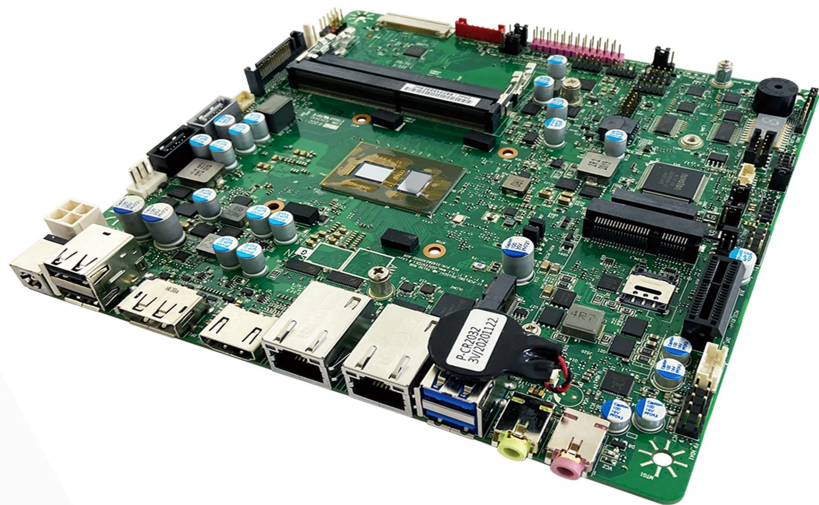




INS8324A

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 |
|-------|------------------|

EXPANSION SLOT

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|----------|---|
| M.2 | 1 x M.2 3042 / 3052 / 2242 / 2260 / 2280 B key (USB2.0, SATAIII, *PCIex1) 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 |
|---------|---------------|

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 |

| | |
|-------|--------------------------|
| Audio | 1 x Mic-in, 1 x Line-out |
|-------|--------------------------|

INTERNAL I/O HEADER (NO EDGE I/O NEEDED)

| | |
|------|---|
| SATA | 2x SATAIII(Multiplexed with M.2 and mSATA port) |
|------|---|

| | |
|-----|--------------------|
| USB | 2 x USB 2.0 Header |
|-----|--------------------|

| | |
|-------------|----------------------------------|
| Display I/O | 1 x LVDS 1 x Backlight Connector |
|-------------|----------------------------------|

| | |
|-----------|--|
| 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) |
|-------------|--|

| | |
|---------------|--|
| Parallel Port | 1 x MiAPI Header (Optional for Parallel Port Header) |
|---------------|--|

| | |
|-----|--------------------------|
| Fan | 1 x 4-pin CPU Fan Header |
|-----|--------------------------|

| | |
|-------|---|
| Power | 1 x AT / ATX Mode Select Jumper / 1 x ATX 4-pin Power Connector |
|-------|---|

| | |
|--------|--|
| 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 |
|--------|--|

MECHANICAL AND ENVIRONMENTAL

| | |
|-------------|----------|
| Form Factor | Mini ITX |
|-------------|----------|

| | |
|------------|--|
| Power Type | DC-in 8~24V/ ATX 4-pin Power Connector + DC Jack |
|------------|--|

| | |
|-----------|---------------|
| Dimension | 170 mmX 170mm |
|-----------|---------------|

| | |
|-----------------------|--|
| Operating Temperature | ET : -20°C ~ 70°C UT : -40°C ~ 85°C |
|-----------------------|--|

| | |
|---------------------|--------------|
| Storage Temperature | -40°C ~ 85°C |
|---------------------|--------------|

| | |
|-------------------|----------------------------|
| Relative humidity | 10% to 90%, non-condensing |
|-------------------|----------------------------|

