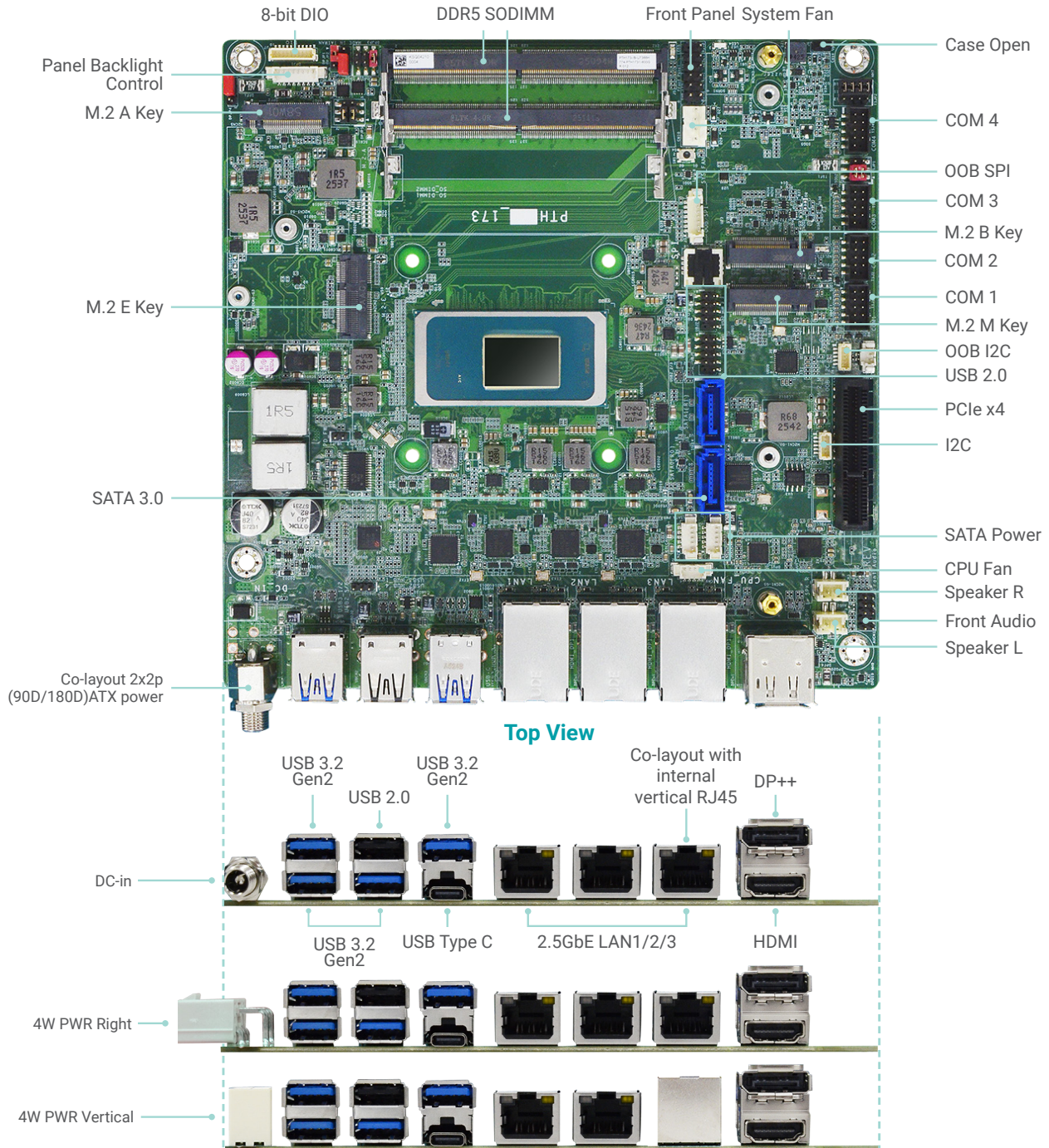


# PTH171/PTH173

Inter Panther Lake H  
Mini-ITX



## KEY FEATURES



### DDR5

2 DDR5 6400/7200MHz SODIMM up to 128GB



### 4K High Resolution

Supports 4K/ 2K resolution



### Quad Displays

HDMI, DP, USB Type C (DP alt-mode/USB3.2 Gen2 /PD 15W), M2A-Display (optional)



