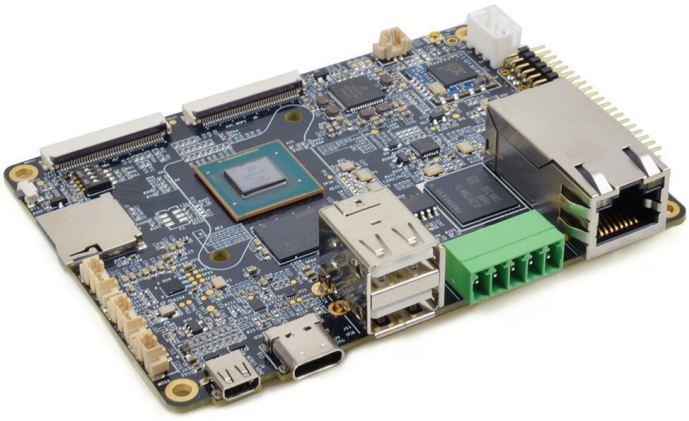
# EMB-2238

## EMBEDDED BOARD



## FEATURES

- NXP i.MX8M With Up To Four 1.5 GHz Cortex-A53 Processors
- One Cortex-M4 For Real-Time Requirements
- Gigabit Ethernet With Build-In PoE Option
- Smart Codec With Dual-Core DSP For Voice Control
- MIPI CSI & DSI For LCD Panel With I²C Touch Panel Support
- 20+ Audio Channel 32-bit @ 384KHz Input & Output
- Rich I/O With RS-232/485, I²C, GPIOs, USB 2.0 & 3.0 Ports

The EMB-2238 is a Pico-ITX industrial motherboard based on the NXP i.MX8M ARM application processor. It features a Power over Ethernet (PoE) ready Gigabit Ethernet port, dual-core hardware DSP for voice control, noise suppression, and echo cancellation, extensive high-performance digital audio inputs/outputs and full set of I/Os including RS-232/485. OS support includes Yocto built Embedded Linux, Ubuntu, Qt and Wayland, Amazon AVS (Alexa Voice Service) Device SDK, Sensory TrulyHandsfree Wake Word Engine and Android OS.

## SPECIFICATIONS

### SYSTEM

| | |
|---|---|
| Processor | NXP i.MX 8MQuad<br>4x ARM Cortex-A53 @ 1.5GHz<br>1x Arm Cortex-M4 @ 266MHz |
| Platform | ARM Cortex-A53 |
| Graphic Controller | GC7000L/GC7000LVX<br>Supports OpenGL/ES 3.1, OpenGL 3.0, Vulkan, OpenCL 1.2 |
| Memory | Onboard 2GB LPDDR4, Up To 4GB |
| OS | Embedded Linux (Kernel Version 4.9, Qt & Wayland)<br>Amazon AVS (Alexa Voice Service) Device SDK<br>Sensory TrulyHandsfree Wake Word Engine<br>Android 8.1.0 |
| Storage | Onboard iNAND Flash (8GB Default)<br>1x Micro SD Slot<br>265K EEPROM With Write Protect Control |

### DISPLAY

| | |
|---|---|
| Interface | 1x Micro HDMI |
| LCD Interface | 1x MIPI 4-Lane DSI for 7", 8", 10.1" & Other Size LCD Panel |
| Resolution | HDMI - Up To 4096 x 2160 @ 60Hz<br>MIP DSI - 1920 x 1200 |

### COMMUNICATIONS

| | |
|---|---|
| Ethernet | 1x 10/100 Mbps GbE With PoE Option<br>**Option:**<br>Second 10/100 Mbps PCIe GbE (Via PCIe Add-onn Card) |
| Wi-Fi/Bluetooth | 1x Wi-Fi/Bluetooth USB Module<br>802.11 b/g/n<br>Bluetooth 4.0 |

### I/O INTERFACE

| | |
|---|---|
| Audio | 1x Mono Class D Speaker Out, 2W(4Ω)<br>1x 40-pin FPC Expansion Header: 8 Channel Digital Audio Input & 8 Channel Digital Audio Output (SAI1) Interfaces With 32-bit @ 384 KHz Fs and TDM Support<br>1x SPDIF<br>1x QSPI |
| Voice Control | Dual Digital MEMS Microphone Header Via CS47L24 W/ Dual DSP<br>Support Multi-Mic Noise Suppression<br>Acoustic Echo Cancellation (AEC)<br>Omni-Directional Spatial<br>8 Channel Digital Audio/DMIC Inputs (SAI5) For MIC Array Via 40-pin Expansion Header |
| Ports | 1x RS-232/RS-485 Terminal Block<br>1x RS-232 Header<br>2x USB 2.0 Type A<br>2x USB 2.0 Header<br>1x USB 3.0 Type C OTG<br>4+ GPIO<br>2x I²C (For TP & MIPI CSI)<br>1x MIPI 4-Lane CSI |

### EXPANSION I/O

| | |
|---|---|
| Expansion | 1x 40-pin Connector With PCIe x1, GPIO, Font Panel Control, POE Power Input & 8 Channel Audio Inputs |

### MECHANICAL

| | |
|---|---|
| Watchdog Timer | Programmable Time System Reset |
| Form Factor | Embedded Pico-ITX Standard |
| Dimensions | 100mm x 72mm (3.94" x 2.83") |

### POWER

| | |
|---|---|
| Input Voltage | 5V DC Header Or PoE |

### ENVIRONMENTAL

| | |
|---|---|
| Operating Temp | 0°C to 60°C (32°F to 140°F) |
| Storage Temp | -40°C to 85°C (-40°F to 185° F) |
| Humidity | 5% to 95% @ 40°C (Non-Condensing) |

