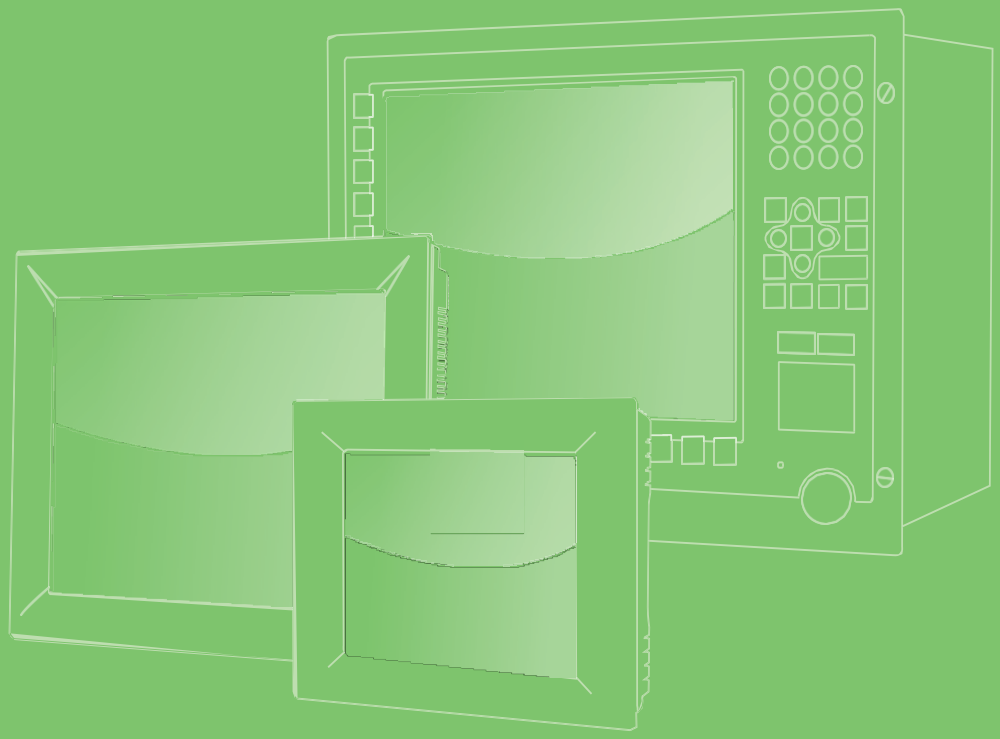
User Manual



TPC-300 Elkhart Lake Series

Industrial Touch Panel Computer with Intel® Elkhart Lake Atom™/ Celeron® Processor

ADVANTECH

Enabling an Intelligent Planet

限用物質含有情況標示聲明書
Declaration of the Presence Condition of the Restricted Substances Marking

設備名稱： Equipment name	電腦			型號（型式）： Type designation (Type)		TPC-312-RExxx TPC-312-RJxxx
單元 Unit	限用物質及其化學符號					
	鉛 Lead (Pb)	汞 Mercury (Hg)	鎘 Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr^{+6})	多溴聯苯 Polybromi-nated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
電路板	－	○	○	○	○	○
面板	－	○	○	○	○	○
內外殼 (外殼、內部框架…等)	○	○	○	○	○	○
其它固定組件 (螺絲、夾具)	－	○	○	○	○	○
配件 (排線、傳輸線、網路線…等)	－	○	○	○	○	○
存取裝置 (SSD)	－	○	○	○	○	○
記憶卡	－	○	○	○	○	○

備考1.〝超出0.1 wt %〞及〝超出0.01 wt %〞係指限用物質之百分比含量超出百分比含量基準值。
Note 1: Exceeding 0.1 wt %" and "exceeding 0.01 wt %" indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.

備考2.〝○〞係指該項限用物質之百分比含量未超出百分比含量基準值。
Note 2: "○" indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.

備考3.〝－〞係指該項限用物質為排除項目。
Note 3: The "?" indicates that the restricted substance corresponds to the exemption.

