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

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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 +70°C
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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