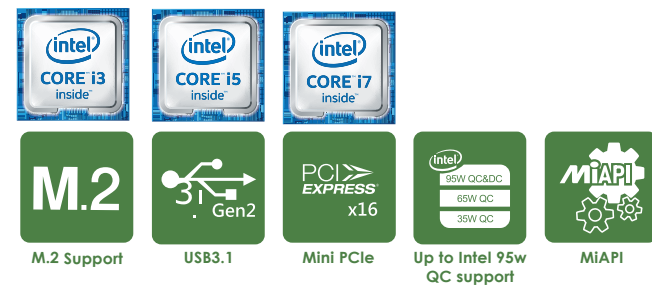
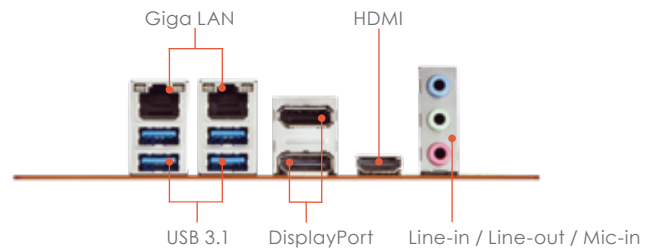
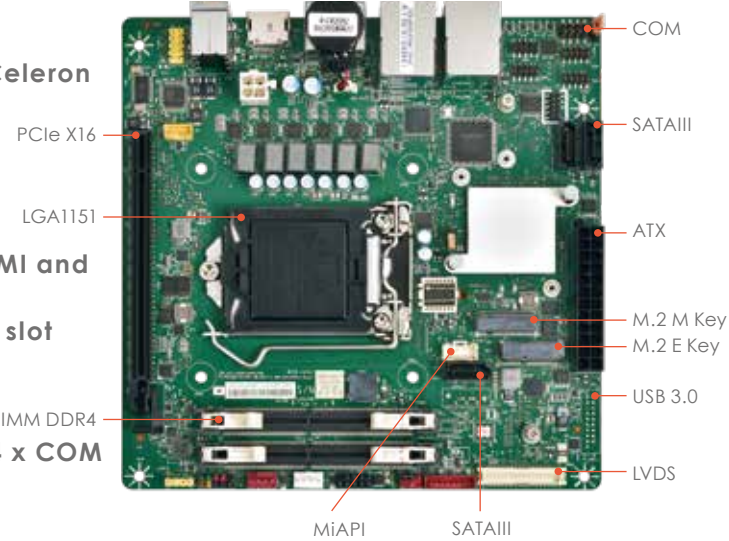


# PH13FEI

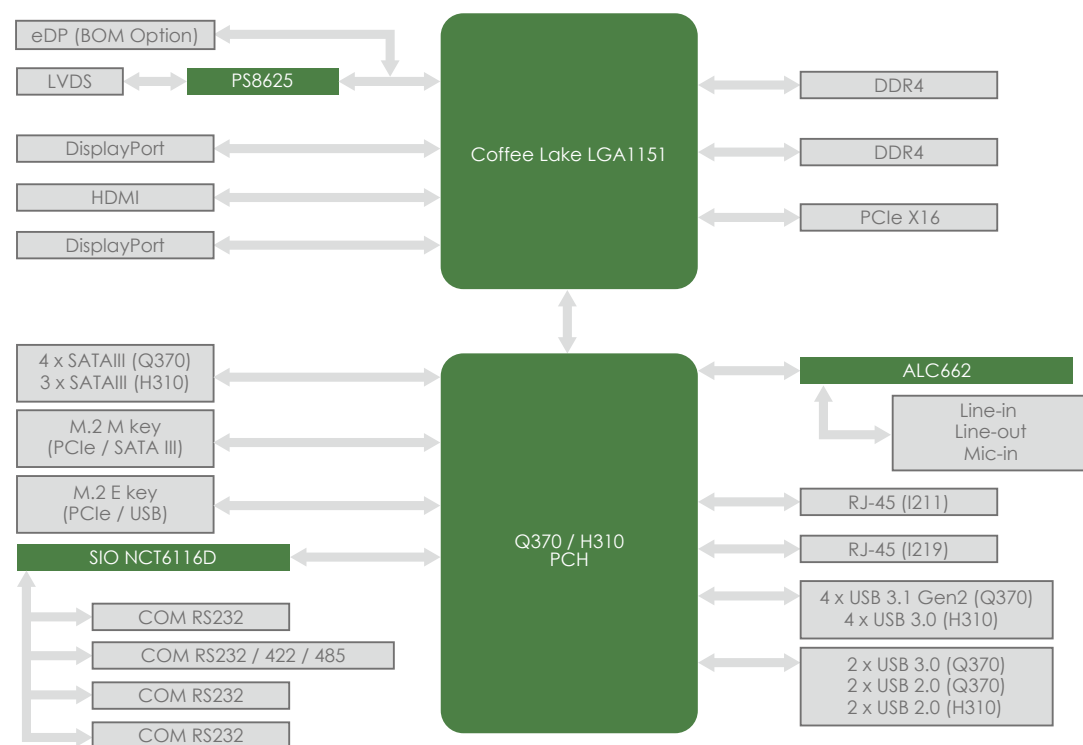
Mini-ITX Form Factor  
Intel® Coffee Lake Processor with Q370 / H310 Chipset