設備名稱： Equipment name	電腦			型號（型式）： Type designation (Type)		TPC-315-RExxx TPC-315-RJxxx
單元 Unit	限用物質及其化學符號					
	鉛 Lead (Pb)	汞 Mercury (Hg)	鎘 Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr^{+6})	多溴聯苯 Polybromi-nated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
電路板	－	○	○	○	○	○
面板	－	○	○	○	○	○
內外殼 (外殼、內部框架…等)	○	○	○	○	○	○
其它固定組件 (螺絲、夾具)	－	○	○	○	○	○
配件 (排線、傳輸線、網路線…等)	－	○	○	○	○	○
存取裝置 (SSD)	－	○	○	○	○	○
記憶卡	－	○	○	○	○	○

備考1.〝超出0.1 wt %〞及〝超出0.01 wt %〞係指限用物質之百分比含量超出百分比含量基準值。
Note 1: Exceeding 0.1 wt %" and "exceeding 0.01 wt %" indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.

備考2.〝○〞係指該項限用物質之百分比含量未超出百分比含量基準值。
Note 2: "○" indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.

備考3.〝－〞係指該項限用物質為排除項目。
Note 3: The "?" indicates that the restricted substance corresponds to the exemption.

限用物質含有情況標示聲明書
Declaration of the Presence Condition of the Restricted Substances Marking

設備名稱： Equipment name	電腦			型號（型式）： Type designation (Type)		TPC-317-RExxx TPC-317-RJxxx
單元 Unit	限用物質及其化學符號					
	鉛 Lead (Pb)	汞 Mercury (Hg)	鎘 Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr^{+6})	多溴聯苯 Polybromi-nated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
電路板	－	○	○	○	○	○
面板	－	○	○	○	○	○
內外殼 (外殼、內部框架…等)	○	○	○	○	○	○
其它固定組件 (螺絲、夾具)	－	○	○	○	○	○
配件 (排線、傳輸線、網路線…等)	－	○	○	○	○	○
存取裝置 (SSD)	－	○	○	○	○	○
記憶卡	－	○	○	○	○	○

備考1. 〝超出0.1 wt %〞及〝超出0.01 wt %〞係指限用物質之百分比含量超出百分比含量基準值。
Note 1: Exceeding 0.1 wt %" and "exceeding 0.01 wt %" indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.

備考2. 〝○〞係指該項限用物質之百分比含量未超出百分比含量基準值。
Note 2: "○" indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.

備考3. 〝－〞係指該項限用物質為排除項目。
Note 3: The "?" indicates that the restricted substance corresponds to the exemption.

Copyright

Acknowledgments

This manual is applicable to the following models:

Atom™ Processor

- TPC-312-RExxx
- TPC-315-RExxx
- TPC-317-RExxx

Celeron® Processor

- TPC-312-RJxxx
- TPC-315-RJxxx
- TPC-317-RJxxx

Part No. 2003T30000 Edition 1

Printed in China August 2025

Product Warranty (2 years)

Advantech warrants the original purchaser that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products that have been repaired or altered by persons other than repair personnel authorized by Advantech, or that have been subject to misuse, abuse, accident, or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced free of charge during the warranty period. For out-of-warranty repairs, customers are billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details.

If you believe your product is defective, follow the steps outlined below.

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages displayed when the problem occurs.
2. Call your dealer and describe the problem. Have your manual, product, and any relevant information readily available.
3. If your product is diagnosed as defective, obtain a return merchandize authorization (RMA) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a completed Repair and Replacement Order Card, and a proof of purchase date (such as a photocopy of your sales receipt) into a shippable container. Products returned without proof of purchase date are not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This type of cable is available from Advantech. Contact your local supplier for ordering information.

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference. In such cases, users are required to correct the interference at their own expense.\

甲類警語

警告：為避免電磁干擾，本產品不應安裝或使用於住宅環境。

Technical Support and Assistance

1. Visit the Advantech website at www.advantech.com/support to obtain the latest product information.
2. Contact your distributor, sales representative, or Advantech customer service center for technical support if you need additional assistance. Please have the following information ready before calling:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Warnings, Cautions, and Notes

Warning! *Warnings indicate conditions that if not observed can cause personal injury!*

Caution! *Cautions are included to prevent hardware damage and data losses. For example,*

"Batteries are at risk of exploding if incorrectly installed. Replace the battery only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions."

