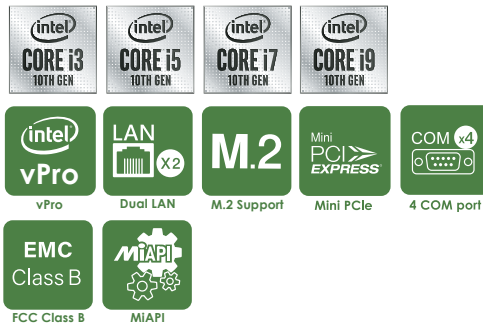
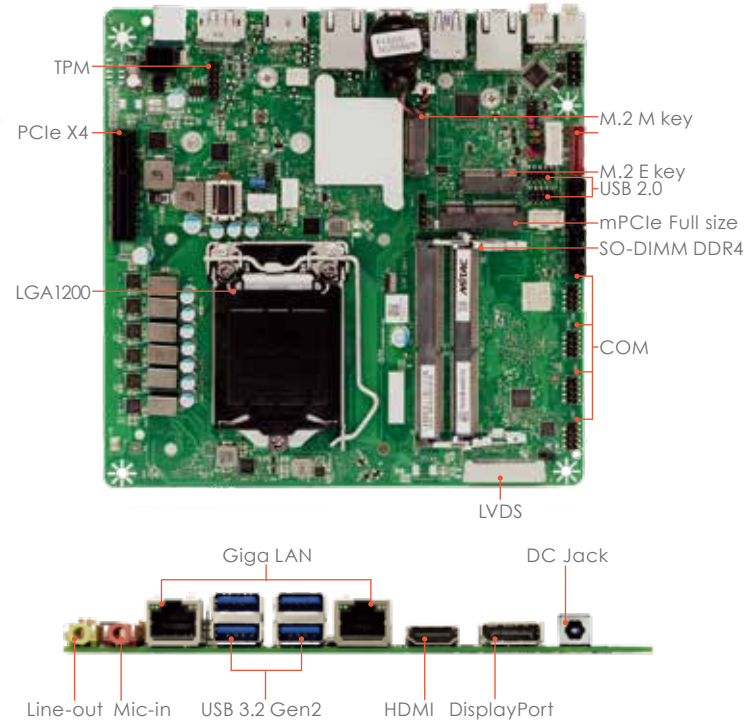


PH12CMI

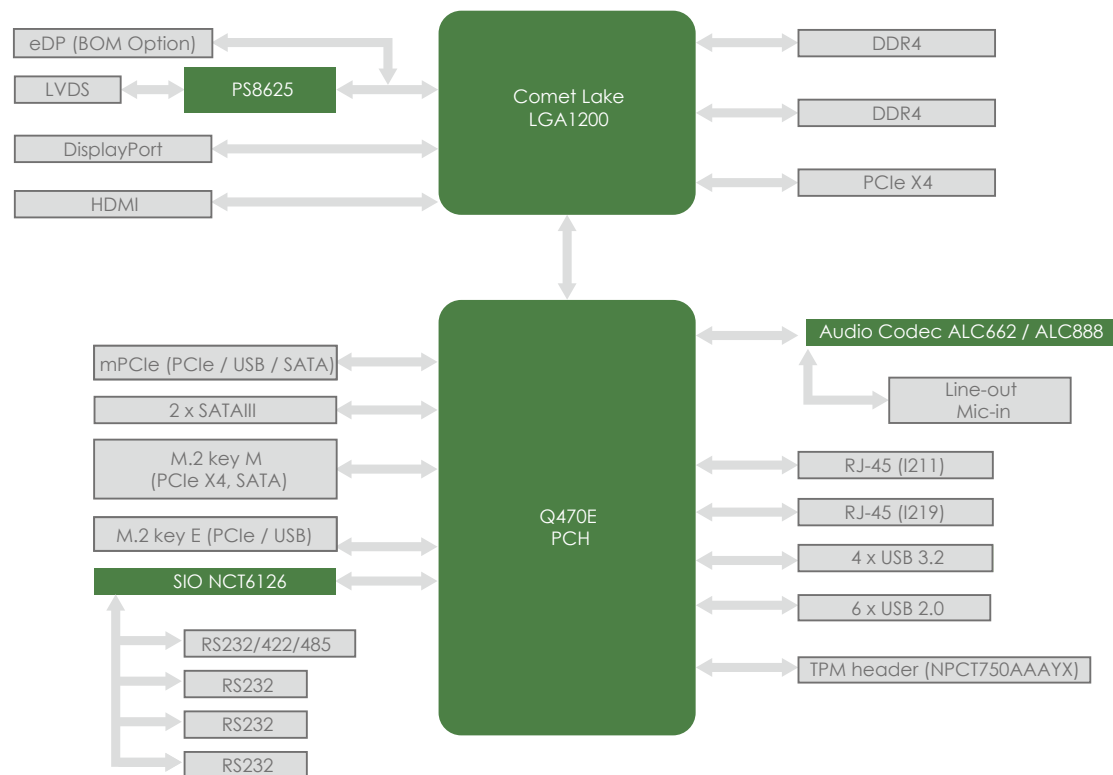
Thin Mini-ITX Form Factor
Intel® Comet Lake Processor with Q470E Chipset

