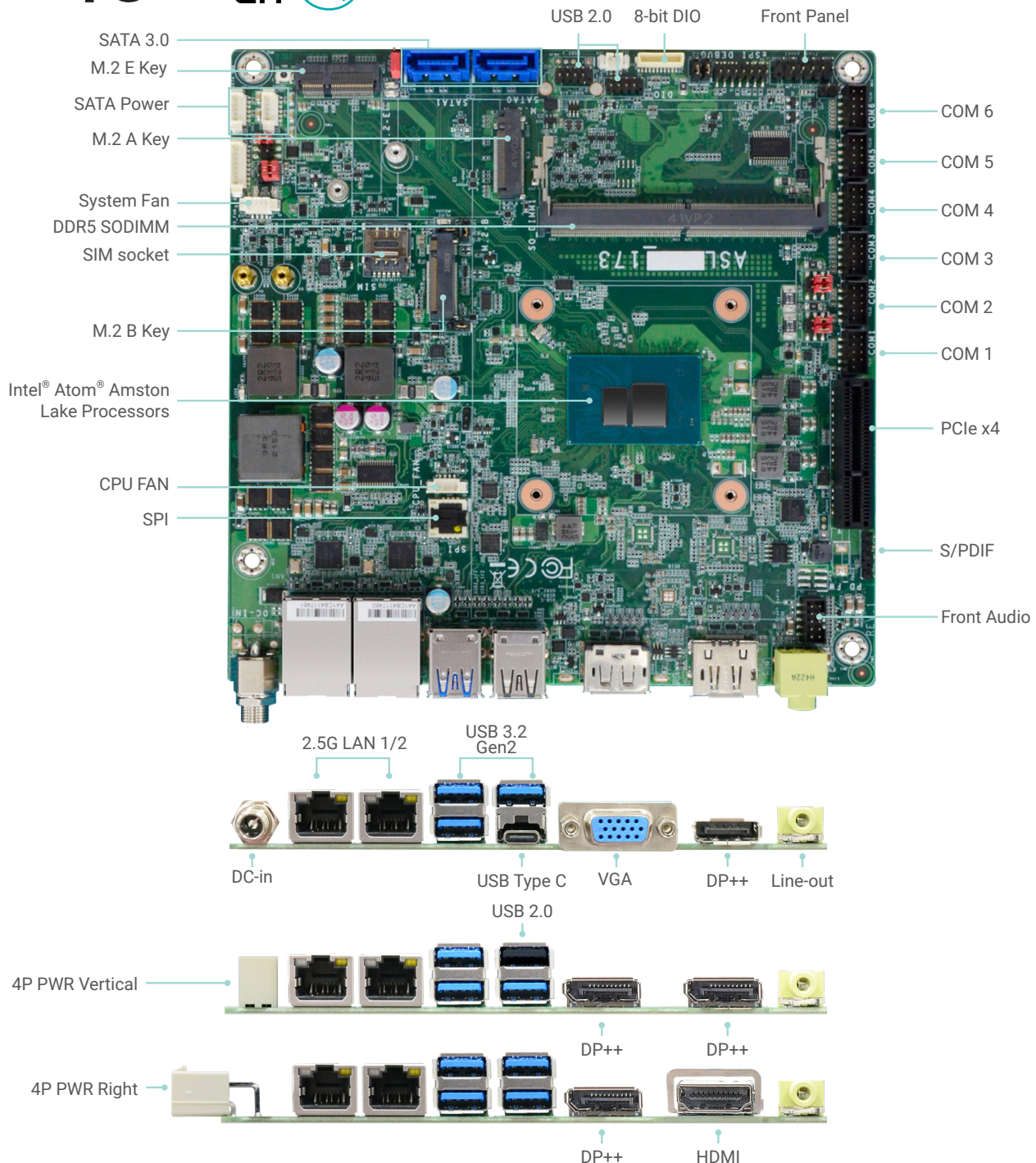


# ASL171/ASL173

Intel® Atom® Twin Lake Processors  
Intel® Atom® Amston Lake Processors  
Atom Mini-ITX