Note! *Notes provide additional optional information.*

Safety Instructions

1. Read these safety instructions carefully.
2. Retain this user manual for future reference.
3. Disconnect the equipment from all power outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or spray detergents.
4. For pluggable equipment, the power outlet socket must be located near the equipment and easily accessible.
5. Protect the equipment from humidity.
6. Do not expose the equipment to direct sunlight, or install the equipment in an environment with direct sunlight, as this may cause damage.
7. Place the equipment on a reliable surface during installation. Dropping or letting the equipment fall may cause damage.
8. The openings on the enclosure are for air convection. Protect the equipment from overheating. Do not cover the openings.
9. Ensure that the voltage of the power source is correct before connecting the equipment to a power outlet.
10. Position the power cord away from high-traffic areas. Do not place anything over the power cord.
11. All cautions and warnings on the equipment should be noted.
12. If the equipment is not used for a long time, disconnect it from the power source to avoid damage from transient overvoltage.
13. Be aware that the rear cover may become quite hot during operation. To avoid scalding or personal injury, do not touch the rear cover.
14. Never pour any liquid into an opening. This may cause fire or electric shock.
15. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
16. If one of the following occurs, have the equipment checked by qualified service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated the equipment.
    - The equipment has been exposed to moisture.
    - The equipment is malfunctioning or does not work according to the user manual.
    - The equipment has been dropped and damaged.
    - The equipment shows obvious signs of breakage.
17. Do not leave the equipment in an environment with a storage temperature of below -30 °C (-22 °F) or above 70 °C (158 °F) as this may cause damage. The equipment should be located in a controlled environment.
18. Batteries are at risk of exploding if incorrectly replaced or installed. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.
19. Danger d'explosion si la pile est remplacée de fa?on incorrecte. Remplacez seulement avec le même type ou équivalent recommandé par le fabricant. Disposer des piles usagées selon les instructions du fabricant.
20. The equipment is intended to be installed on a wall or in a cabinet with the following conditions: access is restricted to service personnel or users who are aware of all precautions that must be taken when using the equipment; access can only be gained with the use of a key or other means of security; access is controlled by the authority responsible for the location.
21. In accordance with the IEC 704-1:1982 specifications, the sound pressure level at the operator's position does not exceed 70 dB (A).

22. DISCLAIMER: These instructions are provided in accordance with IEC 704-1 specifications. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Document Feedback

To assist us with improving this manual, we welcome all comments and constructive criticism. Please send all feedback in writing to support@advantech.com.

Contents

Chapter 1 General Information 1

1.1 Introduction 2
1.2 Specifications 2
1.2.1 General 2
1.2.2 System Hardware 3
1.2.3 LCD Panel 4
1.2.4 Touchscreen 5
1.2.5 Safety and Environmental 5
1.2.6 Operating Systems 6
1.3 I/O Layout 6
Figure 1.1 I/O Layout 6
1.4 Dimensions and Cutouts 7
1.4.1 TPC-312 EHL 7
Figure 1.2 TPC-312 EHL Dimensions 7
1.4.2 TPC-315 EHL 8
Figure 1.3 TPC-315 EHL Dimensions 8
1.4.3 TPC-317 EHL 9
Figure 1.4 TPC-317 EHL Dimensions 9

Chapter 2 Installation 10

2.1 Transport and Unpacking 11
2.1.1 Transport 11
2.1.2 Unpacking 11
Figure 2.1 Power Connector and Power Lines 11
Figure 2.2 Power Connector 12
2.2 Panel Mounting 12
Figure 2.3 Panel Mounting – Positioning 12
Figure 2.4 Panel Mounting – Clamp Attachment 13
Figure 2.5 Panel Mounting – Clamp Fixing 13
2.3 VESA Mounting 14
Figure 2.6 VESA Mounting 14
2.4 Cabinet Installation and Grounding 14
2.4.1 Cabinet Installation 15
Figure 2.7 Cabinet Installation 15
2.4.2 System Wiring 15
Figure 2.8 System Wiring Diagram 16
2.5 Power/Digital Ground and Earth/Ground 17
Figure 2.9 TPC Chassis and Power Supply 17
2.6 Enabling Wake On Touch 18

Appendix A Serial Port Settings 19

A.1 Jumper, Dip Switch, and Connector 20
A.1.1 Board Layout 20
Figure A.1 Board Placement - Top 20
Figure A.2 Board Placement - Bottom 20
Table A.1: Connectors and Jumpers 21
A.2 Jumper Settings, and Descriptions 22
A.2.1 CMOS Clear Function (JCMOS1) 22
Table A.2: CMOS Clear Function 22
A.2.2 AT/ATX Jumper Setting (PSON1) 22
Table A.3: AT/ATX Function 22

