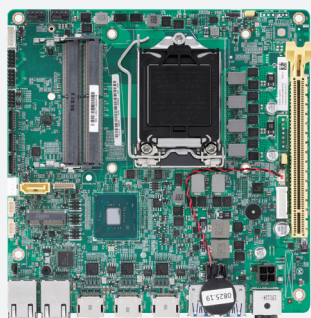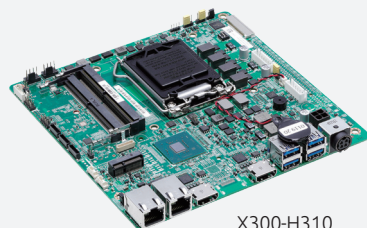# X300-Q370/H310

Mini-ITX, 8th Generation
Intel® Core™ i7/ i5/ i3 Process Family with Q370/H310
HDMI, LVDS, M.2M, M.2E, 2 x GbE, 10 x USB, 3 x COM, 12V DC

X300-Q370

X300-H310

Main Features

- Support socket LGA1151 for 8th Gen Intel® Core™ i7/i5/ i3 processors
- Intel® Q370/H310 chipset
- 2 x 260-pin SO-DIMM DDR4 up to 32GB
- Support Triple display: 3 x HDMI (Q370) or 2 x HDMI + 1 x LVDS (H310)
- 2 x GbE with Intel® i219-LM and i211-AT

- 1 x M.2 2230 Key E for wireless connection
- 1 x SATA 3.0 (Q370)
- 3 x COM, 10 x USB, 1 x Line-in, 1 x MIC-out, GPIO supported
- 1 x PCIe x16 (Q370)
- TPM 2.0 IC onboard for security advantage

Product Overview

X300-Q370/H310 is a Mini-ITX board with 8th generation Intel® Core™ i7/i5/i3 processors (codenamed Coffeelake) which integrated Intel® UHD Graphics 630. X300-Q370/H310 supports multi-displays by HDMI (4K@60Hz) and LVDS (dual channel 24-bit up to 1920 x 1200 @60Hz). With dual DDR4 SO-DIMM channel, the maximum memory supports up to 32GB.

X300 embedded Intel® Q370 as default provides three HDMI, three serial ports, four USB 3.0 ports, six USB 2.0 ports, two Gigabit Ethernet LAN port, one PCIe x16 slot and one M.2 2230 Key E with Wi-Fi interface. The power input is 12V DC. With optional Intel® H310 chipset, X300 switches PCIe x16 to LVDS for multifunctional usage. X300-Q370/H310 features versatile displays, riches I/O support for multimedia as well as critical mission of industrial embedded applications, such as Kiosk, digital signage, gaming, gateway...etc.

Specifications

CPU Support

- Socket LGA1151, Intel® 8/9th Generation Core™ i9/i7/i5/i3 processor, 14nm process

Generation	Socket Type	CPU	Smart Cache	Cores	Threads	Base Frequency	TDP
8th Coffee Lake	FCLGA1151	i3-8100T	6M	4	4	3.1GHz	35W
8th Coffee Lake	FCLGA1151	i5-8500T	9M	6	6	2.1GHz	35W
8th Coffee Lake	FCLGA1151	i7-8700T	12M	6	12	2.4GHz	35W
8th Coffee Lake	FCLGA1151	i3-8300	8M	4	4	3.7GHz	65W
8th Coffee Lake	FCLGA1151	i5-8500	9M	6	6	3.0GHz	65W
8th Coffee Lake	FCLGA1151	i7-8700	12M	6	12	3.2GHz	65W
9th Coffee Lake Refresh	FCLGA1151	i3-9100TE	6M	4	4	2.2GHz	35W
9th Coffee Lake Refresh	FCLGA1151	i5-9500TE	9M	6	6	2.2GHz	35W
9th Coffee Lake Refresh	FCLGA1151	i7-9700TE	12M	8	8	1.8GHz	35W
9th Coffee Lake Refresh	FCLGA1151	i9-9900T	16M	8	16	2.1GHz	35W

