



## EMX-H610P

Intel® 12th/13th Gen Core™ i9/i7/i5/i3/Pentium®/Celeron® Processor Mini ITX Motherboard with Intel® H610E Chipset

- > Intel® 12th/13th Gen Core™ i9/i7/i5/i3/Pentium®/Celeron® processor, Supports LGA 1700 CPU up to 125W Max
- > Intel® H610E Chipset
- > 2 x SODIMM up to 64GB Dual Channel DDR5 4800MHz
- > 2 x Intel® i226-LM 2.5 Gigabit controllers
- > Realtek ALC888S with Stereo Class D 2W 4Ω x2
- > 1x DP++, 1x HDMI 2.0b, 1x VGA, 1x 2CH LVDS or eDP
- > 2 x SATA III
- > 2 x USB 3.2 Gen 2, 2 x USB3.2 GEN 1 at I/O, 2 x USB 3.2 Gen 1 by pin header, 4 x USB 2.0 at I/O
- > 1 x PCIe x 16 Gen 5 (from CPU)
- > 1 x M.2 (2230) E-Key, supports WiFi module
- > 1 x M.2 (3042\_4G/3052\_5G/2242/2280) B-Key, with USB 3.0 & PCI-e x2 Gen 3 & SATA signal, support WWAN+GNSS (support 4G/5G) with Nano SIM card slot and SSD (default SATA)
- > 1 x RS232/422/485 via BIOS selectable I/O (COM1), 1 x RS232/422/485 via interface (COM2), 4 x RS232
- > 16-bits GPIO, support RAID 0, 1 ATX Power

### + Spec

-System Information-	
<b>Processor</b>	Intel® 12th Gen Core™ i9/i7/i5/i3/Pentium®/Celeron® Processor
<b>Platform Controller Hub</b>	Intel® H610E Chipset
<b>System Memory</b>	2 x SO-DIMM Up to 64GB Dual Channel DDR5 4800MHz
<b>I/O Chipset</b>	Nuvoton NCT6126D Ver.B (eSPI super IO)
<b>BIOS Information</b>	AMI uEFI BIOS, 256Mbit SPI Flash ROM
<b>Watchdog Timer</b>	H/W Reset, 5~255 seconds/5~255 minutes
<b>H/W Status Monitor</b>	CPU temperature monitoring Voltage monitoring CPU fan speed control
<b>Board</b>	Mini ITX Board
Expansion	
<b>Expansion</b>	1 x PCIe x 16 Gen 5 (from CPU) 1 x M.2 (2230) E-Key, support WiFi module 1 x M.2 (2280) M-Key, support PCIe x4 Gen 4 SSD (From CPU) 1 x M.2 (3042_4G/3052_5G/2242/2280) B-Key, with USB 3.0 & PCI-e x2 Gen 3 & SATA signals, support WWAN+GNSS (support 4G/5G) with Nano SIM card slot & SSD (default SATA)
I/O	
<b>USB Port</b>	4 x USB 3.2 Gen 1 at I/O 4 x USB 2.0 at I/O 2 x USB3.2 Gen1 by pin header
<b>COM Port</b>	1 x RS232/422/485 by BIOS selection at I/O (COM1) 1 x RS232/422/485 by BIOS selection by pin header (COM2) 4 x RS232(COM3-6) without DB9 (pin9 without Power)
<b>SATA</b>	2 x SATA III
<b>DIO</b>	1 x 16-bit GPIO
Display	
<b>Graphic Chipset</b>	Intel® 12th Generation CPU Integrated
<b>Spec. &amp; Resolution</b>	VGA: 2048 x 1536@60 Hz DP: 4096 x 2304@60Hz / 5120 x 3200@60Hz HDMI 2.0b: 4096 x 2304 @60Hz LVDS: 1920 x 1080@60Hz Dual channel 18/24-bits LVDS (Chrontel CH7513A-BF eDP to LVDS) Or 1 x eDP 1920 x 1080@60Hz (2 Lanes)
<b>Multiple Display</b>	3 independent Displays
<b>LVDS</b>	Dual channel 18/24-bits LVDS (Chrontel CH7513A-BF eDP to LVDS) Or 1 x eDP 1920 x 1080@60Hz (2 Lanes)
Ethernet	
<b>LAN Chipset</b>	2 x Intel® i226-LM 2.5 Gigabit Controller
<b>LAN Port</b>	2 x 2.5 Gigabit Ethernet
Mechanical & Environmental	
<b>Operating Temperature</b>	0~60°C (32~140°F)
<b>Storage Temperature</b>	-40 ~ 75°C
<b>Operating Humidity</b>	40°C @ 95% Relative Humidity, Non-condensing
<b>Weight</b>	0.60 kg TBC
<b>Power Requirement</b>	+12V / +5V / 5VSB /+3.3V /-12V
<b>ACPI</b>	Single power ATX Support S0, S3, S4, S5
<b>Power Mode</b>	AT / ATX mode Switchable Through Jumper
<b>Dimension (L x W)</b>	6.7" x 6.7" (170mm x 170mm)
Ordering Information	
<b>Ordering Information</b>	EMX-H610P Intel® 12th Gen Core™ i9/i7/i5/i3/Pentium®/Celeron® Processor