A.3 Connector Pin Definition 23
A.3.1 DP connector (CN3) 23
Table A.4: 1654006275 DisplayPort Conn. 20P 1.40mm 90D DIP 3VD11203 23
A.3.2 SATA Power Connector (CN8) 24
Table A.5: 1655001154 WAFER BOX 2.0mm 5P 180D(M) DIP WO/Pb JIH VEI 24
A.3.3 SATA Connector (CN9) 24
Table A.6: 1654013471-01 SATA 7P/1.27mm/(F)/NY46/VA/G15u/ D/BK/H8.45mm 24
A.3.4 SIM connector (CN10) 25
Table A.7: 1654013260-01 Nano SIM Card 6P/1.27mm/(F)/LCP/ RA/GFL/S/BK/H1.5 25
A.3.5 M.2 B key slot (CN11 USB3.0/SATA) 26
Table A.8: 1654011348-01 NGFF 75P/0.5mm/(F)/LCP/RA/GFL/ S/BK/H8.50/B-key 26
A.3.6 Mini PCIE Slot (CN12) 27
Table A.9: 1654011230-01 MINIPCIExpress 52P 0.8mm RVS H=9.9mm 90D(F) SMD Support PCI1.1, PCI1.2 Power Definition 27
A.3.7 LAN RJ45 Connector (CN13) 28
Table A.10:1652006625-01 PHONE JACK RJ45 28P DIP RTB-19GB9J1A 28
Table A.11:LED 28
A.3.8 Audio Connectors (CN14) 29
Table A.12:1654014004-01 Phone JK 6P/LCP/RA(F)/G-FL/S/ O3.5mm/BK 29
A.3.9 Power in connector (CN18) 29
Table A.13:1652003104 PLUG-IN BLOCK 3P 5.08mm 90D(M) DIP ME050-50803 29
A.3.10 Remote key connector (CN19) 29
Table A.14:1652000055 Terminal BLOCK 2P 3.5mm 90D(M) DIP 29
A.3.11 COM2 RS-232 Connector (COM2) 30
Table A.15:COM1 RS232/422/485
1653210260 BOX HEADER 10*2P 180D(M) 2.0mm SMD W/O Pb 30
Table A.16:COM2 RS232
1653210260 BOX HEADER 10*2P 180D(M) 2.0mm SMD W/O Pb 30
A.3.12 USB Connector (USB1, USB2) 31
Table A.17:USB1
1654013480-01 USB 3.1 2x9P/2.0mm/PA66/(F)/RA/ G30u/D/BU/H15.69 31
Table A.18:USB2
1654010199 USB Conn. 2.0+3.0 13P 90D(F) DIP UEA1112C-UHS6-4 31
A.3.13 i-Door Power 24V (PCN1) 32
Table A.19:1653006812-01 WTB Con. 4P 2.0mm 180D(M) DIP A2001WV2-4P-6T-5E 32
A.3.14 M.2 E key slot (M2E1 PCIE/USB2.0) 33
Table A.20:1654012663-01 NGFF 75P/0.5mm/(F)/LCP/RA/GFL/ S/BK/H8.5mm/E-key 33
A.4 Switch Setting 34
A.4.1 B-Key 5G Setting (SW3) 34
Table A.21:1654013260-01 Nano SIM Card 6P/1.27mm/(F)/LCP/ RA/GFL/S/BK/H1.5 34

Chapter 1

General Information

1.1 Introduction

The TPC-300 Elkhart Lake series touch panel computers are human machine interfaces (HMIs) equipped with an Intel Atom™ 6425E 2.00 GHz, quad core / Celeron® J6412 2.00 GHz, quad core processor and feature displays that range from 12" to 23.8" in size.