## KEY FEATURES



### DDR5

1 DDR5 4800MHz SODIMM up to 16GB



### 4K High Resolution

Supports 4K/ 2K resolution



### Triple Displays

DP++/VGA + HDMI/  
DP++ + USB-Type C +  
\*M2A-Display(optional)  
\*M2A Display support  
(eDP/LVDS/VGA/HDMI/DP)



### Multiple Expansion

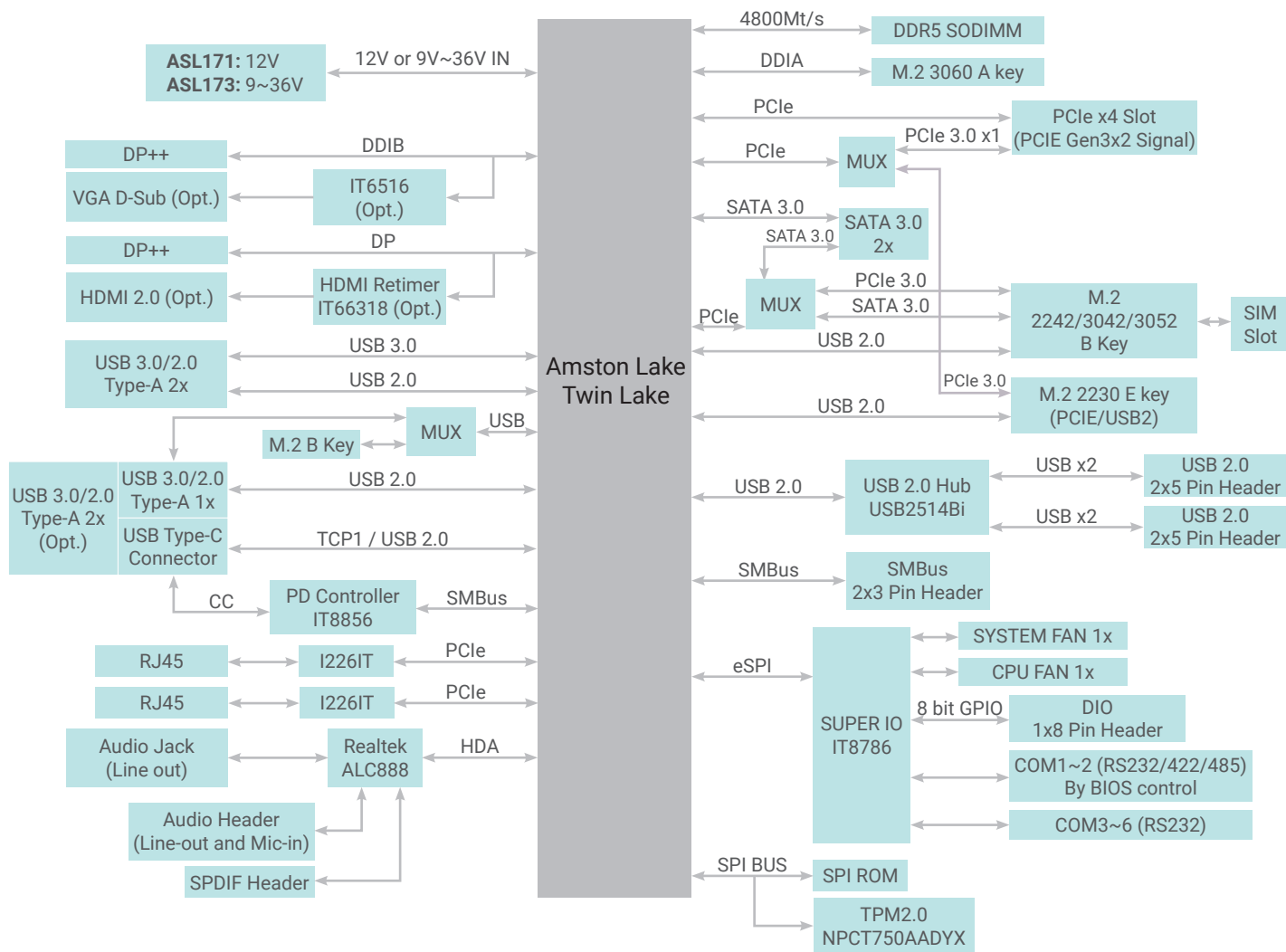
1 M.2 A Key,  
1 M.2 B Key,  
1 M.2 E Key



