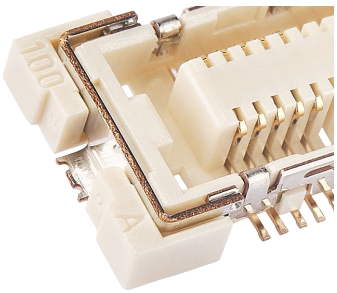
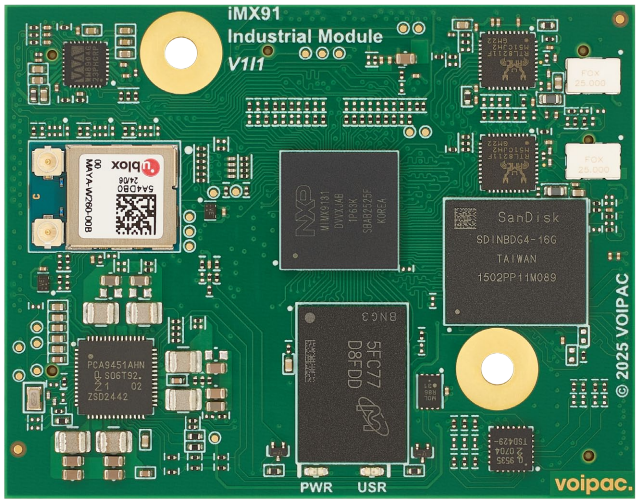
iMX91 Industrial Module

With a size of less than 2/3 of a credit card surface area, the brand-new iMX91 Industrial Module is targeting experienced development teams building **energy-focused and cost-optimized solutions**.
Its high efficiency is delivered without functionality sacrifice, providing an **exceptional thermal performance**, ideal for battery-powered applications where heatsink usage is not possible. The module has **3 pieces of robust, shielded and industrial-grade 100-pin connectors with a wide operating temperature range** providing remarkable peripheral availability. Its 2 convenient mounting holes with a wide diameter and clearance deliver an additional option for improving vibration immunity.



The baseboard mating connector is shielded all the way around.

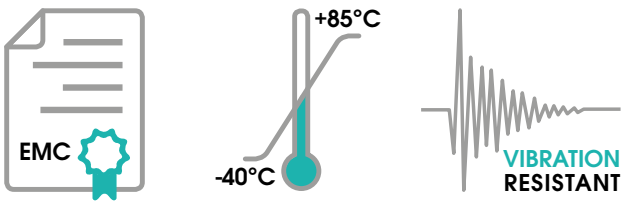


HARDWARE SPECIFICATION

CPU	NXP i.MX 91 ARM® Cortex®-A55, Solo, up to 1.4GHz
eMMC Flash	up to 64GB
LPDDR4-3733 SDRAM	up to 2GB, 1.866GHz
WiFi	on module, 802.11a/b/g/n/ac/ax 2.4 and 5GHz
Bluetooth	on module, Bluetooth 5.3 supporting LE Audio
Analog stereo audio	soldered on module
Ethernet	2x 10/100/1000 Mbps
I2C EEPROM	1Mbit
LED	User, Power
I/O voltage	3.3V, 1.8V
Input power	5V (DC)
Temperature range	Commercial 0°C to +70°C Extended -20°C to +85°C Industrial -40°C to +85°C
Mounting holes	2x with 3.1mm diameter, 7.8mm clearance
Dimensions	60 x 47 x 6.20mm
100-pin connector	3x with wide mating lenght, shielded
Compliance	Lead free, REACH / RoHS compliant

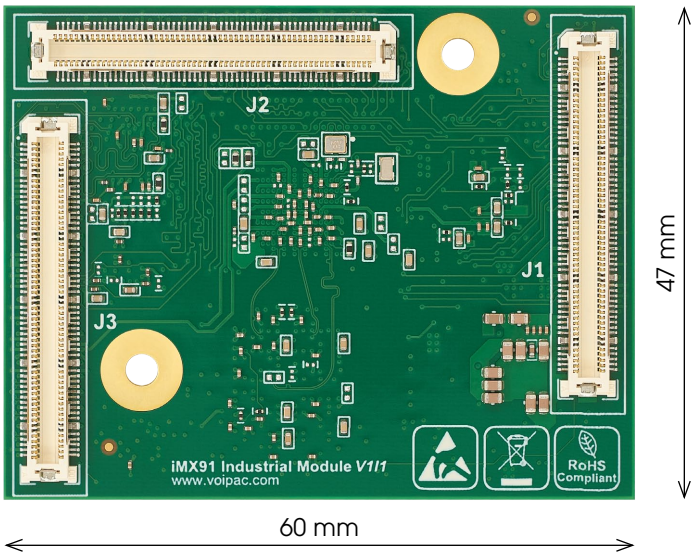
This highly integrated module is **a third member of growing family** of Voipac **cross-compatible** industrial COMs (Computers On Module) / SOMs (Systems On Module) that are **specially designed for use in the same peripheral-rich development environment**, enabling the newly designed system to be tuned for price and performance by a simple COM / SOM replacement.