*Specifications are representative. Specific product technology may be different than indicated.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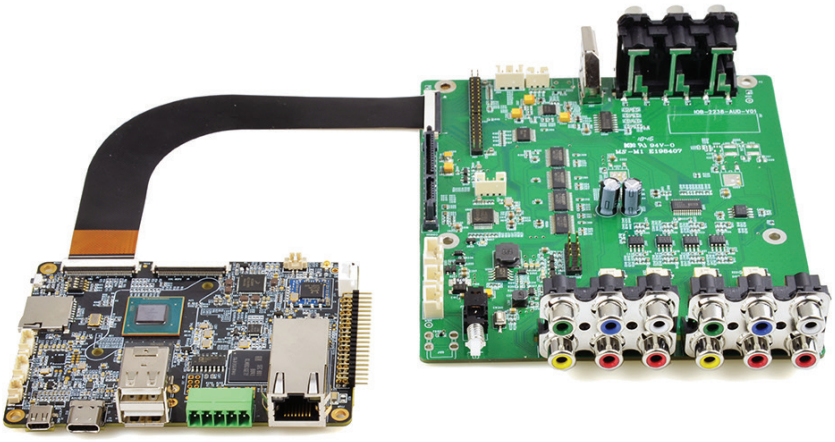

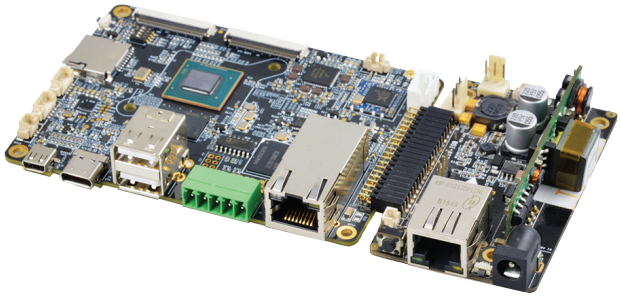

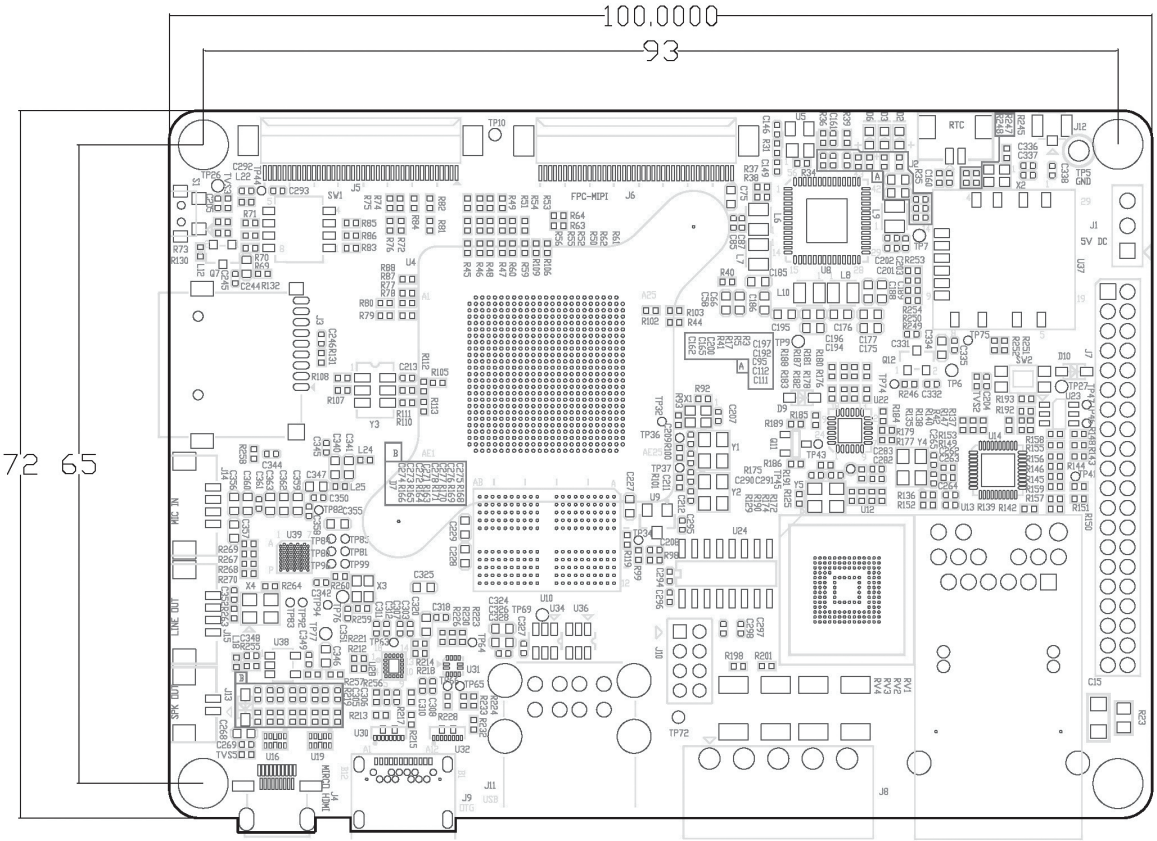


*Dimensions in mm

## ORDER OPTIONS

| PART NUMBER | DESCRIPTION |
|---|---|
| EMB-2238 | NXP i.MX8M Quad-Core With SIngle NIC |
| IOB-4210 | Second NIC Add-On Module With DC In |
| POE-4210 | PoE Add-On Module |
| PPC-4710 | 10.1" Touch Panel PC Development Kit With EMB-2238 |


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