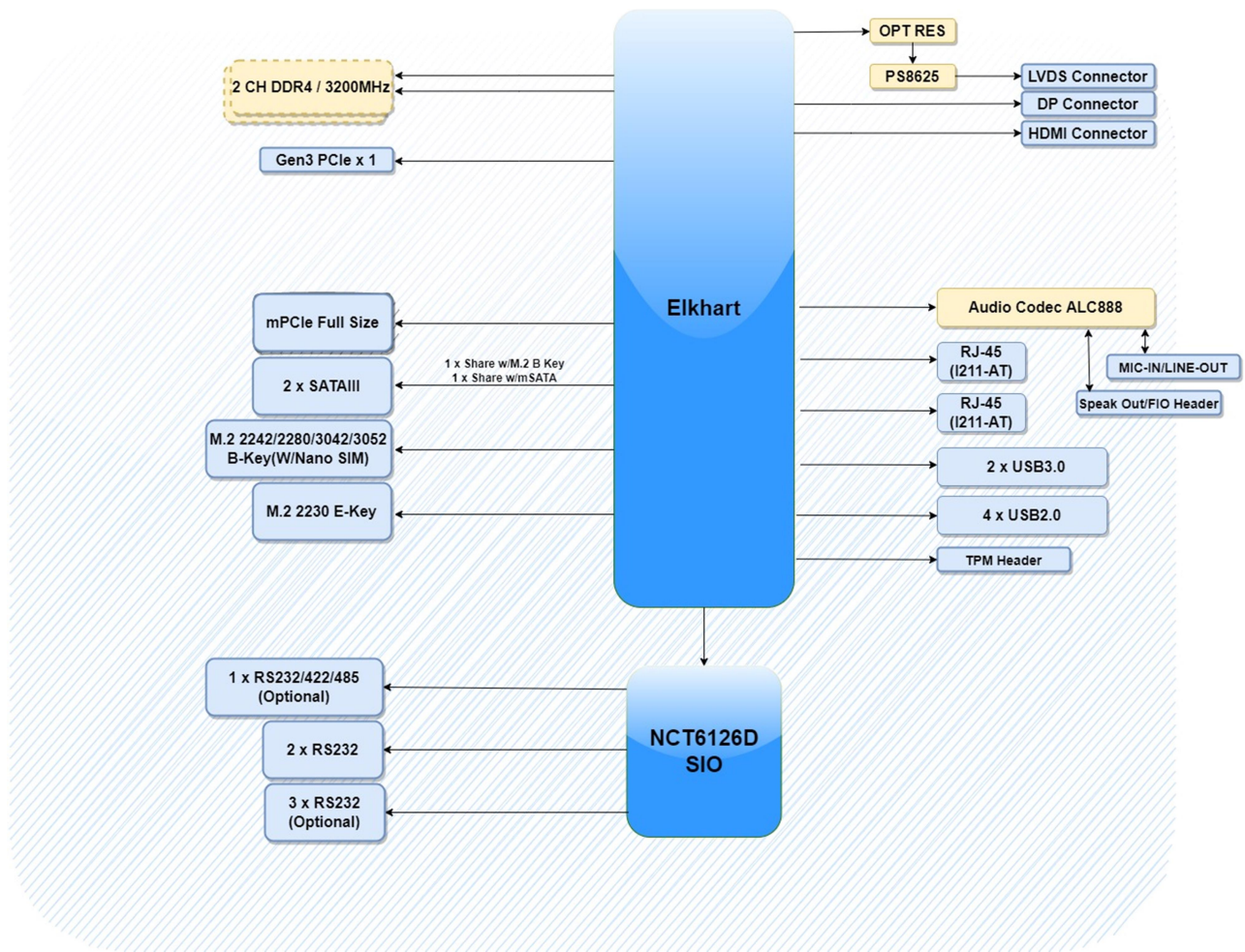
STANDARD COMPLIANCE

| | |
|---------------------|--------|
| Standard Compliance | CE/FCC |
|---------------------|--------|

