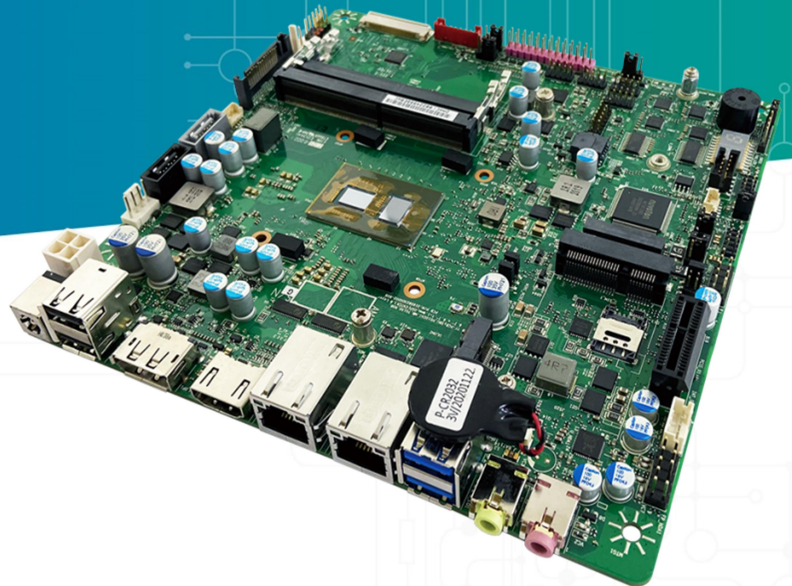


Intel® Elkhart Lake

J6413/N6415/N6211/N6210/x6413

Processor



- Intel® Elkhart Lake ATOM/Celeron/Pentium BGA Processor
- Support 2 x DDR4 SO-DIMM (Up to 32GB) and Intel® IBECC
- Compatible with M.2 3042/3052 + SIM slot for 5G cellular network connectivity
- Support Triple Display for HDMI, DisplayPort, and LVDS
- Support 1 x PCIe X1 (Gen 3) slot, 1 x M.2 2280 B-Key (SATA, PCIe X1), 1 x M.2 2230 E-Key, 2 x SATA III and 1 x mPCIe slot
- 4 x USB2.0, 2 x USB3.1 Gen2, 6 x COM and 1 x Parallel Port / MiAPI (configurable digital I/O)
- 8V~24V wide voltage power input
- Extended Temperature ET : -20 to 70°C ; UT : -40 to 85°C

Specifications

SYSTEM

CPU	Intel® Elkhart Lake : Celeron J6413 (1.5M Cache, up to 3.00 GHz , TDP 10W) Pentium N6415(1.5M Cache, up to 3.00 GHz, TDP 6.5W) Celeron N6211(1.5M Cache, up to 3.00 GHz, TDP 6.5W) Celeron N6210(1.5M Cache, up to 2.60 GHz, TDP 6.5W) Atom x6413E(1.5M Cache, up to 2.60 GHz, TDP 9W)
Memory type	DDR4 3200 MHz / 2 x 260-pin SO-DIMM / Max. 32GB (Non-ECC)
Chipset	Intel® SoC Integrated
TPM	Nuvoton NPCT750AABYX TPM2.0 (Optional)
I/O Chipset	Nuvoton NCT6126D(eSPI)
Watchdog	1-255 sec. or 1-255 min. software programmable and can be generate system reset

DISPLAY

Display Port	Up to 4K (4096 x 2160) @60 Hz
HDMI	Up to 4K (4096 x 2160) @60 Hz
LVDS	Up to 1920 x 1200 @60 Hz

AUDIO

Codec	Realtek® ALC888S
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EXPANSION

M.2	1 x M.2 3042 / 3052 / 2242 / 2260 / 2280 B key (USB2.0, SATAIII, *PClex1) 1 x M.2 2230 E key (PCIe X1, USB2.0)
miniPCIe	1 x mPCIe Full size (USB2.0 / PCIe X1 / SATAIII)
PCIe x 1	1

ETHERNET

Chipset	Intel® I211AT
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FRONT I/O

USB	2 x USB 3.1, 2 x USB 2.0
Display I/O	1 x HDMI 1.4, 1 x DisplayPort 1.4

LAN	2 x RJ45
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Audio	1 x Mic-in, 1 x Line-out
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INTERNAL I/O