Chipset

- Intel® PCH Q370
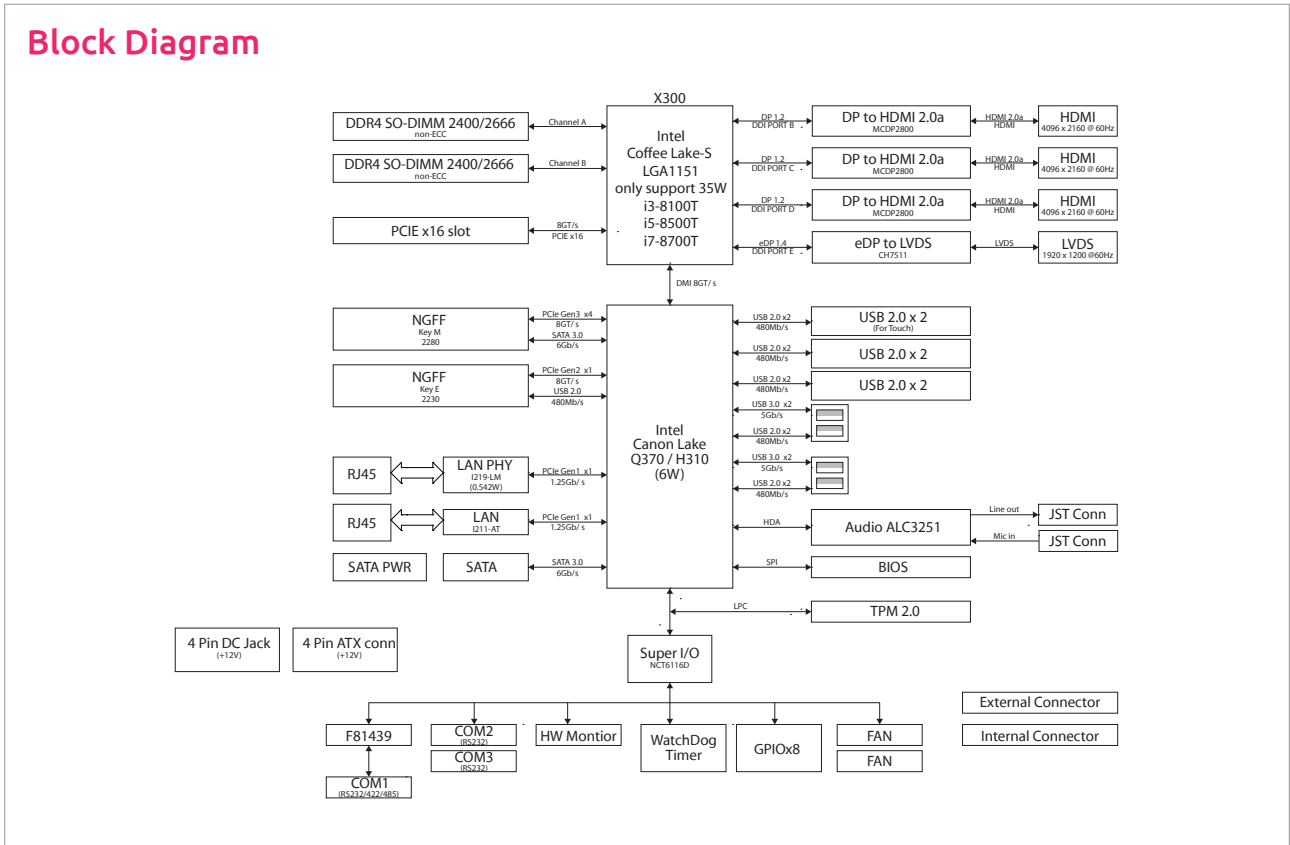- Intel® PCH H310

Graphics

- Intel® UHD Graphics 630

Main Memory

- 2 x 260-pin SO-DIMM socket, support up to DDR4 2400/2666MHz, non ECC, un-buffered memory up to 32GB

