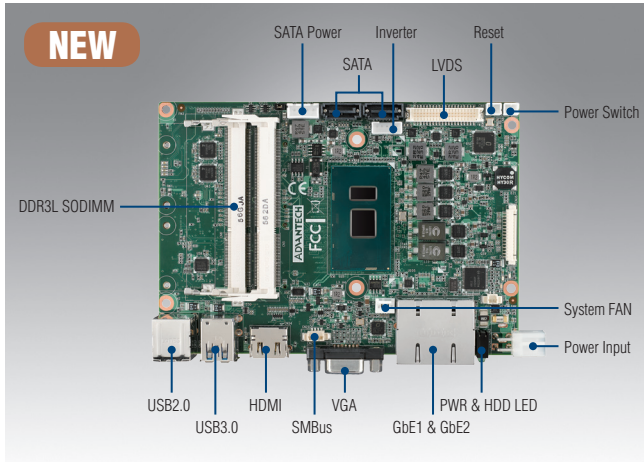


# MIO-5272

## 7<sup>th</sup> & 6<sup>th</sup> Gen Intel® Core™ U-series (i7/i5/i3/Celeron®\*), 3.5" MI/O-Compact SBC



WISE-PaaS/RMM

### Features

- 7<sup>th</sup> & 6<sup>th</sup> Gen Intel® Core™ U-series (i7/i5/i3/Celeron®\*)
- DirectX 12, OpenGL 4.4, OpenCL 2.1
- 2 x 204-pin SO-DIMM up to 16GB DDR3L- 1600/1333 MHz DRAM
- Flexible I/Os expansion: MIOe to approach vertical market application
- Support TPM 2.0 (optional)
- Supports Intel AMT11.0, WISE-PaaS/RMM and Embedded Software APIs