SATA	2x SATAIII(Multiplexed with M.2 and mSATA port)
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USB	2 x USB 2.0 Header
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Display I/O	1 x LVDS 1 x Backlight Connector
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Audio I/O	1 x Speaker Header
	1 x Front Audio Header (Mic-in / Line-out)

Serial Port	2 x RS232 Header (Extra 1 x RS232/422/485 Header + 3 x RS232 Header for Option, total 6 x COM)
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Parallel Port	1 x MiAPI Header (Optional for Parallel Port Header)
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Fan	1 x 4-pin CPU Fan Header
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Power	1 x AT / ATX Mode Select Jumper / 1 x ATX 4-pin Power Connector
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Others	1 x Clear CMOS Button / MiAPI: Programmable header (support 10 x GPIO, 1 x SMBUS, 1 x UART, 1 x Watchdog) with API library supported for Windows OS 1 x Buzzer / 1 x 3-pin CAN-FD Bus Header
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MECHANICAL AND ENVIRONMENTAL

Form Factor	Mini ITX
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Power Type	DC-in 8~24V/ ATX 4-pin Power Connector + DC Jack
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Dimension	170 mmX 170mm
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Operating Temperature	ET : -20°C ~ 70°C
	UT : -40°C ~ 85°C

Storage Temperature	-40°C ~ 85°C
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Relative humidity	10% to 90%, non-condensing
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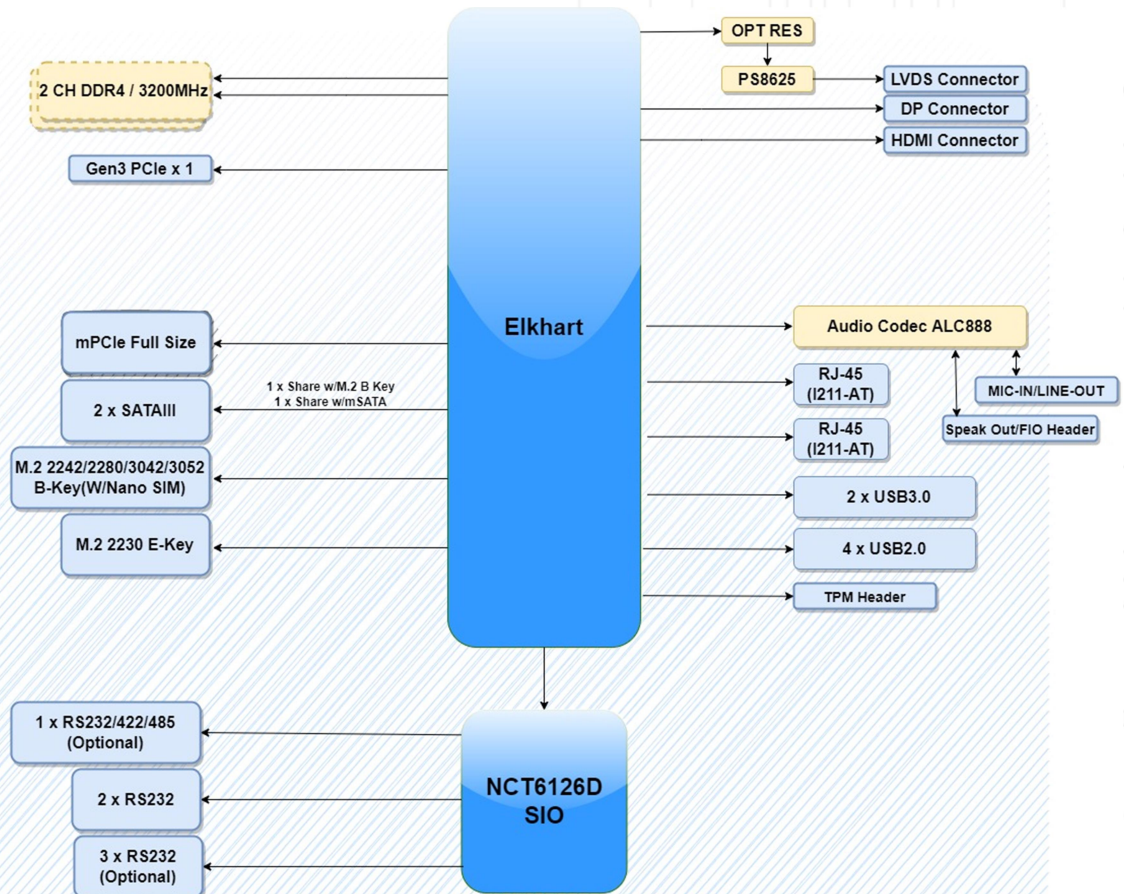
STANDARD COMPLIANCE