Onboard LAN

- 2 x RJ45 connectors with Intel® i219-LM and i211-AT GbE controller, support PXE boot from LAN, wake on LAN function

Block Diagram

Block diagram labels:

X300

- DDR4 SO-DIMM 2400/2666 non-ECC — Channel A
- DDR4 SO-DIMM 2400/2666 non-ECC — Channel B
- PCIE x16 slot — 8GT/s PCIE x16

Intel Coffee Lake-S LGA1151 only support 35W i3-8100T i5-8500T i7-8700T

- DP 1.2 DDI PORT B → DP to HDMI 2.0a MCDP2800 → HDMI 2.0a HDMI → HDMI 4096 x 2160 @ 60Hz
- DP 1.2 DDI PORT C → DP to HDMI 2.0a MCDP2800 → HDMI 2.0a HDMI → HDMI 4096 x 2160 @ 60Hz
- DP 1.2 DDI PORT D → DP to HDMI 2.0a MCDP2800 → HDMI 2.0a HDMI → HDMI 4096 x 2160 @ 60Hz
- eDP 1.4 DDI PORT E → eDP to LVDS CH7511 → LVDS → LVDS 1920 x 1200 @60Hz

DMI 8GT/s

Intel Canon Lake Q370 / H310 (6W)

- NGFF Key M 2280 — PCIe Gen3 x4 8GT/s, SATA 3.0 6Gb/s
- NGFF Key E 2230 — PCIe Gen2 x1 8GT/s, USB 2.0 480Mb/s
- RJ45 ↔ LAN PHY I219-LM (0.542W) — PCIe Gen1 x1 1.25Gb/s
- RJ45 ↔ LAN I211-AT — PCIe Gen1 x1 1.25Gb/s
- SATA PWR | SATA — SATA 3.0 6Gb/s

- USB 2.0 x2 480Mb/s → USB 2.0 x 2 (For Touch)
- USB 2.0 x2 480Mb/s → USB 2.0 x 2
- USB 2.0 x2 480Mb/s → USB 2.0 x 2
- USB 3.0 x2 5Gb/s
- USB 2.0 x2 480Mb/s
- USB 3.0 x2 5Gb/s
- USB 2.0 x2 480Mb/s
- HDA → Audio ALC3251 → Line out → JST Conn / Mic in → JST Conn
- SPI → BIOS
- LPC → TPM 2.0

- 4 Pin DC Jack (+12V)
- 4 Pin ATX conn (+12V)

Super I/O NCT6116D

- F81439
- COM1 (RS232/422/485)
- COM2 (RS232)
- COM3 (RS232)
- HW Montior
- WatchDog Timer
- GPIOx8
- FAN
- FAN

External Connector
Internal Connector

Display
- Q370
  - 3 x HDMI 2.0 connector (resolution up to 4096 x 2160 @ 60Hz)
- H310
  - 2 x HDMI 2.0 connector (resolution up to 4096 x 2160 @ 60Hz)
  - 1 x LVDS (support dual port, resolution up to 1920 x 1200 @ 60Hz)

Edge I/O Interface
- 2 x Intel® GbE LAN ports (Intel® i219-LM and i211-AT)
- 3 x HDMI (Q370) or 2 x HDMI (H310)
- 4 x USB 3.0
- 1 x 5-pin DC Jack for power input

