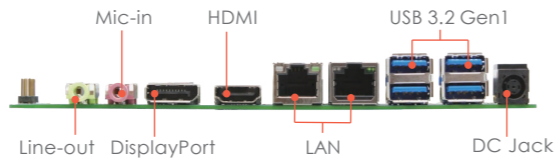
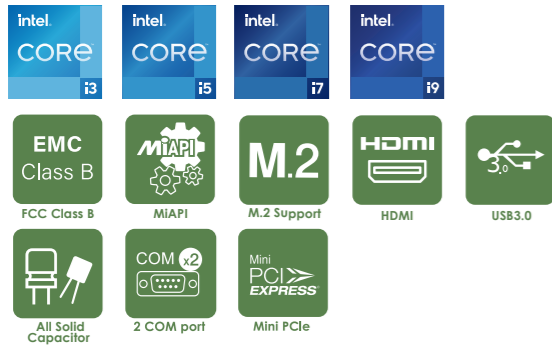
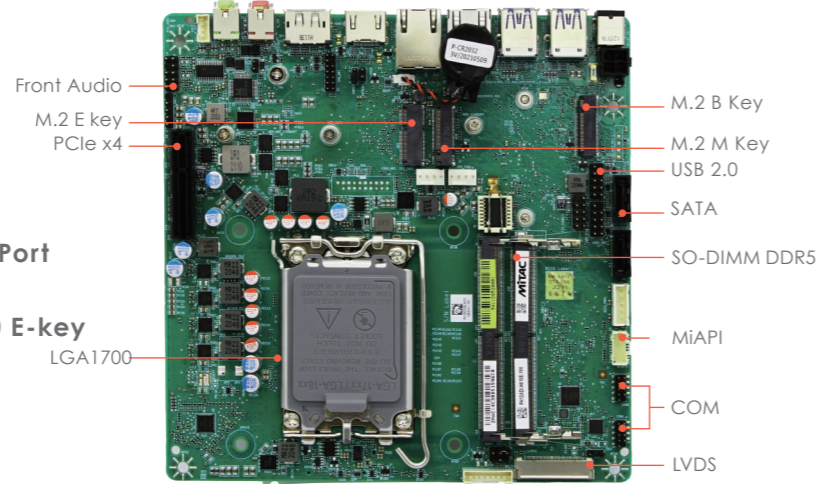


# PH12ADI

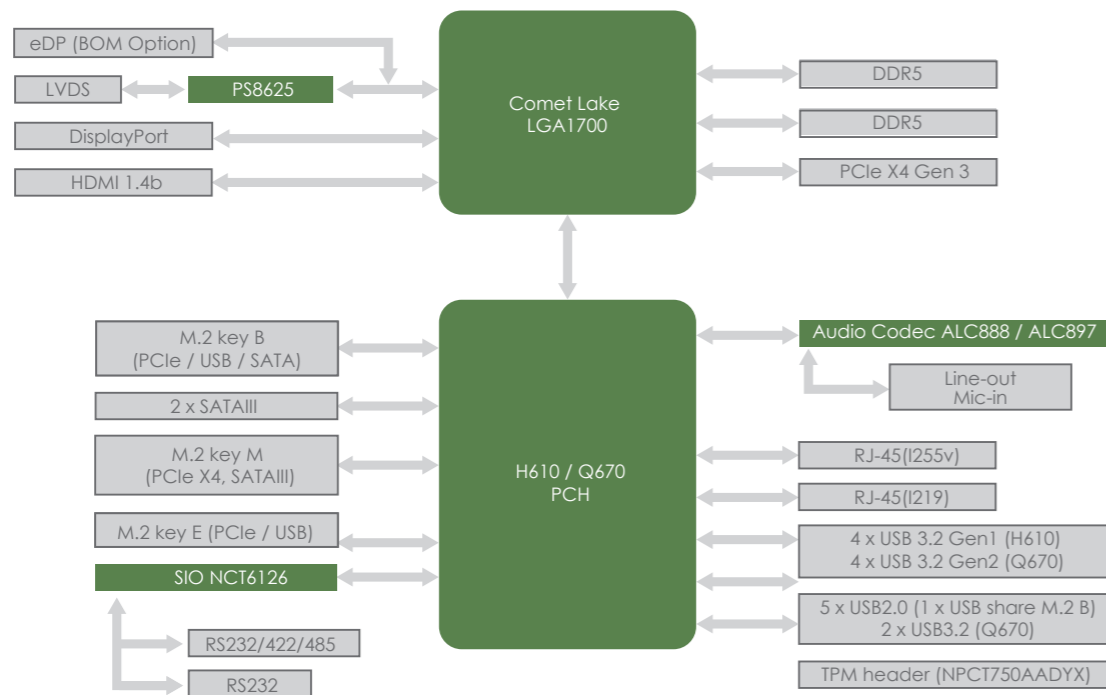
Thin Mini-ITX Form Factor  
Intel® 13th/12th Processor with H610/Q670 Chipset

