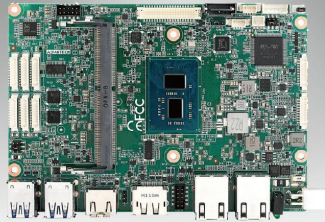


# MIO-5152

## Intel® Atom® x6000E series and Intel® Celeron® N and J series 3.5" SBC

NEW



### Features

- Atom® x6000E series and Intel® Celeron® J and N series with Quad/Dual Cores, TDP 6W/ 10W/ 12W
- Single Channel DDR4-3200 up to 32GB
- 3 independent displays via LVDS, DP1.4, and HDMI2.0 up to 4K@60Hz
- Dual GbE, 6 USB, 6 UART, TPM2.0
- CE/FCC Class B, Coastline I/O ESD 8KV/15KV Criteria A
- Support Windows 10 LTSC & Ubuntu 20.04 LTS, embedded software APIs, WISE-DeviceOn

#### Software APIs:



ubuntu yocto Windows 10 iManager WISE-DeviceOn CE FCC

### Specifications

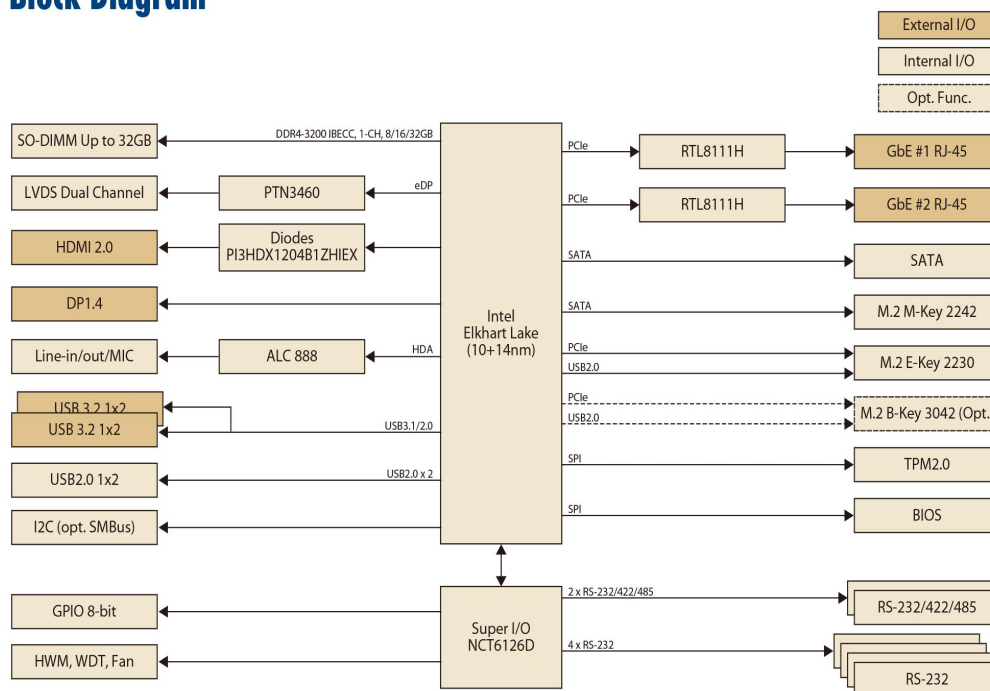
|               |                      |                                                                                                                     |                       |                              |
|---------------|----------------------|---------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------------|
| Platform      | Processor            | Intel® Celeron® J6412                                                                                               | Intel® Celeron® N6210 | Intel Atom® x6425E           |
|               | Max Frequency        | 2.6GHz                                                                                                              | 2.6GHz                | 3.0GHz                       |
|               | Base Frequency       | 2.0GHz                                                                                                              | 1.2GHz                | 2.0GHz                       |
|               | Core/Thread          | 4/4                                                                                                                 | 2/2                   | 4/4                          |
|               | LLC                  | L2                                                                                                                  | L2                    | L2                           |
|               | CPU TDP              | 10W                                                                                                                 | 6.5W                  | 12W                          |
|               | Chipset              | Intel® Chipset (SoC Integrated)                                                                                     |                       |                              |
| Memory        | BIOS                 | AMI EFI 256Mbit                                                                                                     |                       |                              |
|               | Technology           | DDR4-3200 SDRAM                                                                                                     |                       |                              |
|               | Max Capacity         | 32GB                                                                                                                |                       |                              |
|               | Channel/Socket       | Single Channel/ 1 Socket                                                                                            |                       |                              |
| Graphic       | ECC Support          | N/A                                                                                                                 | N/A                   | In-Band ECC Supported by SoC |
|               | Controller           | Intel Gen11 Graphics Engines (SoC integrated)                                                                       |                       |                              |
|               | Max Frequency        | 800MHz                                                                                                              | 750MHz                | 750MHz                       |
|               | Base Frequency       | 400MHz                                                                                                              | 250MHz                | 500MHz                       |
|               | Graphic Memory       | TBU                                                                                                                 |                       |                              |
| Display I/F   | 3D/HW Acceleration   | DX12, OpenGL 4.5, Vulkan 1.1, MPEG2, H.264, JPEG/MJPEG, H.265 (HEVC)                                                |                       |                              |
|               | LCD                  | 1 x LVDS: Dual Channel 18/24-bit, up to 1920 x 1200                                                                 |                       |                              |
|               | HDMI/DP              | 1 x HDMI2.0 up to 4096 x 2160 x 24bpp @ 60Hz<br>1 x DP1.4a, up to 4096 x 2160 x 36bpp@60Hz                          |                       |                              |
|               | Triple Display       | 3 simultaneous displays with LVDS, HDMI, DP                                                                         |                       |                              |
| External I/O  | Ethernet             | 2 x RJ-45; LAN1: Realtek RTL8111H, LAN2: Realtek RTL8111H                                                           |                       |                              |
|               | HDMI/DP              | 1/1                                                                                                                 |                       |                              |