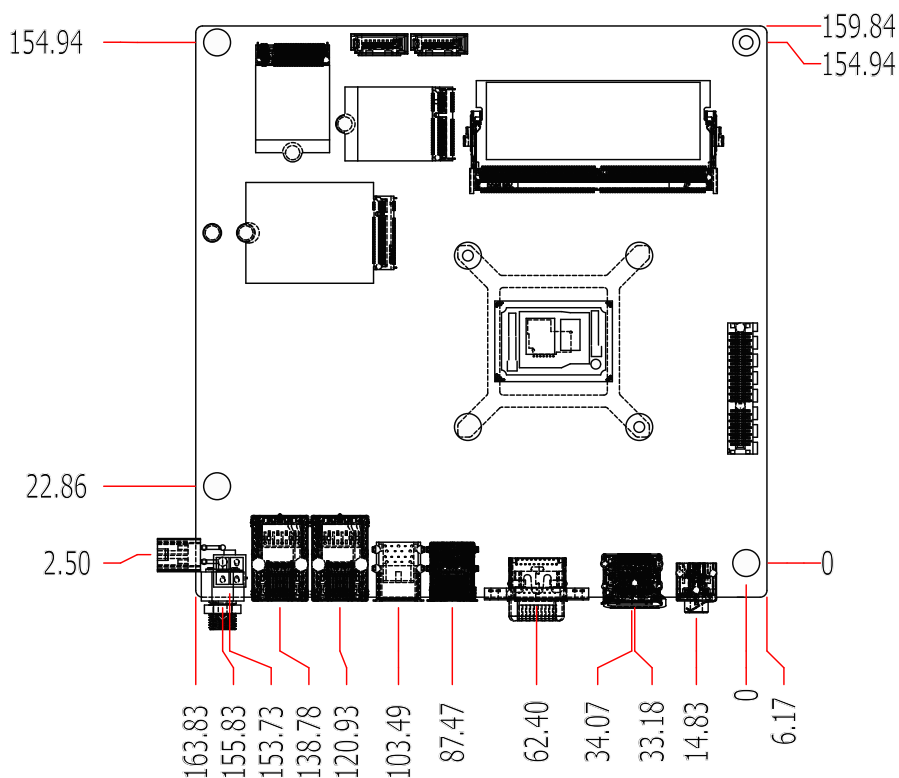
### Rich I/O

2 2.5GbE LAN, up to 4  
USB 3.2, 1 USB Type C,  
2 USB2.0, 2 SATA3.0,  
6 COM

## BLOCK DIAGRAM



## MECHANICAL DRAWING



## SPECIFICATION

| Model Name     |                   | ASL171                                                                                                                                                                                                                                                                                                                                                                                                                         | ASL173                                                                                                                                                                                                                                                                                                                   |
|----------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SYSTEM         | Processor         | Intel® Atom x7000RE series processors (Code Name : Amston Lake)<br>Intel® Processor N-series processors(Code Name : Twin Lake)<br>Intel® Atom Processor x7835RE, 8 Cores, 1.3~3.6GHz, 12W<br>Intel® Atom Processor x7433RE, 4 Cores, 1.5~3.4GHz, 9W<br>Intel® Atom Processor x7213RE, 2 Cores, 2.0~3.4GHz, 9W<br>Intel® Atom Processor x7211RE, 2 Cores, 1.0~3.2GHz, 6W<br>Intel® Atom Processor N150, 4 Cores, 1.0~3.6GHz, 6W |                                                                                                                                                                                                                                                                                                                          |
|                | Memory            | One 262-pin SODIMM up to 16GB<br>Single Channel DDR5 4800MHz                                                                                                                                                                                                                                                                                                                                                                   | One 262-pin SODIMM up to 16GB<br>Single Channel DDR5 4800MHz                                                                                                                                                                                                                                                             |
|                | BIOS              | AMI SPI 256Mbit                                                                                                                                                                                                                                                                                                                                                                                                                | AMI SPI 256Mbit                                                                                                                                                                                                                                                                                                          |
| GRAPHICS       | Controller        | Intel® UHD Graphics                                                                                                                                                                                                                                                                                                                                                                                                            | Intel® UHD Graphics                                                                                                                                                                                                                                                                                                      |
|                | Feature           | OpenGL 4.6, Direct X 12.1, OpenCL 3.0<br><b>HW Decode:</b> HEVC, VP9, AV1, AVC<br><b>HW Encode:</b> HEVC, VP9, AVC                                                                                                                                                                                                                                                                                                             | OpenGL 4.6, Direct X 12.1, OpenCL 3.0<br><b>HW Decode:</b> HEVC, VP9, AV1, AVC<br><b>HW Encode:</b> HEVC, VP9, AVC                                                                                                                                                                                                       |
|                | Display           | 1 x DP++/ VGA (Co-layout)<br>1 x DP++/ HDMI2.0 (Co-layout)<br>1 x USB Type C (DP alt-mode/USB3.2 Gen2/<br>PD 15W)<br><b>HDMI:</b> resolution up to 3840x2160 @ 24Hz<br><b>DP++:</b> resolution up to 3840x2160 @ 60Hz<br><b>VGA:</b> resolution up to 2048x1536 @ 60Hz<br><b>USB-C:</b> resolution up to 3840x2160 @24Hz                                                                                                       | 1 x DP++/ VGA (Co-layout)<br>1 x DP++/ HDMI2.0 (Co-layout)<br>1 x USB Type C (DP alt-mode/USB3.2 Gen2/<br>PD 15W)<br><b>HDMI:</b> resolution up to 3840x2160 @ 24Hz<br><b>DP++:</b> resolution up to 3840x2160 @ 60Hz<br><b>VGA:</b> resolution up to 2048x1536 @ 60Hz<br><b>USB-C:</b> resolution up to 3840x2160 @24Hz |
|                | Triple Displays   | DP++/VGA + HDMI/DP++ + USB Type C (DP alt-mode/USB3.2 Gen2/PD 15W) + M2A-Display (optional)                                                                                                                                                                                                                                                                                                                                    | DP++/VGA + HDMI/DP++ + USB Type C (DP alt-mode/USB3.2 Gen2/PD 15W) + M2A-Display (optional)                                                                                                                                                                                                                              |
| EXPANSION      | Interface         | 1 x PCIe x4 (PCIe signal x2)<br>1 x M.2 2242/3042/3052 B Key (PCIe Gen3x1 or SATA3 and USB2.0 wi USB3(opt.))<br>1 x M.2 2230 E Key (PCIe Gen3x1, USB2.0)<br>1 x M.2 3060 A Key support DFI M2A-display module (opt. MOQ required)<br>1 x Nano SIM socket (connected to M.2 B key)                                                                                                                                              | 1 x PCIe x4 (PCIe signal x2)<br>1 x M.2 2242/3042/3052 B Key (PCIe Gen3x1 or SATA3 and USB2.0 wi USB3(opt.))<br>1 x M.2 2230 E Key (PCIe Gen3x1, USB2.0)<br>1 x M.2 3060 A Key support DFI M2A-display module (opt. MOQ required)<br>1 x Nano SIM socket (connected to M.2 B key)                                        |