Standard Compliance	CE/FCC
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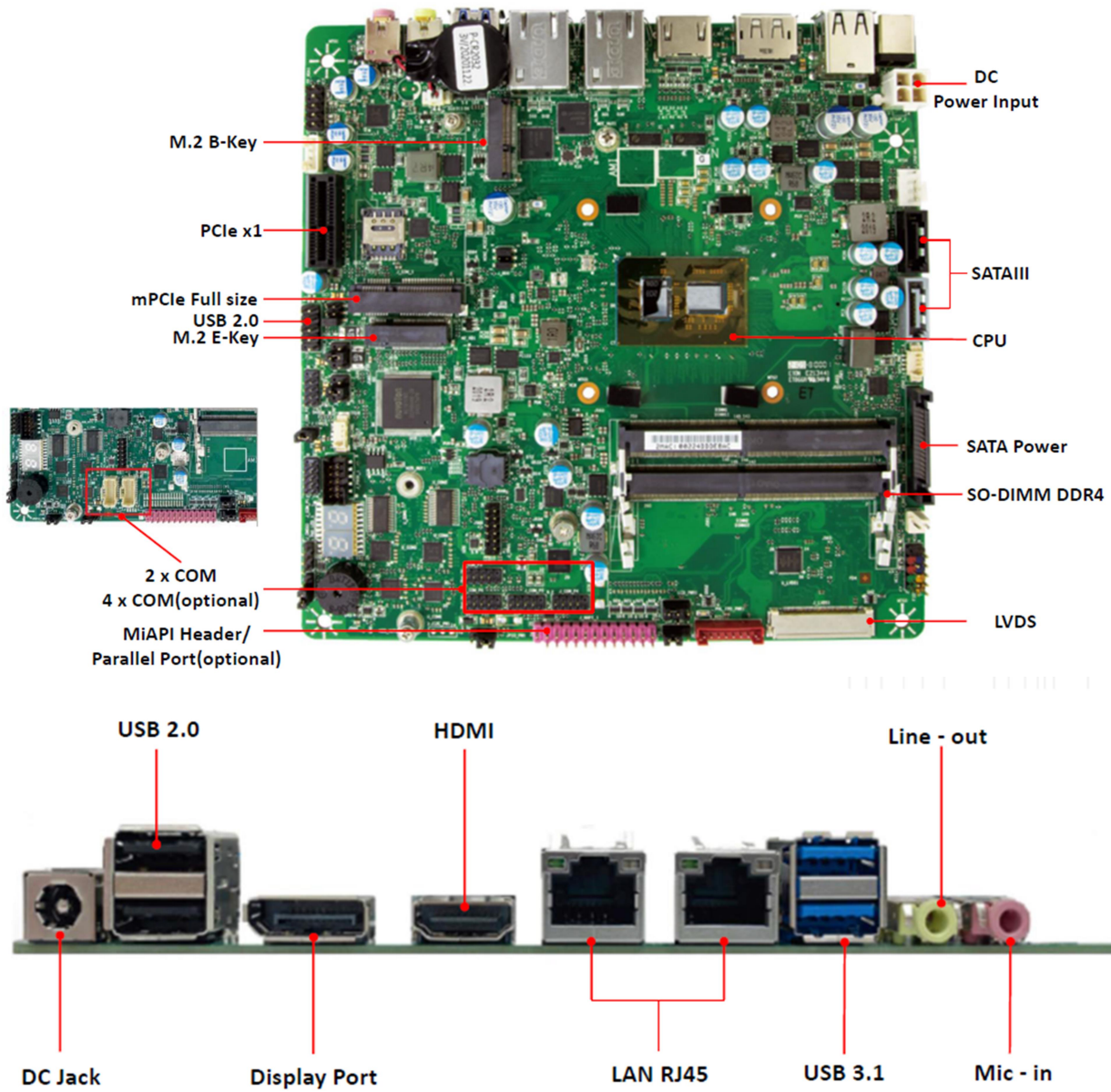
OS