Onboard I/O interface
- COM1: RS232/422/485, 10-pin wafer with cable JST connector
- COM2/3: RS232, 10-pin wafer with cable JST connector
- 1 x GPIO, 4-in/4-out
- USB 2.0 x 2 ports by 1 x 6P header, 2.5mm pitch
- 1 x 5-pin connector with stand-by LED/PWR LED/HDD LED
- 2 x 4-pin connector support CPU/system fan
- 1 x 2-pin header support reset button
- 1 x 4-pin header support power button
- 2 x 4-pin connector support Line-out/MIC-in
- TPM 2.0 IC onboard
- Q370
  - USB 2.0 x 4 ports by 2 x 5P, 2.0mm pin header
- H310
  - USB 2.0 x 2 ports by 2 x 5P, 2.0mm pin header

Expansion
- Q370
  - 1 x M.2 2230 Key E slot, support Wi-Fi/ Bluetooth module
  - 1 x PCIe x16 slot
- H310
  - 1 x M.2 2230 Key E slot, support Wi-fi with Bluetooth module
  - 1 x LVDS connector

Audio
- Realtek ALC3251

Storage
- Q370
  - 1 x M.2 2280 Key M SSD with SATA/PCIe (NVMe) signal
  - 1 x 7-pin SATA 6Gb/s connector supports SATA-DOM
  - 1 x 4-pin connector for SATA power
- H310
  - 1 x M.2 2280 Key M SSD with SATA signal

Power Requirements
- 5-pin DC power input Jack on edge I/O
- 4-pin power connector (right angle) for DC power input
- +12V DC input only
- AT/ATX mode (by jumper setting default-AT)

Environment
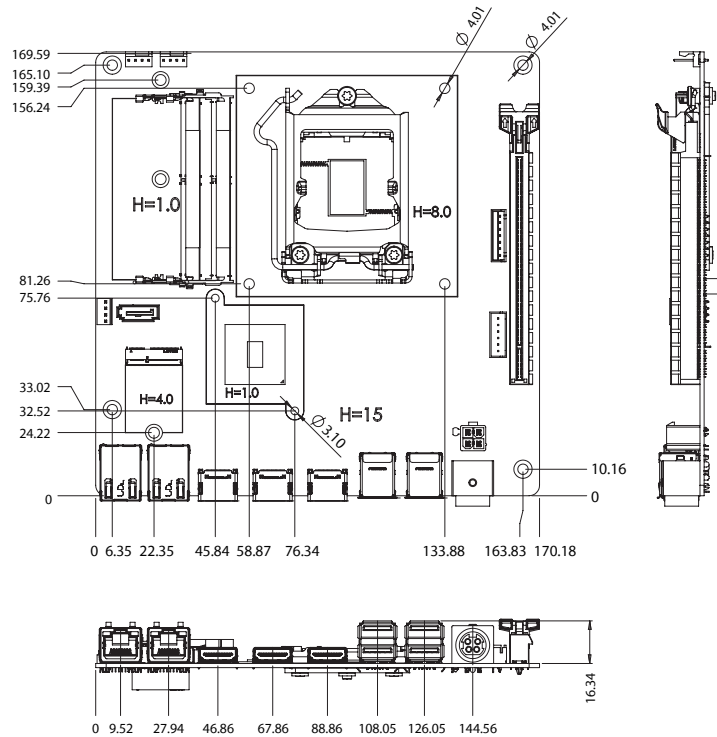- Operating temperature: 0°C to 60°C
- Humidity: 95% (non-condensing)

Certification
- Meet CE (EMC EN55032 +EN55024)
- FCC Class A (EMI part 15B)

Dimensions
- 170mm (L) x 170mm (W) (6.7"x 6.7")

Last update: 09/04/2023

Dimension Drawing (mm)

Ordering Information

- **X300-Q370 (P/N: 10W10X30002X0)**
  Mini-ITX embedded computing board powered by 8/9th Gen Intel®
  Core™ processor

- **X300-H310 (P/N: 10W10X30003X0)**
  Mini-ITX embedded computing board powered by 8/9th Gen Intel®
  Core™ processor

Accessory

- **X300 CPU Cooler & CPU Bracket**
  (P/N: 5050200153X00, 5061711340X00)