| AUDIO          | Audio Codec       | Realtek ALC888S                                                                                                                                                                                                                                                                                                                                                                                                                | Realtek ALC888S                                                                                                                                                                                                                                                                                                          |
| ETHERNET       | Controller        | 2 x Intel® I226IT (10/100/1000/2500Mbps)                                                                                                                                                                                                                                                                                                                                                                                       | 2 x Intel® I226IT (10/100/1000/2500Mbps)                                                                                                                                                                                                                                                                                 |
| REAR I/O       | Ethernet          | 2 x 2.5GbE RJ45                                                                                                                                                                                                                                                                                                                                                                                                                | 2 x 2.5GbE RJ45                                                                                                                                                                                                                                                                                                          |
|                | USB               | 4 x USB 3.2 Gen2 or 3 x USB 3.2 Gen2 + 1 x USB 2.0 or 3 x USB 3.2 Gen2 + 1 x USB Type C                                                                                                                                                                                                                                                                                                                                        | 4 x USB 3.2 Gen2 or 3 x USB 3.2 Gen2 + 1 x USB 2.0 or 3 x USB 3.2 Gen2 + 1 x USB Type C                                                                                                                                                                                                                                  |
|                | Display           | 1 x HDMI /DP++ (opt., MOQ may required)<br>1 x DP++ /VGA (opt., MOQ may required)<br>1 x USB Type C (DP alt-mode/USB3.2 Gen2/<br>PD 15W)                                                                                                                                                                                                                                                                                       | 1 x HDMI /DP++ (opt., MOQ may required)<br>1 x DP++ /VGA (opt., MOQ may required)<br>1 x USB Type C (DP alt-mode/USB3.2 Gen2/<br>PD 15W)                                                                                                                                                                                 |
|                | Audio             | 1 x Line-out                                                                                                                                                                                                                                                                                                                                                                                                                   | 1 x Line-out                                                                                                                                                                                                                                                                                                             |
| INTERNAL I/O   | Serial            | 2 x RS-232/422/485 (RS-232 w/ power)<br>(2.0mm pitch)<br>4 x RS-232 (2.0mm pitch)                                                                                                                                                                                                                                                                                                                                              | 2 x RS-232/422/485 (RS-232 w/ power)<br>(2.0mm pitch)<br>4 x RS-232 (2.0mm pitch)                                                                                                                                                                                                                                        |
|                | USB               | 4 x USB 2.0 (2.0mm pitch) or 3 x USB 2.0 (2.00mm pitch) + 1 x Vertical USB 2.0 (type A) (opt., MOQ required)                                                                                                                                                                                                                                                                                                                   | 4 x USB 2.0 (2.0mm pitch) or 3 x USB 2.0 (2.00mm pitch) + 1 x Vertical USB 2.0 (type A) (opt., MOQ required)                                                                                                                                                                                                             |
|                | Audio             | 1 x S/PDIF<br>1 x Line-out/Mic-in                                                                                                                                                                                                                                                                                                                                                                                              | 1 x S/PDIF<br>1 x Line-out/Mic-in                                                                                                                                                                                                                                                                                        |
|                | SATA              | 2 x SATA 3.0 (up to 6Gb/s)                                                                                                                                                                                                                                                                                                                                                                                                     | 2 x SATA 3.0 (up to 6Gb/s)                                                                                                                                                                                                                                                                                               |