## Features

- Intel® Coffee Lake Core i7/i5/i3 / Pentium / Celeron LGA1151 processors
- Intel® H310 / Q370 Chipset
- Intel® vPro technology support (Q370)
- 2 x DDR4 SO-DIMM and support up to 32GB
- Support triple display for 2 x DisplayPort, HDMI and LVDS / eDP
- Support 1 x PCIe X16 (Gen3) slot and 2 x M.2 slot
- 4 x SATAIII and support RAID 0, 1, 5, 10
- 2 x Intel® Gigabit Ethernet
- 2 x USB 2.0, 2 x USB 3.0, 4 x USB.1 (Gen 2) , 4 x COM and 1 x MiAPI (configurable digital IO)
- ATX power input



## Block Diagram



# PH13FEI Mini-ITX

MECHANICAL	
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
SYSTEM	
Processor	9th & 8th Gen Intel® Coffee Lake LGA1151 Socket Processor, Core i7/i5/i3 6-core TDP Max. 95W, Core i9 8-core TDP Max 35W
Chipset	Intel® Q370 / Intel® H310
Memory	DDR4 2666MHz, 2 x 260-pin SO-DIMM, Max. 32GB (Non-ECC)
Graphics	Intel® HD Graphics
Ethernet	Intel® I219LM Giga LAN +Intel® I211AT Giga LAN
Audio	Realtek® ALC662
I/O Chipset	Nuvoton NCT6116D
TPM	Nuvoton NPCT750AAAYX TPM2.0 (Optional)
Expansion Slot	1 x PCIe x16 slot 1 x M.2 2260 / 2280 M key (PCIe X2, SATA) 1 x M.2 2230 E key (PCIe, USB 2.0) * H310 only support M.2 SATA SSD
BIOS	256 Mbit SPI, AMI BIOS
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 3.1 Gen 2 (10Gbps) (Q370), 4 x USB 3.0 (H310)
Display I/O	1 x HDMI 1.4 , 2 x DisplayPort 1.2
Audio I/O	1 x Mic-in ,1 x Line-out, 1 x Line-in
LAN I/O	2 x RJ-45
Serial Port	—
PS/2 Port	—
Others	—
INTERNAL CONNECTORS	
Storage	4 x SATAIII (Q370), 3 x SATAIII(H310)
USB	2 x USB 3.0 (Q370), 2 x USB 2.0 (Q370), 2 x USB 2.0 (H310)
Display I/O	1 x LVDS(Optional eDP SKU available) 1 x Backlight Connector
Audio I/O	1 x Line-out
Serial Port	4 x RS232
PS/2 Port	—
Parallel Port	—
GPIO	1 x MiAPI Header (Programmable) support 10-bit GPIO
Fan	1 x 4-pin CPU Fan Connector, 1x 4-Pin System Fan Connector
Power	1 x ATX 24-pin, 1 x ATX 4-pin, 1 x AT/ATX Mode Select Jumper
Others	1 x Front Audio Header (Mic-in/Line-out), 1 x CMOS Jumper
POWER REQUIREMENT	
Power Input	ATX 4-pin + ATX 24-pin
ENVIRONMENTAL	
Operating Temperature	0 ~ 60°C (32 ~140°F)
Storage Temperature	-20 ~ 80°C (-4 ~158°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)

\*Option: TPM, eDP

## Ordering Information

Model Number	Chipset	Display Port	HDMI	LVDS / eDP	USB 3.1 / 2.0	Mic-in/ Line-out/ Line-in	RS232	LAN	M.2 2230 E key / M.2 2280 M key	PCIe X16	Power
PH13FEI-H310	Intel® H310	2	1	1 / 0	4 / 2	1 / 1 / 1	4	2	1 / 1	1	ATX Power (24+4 pin)
PH13FEI-Q370	Intel® Q370	2	1	1 / 0	6 / 2	1 / 1 / 1	4	2	1 / 1	1	ATX Power (24+4 pin)

## Packing List

Packing		
• 1 x Motherboard	• 1 x 50cm SATA Cable	• 1 x Quick Guide
• 1 x I/O Bracket (Full Height)	• 1 x Driver CD	