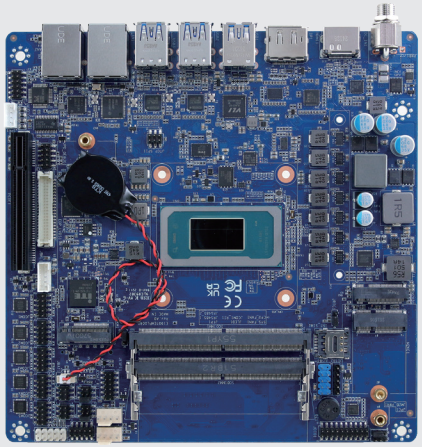
EMX-PTLP

Onboard Intel® Core™ Ultra BGA processor (Series 3),
Thin Mini ITX Motherboard supports TDP 25W



Features

- Intel® Core™ Ultra processor (Series 3) Series
- 2 x 262-Pin DDR5 (H404) 6400MHz, (H484 & 12Xe) 7200MHz SoDIMM/CSoDIMM Socket Supports Up to 64GB
- 3 x DP (2 from Type C), 1 x HDMI, 1 x LVDS/eDP
- 1 x PCIe x8 Gen5 (H484 4Xe only)
- 1 x Intel® I210AT, 1 x Intel® I226LM
- 4 x USB 3.2 Gen2 x1, 3 x USB 2.0
- 2 x M.2 Type M, 1 x M.2 Type B, 1 x M.2 Type E
- 2 x USB Type C, 5V@3A, supports USB3.2 Gen2 and DP
- DC in +12V~24V
- 5 x COM

HDMI · DP · DDR5 SO-DIMM · USB 3.2 · Type C

Specifications

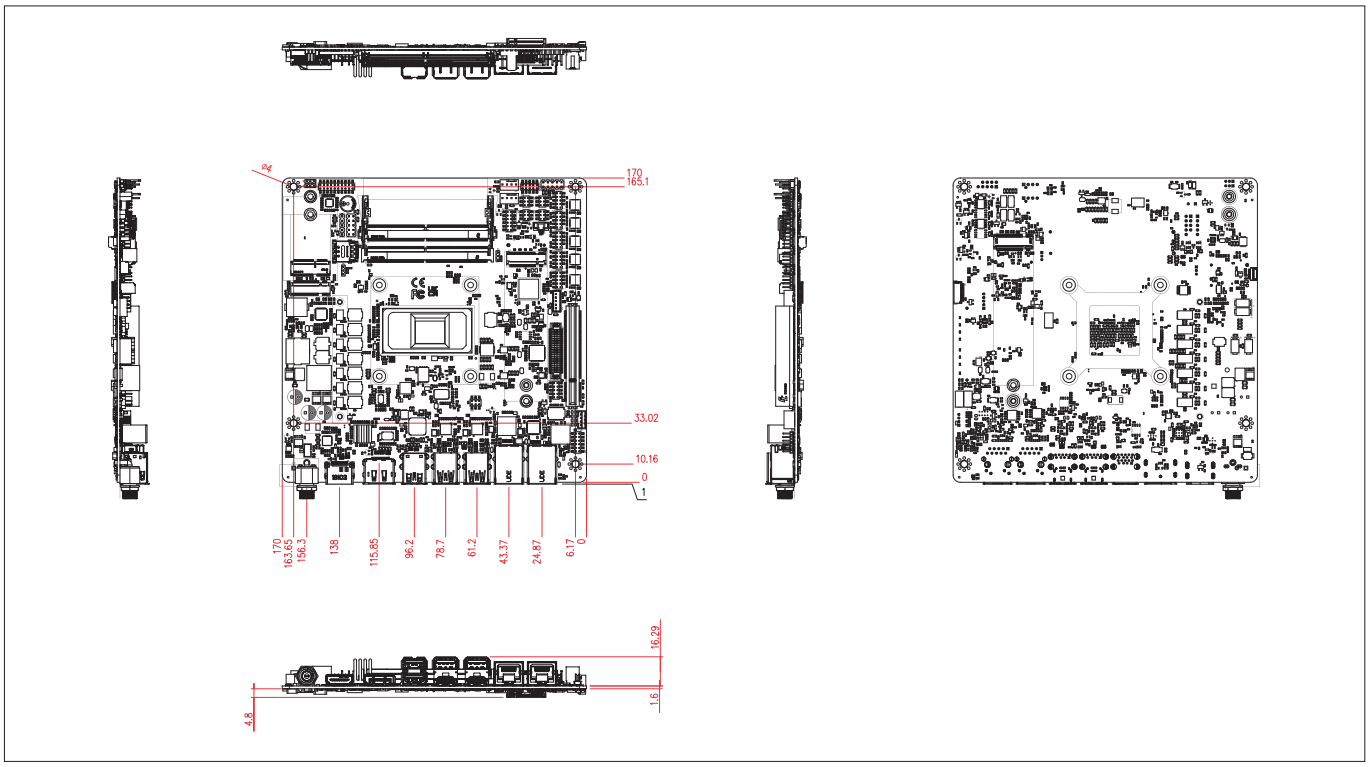
System Information	
Processor	Intel® Core™ Ultra Series 3 processors, BGA 2540 Intel® Core™ Ultra 5 325, 8C8T, 12MB, 2.1GHz (4.5GHz), TDP up to 25W Intel® Core™ Ultra 7 356H, 16C16T, 18MB, 1.9GHz (4.7GHz), TDP up to 25W Intel® Core™ Ultra X7 358H, 16C16T, 18MB, 1.9GHz (4.8GHz), TDP up to 25W
System Memory	2 x 262-Pin DDR5 (H404) 6400MHz, (H484 & 12Xe) 7200MHz SoDIMM/CSoDIMM Socket Supports Up to 64GB
I/O Chipset	uBMC IT5792 or equivalent for remote out-of-band management and IPMI support.
Watchdog Timer	H/W Reset: 1Sec. ~ 65535Sec./Min. and1 Sec. or 1Min./Step
BIOS	AMI uEFI BIOS, 256Mbit SPI Flash ROM
H/W Status Monitor	CPU Temperature Monitoring Voltage Monitoring CPU Fan Speed Control
TPM	Onboard nuvoTon NPCT760AABYX (7.2.3.1) support TPM 2.0
Board	Thin Mini ITX
Expansion	
Expansion	1 x PCIe x8 Gen5 (H484 4Xe only) 1 x M.2 Type B 2242/3042/3052 (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 M 2280 (PCIe x4 Gen5) Slot for Storage NVMe SSD 1 x M.2 Key M 2280 (PCIe x4 Gen4) Slot for Storage NVMe SSD
Display	
Graphic Chipset	Intel® Xe LPG Graphics
Spec. & Resolution	1 x HDMI 2.1: 7680 x 4320 @60Hz 1 x DP1.4a: Max: 7680 x 4320@60Hz 2 x USB Type C supports 3840 x 2160@60Hz LVDS: 1920 x 1080 Dual channel 18/24-bits LVDS (Chrontel CH7511B eDP to LVDS) or eDP1.4: Max 1920x1080 60Hz (2 Lanes)
Multiple Display	2 x DP, 2 x HDMI, 1 x LVDS, 1 x eDP (Maximum: 6 for Quadruple Independent Displays)
LVDS	1 x Dual Channel 18/24-bits LVDS (Chrontel CH7513 eDP to LVDS)