|                | DIO               | 1 x 8-bit DIO                                                                                                                                                                                                                                                                                                                                                                                                                  | 1 x 8-bit DIO                                                                                                                                                                                                                                                                                                            |
|                | SMBus             | 1 x SMBus                                                                                                                                                                                                                                                                                                                                                                                                                      | 1 x SMBus                                                                                                                                                                                                                                                                                                                |
| WATCHDOG TIMER | Output & Interval | System Reset, Programmable via Software from 1 to 255 Seconds                                                                                                                                                                                                                                                                                                                                                                  | System Reset, Programmable via Software from 1 to 255 Seconds                                                                                                                                                                                                                                                            |
| SECURITY       | TPM               | dTPM (default)<br>fTPM (option)                                                                                                                                                                                                                                                                                                                                                                                                | dTPM (default)<br>fTPM (option)                                                                                                                                                                                                                                                                                          |
| POWER          | Type              | Single 12VDC (+/-5%) (DC-In jack by default)                                                                                                                                                                                                                                                                                                                                                                                   | Wide Range 9~36V (4P vertical type by default)                                                                                                                                                                                                                                                                           |
|                | Connector         | DC-in Jack<br>Right Angle Connector (4-pin)<br>Vertical Type Connector (4-pin)                                                                                                                                                                                                                                                                                                                                                 | DC-in Jack<br>Right Angle Connector (4-pin)<br>Vertical Type Connector (4-pin)                                                                                                                                                                                                                                           |
|                | Consumption       | <b>Idle:</b> x7835RE 12W: 12V @ 0.53A (6.36W)<br><b>Max:</b> x7835RE 12W: 12V @ 4.36A (52.32W)                                                                                                                                                                                                                                                                                                                                 | <b>Idle:</b> x7835RE 12W: 9V @ 0.82A (7.38W)<br><b>Max:</b> x7835RE 12W: 9V @ 6.12A (55.08W)<br><b>Idle:</b> x7835RE 12W: 36V @ 0.3A (10.8W)<br><b>Max:</b> x7835RE 12W: 36V @ 1.52A (54.72W)                                                                                                                            |
|                | RTC Battery       | CR2032 Coin Cell                                                                                                                                                                                                                                                                                                                                                                                                               | CR2032 Coin Cell                                                                                                                                                                                                                                                                                                         |
| OS SUPPORT     | Microsoft         | Windows IoT Enterprise 10 LTSB<br>Windows 11                                                                                                                                                                                                                                                                                                                                                                                   | Windows IoT Enterprise 10 LTSB<br>Windows 11                                                                                                                                                                                                                                                                             |
|                | Linux             | Linux                                                                                                                                                                                                                                                                                                                                                                                                                          | Linux                                                                                                                                                                                                                                                                                                                    |