Features

- Intel® Comet Lake 10th 65W(10cores) LGA processor
- Intel® Q470E Chipset
- Intel® vPro technology support (Q470E)
- 2 x DDR4 SO-DIMM up to 64GB
- Support triple display for HDMI, DisplayPort and LVDS / eDP
- 1 x M.2 M 2280, 1 x M.2 E 2230, 1 x mPCIe Full size, 1 x PCIe X4
- 2 x Intel® Gigabit Ethernet
- DC-in 12V / 19V



Block Diagram



PH12CMI Thin Mini-ITX

MECHANICAL	
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
SYSTEM	
Processor	10th Gen Intel® Comet Lake LGA1200 Socket Processor, 10core TDP Max 35W / 8ccore TDP 65W
Chipset	Intel® Q470E (Support RAID 0 / 1 / 5, VPro)
Memory	DDR4 2933/2666/2400MHz, 2 x 260-pin SO-DIMM, Max. 64GB (Non-ECC)
Graphics	Intel® HD Graphics
Ethernet	Intel® I219-LM Giga LAN + Intel® I211-AT Giga LAN
Audio	Realtek® ALC662 / ALC888
I/O Chipset	Nuvoton NCT6126D(eSPI)
TPM	TPM Header (support TPM module board PCT750)
Expansion Slot	1 x PCIe X4 slot Mini PCIe Full size (PCIe / USB / SATA) 1 x M.2 2242 / 2280 M key (PCIe X4, SATA) 1 x M.2 2230 E key (PCIe, USB 2.0)
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
2nd DisplayPort	—
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 Gen 2 (Q470E)
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 / 1 x SATA power header
USB	6 x USB 2.0 pitch 2.0mm
Display I/O	1 x LVDS (Optional eDP SKU available) 1 x Backlight Connector
Audio I/O	—
Serial Port	4 x RS232 pitch 2.0mm (one supports 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 Connector
Power	1 x ATX 4-pin Power Connector, 1 x AT / ATX Mode Select Jumper
Others	1 x Front Audio Header (Mic-in / Line-out), 1 x CMOS Jumper, 1 x panel power select header, 1 x backlight power select header, 1x buzzer header, 1 x Digital MIC
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® 10 64-bit Linux (support by request)

Ordering Information

Model Number	Chipset	DisplayPort / HDMI	LVDS / eDP	USB 3.2 / 2.0	Mic-in / Line-in	RS-232	LAN	M.2 2230 E key / M.2 2280 M key	PCIe X4	Power
PH12CMI-Q470-12V	Intel® Q470E	1 / 1	1 / 0	4 / 6	1 / 1	4	2	1 / 1	1	DC-in 12V
PH12CMI-Q470-19V	Intel® Q470E	1 / 1	1 / 0	4 / 6	1 / 1	4	2	1 / 1	1	DC-in 19V

Packing List

Packing	• 1 x Motherboard	• 1 x SATA & SATA Power Cable	• 1 x I/O Bracket (Full Height)
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