### Multiple Expansion

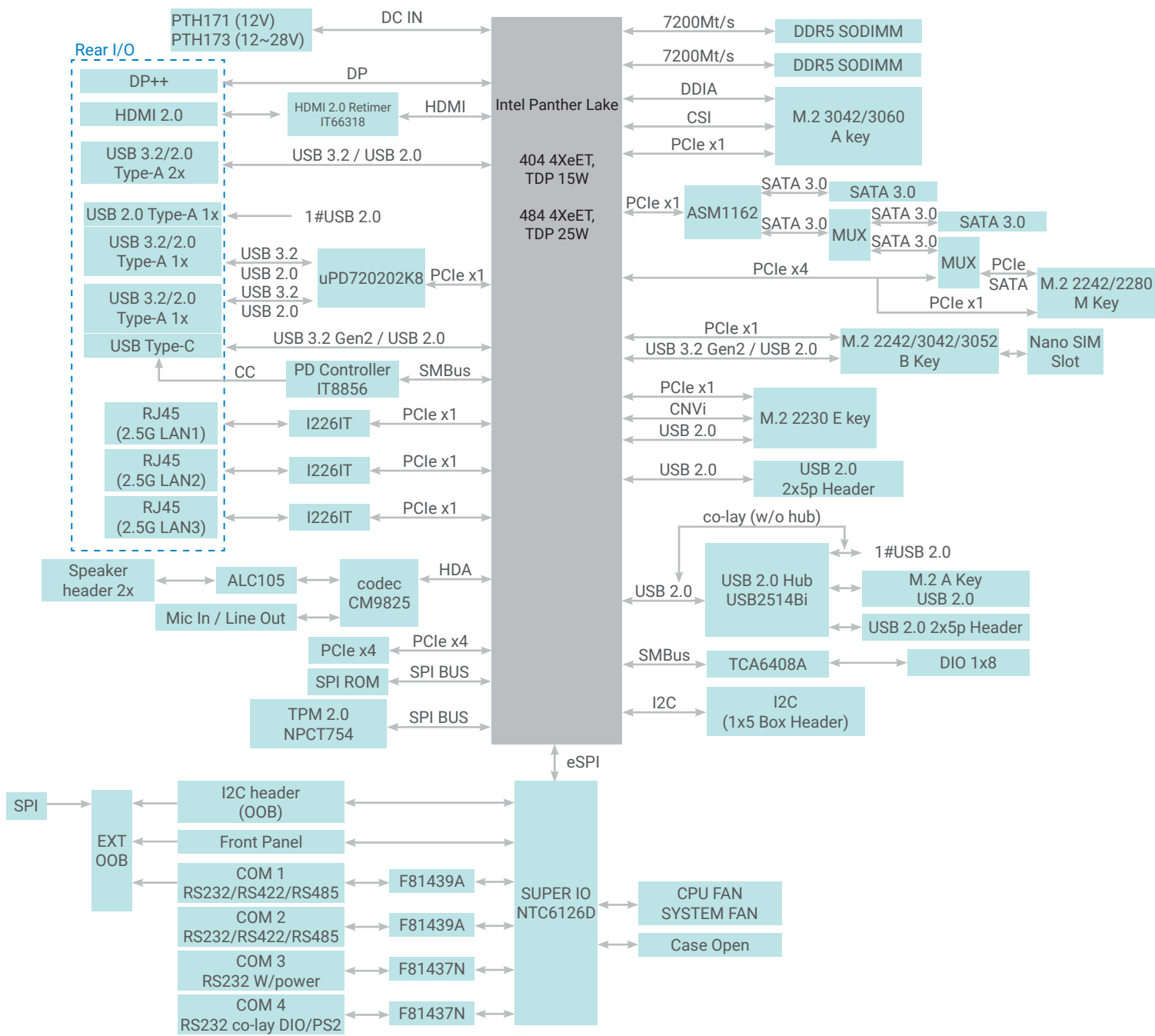
1 PCIe Gen5 x4, 1 M.2 M Key Gen5 x4, 1 M.2 B Key Gen4 x1, 1 M.2 E Key Gen4 x1, 1 M.2 A Key Gen4 x1



