detailed definitions, see the [Aquila Family Specification](#).

Features	Total (up to)	Always compatible	Reserved	Module specific or Alternate Function
Analog				
Analog Input (ADC)	8		4	4
Audio				
I2S	4		2	2 (alternate)
S/PDIF (RX and TX)	1			1 (alternate)
PDM Mic Input	4			4 (alternate)
Camera				
MIPI CSI-2	2		1	1 (alternate)
Display				
DisplayPort (on-SoM DSI to DP converter)	1		1	
MIPI DSI	1		1	
LVDS (dual channel)	1			1
Low speed				
I2C	8	1	3	4 (alternate)
I3C	1	1		
SPI	6	1	1	4 (alternate)
UART	8	3	1	4 (alternate)
PWM	22	2	2	18 (alternate)
CAN FD	5		4	1 (alternate)
JTAG	1	1		
OSPI	1		1	
GPIO	94	8	6	~80 (alternate) (TBC)
Network				
Gigabit Ethernet	1	1		
RGMII (for 2nd Gigabit Ethernet)	1			1 (alternate)
USX/S/GMII (for 2.5 and 10 Gb Ethernet)	1		1	
Other				
PCIe Gen3 (x1 lane)	2	1	1 ¹	-
Storage				
SD/SDIO/MMC	2	1		1 (alternate)
USB				
USB 2.0 DRP	1	1		
USB 3.1 (SS Signals for USB 2.0 DRP)	1		1	
USB 2.0 Host	2	1		1 ¹

1¹: Only on SoMs without WiFi.

Aquila iMX95 Product Brief

Configuration Overview

The Aquila iMX95 SoM is designed to meet a wide range of performance, connectivity, and memory requirements. It combines powerful CPU cores, high-speed RAM and Flash, and extensive connectivity options such as PCIe, Ethernet, Wi-Fi and Bluetooth, making it suitable for applications across industrial and edge AI use cases.

The first configuration to be released is shown in the table below: Aquila iMX95 Hexa 8GB WB IT.

Family	iMX95 Segment	A-Core Qty	RAM	eMCC	DSI Usage	Wi-Fi	TPM	Temperature
AQIMX95	9	6	-8G	-32G	-DP	-W7	-T	-IT

Additional configurations will be developed over time. In the meanwhile, the tables below summarizes the available configuration elements and how they can be combined. Use the "Configuration Inputs" tables to fill in the open fields from "NPI part number table" in order to build the desired configuration.

For additional specific requirements or tailored options, please, get in touch with us.

Note: The New Product Introduction (NPI) part number nomenclature shown below does not reflect volume or sellable part numbers from Toradex. They should only be used to communicate your desired configuration.

NPI part number table

Family	iMX95 Segment	A-Core Qty	RAM	eMCC	DSI Usage	Wi-Fi	TPM	Temperature
AQIMX95	9	6						

Configuration Inputs

iMX95 Segment	Description	A-Cores Qty	ISP	NPU	GPU	VPU	Display
9	Full Featured	6	Yes	Yes	Yes	Yes	Yes

RAM Density	
-2G	2 GB
-4G	4 GB
-8G	8 GB
-16G	16 GB

eMMC Capacity	
-4G	4 GB
-8G	8 GB
-16G	16 GB
-32G	32 GB
-64G	64 GB
-128G	128 GB
-256G	256 GB

DSI Usage	
-DP	DSI to DP converter (SN65DSI86)
-DSI	On DSI_1 of Aquila Connector
-CSI	On CSI_2 of Aquila Connector

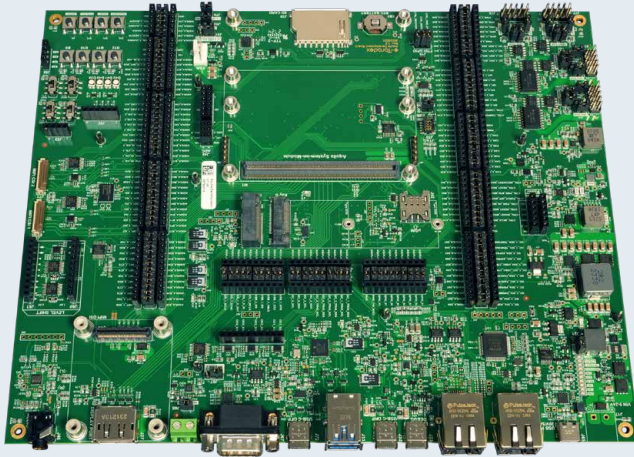
TPM	
-T	TPM 2.0 assembled
-N	TPM 2.0 not assembled

