Toradex
Swiss. Embedded. Computing.

Lino iMX93
PRODUCT BRIEF

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Lino Family SoMs

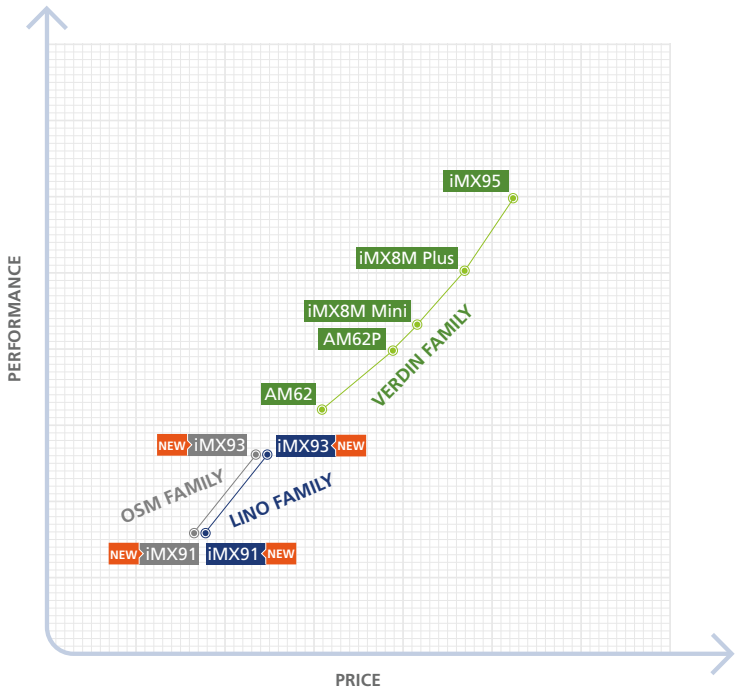
The **Lino family** brings modern processing, connectivity, and security to space- and power-constrained designs. Built on NXP's i.MX 9 applications processors, it provides a consistent and scalable foundation for industrial and IoT devices requiring long-term reliability and efficient performance in compact designs.

Within the family, two modules address different application needs while sharing the same mechanical design, connector, and software ecosystem; enabling effortless scalability from simple control units to intelligent connected devices.

Features / SoMs	Lino iMX91	Lino iMX93
Form Factor	Lino	
SoM Physical Size	30x30mm	
Connector	2x100-pin board-to-board connectors down to 1.5mm stacking height	
CPU	1× Arm Cortex-A55 (up to 1.4 GHz)	Up to 2× Arm Cortex-A55 (up to 1.7 GHz)
MCU	-	1× Cortex-M33 (250 MHz)
RAM Technology	LPDDR4 (up to 2.4 GT/s)	LPDDR4 (up to 3.7 GT/s)
Storage Technology	On-module eMMC	
Connectivity	Dual Ethernet (with TSN), 2× CAN FD, USB 2.0 (OTG + Host), I²C, I³C, SPI, UART, PWM, GPIO, ADC, SDIO/SD/MMC, I²S	
NPU	-	0.5 TOPS
Multimedia	Headless design for compact controllers and gateways	MIPI DSI display, LVDS, MIPI CSI-2 camera and 2D graphics acceleration
Typical use cases	Industrial controllers, PLCs, IoT gateways, smart sensors	HMIs, smart vision nodes, AI-enabled controllers, connected IPCs

Each **Lino SoM** is strategically positioned within the family to deliver a clear path for scalability. The **Lino iMX91** serves as the entry point, offering essential performance and robust connectivity for control-oriented systems. The **Lino iMX93** builds on the same foundation with added multimedia and AI capabilities, enabling more advanced and interactive applications.

Together, they form a consistent, cost-optimized platform that enables easy scalability and long-term design compatibility across product lines.



Lino Family SoMs

The **Lino connector solution** uses a pair of **2×100-pin board-to-board connectors**, supporting a stacking height as low as **1.5 mm** to enable ultra-compact designs. This robust connector system ensures **ruggedness and reliability** in demanding industrial environments, providing strong resistance to shock and vibration.

It also offers clear advantages for **field upgrades and serviceability**, allowing modules to be replaced or updated without complex rework. **During development**, the same connector approach simplifies hardware integration, enabling **fast prototyping** and easy access to key signals on carrier and development boards.

Front

Back

Lino-Verdin Adapter

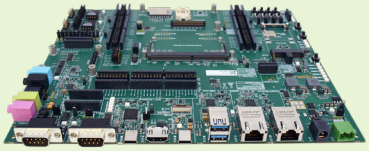
The **Lino family pinout** is designed as a carefully selected **subset of the Verdin family pinout**, enabling **high-level compatibility for evaluation and early development**. This approach allows developers to explore Lino modules quickly without redesigning hardware during the initial stages of a project, while keeping the Lino family clearly positioned for **direct integration in volume products**.