SPECIFICATION

| Model Name                  |                | ASL171                                                                                                                                                                                                                       | ASL173                                                                                                                                                                                                                       |
|-----------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ENVIRONMENT                 | Temperature    | Operating: -40 to 85°C / -5 to 65°C<br>Storage: -40 to 85°C                                                                                                                                                                  | Operating: -40 to 85°C / -5 to 65°C<br>Storage: -40 to 85°C                                                                                                                                                                  |
|                             | Humidity       | Operating: 5 to 90% RH<br>Storage: 5 to 90% RH                                                                                                                                                                               | Operating: 5 to 90% RH<br>Storage: 5 to 90% RH                                                                                                                                                                               |
| ENVIRONMENT                 | MTBF           | ASL171-CT-x7211RE<br>MTBF 472,343 hrs @ 25°C; 291,391 hrs @ 45°C;<br>192,586 hrs @ 60°C; 144,364 hrs @ 70°C;<br>93,242 hrs @ 85°C<br>Calculation model: Telcordia Issue 4<br>Environment: GB, GC – Ground Benign, Controlled | ASL173-CT-x7835RE<br>MTBF 455,085 hrs @ 25°C; 278,736 hrs @ 45°C;<br>183,740 hrs @ 60°C; 137,635 hrs @ 70°C;<br>88,893 hrs @ 85°C<br>Calculation model: Telcordia Issue 4<br>Environment: GB, GC – Ground Benign, Controlled |
| MECHANISM                   | Dimensions     | Mini-ITX Form Factor<br>170mm (6.7") x 170mm (6.7")                                                                                                                                                                          | Mini-ITX Form Factor<br>170mm (6.7") x 170mm (6.7")                                                                                                                                                                          |
|                             | Height         | PCB: 1.6mm<br>Top Side: 20mm<br>Bottom Side: 3mm                                                                                                                                                                             | PCB: 1.6mm<br>Top Side: 20mm<br>Bottom Side: 3mm                                                                                                                                                                             |
| STANDARDS AND CERTIFICATION | Certifications | CE, FCC, RoHS, UKCA                                                                                                                                                                                                          | CE, FCC, RoHS, UKCA                                                                                                                                                                                                          |