Wi-Fi	
-W7	Wi-Fi 7 and BT 5.3
-W6E	Wi-Fi 6E and BT 5.2 (CT & ET only)
-W5	Wi-Fi 5 and BT 5.3
-W0	No WiFi-BT module

Temperature	
-IT	Industrial (-40°C to 85°C)
-ET	Extended (-25°C to 85°C)
-CT	Commercial (0°C to 70°C)

Aquila iMX95 Product Brief

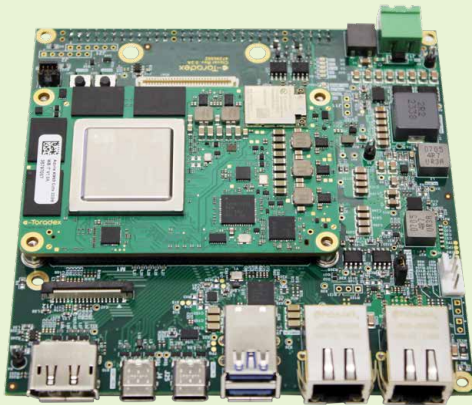
Aquila - Development and Evaluation



Aquila Development Board

The Aquila Development Board is a fully featured carrier board providing easy access to all features of the Aquila family. Several display adapter boards will be available to support HDMI, LVDS, and DSI interfaces (a DSI to HDMI Adapter is included with Aquila Development Boards).

Aquila - Volume Production



Clover Board

- Scalable Single-Board Computer compatible with all Aquila SoMs
- High-Speed interfaces, including 2x GbE and 2x M.2 slots
- Extension header for simple integration
- Small form factor (Nano-ITX 120mm x 120mm)
- Cost-optimized and built for Volume Production

Aquila iMX95 Product Brief



Torizon™

**Easily Develop, Manage and
Secure Your Linux Devices**

Torizon is a ready-to-use Linux-based ecosystem that simplifies the development, management, and security of embedded devices. Built on a robust Linux foundation, it accelerates time-to-market with a production-grade software stack and no vendor lock-in.

Designed for reliability at scale, Torizon offers secure over-the-air updates, real-time capabilities, and streamlined device management throughout the product lifecycle. It empowers you to build, deploy, and maintain Linux devices with confidence.



Fast time-to-market
Ready-to-use
Linux distribution



Open Source
Based on open software,
no lock-in



Simple updates
Built-in, automotive-grade,
over-the-air update
capabilities



Real-time
Optimized real-time option



Secure
Frequent updates, accessible
security features



**Device
Monitoring**



**Subsystem
Updates**



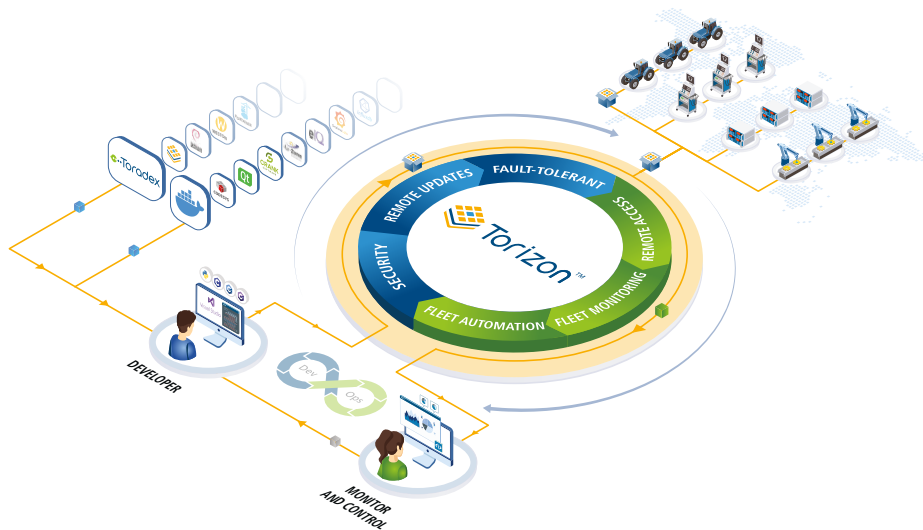
**Remote
Access**



**Remote
Updates**



**Secure
by Default**



To explore the full potential of the Torizon ecosystem, visit [Torizon.io](https://torizon.io)

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