|               | USB3.2               | 4 x TypeA; 4 x USB3.2 Gen2 (10Gbps)                                                                                 |                       |                              |
|               | Power DC-Jack        | Optional                                                                                                            |                       |                              |
| Internal I/O  | SATA                 | 1 x SATA GenIII 6.0 Gbps                                                                                            |                       |                              |
|               | USB                  | 2 x USB2.0                                                                                                          |                       |                              |
|               | Serial Bus           | I2C                                                                                                                 |                       |                              |
|               | COM Ports            | 2 x RS-232/422/485 (Max baud rate: 1Mbps), 4 x RS-232                                                               |                       |                              |
|               | GPIO                 | 8-bit general purpose input output I/O                                                                              |                       |                              |
|               | Audio                | Realtek ALC888S, Line-in/Line-out/MIC                                                                               |                       |                              |
|               | Inverter             | 12V/5V                                                                                                              |                       |                              |
|               | SPI Bus              | eSPI                                                                                                                |                       |                              |
|               | Fan                  | 4-wire smart fan                                                                                                    |                       |                              |
|               | Front Panel Control  | Power-on, Reset, Buzzer, SATA LED, CaseOpen                                                                         |                       |                              |
| Board Feature | Watchdog Timer       | Programmable 1 ~ 255 sec/min                                                                                        |                       |                              |
|               | TPM                  | TPM2.0                                                                                                              |                       |                              |
| Expansion     | M.2 E-Key/B-Key      | 1 x E-Key 2230 (PCIex1, USB2.0)<br>Optional B-key 3042 w/ NanoSIM                                                   |                       |                              |
|               | M.2 M-Key            | 1 x M-key 2242 (SATA)                                                                                               |                       |                              |
| Power         | Supply Voltage       | Vin: DC 12V ± 10%; RTC Battery Lithium 3V/210mAH                                                                    |                       |                              |
|               | Connector            | ATX 2x2pin 90D, optional DC-Jack                                                                                    |                       |                              |
|               | Power Management     | AT, ATX mode                                                                                                        |                       |                              |
|               | Max Consumption      | 21.39W                                                                                                              | 12.74W                | 25.06W                       |
| Environment   | Idle Consumption     | 7.31W                                                                                                               | 10.53W                | 11.30W                       |
|               | Temperature          | Operating: Standard: 0 ~ 60° C (32 ~ 140° F)<br>Storage: -40 ~ 85° C (-40 ~ 185° F)                                 |                       |                              |
|               | Humidity             | Operating: 40° C @ 95% relative humidity, non-condensing<br>Storage: -60° C @ 95% relative humidity, non-condensing |                       |                              |
|               | Vibration Resistance | 3.5 Grms                                                                                                            |                       |                              |
| Certification | EMC                  | CE, FCC Class B                                                                                                     |                       |                              |
| Mechanical    | Dimensions           | 146 x 102 mm (5.7" x 4")                                                                                            |                       |                              |
|               | Net weight           |                                                                                                                     |                       |                              |