To support this workflow, Toradex will offer a **Verdin–Lino Adapter** as part of its official **accessories portfolio**, enabling seamless evaluation of Lino modules using the well-established Verdin ecosystem. Developers can take advantage of the broad selection of **Verdin carrier and development boards, peripherals and documentation** to accelerate bring-up, testing, and validation, while also having access to the **complete hardware design files** for review or adaptation as needed.

Lino-Verdin Adapter

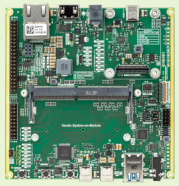
Verdin Ecosystem

Development and Evaluation

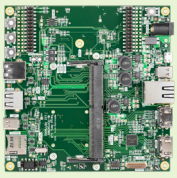


Verdin Development Board

Fully featured carrier board providing easy access to all features of the Verdin family. Several display adapter boards will be available to support HDMI, LVDS, DSI and Parallel RGB display interfaces.



Dahlia



Yavia

Compact carrier boards providing easy access to the most common features of the Verdin Family. It is an ideal platform for software development and demonstration purposes.

Lino iMX93 Product Brief

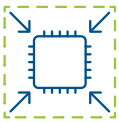
Interfaces Overview

The **Lino iMX93 System on Module (SoM)** combines scalable performance, advanced connectivity, and industrial reliability in a compact form factor. Based on the NXP i.MX 93 applications processor, it integrates dual Arm® Cortex®-A55 cores, an Arm® Cortex®- M33 real-time core, and an optional Neural Processing Unit (NPU), enabling efficient edge AI acceleration and responsive system control.

Designed for **HMIs, vision-based systems, and intelligent gateways**, the Lino iMX93 simplifies development with on-module LPDDR4 memory, eMMC storage, and a versatile set of multimedia and industrial interfaces, all supported by Toradex's long-term software ecosystem.