## Features

- Intel® Raptor Lake-S 13th/Alder Lake-S 12th i9/i7/i5/i3 65W processor
- Intel® H610 / Q670 Chipset
- Intel® vPro technology support (Q670)
- 2x DDR5 SO-DIMM up to 64GB
- Support triple display for HDMI, DisplayPort and LVDS/eDP
- 1x M.2 2280M-key (NVME), 1 x M.2 2230 E-key (CNVi), 1 x M.2 3042 B-Key, 1 x PCIe X4
- 1 x Intel® 2.5Gigabit Ethernet, 1 x Intel® Gigabit Ethernet
- DC-in 12V / 19V



## Block Diagram



# PH12ADI Thin Mini-ITX

MECHANICAL	
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
SYSTEM	
Processor	13th/12th Gen Intel® Raptor Lake-S/Alder Lake-S LGA1700 Socket Processor / Core i9/i7/i5/i3 Processor / TDP 65W
Chipset	Intel® H610 / Q670
Memory	DDR5 4800 MHz / 2 x 262-pin SO-DIMM / Max. 64GB (Non-ECC) Horizontal (support 5200MHz on Raptor Lake s)
Graphics	Intel® UHD Graphics 770
Ethernet	Intel® I219-LM Giga LAN + Intel® I225V 2.5 Giga LAN
Audio	Realtek® ALC888 Co-Lay ALC897
I/O Chipset	Nuvoton NCT6126D (eSPI)
TPM	TPM Header / (support optional TPM module board NPCT750)
Expansion Slot	1x PCIe x4 slot Gen3 open end (not support x16 graphic card) 1x M.2 2242 / 2280 M key (PCIe X4, SATA) 1x M.2 2230 E key (PCIe, USB 2.0, CNVi) 1x M.2 3042 B key (USB, PCIe, SATA)
BIOS	AMI BIOS, 256 Mbit SPI
H / W Monitor	Temperature Monitor, Voltage Monitor, Fan Monitor
Watchdog Timer	1 ~ 255 Steps by Software Program
Smart Fan Control	CPU Fan / System Fan
GRAPHICS	
VGA	—
DVI	—
HDMI	Up to 4K (4096 x 2160) @30 Hz
DisplayPort	Up to 4K (4096 x 2304) @60 Hz
LVDS	Up to 1920 x 1200 @60 Hz
eDP (Option)	Up to 4K (4096 x 2304) @60 Hz
REAR I/O	
USB	4 x USB 3.2 Gen1 (H610) / 4 x USB 3.2 Gen2 (Q670)
Display I/O	1 x HDMI 1.4, 1 x DisplayPort 1.2
Audio I/O	1 x Mic-in, 1 x Line-out
LAN I/O	2 x RJ-45
Serial Port	—
PS/2 Port	—
Others	DC-in 12V (2.5 mm / ID, 5.5 mm / OD) / DC-in 19V (5.1 mm / ID, 7.4 mm / OD)
INTERNAL CONNECTORS	
Storage	2 x SATAIII
USB	H610 & Q670: 5 x USB 2.0 (1 x USB share M.2 B) Q670: 2 x USB 3.2
Display I/O	1 x LVDS (Optional eDP SKU available) 1 x Backlight Connector
Audio I/O	1 x Stereo Speaker 2W
Serial Port	1 x RS232, 1 x RS232 / 422 / 485
PS/2 Port	—
Parallel Port	—
GPIO	1 x MiAPI Header (Programmable)
Fan	1 x 4-pin CPU Fan Connector / 1 x 4-pin System Fan Header
Power	12V DC in Jack (2.5mm / ID, 5.5mm / OD) colay 19V DC in Jack (5.1 mm / ID, 7.4 mm / OD) 1 x ATX-4pin Connector, Jumper: 1 x AT / ATX Mode Select
Others	1 x Front Audio Header (Mic-in / Line-out), 1 x CMOS Jumper, 1 x panel power select header, 1 x SATA power, 1 x FIO header, 1 x intrusion switch header, 1 x DMIC header, 1x buzzer header
POWER REQUIREMENT	
Power Input	DC-in 19V (5.1 mm / ID, 7.4 mm / OD) / ATX 4-pin 19V DC-in 12V (2.5 mm / ID, 5.5 mm / OD) / ATX 4-pin 12V
ENVIRONMENTAL	
Operating Temperature	0 ~ 60°C (32 ~ 140°F)
Storage Temperature	-40 ~ 85°C (-40 ~ 185°F)
Operating Humidity	10% ~ 95% R/H, non-condensing
Certification	CE & FCC Class B
OS	
OS Support	Windows® 11 64bit, Linux (support by request) ubuntu 20.04

## Ordering Information

Model Number	Chipset	DisplayPort	HDMI	LVDS / eDP	USB 3.2 / USB 2.0	RS232	Mic-in / Line out	LAN	M.2 2230 E key / M.2 2280 M key / M.2 3042 B key	PCIe X4	Power
PH12ADI-H610-19V	Intel® H610	1	1	1 / 0	4 / 5	2	1 / 1	2	1 / 1 / 1	1	DC-in 19V
PH12ADI-Q670-19V	Intel® Q670	1	1	1 / 0	6 / 5	2	1 / 1	2	1 / 1 / 1	1	DC-in 19V
PH12ADI-Q670-12V	Intel® Q670	1	1	1 / 0	6 / 5	2	1 / 1	2	1 / 1 / 1	1	DC-in 12V

## Packing List

Packing	• 1 x Mainboard	• 1 x SATA & SATA Power Cable	• 2 x I/O Bracket (Half and Full Height)
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