OS Support	Windows®10 64-bit
	Linux(Support by request)

Block Diagram



Board Placement



Ordering Information

Model	Description
INS8324A-01ET	MiniITX MB with Intel® Elkhart Lake Celeron J6413 Processor, 2 x DDR4 SO-DIMM up to 64GB, 1 x DP, 1 x HDMI, 2 x LAN, 2 x USB3.1, 2 x USB2.0, 1 x Mic-in & 1 x Line-out, Operation Temperature -20 ~ 70 °C, RoHS
INS8324A-01UT	MiniITX MB with Intel® Elkhart Lake Celeron J6413 Processor, 2 x DDR4 SO-DIMM up to 64GB, 1 x DP, 1 x HDMI, 2 x LAN, 2 x USB3.1, 2 x USB2.0, 1 x Mic-in & 1 x Line-out, Operation Temperature -40 ~ 85 °C, RoHS
INS8324A-02ET	MiniITX MB with Intel® Elkhart Lake Pentium N6415 Processor, 2 x DDR4 SO-DIMM up to 64GB, 1 x DP, 1 x HDMI, 2 x LAN, 2 x USB3.1, 2 x USB2.0, 1 x Mic-in & 1 x Line-out, Operation Temperature -20 ~ 70 °C, RoHS
INS8324A-02UT	MiniITX MB with Intel® Elkhart Lake Pentium N6415 Processor, 2 x DDR4 SO-DIMM up to 64GB, 1 x DP, 1 x HDMI, 2 x LAN, 2 x USB3.1, 2 x USB2.0, 1 x Mic-in & 1 x Line-out, Operation Temperature -40 ~ 85 °C, RoHS
INS8324A-03ET	MiniITX MB with Intel® Elkhart Lake Celeron N6211 Processor, 2 x DDR4 SO-DIMM up to 64GB, 1 x DP, 1 x HDMI, 2 x LAN, 2 x USB3.1, 2 x USB2.0, 1 x Mic-in & 1 x Line-out, Operation Temperature -20 ~ 70 °C, RoHS
INS8324A-03UT	MiniITX MB with Intel® Elkhart Lake Celeron N6211 Processor, 2 x DDR4 SO-DIMM up to 64GB, 1 x DP, 1 x HDMI, 2 x LAN, 2 x USB3.1, 2 x USB2.0, 1 x Mic-in & 1 x Line-out, Operation Temperature -40 ~ 85 °C, RoHS
INS8324A-04ET	MiniITX MB with Intel® Elkhart Lake Celeron N6210 Processor, 2 x DDR4 SO-DIMM up to 64GB, 1 x DP, 1 x HDMI, 2 x LAN, 2 x USB3.1, 2 x USB2.0, 1 x Mic-in & 1 x Line-out, Operation Temperature -20 ~ 70 °C, RoHS
INS8324A-04UT	MiniITX MB with Intel® Elkhart Lake Celeron N6210 Processor, 2 x DDR4 SO-DIMM up to 64GB, 1 x DP, 1 x HDMI, 2 x LAN, 2 x USB3.1, 2 x USB2.0, 1 x Mic-in & 1 x Line-out, Operation Temperature -40 ~ 85 °C, RoHS
INS8324A-05ET	MiniITX MB with Intel® Elkhart Lake Atom x6413E Processor, 2 x DDR4 SO-DIMM up to 64GB, 1 x DP, 1 x HDMI, 2 x LAN, 2 x USB3.1, 2 x USB2.0, 1 x Mic-in & 1 x Line-out, Operation Temperature -20 ~ 70 °C, RoHS
INS8324A-05UT	MiniITX MB with Intel® Elkhart Lake Atom x6413E Processor, 2 x DDR4 SO-DIMM up to 64GB, 1 x DP, 1 x HDMI, 2 x LAN, 2 x USB3.1, 2 x USB2.0, 1 x Mic-in & 1 x Line-out, Operation Temperature -40 ~ 85 °C, RoHS