**ADVANTECH** MIO Extension SBCs, Modules and Chassis

All product specifications are subject to change without notice.

Last updated: 28-Mar-2024

## Block Diagram



## Ordering Information

| Part Number     | CPU            | TDP  | Max. Frequency | Core | GbE | USB3.2 | USB2.0 | Cable Kit | Thermal solution | Operating Temp. |
|-----------------|----------------|------|----------------|------|-----|--------|--------|-----------|------------------|-----------------|
| MIO-5152J-U6A1  | Celeron® J6412 | 10W  | 2.6GHz         | 4    | 2   | 4      | 2      | Y         | Y; Passive       | 0 ~ 60° C       |
| MIO-5152N-U6A1  | Celeron® N6210 | 6.5W | 2.6GHz         | 2    | 2   | 4      | 2      | Y         | Y; Passive       | 0 ~ 60° C       |
| MIO-5152A-POA1  | Atom® x6425E   | 12W  | 3.0GHz         | 4    | 2   | 4      | 2      | Y         | Y; Passive       | 0 ~ 60° C       |
| MIO-5152JL-U6A1 | Celeron® J6412 | 10W  | 2.6GHz         | 4    | 2   | 4      | 2      | N         | N                | 0 ~ 60° C       |
| MIO-5152NL-U6A1 | Celeron® N6210 | 6.5W | 2.6GHz         | 2    | 2   | 4      | 2      | N         | N                | 0 ~ 60° C       |

## Packing List

| Part No.       | Description                                  | Quantity |
|----------------|----------------------------------------------|----------|
|                | MIO-5152 SBC                                 |          |
| 2046515201     | Startup Manual                               | 1        |
| 1970005053T011 | MIO-5152 Passive Heatsink for Celeron series | 1        |
| 1970005053T001 | MIO-5152 Passive Heatsink for x6000E         | 1        |
| 1700006291     | M Cable SATA 7P/SATA 7P 30cm C=R 180/90      | 1        |
| 1700031583-01  | M CABLE SATA 15P/1*2P-2.0 35cm               | 1        |
| 1700030406-01  | M Cable 2*5P-2.0/USB-A 4P(F)*2 20cm          | 1        |
| 1700030404-01  | F Cable D-SUB 9P(M)/1*10P-1.25 20cm          | 2        |
| 1700019584-01  | A Cable 2*5P-2.0/Audio JACK*3 20cm           | 1        |

## Optional Accessories

| Part No.       | Description                                      |
|----------------|--------------------------------------------------|
| 1970005542T001 | MIO-5152 heatspreader (for J6412, N6210 CPU sku) |

## Embedded OS/API

| Embedded OS/API | Part No.           | Description                                                          |
|-----------------|--------------------|----------------------------------------------------------------------|
| Windows 10      | 20706WX9ES0157     | 64-bit (UEFI Mode Only)                                              |
| Ubuntu 20.04    | 20706U20DS0034     | Ubuntu Desktop 20.04 LTS 64-bit Image & License Sticker for MIO-5152 |
| Yocto           | Support by Request | Yocto BSP and Test Image                                             |
| Software API    | Website Download   | SUSI v4.0                                                            |

## Rear I/O View