ORDERING INFORMATION

| Model Name        | P/N              | CPU     | Memory | Rear I/O      |         |                              | Internal I/O |                |           | Power   | Thermal | Operating Temp. |
|-------------------|------------------|---------|--------|---------------|---------|------------------------------|--------------|----------------|-----------|---------|---------|-----------------|
|                   |                  |         |        | Display       | 2.5 GbE | USB                          | RS-232       | RS-232/422/485 | USB       |         |         |                 |
| ASL171-CT-x7835RE | 770-ASL1711-000G | x7835RE | 1 DDR5 | DP/DP/Type C  | 2       | 3 USB 3.2 Gen2, 1 USB Type C | 4            | 2              | 4 USB 2.0 | 12VDC   | Fanless | -40 to 85°C     |
| ASL171-CT-x7433RE | 770-ASL1711-100G | x7433RE |        | VGA/DP/Type C |         | 3 USB 3.2 Gen2, 1 USB Type C |              |                |           | 12VDC   |         | -40 to 85°C     |
| ASL171-CT-x7213RE | 770-ASL1711-200G | x7213RE |        | DP/HDMI       |         | 4 USB 3.2 Gen2               |              |                |           | 12VDC   |         | -40 to 85°C     |
| ASL171-CT-x7211RE | 770-ASL1711-300G | x7211RE |        | DP/DP         |         | 3 USB 3.2 Gen2, 1 USB 2.0    |              |                |           | 12VDC   |         | -40 to 85°C     |
| ASL171-CB-N150    | 770-ASL1711-400G | N150    |        | DP/HDMI       |         | 4 USB 3.2 Gen2               |              |                |           | 12VDC   |         | -5 to 65°C      |
| ASL173-CT-x7835RE | 770-ASL1731-000G | x7835RE |        | VGA/DP/Type C |         | 3 USB 3.2 Gen2, 1 USB Type C |              |                |           | 9~36VDC |         | -40 to 85°C     |
| ASL173-CT-x7433RE | 770-ASL1731-100G | x7433RE |        | DP/DP         |         | 3 USB 3.2 Gen2, 1 USB 2.0    |              |                |           | 9~36VDC |         | -40 to 85°C     |
| ASL173-CT-x7213RE | 770-ASL1731-200G | x7213RE |        | DP/HDMI       |         | 3 USB 3.2 Gen2, 1 USB 2.0    |              |                |           | 9~36VDC |         | -40 to 85°C     |
| ASL173-CT-x7211RE | 770-ASL1731-300G | x7211RE |        | DP/DP/Type C  |         | 3 USB 3.2 Gen2, 1 USB Type C |              |                |           | 9~36VDC |         | -40 to 85°C     |
| ASL173-CB-N150    | 770-ASL1731-400G | N150    |        | DP/HDMI       |         | 4 USB 3.2 Gen2               |              |                |           | 9~36VDC |         | -5 to 65°C      |

PACKING LIST

|                                                          |
|----------------------------------------------------------|
| • 1 ASL171/ASL173 motherboard                            |
| • 1 COM port cable (Length: 250mm, 1 x COM ports)        |
| • 1 Serial ATA data & power cable w/lock (Length: 300mm) |
| • 1 Heat sink                                            |