Audio	
Audio Codec	Realtek ALC888S HD Audio Decoding Controller
Audio Interface	Support MIC-in, Line-out, Line-in via internal connector
Audio Amplifier	Audio Amplifier Output: Up to 4Vrms / 2W (at 36dB Gain) Note: BIOS Default Gain is set to 20dB. To achieve the full 4Vrms / 2W output, please adjust the gain to 36dB in Expert Mode.
Ethernet	
LAN Chipset	1 x Intel® i210AT Gigabit Ethernet Controller 1 x Intel® i226LM 2.5 Gigabit Ethernet Controller
Ethernet Interface	10/100/1000 Base-Tx GbE compatible & 2.5 Gigabit Ethernet
LAN Port	2 x RJ-45
Power Requirement	
DC Input	12 ~ 24V
Software Support	
OS	Windows 11 LTSC Linux
Certification	
Certification Information	CE, FCC, RoHS Compliant
I/O	
USB	2 x USB Type C, 5V@3A 4 x USB 3.2 Gen2 x1 3 x USB 2.0
COM Port	3 x RS232 (JCOM1 ~ JCOM3) 2 x RS422/485 (JCOM1 and JCOM2, need to modify BIOS Setup settings and change pin header & cable)
DIO	1 x 16-bit GPIO
Mechanical & Environmental	
Operating Temp.	Intel@ Commercial Temperature CPU SKU support: 0 ~ 55°C **w/HDD/SSD, ambient with 0.5 m/s Air flow
Storage Temp.	-40 ~ 75°C (-40 ~ 167°F)
Operating Humidity	40°C @ 95% Relative Humidity, Non-condensing
Weight	Shipping w/o cooler: 0.603lbs (0.27kgs)
Power Requirement	DC in +12V~24V
Power Mode	AT/ATX (Default Setting: ATX)
Dimension (L x W)	6.7" x 6.7" (170mm x 170mm)