#### Software APIs:



#### Utilities:

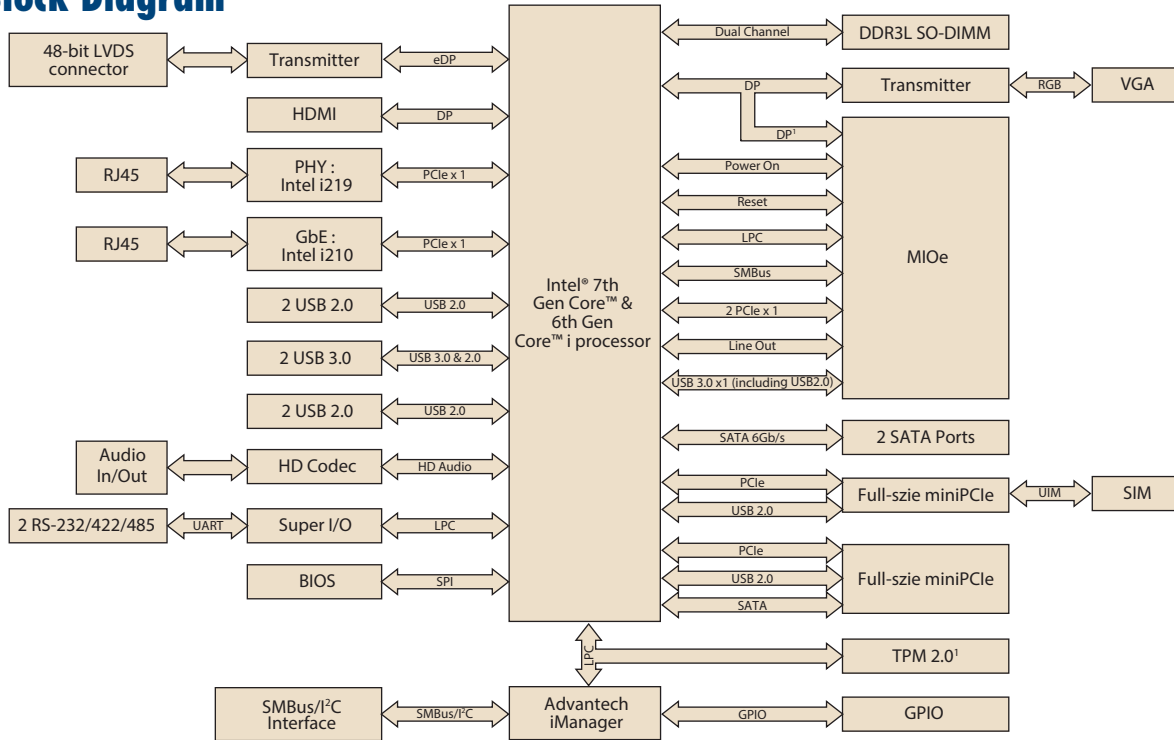


### Specifications

|                          |  | Intel 7th Core™ U-series   | Intel 6th Core™ U-series | Intel Core i5 6300U | Intel Core i3 6100U | Intel Celeron 3955U* |  |
|--------------------------|--|--|--------------------------|---------------------|---------------------|----------------------|--|
| Processor System         | CPU  | Intel Core i7 7600U  | Intel Core i7 6600U      | Intel Core i5 6300U | Intel Core i3 6100U | Intel Celeron 3955U* |  |
|                          | Base Frequency   | 2.8 GHz (Dual-Core)  | 2.6 GHz (Dual-Core)      | 2.4 GHz (Dual-Core) | 2.3 GHz (Dual-Core) | 2.0 GHz (Dual-Core)  |  |
|                          | Max Turbo Frequency                                    | 3.9 GHz  | 3.4 GHz                  | 3.0 GHz             | -                   | -                    |  |
|                          | L3 Cache   | 4MB  | 4MB                      | 3MB                 | 3MB                 | 2MB                  |  |
|                          | BIOS   | AMI UEFI 128 Mbit  |                          |                     |                     |                      |  |
| Memory                   | Technology   | DDR3L 1600 MHz   |                          |                     |                     |                      |  |
|                          | Max. Capacity  | 16 GB  |                          |                     |                     |                      |  |
|                          | Socket   | 2 x 204-pin SODIMM   |                          |                     |                     |                      |  |
| Display                  | Controller   | Intel HD Graphics 620/520/510 (Celeron)  |                          |                     |                     |                      |  |
|                          | Processor Graphics                                     | DirectX 12, DirectX 11.3, OpenGL 4.4, and OpenCL 2.1<br>Full AVC/VC1/MPEG2 HW Decode   |                          |                     |                     |                      |  |
|                          | VGA  | 1920 x 1200 @ 60Hz or 2048 x 1152 @ 60Hz with reduced blanking   |                          |                     |                     |                      |  |
|                          | LVDS   | LVDS with 3.3V, 5V and 12V on LCD VDD power, 5V and 12V support on LVDS inverter<br>Dual channel 24-bit LVDS, max resolution up to 1920 x 1200 at 60Hz |                          |                     |                     |                      |  |
|                          | HDMI   | Supports HDMI 1.4 for HD Video playback<br>Max resolution up to 4096 x 2160 at 24 Hz   |                          |                     |                     |                      |  |
| Multi-Display            | VGA + HDMI, VGA + LVDS, HDMI + LVDS, VGA + HDMI + LVDS |  |                          |                     |                     |                      |  |
| Ethernet                 | Speed  | 10/100/1000Mbps  |                          |                     |                     |                      |  |
|                          | Controller   | GbE1: Intel i219, GbE2: Intel i210   |                          |                     |                     |                      |  |
|                          | Connector  | 2 RJ45 on Rear I/O   |                          |                     |                     |                      |  |
| Audio                    | Codec  | High Definition Audio (HD), Line-in, Line out, Mic-in  |                          |                     |                     |                      |  |
| Amplifier                | Optional via MIOe                                      |  |                          |                     |                     |                      |  |
| WatchDog Timer           |  | Output System reset, Programmable counter from 1 - 255 minutes/ seconds  |                          |                     |                     |                      |  |
| Storage                  | SATA   | 2, up to 6.0 Gb/s (600 MB/s)   |                          |                     |                     |                      |  |
|                          | mSATA  | 1 x Full-size (support either mSATA or miniPCIe)   |                          |                     |                     |                      |  |
| Rear I/O                 | Ethernet   | 2  |                          |                     |                     |                      |  |