### Rich I/O

Up to 3 2.5GbE LAN, 4 USB 3.2, 1 USB Type C, 5 USB 2.0, 2 SATA 3.0, 4 COM

## BLOCK DIAGRAM



## SPECIFICATION

| Model Name     |                   | PTH171                                                                                                                                                                                                                                                                                                                                                     | PTH173                                                                                                                                                                                                              |
|----------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SYSTEM         | Processor         | <b>Inter Panther Lake H processor, TDP up to 25W</b><br>Intel® Core™ Ultra 9 388H (H484-12XeCT, vPro)<br>Intel® Core™ Ultra X7 358HR (H484-12XeCT, vPro)<br>Intel® Core™ Ultra 7 366HRE (484-4XeET, vPro)<br>Intel® Core™ Ultra 7 365RE (404-4XeET, vPro)<br>Intel® Core™ Ultra 5 336HRE (444-4XeET, vPro)<br>Intel® Core™ Ultra 5 335RE (404-4XeET, vPro) |                                                                                                                                                                                                                     |
|                | Memory            | 2x 262-pin SODIMM up to 128GB<br>Dual-channel SODIMM DDR5 up to 6400 MHz (H404)/7200 MHz (H484)                                                                                                                                                                                                                                                            | 2x 262-pin SODIMM up to 128GB<br>Dual-channel SODIMM DDR5 up to 6400 MHz (H404)/7200 MHz (H484)                                                                                                                     |
|                | BIOS              | AMI SPI 256Mbit                                                                                                                                                                                                                                                                                                                                            | AMI SPI 256Mbit                                                                                                                                                                                                     |
| GRAPHICS       | Controller        | Intel® Arc Xe3                                                                                                                                                                                                                                                                                                                                             | Intel® Arc Xe3                                                                                                                                                                                                      |
|                | Display           | 1 x HDMI<br>1 x DP++<br><b>HDMI:</b> resolution up to 4096x2160 @60Hz<br><b>DP:</b> resolution up to 4096x2304 @60Hz<br><b>USB Type C (DP alt-mode/USB3.2 Gen2/PD 15W):</b> resolution up to 4096x2304 @60Hz (HBR2)                                                                                                                                        | 1 x HDMI<br>1 x DP++<br><b>HDMI:</b> resolution up to 4096x2160 @60Hz<br><b>DP:</b> resolution up to 4096x2304 @60Hz<br><b>USB Type C (DP alt-mode/USB3.2 Gen2/PD 15W):</b> resolution up to 4096x2304 @60Hz (HBR2) |
|                | Quad Dis-plays    | HDMI + DP + USB Type C (DP alt-mode/USB3.2 Gen2/PD 15W) + M2A-Display (optional)                                                                                                                                                                                                                                                                           | HDMI + DP + USB Type C (DP alt-mode/USB3.2 Gen2/PD 15W) + M2A-Display (optional)                                                                                                                                    |
| EXPANSION      | Interface         | 1 x PCIe Gen 5 x4 slot                                                                                                                                                                                                                                                                                                                                     | 1 x PCIe Gen 5 x4 slot                                                                                                                                                                                              |
|                |                   | 1 x M.2 2242/2280 M Key (PCIe Gen5x4, SATA3 opt. selected by BIOS, support NVMe )                                                                                                                                                                                                                                                                          | 1 x M.2 2242/2280 M Key (PCIe Gen5x4, SATA3 opt. selected by BIOS, support NVMe )                                                                                                                                   |
|                |                   | 1 x M.2 2242/3042/3052 B Key (PCIe Gen4x1 shared with M.2 A key by request, USB3.2 Gen2, USB2.0, SIM)                                                                                                                                                                                                                                                      | 1 x M.2 2242/3042/3052 B Key (PCIe Gen4x1 shared with M.2 A key by request, USB3.2 Gen2, USB2.0, SIM)                                                                                                               |
|                |                   | 1 x M.2 2230 E Key (PCIe Gen4x1 and USB2.0, support Intel® CNVi,WIFI7)                                                                                                                                                                                                                                                                                     | 1 x M.2 2230 E Key (PCIe Gen4x1 and USB2.0, support Intel® CNVi,WIFI7)                                                                                                                                              |
|                |                   | 1 x M.2 3042/3060 A Key (Standoff 3030)<br>Support M2A Display solution (eDP/LVDS/VGA/DP/HDMI or DVI via optional cable)<br>Support M2A-M21 expansion solution (PCIEx1,USB3/USB2,SIM)                                                                                                                                                                      | 1 x M.2 3042/3060 A Key (Standoff 3030)<br>Support M2A Display solution (eDP/LVDS/VGA/DP/HDMI or DVI via optional cable)<br>Support M2A-M21 expansion solution (PCIEx1,USB3/USB2,SIM)                               |
| AUDIO          | Audio Codec       | Realtek ALC888S                                                                                                                                                                                                                                                                                                                                            | Realtek ALC888S                                                                                                                                                                                                     |
| ETHERNET       | Controller        | <b>LAN1/2:</b> i226V/IT (10/100/1000/2.5G speeds)<br><b>LAN3(vPro):</b> i226LM/IT (10/100/1000/2.5G speeds)                                                                                                                                                                                                                                                | <b>LAN1/2:</b> i226V/IT (10/100/1000/2.5G speeds)<br><b>LAN3(vPro):</b> i226LM/IT (10/100/1000/2.5G speeds)                                                                                                         |