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Mechanical Drawing



Ordering Information

P/N	Processor	Chipset	LAN	USB	COM	PCIe Slot	Power Input	Temp.
EMX-PTLP-325-A1R	Intel® Core™ Ultra 5 Processor 325/25W	NA	2	9	5	0	DC in +12V~+24V	0°C ~ 55°C (32 ~ 131°F)
EMX-PTLP-356H-A1R	Intel® Core™ Ultra 7 Processor 356H/25W	NA	2	9	5	1	DC in +12V~+24V	0°C ~ 55°C (32 ~ 131°F)
EMX-PTLP-358H-A1R	Intel® Core™ Ultra X7 Processor 358H/25W	NA	2	9	5	0	DC in +12V~+24V	0°C ~ 55°C (32 ~ 131°F)

Packing List

Item	P/N	Quantity
EMX-PTLP motherboard	-	1
I/O shield	-	1

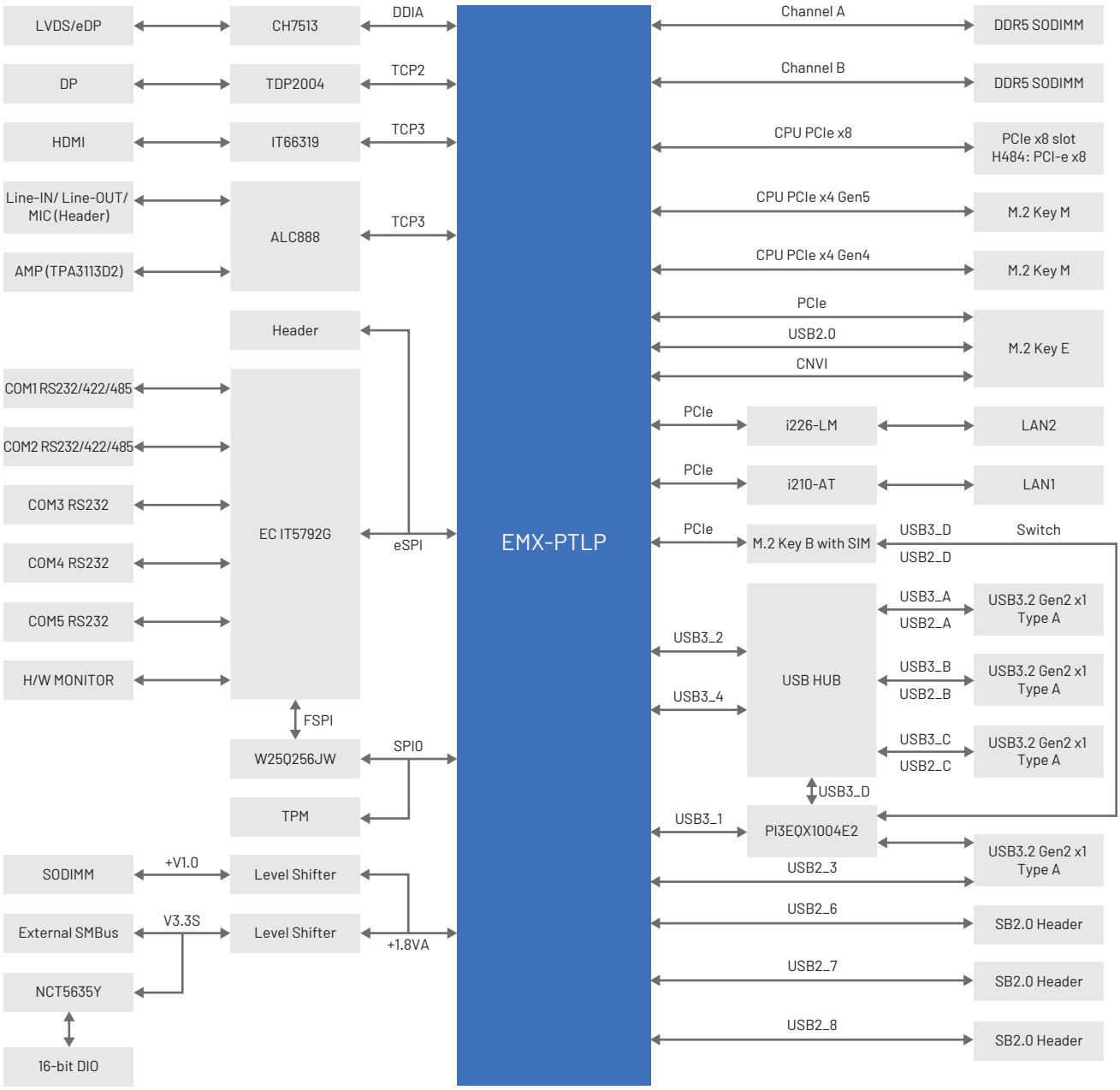
Optional Items

Item	P/N
CPU cooler	E19611214500012R

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Block Diagram



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I/O Overview