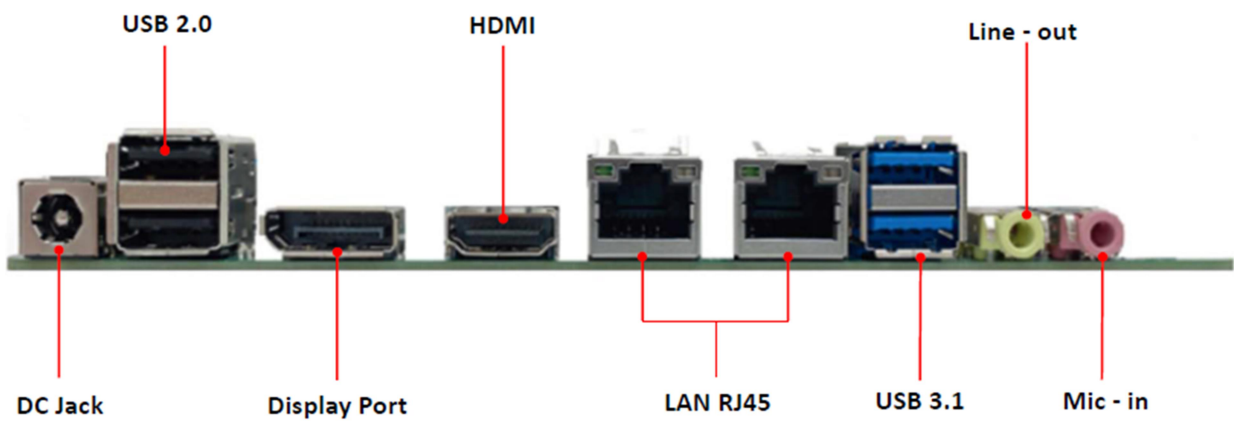
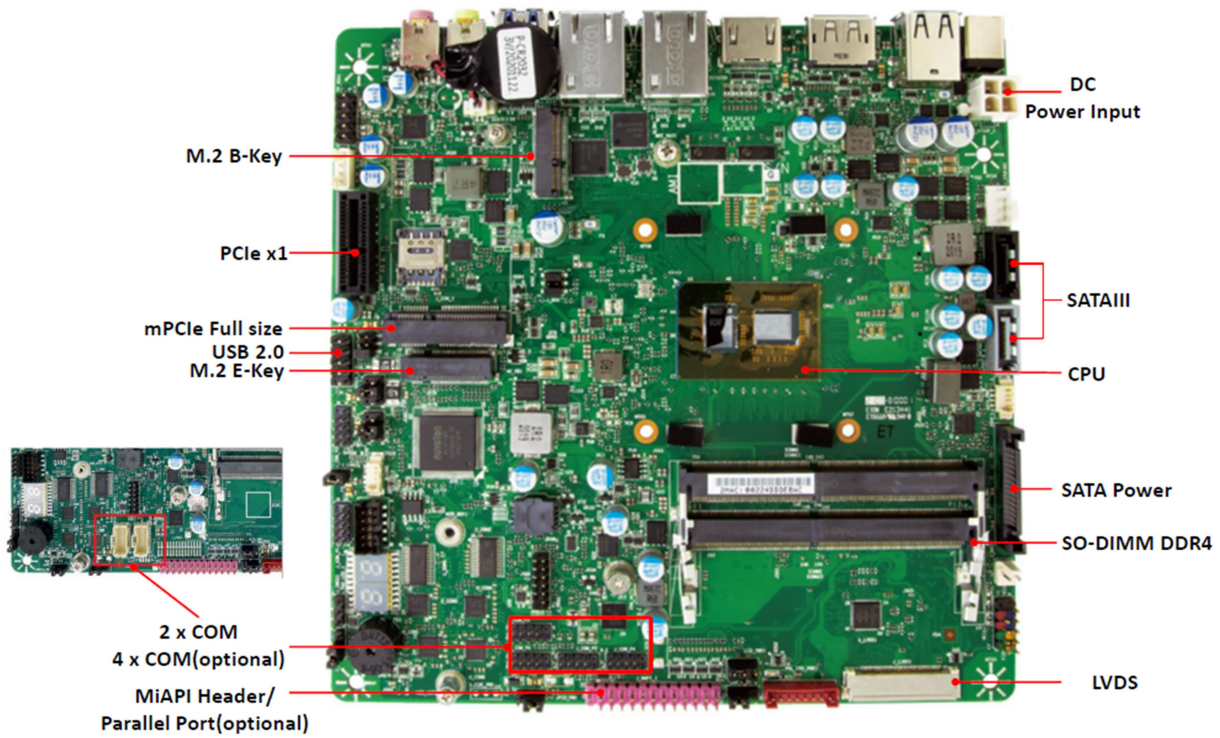
OS

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

Block Diagram



Board Placement



Ordering Information

| Model | Description |
|---------------|--|
| INS8324A-01ET | MiniITX MB withIntel®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 Temperture -20 ~ 70 °C , RoHS |
| INS8324A-01UT | MiniITX MB withIntel®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 Temperture -40 ~ 85 °C , RoHS |
| INS8324A-02ET | MiniITX MB withIntel®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 Temperture -20 ~ 70 °C , RoHS |
| INS8324A-02UT | MiniITX MB withIntel®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 Temperture -40 ~ 85 °C , RoHS |
| INS8324A-03ET | MiniITX MB withIntel®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 Temperture -20 ~ 70 °C , RoHS |
| INS8324A-03UT | MiniITX MB withIntel®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 Temperture -40 ~ 85 °C , RoHS |
| INS8324A-04ET | MiniITX MB withIntel®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 Temperture -20 ~ 70 °C , RoHS |
| INS8324A-04UT | MiniITX MB withIntel®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 Temperture -40 ~ 85 °C , RoHS |
| INS8324A-05ET | MiniITX MB withIntel®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 Temperture -20 ~ 70 °C , RoHS |
| INS8324A-05UT | MiniITX MB withIntel®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 Temperture -40 ~ 85 °C , RoHS |