| REAR I/O       | Ethernet          | Up to 3 x 2.5GHz RJ45 (LAN 3 colayout with internal vertical RJ45 by option)                                                                                                                                                                                                                                                                               | Up to 3 x 2.5GHz RJ45 (LAN 3 colayout with internal vertical RJ45 by option)                                                                                                                                        |
|                | USB               | 4 x USB 3.2 Gen2 Type A<br>1 x USB 2.0 Type A<br>1 x USB 3.2 Gen 2 Type C (DP alt-mode/USB3.2 Gen 2/PD 15W)                                                                                                                                                                                                                                                | 4 x USB 3.2 Gen2 Type A<br>1 x USB 2.0 Type A<br>1 x USB 3.2 Gen 2 Type C (DP alt-mode/USB3.2 Gen 2/PD 15W)                                                                                                         |
|                | Display           | 1 x HDMI 2.0<br>1 x DP++                                                                                                                                                                                                                                                                                                                                   | 1 x HDMI 2.0<br>1 x DP++                                                                                                                                                                                            |
| INTERNAL I/O   | Serial            | 2 x RS-232/422/485 (2.0mm pitch)<br>1 x RS-232 with power (2.0mm pitch)<br>1 x RS-232 (2.0mm pitch) colay with DIO-4bit or PS/2 (Option)                                                                                                                                                                                                                   | 2 x RS-232/422/485 (2.0mm pitch)<br>1 x RS-232 with power (2.0mm pitch)<br>1 x RS-232 (2.0mm pitch) colay with DIO-4bit or PS/2 (Option)                                                                            |
|                | USB               | 4 x USB 2.0 (2.0mm pitch)<br>1 x M.2 A key with M2A-M21 supports up to 2 USB3 Gen1 and 4 USB2.0 (Option)                                                                                                                                                                                                                                                   | 4 x USB 2.0 (2.0mm pitch)<br>1 x M.2 A key with M2A-M21 supports up to 2 USB3 Gen1 and 4 USB2.0 (Option)                                                                                                            |
|                | Display           | 1 x M.2 A key, support M2A-Display ( eDP / LVDS / VGA / DP / HDMI or DVI via optional cable)                                                                                                                                                                                                                                                               | 1 x M.2 A key, support M2A-Display ( eDP / LVDS / VGA / DP / HDMI or DVI via optional cable)                                                                                                                        |
|                | Audio             | 1 x Line-out/Mic-in<br>2 x 3W speaker header (L/R)                                                                                                                                                                                                                                                                                                         | 1 x Line-out/Mic-in<br>2 x 3W speaker header (L/R)                                                                                                                                                                  |
|                | SATA              | 2 x SATA 3.0<br>H484 RAID 0,1,5 supported by Intel VMD<br>H404 RAID 0,1 (shared with M.2 M key)                                                                                                                                                                                                                                                            | 2 x SATA 3.0<br>H484 RAID 0,1,5 supported by Intel VMD<br>H404 RAID 0,1 (shared with M.2 M key)                                                                                                                     |
|                | DIO               | 1 x 8-bit DIO                                                                                                                                                                                                                                                                                                                                              | 1 x 8-bit DIO                                                                                                                                                                                                       |
|                | Case open         | 1 x case open header                                                                                                                                                                                                                                                                                                                                       | 1 x case open header                                                                                                                                                                                                |
|                | 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                                                                                                                                                                                                                                                                                                                                               | Wide Range 12~28VDC                                                                                                                                                                                                 |
|                | Connector         | DC-in Jack<br>Right Angle Connector (4-pin) (Option)<br>Straightl Type Connector (4-pin) (Option)                                                                                                                                                                                                                                                          | DC-in Jack<br>Right Angle Connector (4-pin) (Option)<br>Straightl Type Connector (4-pin) (Option)                                                                                                                   |
|                | Consumption       | Idle: TBD<br>Max: TBD                                                                                                                                                                                                                                                                                                                                      | Idle: TBD<br>Max: TBD                                                                                                                                                                                               |
|                | RTC Battery       | CR2032 Coin Cell                                                                                                                                                                                                                                                                                                                                           | CR2032 Coin Cell                                                                                                                                                                                                    |

