

A Ready-to-Deploy HMI Platform with Powerful NXP Edge Processing

Introducing our latest **Nitrogen Human Machine Interface (HMI)**, a robust and reliable solution engineered to meet the real-world demands of industrial environments. Proudly made in the USA, this HMI is equipped with the most widely used industrial interfaces, including RS485, CAN, and UART, ensuring seamless integration with a broad range of systems. With FCC, CE, and many other certifications already in place, our device is ready for global deployment, helping you speed time-to-market and simplify compliance. The Nitrogen HMI can support any of Ezurio's SMARC SOMs and is ideal fit for smart buildings, industrial automation, food and beverage equipment, and medical environments.

- **Pre-configured HMI Platform:** Ready to deploy 10.1" touch display, Nitrogen8M Plus SMARC SOM, a dedicated HMI carrier board, all enclosed in a rugged mechanical housing.
- **Powered by Nitrogen8M Plus SMARC:** Quad-core Cortex-A53 up to 1.8GHz, Cortex-M7 at 800MHz, with 2.3 TOPS NPU for edge AI, 1080p60 video, audio DSP, and optional Wi-Fi 6 or 6E + Bluetooth 5.4 connectivity.
- **I/O and Interface Flexibility:** Modified carrier board for key interfaces: CAN, RS485, serial, SPI, GPIO, USB, HDMI, and audio.
- **Display Size:** 10.1" touch-capacitive display with 1080p60 resolution. 7" and 15.6" touchscreens are available upon request. They are based on the same platform and can be supported through custom design.
- **HMI-Specific Carrier Board:** HDMI, DisplayPort, LVDS, MIPI display and camera support, dual GbE, USB, PCIe, and industrial I/O. Applicable to all Ezurio's SMARC SOMs.
- **KIT Configuration Available (-H4):** Ships with power supply and evaluation cables to allow for immediate out-of-box testing and streamlined system bring-up.
- **BOM Simplification:** Pre-integrated solution reduces sourcing complexity, eliminates multi-vendor headaches, and backed by Ezurio's commitment to 10+ year industrial lifecycles.
- **US Based Manufacturing:** Built in our ISO 13485 certified Irvine, California facility.
- **Diverse Software and Board Support Options:** Choose from Yocto Linux/Buildroot Linux/Android for Cortex-A53s, Zephyr RTOS/FreeRTOS for the Cortex-M7



Custom Industrial HMI Options:

- **Tailor Your HMI:** Build an HMI designed to your specification. Choose your processor, radio, display size, memory, enclosure, and more to match your application needs.
- **Hardware Upgrade Roadmap:** Easily choose and upgrade to the latest processors and wireless options as future Ezurio SOMs based on the SMARC standard are released:
 - High-End: Tungsten700 SMARC
 - Upper Mid-Range: Tungsten510 SMARC
 - Mid-Range: Nitrogen8M Mini SMARC
 - Value: Nitrogen93 SMARC
- **Future-Proof Design:** Maintain carrier, enclosure, and certifications while upgrading compute, connectivity, and memory.
- **White-Label & Branding:** Available for high-volume commercial, medical, and industrial applications.
- **Custom Solutions:** Work hand-in-hand with our team to enhance reliability, scalability, and reduce your time-to-market with a range of system-on-modules, wireless connectivity options, form factors, mounting styles and more.

Key Features



Connectivity with Optional Wi-Fi 6/6E and BT 5.4

Dual GB Ethernet, RS485, CAN, RS485, USB-A/C, HDMI, plus best-in-class Wi-Fi and BT Classic / LE connectivity



Display and Power

10.1" Touch-capacitive touchscreen with 24V DC power input. Also available in 7" and 15.6" upon request.



ML, Graphics, Camera, Vision, and Audio

2.3 TOPS Machine Learning/Neural Processing Unit, up to 1200p60 or 4Kp30 displays, 2 MIPI-CSI camera interfaces, dedicated Image Signal Processing up to 12 MP, HiFi4 audio DSP



Memory

4GB LPDDR4 and 16GB eMMC

Application Areas



Digital Signage



Food and Beverage



Industrial Automation



Smart Buildings and Smart Cities



Medical Devices

Specification

CATEGORY	FEATURE	SPECIFICATION
Processors	Microprocessor	4x Cortex®-A53 cores @ up to 1.8 GHz
	Microcontroller	1x Cortex®-M7 core @ 800 MHz
	Graphics	GC7000UL with 2 shaders for 3D and GC520L for 2D
	Machine Learning	Neural Processing Unit (NPU) with 2.3 TOP/s
Memory	RAM	4GB (For custom sizes, please contact sales)
	Storage	16GB (For custom sizes, please contact sales)
Machine Learning	Neural Processing Unit	- Keyword detect, noise reduction, beamforming - Speech recognition (i.e. Deep Speech 2) - Image recognition (i.e. ResNet-50)
Vision	Camera	2x MIPI-CSI
Display	Touchscreen Display	10.1" Touch-capacitive display (BD101LCC3) with 1080p60 resolution
Audio	Audio Processing and I/O	Tensilica® HiFi 4 DSP, 1x 3.5mm audio connector (speaker and microphone)
Peripherals	Input/Output	2x USB 3.0 (type A) 1x USB 2.0 (type C) 1x HDMI 2x RJ45 gigabit Ethernet connectors 3x UART 5Mbit/s 2x CAN 5x I2C 2x SPI 14x GPIO - RS485
Optional Wireless Specification	Wi-Fi	Wi-Fi 6 or Wi-Fi 6E on request
	Frequency	Dual-Band 2.4GHz & 5GHz or Tri-Band 2.4GHz, 5GHz, & 6GHz
	Bluetooth	Bluetooth 5.4
Supply Voltage		12-24 V
Physical	Dimensions	249.4 x 170 x 41.9mm
Environmental	Temp Range	0°C to +60°C (I-Temp Options Available)
Miscellaneous	Lead Free	Lead-free and RoHS-compliant
Regulatory	Approvals	FCC/IC/CE/MIC/RCM (Optional Wi-Fi Radio)

For full specifications on the Nitrogen HMI, see datasheet (coming soon) on the [Nitrogen HMI product page](#).

Ezurio's products are subject to standard [Terms & Conditions](#).

Ordering Information

Part	Description
EZSMI-8MP-0416-00158-2-H4	Kit / HMI Carrier / Nitrogen8M Plus SMARC / 4GB Flash / 16GB Memory / Sona™ NX611 (antenna on back)
EZSMI-8MP-0416-00158-2-H2	HMI Carrier / Nitrogen8M Plus SMARC / 4GB Flash / 16GB Memory / Sona™ NX611 (antenna on back)
EZSMI-8MP-0416-00158-2-H3	HMI Carrier / Nitrogen8M Plus SMARC / 4GB Flash / 16GB Memory / Sona™ NX611 (with antenna bezel) – FUTURE OPTION

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