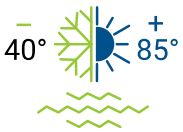
Optimized for Edge & Industrial IoT

Multimedia Support for HMI



Ultra-compact Small Form Factor

Optimized for Edge AI and Vision



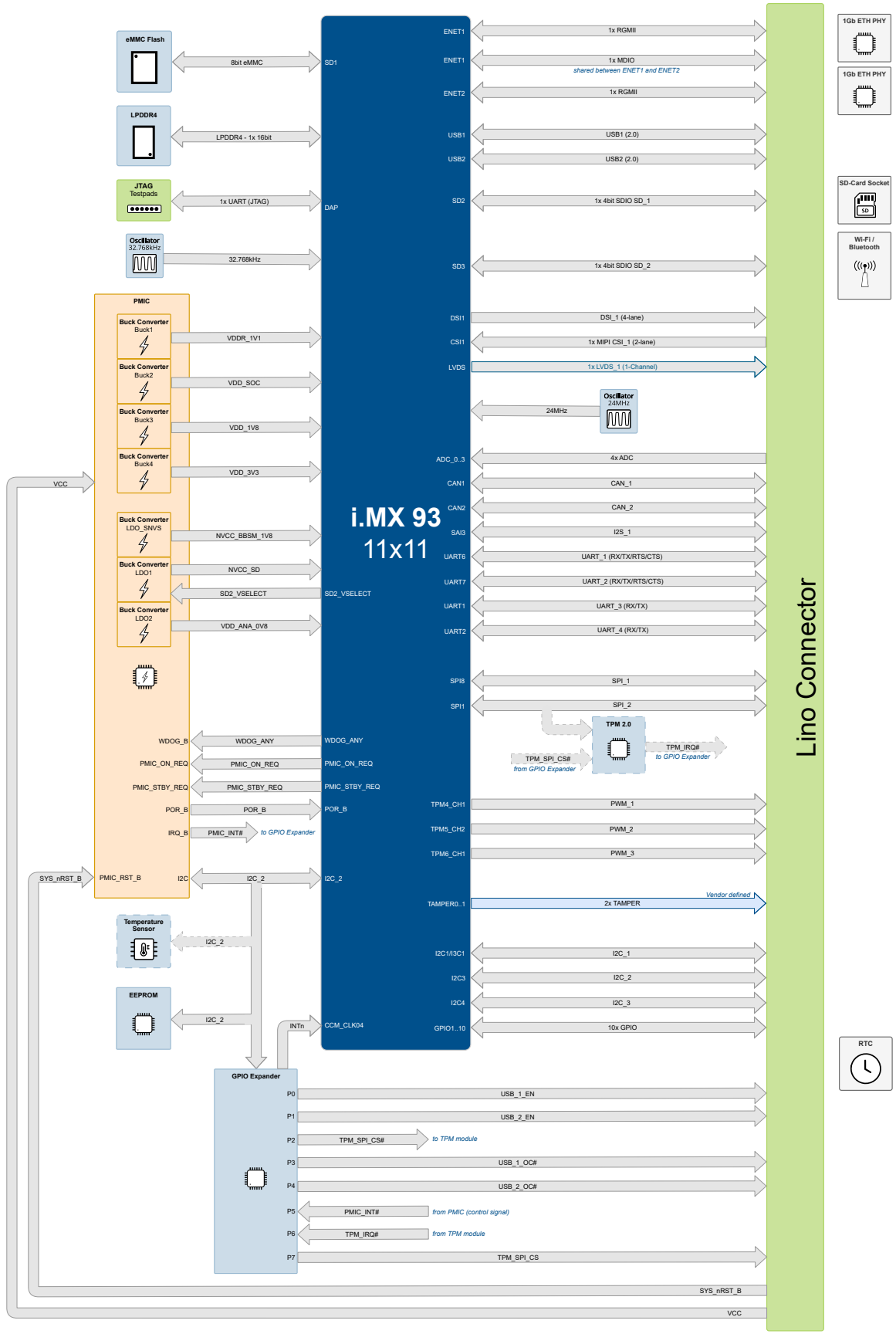
Industrial Reliability

The table below summarizes the main interfaces and configuration options of the Lino iMX93.

Features	Total (up to)	Always compatible	Reserved	Module specific or Alternate Function
Analog				
Analog Input (ADC)	4		4	
Audio				
I2S	1		1	
Camera				
MIPI CSI-2	1		1	
Display				
MIPI DSI	1		1	
LVDS (dual channel)	1			1
Low speed				
I2C	3	3		
I3C	2			2 - alt
SPI	2	1	1	
UART (2-wire)	4	3	1	
UART (RTS/CTS signals)	2		2	
PWM	3	3		
CAN FD	2		2	
GPIO	10	10		~TBD - alt
Network				
RGMII (Gigabit Ethernet)	2	1	1	
Storage				
SD/SDIO/MMC	2	1	1	
USB				
USB 2.0 OTG	1	1		
USB 2.0 Host	1	1		

Contact us for more information, or visit our website product page: [Lino iMX93 product page.]

Block Diagram



Legend

- Solid gray line arrow: always available
- Solid blue line arrow: available on MSP pins
- Dashed gray line arrow: assembly option
- Blue arrow: vendor defined

- Connector — System-on-Module connector
- PMIC — Power Management IC (PMIC)
- Component — Built-in component
- Component — Built-in component - assembly option
- Component — Not on module
- SoC — System-on-Chip

Lino iMX93 Product Brief

Configuration Overview

The Lino iMX93 SoM delivers scalable performance for industrial and IoT applications that require advanced multimedia and edge AI capabilities, all within a compact 30 × 30 mm PCB footprint ideal for space-constrained designs. It offers flexibility through multiple configuration options for memory and storage, allowing developers to tailor the module to their specific system requirements.

The first configuration to be released is shown in the table below: Lino iMX93 Dual 2GB IT.

Family	iMX93 Segment	A-Core Qty	RAM	eMCC	TPM	Temperature
LIMX93	5	2	-2G	-16G	-N	-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	iMX93 Segment	A-Core Qty	RAM	eMCC	TPM	Temperature
LIMX93						

Configuration Inputs

iMX93 Segment	Description	A-Cores Qty	Max Frequency	DRR Speed	NPU
5	Full Featured with NPU	1/2	1.7 GHz	3.7 GT/s	Yes
3	Without NPU	1/2	1.7 GHz	3.7 GT/s	
0	Reduced	1/2	900 MHz	1.866 GT/s	

RAM Density	
-256M	256 MB
-512M	512 MB
-1G	1 GB
-2G	2 GB

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

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

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

Contact us for more information, or visit our website product page: Lino iMX93 product page.

Lino iMX93 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

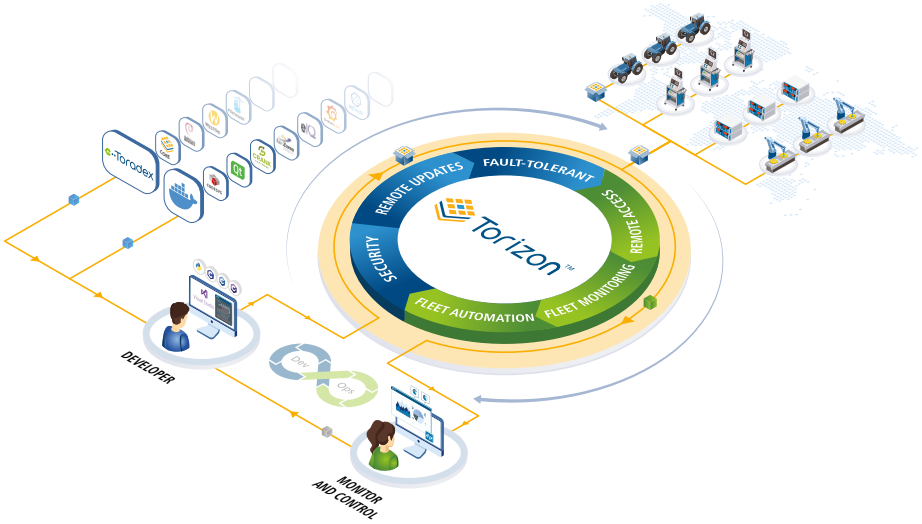
Device Monitoring

Subsystem Updates

Remote Access

Remote Updates

Secure by Default



To explore the full potential of the Torizon ecosystem, visit Torizon.io

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