SPECIFICATION

| Model Name                  |                | PTH171                                                                   | PTH173                                                                   |
|-----------------------------|----------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|
| OS SUPPORT                  | Microsoft      | Windows 11 24H2 LTSC 64-bit                                              | Windows 11 24H2 LTSC 64-bit                                              |
|                             | Linux          | Ubuntu 24.04                                                             | Ubuntu 24.04                                                             |
| ENVIRONMENT                 | Temperature    | <b>Operating:</b> -5 to 65°C, -20 to 70°C<br><b>Storage:</b> -40 to 85°C | <b>Operating:</b> -5 to 65°C, -20 to 70°C<br><b>Storage:</b> -40 to 85°C |
|                             | Humidity       | <b>Operating:</b> 5 to 95% RH<br><b>Storage:</b> 5 to 95% RH             | <b>Operating:</b> 5 to 95% RH<br><b>Storage:</b> 5 to 95% RH             |
| ENVIRONMENT                 | MTBF           | TBD                                                                      | TBD                                                                      |
| 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         | <b>PCB:</b> TBDmm<br><b>Top Side:</b> TBDmm<br><b>Bottom Side:</b> TBDmm | <b>PCB:</b> TBDmm<br><b>Top Side:</b> TBDmm<br><b>Bottom Side:</b> TBDmm |
| 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    | Operating Temp. |
|---------------------|------------------|----------------|--------|---------------------|-----|-----------------------------|-----------------------------------|-----------|-----|----------|-----------------|
|                     |                  |                |        | Display             | LAN | USB                         | Expansion                         | USB       | TPM |          |                 |
| PTH171-IB-UX7358HR  | 770-PTH171X-000G | Ultra X7 358HR | 2 DDR5 | 1 DP++,<br>1 HDMI20 | 3   | 4 USB 3.2 ,<br>1 USB Type C | w/o PCIe slot,<br>M.2 M/B/E/A Key | 5 USB 2.0 | Yes | 12VDC    | -5 to 65°C      |
| PTH171-IE-U7366HRE  | 770-PTH171X-100G | Ultra 7 366HRE |        |                     |     |                             | M.2 M/B/E/A Key                   |           |     | 12VDC    | -20 to 70°C     |
| PTH171-IE-U7365RE   | 770-PTH171X-200G | Ultra 7 365RE  |        |                     |     |                             | M.2 M/B/E/A Key                   |           |     | 12VDC    | -20 to 70°C     |
| PTH171-IE-U5336HRE  | 770-PTH171X-300G | Ultra 5 336HRE |        |                     |     |                             | M.2 M/B/E/A Key                   |           |     | 12VDC    | -20 to 70°C     |
| PTH171-IE-U5335RE   | 770-PTH171X-400G | Ultra 5 335RE  |        |                     |     |                             | M.2 M/B/E/A Key                   |           |     | 12VDC    | -20 to 70°C     |
| PTH171-IB-U9388H    | 770-PTH171X-500G | Ultra 9 388H   |        |                     |     |                             | w/o PCIe slot,<br>M.2 M/B/E/A Key |           |     | 12VDC    | -5 to 65°C      |
| PTH173-IB- UX7358HR | 770-PTH173X-000G | Ultra X7 358HR |        |                     |     |                             | w/o PCIe slot,<br>M.2 M/B/E/A Key |           |     | 12~28VDC | -5 to 65°C      |
| PTH173-IE-U7366HRE  | 770-PTH173X-100G | Ultra 7 366HRE |        |                     |     |                             | M.2 M/B/E/A Key                   |           |     | 12~28VDC | -20 to 70°C     |
| PTH173-IE-U7365RE   | 770-PTH173X-200G | Ultra 7 365RE  |        |                     |     |                             | M.2 M/B/E/A Key                   |           |     | 12~28VDC | -20 to 70°C     |
| PTH173-IE-U5336HRE  | 770-PTH173X-300G | Ultra 5 336HRE |        |                     |     |                             | M.2 M/B/E/A Key                   |           |     | 12~28VDC | -20 to 70°C     |
| PTH173-IE-U5335RE   | 770-PTH173X-400G | Ultra 5 335RE  |        |                     |     |                             | M.2 M/B/E/A Key                   |           |     | 12~28VDC | -20 to 70°C     |
| PTH173-IB-U9388H    | 770-PTH171X-500G | Ultra 9 388H   |        |                     |     |                             | w/o PCIe slot,<br>M.2 M/B/E/A Key |           |     | 12VDC    | -5 to 65°C      |

