



## EMX-ADLP

### 12th Gen Intel® Core™ SoC i7/i5/i3 & Celeron BGA Processor Mini ITX Motherboard

- > Onboard 12th Gen. Intel® Core™ SoC i7/i5/i3 & Celeron® BGA Processor
- > 2 x 262-pin DDR5 4800MHz SO-DIMM supports up to 64GB (non ECC only)
- > 2 x DP++, 2 x DP, 1 x LVDS, 1 x eDP (Maximum: 6 for quadruple independent displays)
- > 3 x Intel® I225LM co-lay I226LM 2.5 Gigabit Ethernet
- > 1 x Intel® I219LM Gigabit Ethernet PHY
- > Realtek ALC888S
- > TI TPA3113D2PWP Stereo Class-D 6W x2 Audio Amplifier
- > 1 x M.2 Type B 3042/3052 (with 1 x PCIe x1 (default), USB2.0, USB 3.2 Gen2 with 1 x SIM card slot support WWAN+GNSS
- > 1 x M.2 Key E 2230 support Wi-Fi module and CNVi (1 x PCIe x1 & USB 2.0 Signal)
- > 1 x M.2 Key B 2242 (SATA Signal, shared with SATA2) slot support SSD storage
- > 1 x M.2 Key M 2280 (PCIe x4) slot for storage NVMe SSD
- > H-series: 1 x PCIe x8 Gen 4 slot (with Redriver mux (DS160PR421 3.2US x1 & DS160PR412 3.2US x1))
- > P/U-series: 1 x PCIe x4 Gen 4 slot (with Redriver mux (DS160PR421 3.2US x1 & DS160PR412 3.2US x1))
- > GPIO 16bit
- > Onboard NuvoTon NPCT754AADYX support TPM 2.0
- > Support Line-out & Mic-in & Front audio pin-header
- > DC in +12V~24V

#### + Spec

-System Information-	
<b>Processor</b>	Onboard Alder Lake-P 12th Intel® Core™ SoC i7/i5/i3/Celeron Processor (TDP: 15~45W) H-Series: 25~45W, P-Series: 20~28W, U-Series: 12~15W
<b>System Memory</b>	2 x 262-pin DDR5 4800 MHz SO-DIMM supports up to 64GB (non ECC only)
<b>I/O Chipset</b>	EC iTE IT5782VG MAX3243 for RS232, MAX13487 Transceiver & SP485 IC for RS422/485
<b>BIOS Information</b>	AMI uEFI BIOS, 256Mbit SPI Flash ROM
<b>Watchdog Timer</b>	H/W Reset: 1sec. ~ 65535sec./min. and 1sec. or 1min./step
<b>H/W Status Monitor</b>	CPU temperature monitoring Voltages monitoring CPU fan speed control
<b>TPM</b>	Onboard NuvoTon NPCT754AABYX support TPM 2.0
Expansion	
<b>Expansion</b>	* 1 x M.2 Type B 3042/3052 (with 1 x PCIe x1 (default), USB2.0, USB 3.2 Gen2 with 1 x SIM card slot support WWAN+GNSS * 1 x M.2 Key E 2230 support Wi-Fi module and CNVi (1 x PCIe x1 & USB 2.0 Signal) * 1 x M.2 Key B 2242 (SATA Signal, shared with SATA2) slot support SSD storage * 1 x M.2 Key M 2280 (PCIe x4) slot for storage NVMe SSD * H-series: 1 x PCIe x8 Gen 4 slot (with Redriver mux (DS160PR421 3.2US x1 & DS160PR412 3.2US x1)) * P/U-series: 1 x PCIe x4 Gen 4 slot (with Redriver mux (DS160PR421 3.2US x1 & DS160PR412 3.2US x1))
I/O	
<b>USB Port</b>	2 x USB3.2 Gen2, 2 x USB 3.0 Gen2 at I/O 4 x USB2.0 by pin header
<b>COM Port</b>	4 x RS232 2 x RS422/485
<b>SATA</b>	1 x SATA Power 2 x SATA III
<b>DIO</b>	1 x 16-bit GPIO
Display	
<b>Graphic Chipset</b>	Intel® Iris® Xe Graphics (For Core i5 & i7) Intel® UHD Graphics for 12th Gen Intel® Processors (For Core i3 & Celeron)
<b>Spec. &amp; Resolution</b>	DP1+DP3 (DP1.4): Max: 7680 x 4329@60 Hz DP2+DP4 (DP1.4): Max: 7680 x 4329@60 Hz Single DP port (2021/2 Lab test): 5120 x 2160 @60 Hz, check Max: 7680 x 4329@60 Hz Intel resolution as below: 2 x DP++ : 1920 x 1080@60 Hz 2 x DP: 4096 x 2304@60 Hz LVDS: 1920 x 1080 Dual channel 18/24-bits LVDS (Chrontel CH7511B eDP to LVDS) eDP 4096 x 2304@60 Hz *2 x DP++, LVDS, eDP Default (Thin Mini ITX), Optional: DP3 and DP4 for full height (Maximum: 6 for quadruple independent displays)
<b>Multiple Display</b>	2 x DP++/2 x DP/1 x LVDS/1 x eDP (Maximum: 6 for quadruple independent displays)
<b>LVDS</b>	2CH 18/24bits LVDS 1920 x 1080 Chrontel. CH7511B eDP to LVDS Converter
Audio	
<b>Audio Codec</b>	Realtek ALC888S
<b>Audio Interface</b>	Support Line-out & Mic-in & Front audio pin-header
<b>Audio Amplifier</b>	2 x Stereo Class-D 6W Audio Amplifier
Ethernet	
<b>LAN Chipset</b>	3 x Intel® i226LM 2.5 Gigabit Ethernet (LAN2~4) 1 x Intel® i219LM Gigabit Ethernet PHY

<b>Ethernet Interface</b>	*LAN3~4 for Full height 10/100/1000 Base-Tx GbE compatible
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<b>LAN Port</b>	4 x RJ45
<b>Mechanical &amp; Environmental</b>	
<b>Operating Temperature</b>	0~60C (32~140°F) w/HDD/SSD, ambient with 0.5 m/s Air flow
<b>Storage Temperature</b>	-40 ~ 75°C (-40 ~ 167°F)
<b>Operating Humidity</b>	40°C @ 95% Relative Humidity, Non-condensing
<b>Weight</b>	0.88lbs (0.4Kgs)
<b>Power Requirement</b>	+12V~24V
<b>Power Mode</b>	AT/ATX
<b>Dimension (L x W)</b>	6.69" x 6.69" (170mm x 170mm)
<b>Software Support</b>	
<b>OS Information</b>	Win11 64bit, Win10 64bit Linux
<b>Ordering Information</b>	
<b>Ordering Information</b>	EMX-ADLP-U15-A1R (Core i3-1215UE Thin, 2DP/2LAN) EMX-ADLP-U45-A1R (Core i5-1245UE Thin, 2DP/2LAN) EMX-ADLP-P20-A1R (Core i3-1220PE Full, 4DP/4LAN) Intel® 12th Gen. Core™ SoC i7/i5/i3 & Celeron® BGA Processor Mini ITX Motherboard