With hundreds of pins available on low-density and wide mating length **connectors delivering outstanding high-speed signal integrity and providing robust power supply via multiple pins**, the module reveals the full performance potential of the NXP 800MHz / 1.4GHz i.MX 91 ARM® Cortex®-A55 processor. The CPU is tuned for **energy-sustainable performance** while providing enough processing power for the majority of embedded solutions. It also maintains pin-to-pin compatibility and preserves most of the industrial capabilities of the versatile i.MX 93 CPU, thus enhancing its scalability. All of these aspects combined makes this SOM an ideal solution for **power-efficient edge computing and cost-optimal IoT devices**.



voipac.

This scalable COM provides many of today's necessary peripherals of a standard embedded system like the energy-optimized i.MX 91 CPU, with up to 2GB LP-DDR4 RAM, up to 64GB eMMC NAND Flash, and USB. **Moreover, this embedded-tailored performance is combined with numerous industrial must-haves such as dual native CAN, dual Gigabit Ethernet, multi channel analog-digital converter (ADC) and plenty of robust UARTs, SPIs and I2Cs for reliable communication**. It also includes the essential high-speed and design-demanding interfaces soldered right on the COM, such as dual 1Gb Ethernet PHY, Analog Stereo Audio codec, I2C Serial EEPROM, and dual-band WiFi and Bluetooth module, to significantly reduce new product time-to-market.



The Computer On Module is suitable for conformal coating, and is **available in 3 standard webshop configurations that can be further customized to better match customers' specific performance and operating temperature range requirements**, helping to build competitive and cost-effective products.

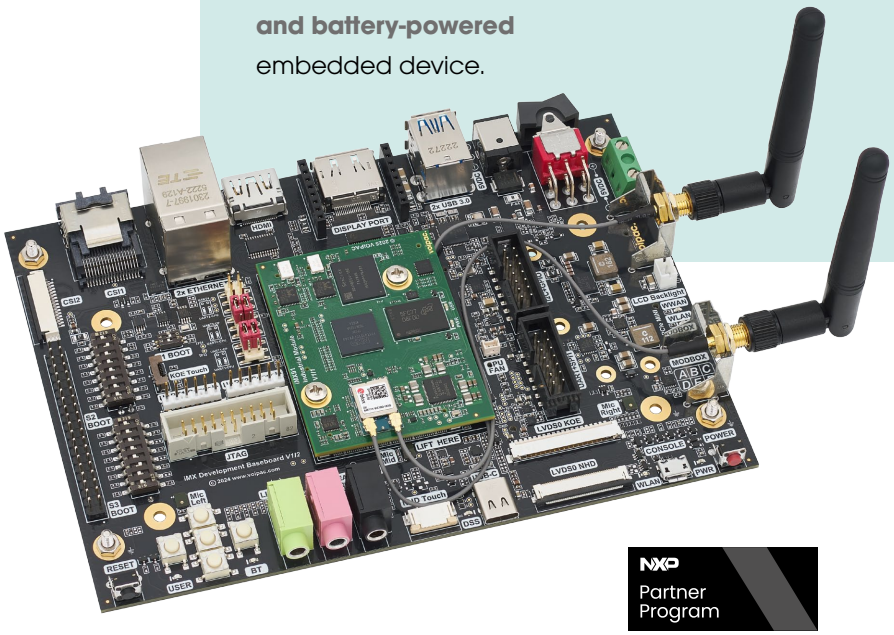
KEY FEATURES

24-bit parallel RGB/YUV display
8-bit parallel RGB/YUV video input
2x USB 2.0
2x 1000Mbit RGMII interface
WiFi 6 on module (802.11a/b/g/n/ac/ax 2.4 and 5GHz)
Bluetooth on module (Bluetooth 5.3 supporting LE Audio)
eMMC 5.1 Flash (8-bit), SD (4-bit)
2x CAN-FD
4-channel 12-bit analog-to-digital converter (ADC)
1x Octal SPI, 8x SPI
8x UART, 4x I2S, 2x I3C, 8x I2C
PDM mic, MQS output, SPDIF
SAI, GPIO and PWM
System signals: Reset IN/OUT, ON/OFF, 4x Boot mode, Power OK, User button
4x Clock OUT, 2x Tamper
JTAG

SUPPORTED SOFTWARE

Yocto 5.0 Scarthgap / Linux kernel 6.6 (preinstalled)
Debian 12 Bookworm (available upon request)

With Yocto Linux OS including driver support for all the COM's peripherals preinstalled on its eMMC Flash, **PDF schematic of the iMX91 Industrial Module**, complete Altium Designer project documentation of the peripheral rich **iMX Development Baseboard including Schematic, BOM and PCB files**, and well documented EMC, vibration, and climate chamber measurements, this development kit is a perfect solution for designers or system integrators looking for an acceleration of time-to-market of a **passive-cooled and battery-powered** embedded device.



NXP Partner Program

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