|                          | VGA  | 1  |                          |                     |                     |                      |  |
|                          | HDMI   | 1  |                          |                     |                     |                      |  |
|                          | USB 2.0  | 2  |                          |                     |                     |                      |  |
|                          | USB 3.0  | 2  |                          |                     |                     |                      |  |
|                          | LED  | Power, HDD   |                          |                     |                     |                      |  |
| Internal I/O             | DC Jack*   | 1  |                          |                     |                     |                      |  |
|                          | Serial   | 2 x RS-232/422/485 with auto flow control (ESD protection: Air gap ±15kV, Contact ±8kV)  |                          |                     |                     |                      |  |
|                          | USB  | 2  |                          |                     |                     |                      |  |
|                          | PC   | 1 (Shares with SMBus pin)  |                          |                     |                     |                      |  |
| Security                 | SMBus  | 1  |                          |                     |                     |                      |  |
|                          | GPIO   | 8-bit general purpose input/output   |                          |                     |                     |                      |  |
|                          | TPM2.0*  | Support by request   |                          |                     |                     |                      |  |
| Expansion                | Mini PCIe  | 2 x Full-size (One with SIM card holder. Another one with mSATA support, default support mSATA)  |                          |                     |                     |                      |  |
|                          | MIOe   | Displayport*, SMBus, USB3.0, LPC, 2 x PCIe x1, line out, +5 Vsb/+12 Vsb power, Power On, Reset   |                          |                     |                     |                      |  |
| Power                    | Power Type   | Single 12V DC power input  |                          |                     |                     |                      |  |
|                          | Power Supply Voltage                                   | Supports single 12V input, ± 10%   |                          |                     |                     |                      |  |
|                          | Power Consumption (Typical)                            | i7 7600U: 6.46W, i7 6600U: 6.46 W, i5 6300U: 5.26 W, i3 6100U: 5.02 W, Celeron 3955U: 4.88 W   |                          |                     |                     |                      |  |
|                          | Power Consumption (Max)                                | i7 7600U: 22.03W, i7 6600U: 22.03 W, i5 6300U: 20.87 W, i3 6100U: 20.45 W, Celeron 3955U: 17.81 W  |                          |                     |                     |                      |  |
|                          | Power Management                                       | ACPI   |                          |                     |                     |                      |  |
| Battery                  | Lithium 3 V / 210 mAh                                  |  |                          |                     |                     |                      |  |
| Environment              | Operating  | 0 - 60 °C (32 - 140 °F) (Operating humidity: 40 °C @ 95% RH Non-Condensing)  |                          |                     |                     |                      |  |
|                          | Non-Operating  | -40 °C - 85 °C and 60 °C @ 95% RH Non-Condensing   |                          |                     |                     |                      |  |
| Physical Characteristics | Dimensions (L x W)                                     | 146 x 102 mm (5.7" x 4"), same as 3.5"   |                          |                     |                     |                      |  |
|                          | Weight   | 0.67kg, weight of total package  |                          |                     |                     |                      |  |
|                          | Height   | Top Side: 16.5 mm; Bottom Side: 7.8 mm; PCB: 2.0 mm  |                          |                     |                     |                      |  |