## OPTIONAL ITEMS

| Model Name                      | P/N             | CPU                                                                                                                                                                |
|---------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WM130 Chassis                   |                 | CASE, mini-ITX, 200x210.6x153.8mm, for 6.7"x6.7"                                                                                                                   |
| Power adapter-230W/24V          | 671-123001-000G | POWER ADAPTER,230W,HA-1231-24LC,Input:100~240V,Output:24V/9.6A,155x75x25.4mm,L=1500mm,DC Cord 5.5*2.5mm,LV6,62368-1,HA-1231-24LC-D1(LITEON)RoHS                    |
| Power adapter-150W/24V          | 671-115004-000G | POWER ADAPTER,150W,PA-1151-08EA,Input:100~240V,Output:24V/6.25A,138x66x22mm,L=1500mm,DC PLUG 5.5*2.5*10mm(10A),LV6,62368-1,PA-1151-08EA(LITEON)RoHS                |
| Power adapter-120W/24V          | 671-112005-100G | POWERADAPTER,120W,GST120A24,Input:100~240V,Output:24V/5A,167x67x35mm,L=1200mm,DC Cord 5.5*2.5*17mm(Lockable),LV6,62368-1,W/DFI JP PSE,GST120A24-DFI(MEAN WELL)RoHS |
| Power adapter-150W/12V          | 671-115003-000G | POWER ADAPTER,150W,EA11701E-1200,Input:100~240V,Output:12V/12.5A,179x65x40mm,L=1500mm,DC PLUG 5.5*2.5*10mm(10A),LV6,62368-1,EA11701E(T02)(EDAC)RoHS                |
| Power adapter-60W/12V           | 671-106012-000G | POWER ADAPTER,60W,EA10681N-120,Input:100~240V,Output:12V/5A,113x49x35mm,L=1500mm,DC PLUG 5.5*2.5*10mm(Lockable),LV6,62368-1,EA10681N(183)(EDAC)RoHS                |
| M2A-LVDS                        | 770-M2ALVD-000G | M.2 A/E key DP-to-LVDS Display Module                                                                                                                              |
| M2A-EDP                         | 770-M2AEDP-000G | M.2 A/E key DP-to-EDP Display Module                                                                                                                               |
| M2A-HDMI (HDMI/DVI)             | 770-M2AHDM-000G | M.2 A/E key DP-to-HDMI 2.0 Internal Module                                                                                                                         |
|                                 | A81-026014-004G | HDMI Extend CABLE (90D M, L=300mm)                                                                                                                                 |
|                                 | A81-013010-017G | DVI CABLE, DVI-I 24+5P W/SCREW to HDMI, L=300mm                                                                                                                    |
| M2A-DP                          | 770-M2ADP1-000G | M.2 A/E key DP-to-Internal DP Module w/re-driver                                                                                                                   |
|                                 | A81-020081-023G | DISPLAYPORT Extend CABLE (90D M, L=300mm)                                                                                                                          |
| M2A-VGA                         | 770-M2AVGA-000G | M.2 A/E key DP-to-VGA Internal Module                                                                                                                              |
|                                 | A81-012004-001G | VGA CABLE,PITCH:2.54mm;L=350mm                                                                                                                                     |
| M2A-M21 (to B key w/I SIM slot) | 770-M2AM21-000G | M.2 A/E key-to-M.2 M/B key(PCIE) (3060) adapter wi SIM slot, 4 USB2.0                                                                                              |
| M2A-M21 (to B key w/I SIM slot) | 770-M2AM21-100G | M.2 A/E key-to-M.2 M/B key(USB3/2) (3060) adapter wi SIM slot, 4 USB2.0                                                                                            |
| M2A-M21 (2xUSB3/4xUSB2)         | 770-M2AM21-200G | M.2 A/E key to USB module (3060) with 2 USB3.2 Gen1, 4 USB2.0                                                                                                      |
| M2A-M21 (4xUSB2)                | 770-M2AM21-300G | M.2 A/E key-to-USB adapter with 4 USB2.0                                                                                                                           |
| M2A-MIPI (MIPI-CST)             | 770-M2AMIP-000G | M.2 A key-to-MIPI CSI Adapter                                                                                                                                      |