\* Supported by request; please contact Advantech if this function is needed.

### Block Diagram



<sup>1</sup> Supported by request

### Ordering Information

| Part No.                              | CPU <sup>1</sup>           | L3 Cache | Memory | LVDS   | VGA | HDMI | GbE | HD Audio | RS-232/422/485 | USB 3.0 | USB 2.0 | SATAIII | Full-size Mini PCIe <sup>2</sup> | MIOe | Power connector <sup>3</sup> | Thermal Solution | Operating Temp. |
|---------------------------------------|----------------------------|----------|--------|--------|-----|------|-----|----------|----------------|---------|---------|---------|----------------------------------|------|------------------------------|------------------|-----------------|
| <b>7th Gen. Intel® Core™ U-series</b> |                            |          |        |        |     |      |     |          |                |         |         |         |                                  |      |                              |                  |                 |
| MIO-5272U-U8A1E                       | Intel i7 7600U, 2.8GHz 15W | 4MB      | SODIMM | 48 bit | Yes | Yes  | 2   | 1        | 2              | 2       | 4       | 2       | 2                                | 1    | 2x2 pin                      | Passive          | 0 - 60 °C       |
| MIO-5272Z-U8A1E                       | Intel i7 7600U, 2.8GHz 15W | 4MB      | SODIMM | 48 bit | Yes | Yes  | 2   | 1        | 2              | 2       | 4       | 2       | 2                                | 1    | 2x2 pin                      | Passive          | -20 - 80 °C     |
| MIO-5272Z2-U8A1E                      | Intel i7 7600U, 2.8GHz 15W | 4MB      | SODIMM | 48 bit | Yes | Yes  | 2   | 1        | 2              | 2       | 4       | 2       | 2                                | 1    | 2x2 pin                      | Passive          | -40 - 85 °C     |
| <b>6th Gen. Intel® Core™ U-series</b> |                            |          |        |        |     |      |     |          |                |         |         |         |                                  |      |                              |                  |                 |
| MIO-5272U-U6A1E                       | Intel i7 6600U 2.6GHz 15W  | 4MB      | SODIMM | 48-bit | Yes | Yes  | 2   | 1        | 2              | 2       | 4       | 2       | 2                                | 1    | 2x2 pin                      | Passive          | 0 - 60 °C       |
| MIO-5272U-U4A1E                       | Intel i5 6300U 2.4GHz 15W  | 3MB      | SODIMM | 48-bit | Yes | Yes  | 2   | 1        | 2              | 2       | 4       | 2       | 2                                | 1    | 2x2 pin                      | Passive          | 0 - 60 °C       |
| MIO-5272U-U3A1E                       | Intel i3 6100U 2.3GHz 15W  | 3MB      | SODIMM | 48-bit | Yes | Yes  | 2   | 1        | 2              | 2       | 4       | 2       | 2                                | 1    | 2x2 pin                      | Passive          | 0 - 60 °C       |
| MIO-5272Z2-U6A1E                      | Intel i7 6600U 2.6GHz 15W  | 4MB      | SODIMM | 48-bit | Yes | Yes  | 2   | 1        | 2              | 2       | 4       | 2       | 2                                | 1    | 2x2 pin                      | Passive          | -40 - 85 °C     |
| MIO-5272Z2-U4A1E                      | Intel i5 6300U 2.4GHz 15W  | 3MB      | SODIMM | 48-bit | Yes | Yes  | 2   | 1        | 2              | 2       | 4       | 2       | 2                                | 1    | 2x2 pin                      | Passive          | -40 - 85 °C     |
| MIO-5272Z2-U4A1E                      | Intel i5 6300U 2.4GHz 15W  | 3MB      | SODIMM | 48-bit | Yes | Yes  | 2   | 1        | 2              | 2       | 4       | 2       | 2                                | 1    | 2x2 pin                      | Passive          | -20 - 80 °C     |

<sup>1</sup> Intel Celeron 3955U is supported by request

<sup>2</sup> One Mini PCIe default support mSATA

<sup>3</sup> DC jack is supported by request

### Packing List

| Part No.       | Description   | Quantity |
|----------------|---|----------|
|                | MIO-5272 SBC  | 1        |
| 2006527200     | Startup Manual  | 1        |
| 1700006291     | M Cable SATA 7P/SATA 7P 30cm C=R 180/90               | 1        |
| 1700018785     | SATA 35cm power cable                                 | 1        |
| 1701200220     | COM RS-232 Cable 2*10P-2.0/D-SUB 9P (M)*2 22CM        | 1        |
| 1700019584     | Audio Cable 2*5P-2.0/JACK*3 20cm                      | 1        |
| 9689000002     | Mini Jumper pack                                      | 1        |
| 1960068763T001 | Heatsink (145 x 84 x 24 mm) for MIO-5272              | 1        |
| 1960072272T001 | Heatsink (145.4 x 84.2 x 34 mm) for MIO-5272Z/Z2 only | 1        |

### Rear I/O View



### Optional Accessories

| Part No.           | Description                                   |
|--------------------|---|
| 1960074236N001     | Heat spreader (145 x 84 x 16 mm) for MIO-5272 |
| 1700002172         | Internal 2 ports USB cable 17CM               |
| SQR-SD3N-8G1K6HNEC | SODIMM 204pin DDR3L 1600 8GB (0-85oC) Hynix   |

### Embedded OS/API

| Embedded OS/API             | Part No.   | Description  |
|-----------------------------|------------|--------------|
| Windows Embedded 10         | TBD        |              |
| Windows Embedded 7 Standard | 2070014274 | EN/JP/TC/SC  |
| VxWorks                     |            | 7.0 (TBD)    |
| Linux                       |            | Ubuntu 15.10 |
| Software API                |            | SUSI 4.0     |

1. Intel i7 7600U support Win10 only