| SMBUS cable                     | A81-009716-018G | WIRE CABLE, SMBus, WL1010 1*5P/1mm to KB931 2*3P/2mm, L=200mm, UL1571, 28AWG, CYT23050202BAA(GREAT IDEAL)RoHS                                                      |
| COM Port Cable                  | A81-015115-018G | COM PORT CABLE, D-SUB 9P M to KB931 2*5P/2mm, L=250mm, UL2651, 28AWG                                                                                               |
| PS/2 cable                      | A81-023005-009G | PS2 CABLE, MD 6P F x2 (GREEN & PURPLE) W/BACKET to 2032H 2*5P/2mm, L=400mm, UL2725, 28AWG                                                                          |
| SATA cable w/lock               | A81-002013-000G | Serial ATA data & power cable w/lock (Length: 300mm)                                                                                                               |
| SATA PWR adapter cable          | A81-009794-018G | SATA Power 5P/1.25mm to 4P/2.5mm,Length: 100mm                                                                                                                     |
| USB 2.0 cable                   | A81-000060-054G | USB 2.0 1-port cable (Length: 200mm) NO Bracket                                                                                                                    |
| USB 2.0 cable                   | A81-001032-016G | USB 2.0 2-port cable (Length: 200mm) NO Bracket                                                                                                                    |
| DIO cable                       | A81-009715-018G | WIRE CABLE, DIO, WL1010 1*10P/1mm to PH-8Y 1*8P/2mm and PH-4Y 1*4P/2mm, L=200mm, UL1571, 28AWG                                                                     |
| Fan cable                       | A81-009771-018G | CPU/System 3P/4P Fan 1.25p-to2.54p adatper cable, Length: 150mm                                                                                                    |
| Front Panel cable               | A81-009615-016G | WIRE CABLE, Front panel, HSG 2*6P/2.54mm to 3φ LED*2 (orange/green) & SW Button, L=270mm,                                                                          |
| Front Audio, w/bracket, 300mm   | A81-022034-016G | AUDIO CABLE, HSG 2*5P/2.0mm to 3.5 audio jack green*1 and pink *1, w/ STD bracket, L=300mm, UL2651, 28AWG                                                          |
| Front Audio, 110mm              | A81-022036-016G | AUDIO CABLE, HSG 2*5/2mm TO RED Earphone Jack and Green Earphone Jack, L=110mm, UL1517, 28AWG                                                                      |
| WIFI7 BE211                     | TBD             | TBD                                                                                                                                                                |
| KS-AUD2                         | 770-KSAUD2-000G | Audio Amplifiers Mono/Stereo High-Power Class D Amplifier                                                                                                          |
| SPEAKER 3W,150mm                | 293-130020-010G | SPEAKER 3W,150mm                                                                                                                                                   |
| SPEAKER 5W, 350mm               | 293-050001-100G | SPEAKER 5W,8Ω,w/CABLE 350mm                                                                                                                                        |

## PACKING LIST

|                                                                   |                 |
|-------------------------------------------------------------------|-----------------|
| • 1 PTH171/PTH173 motherboard                                     |                 |
| • 1 COM port cable with bracket<br>(Length: 250mm, 1 x COM ports) | A81-015115-018G |
| • 1 Serial ATA data with power cable<br>(Length: 300mm)           | A81-002144-018G |
| • 4 M.2 screw/standoff                                            |                 |
| • 1 I/O Shield                                                    |                 |
| - (2 LAN, Regular type)(For Sample)                               | TBD             |
| - (3 LAN, Regular type)(For Sample)                               | TBD             |
| - (2 LAN, Thin type)(For Sample)                                  | TBD             |
| - (3 LAN, Thin type)(For Sample)                                  | TBD             |
| • 1 Cooler                                                        |                 |
| - (Wide/Normal Temp. -Cooler for 25W)                             | A71-108160-030G |