Key Features

- **True-Flat Touchscreen**
  True-flat touchscreen with IP66-rated ingress protection
- **Fanless Design**
  The fanless system design, combined with a low-power processor, minimizes the accumulation and circulation of dust and other contaminants
- **Dual-Channel DDR4 SODIMM**
  Dual memory slots support up to 32GB of memory
- **iDoor Technology**
  Supports Advantech's iDoor technology for integrating additional I/O, isolated DI/O, and fieldbus modules
- **DisplayPort and Audio Line-Out/Mic-In**
  Supports multimedia
- **TFT LED LCD Display**
  The TFT LED LCD display provides high-quality imaging, ideal for industrial applications
- **Wide Operating Temperature Range**
- **Isolation Protection**

1.2 Specifications

1.2.1 General

- **BIOS:** AMI UEFI BIOS
- **Certification:** BSMI, CCC, CE, FCC Class A, CB/UL
- **Cooling System:** Fanless design
- **Dimensions (W x H x D):**
  - TPC-312 EHL: 311.8 x 238 x 67 mm/ 12.28 x 9.37 x 2.64 in
  - TPC-315 EHL: 383.2 x 307.3 x 67 mm/ 15.09 x 12.10 x 2.64 in
  - TPC-317 EHL: 410.4 x 343.4 x 68 mm/ 16.16 x 13.52 x 2.68 in
- **Enclosure:**
  - Front bezel: Die cast aluminum alloy
  - Rear housing: Die cast aluminum alloy
- **Mount Options:** VESA, desktop, wall, or panel
- **Power Input:** 24 V_{DC} ± 20%
- **Watchdog Timer:** 15 ~ 255 sec (system)
- **Weight (Net):**
  - TPC-312 EHL: 4.2 kg/ 9.26 lb
  - TPC-315 EHL: 5.15 kg/ 11.35 lb
  - TPC-317 EHL: 6.1 kg/ 13.45 lb

- **Power Consumption:**
  This product is intended to be supplied by a IEC/UL 60950-1/IEC/UL 62368-1-recognized limited power source that is rated as follows:
  - TPC-312 EHL: 39.01 W (typical)
    24 VDC, minimum 5A, minimum operating temperature 60 °C/140 °F
  - TPC-315 EHL: 30.16 W (typical)
    24 VDC, minimum 5A, minimum operating temperature 60 °C/140 °F
  - TPC-317 EHL: 40.00 W (typical)
    24 VDC, minimum 5A, minimum operating temperature 60 °C/140°F

1.2.2 System Hardware

- **CPU:** Intel® Elkhart Lake Atom™ 6525E/ Celeron® J6412 processor i

Model Number	Processor
TPC-312-RExxx	Intel® Atom™ 6425E 2.00 GHz quad core
TPC-315-RExxx	
TPC-317-RExxx	
TPC-312-RJxxx	Intel® Celeron® J6412 2.00 GHz quad core
TPC-315-RJxxx	
TPC-317-RJxxx	

- **Memory:** 4GB DDR4 SODIMM (built-in)
- **LAN:** 2 x 10/100/1000BASE-T
- **Expansion Slot:** 1 x Full-size mini PCIe
- **Storage Slots:**
  - 1 x M.2 (B key): 2242/ 2280 (SATA/ USB3.0); 3042/ 3052 (5G)
  - 1 x 2.5" SSD/ HDD (SATA, Max. 7mm)
- **I/O Ports:**
  - 1 x RS-232
  - 1 x RS-232/422/485
  - 3 x USB 3.2
  - 1 x USB 2.0
  - 1 x iDoor slot
  - 1 x Displayport (Video output)
  - 1 x Audio line out/ mic in
  - 1 x Remote Power Buttom

1.2.3 LCD Panel

TPC-312 EHL

- **Display Type:** XGA TFT LED LCD
- **Display Size:** 12.1” (4:3)
- **Max. Resolution:** 1024x768
- **Max. Color:** 16.2M
- **Luminance (cd/m^2):** 600
- **Viewing Angle (H°/V°):** 178°/178°
- **Backlight Life:** 50,000 hrs
- **Contrast Ratio:** 1000:1

TPC-317 EHL

- **Display Type:** XGA TFT LED LCD
- **Display Size:** 15” (4:3)
- **Max. Resolution:** 1024x768
- **Max. Color:** 16.2M
- **Luminance (cd/m^2):** 300
- **Viewing Angle (H°/V°):** 176°/176°
- **Backlight Life:** 70,000 hrs
- **Contrast Ratio:** 2000:1

TPC-317 EHL

- **Display Type:** SXGA TFT LED LCD
- **Display Size:** 17” (4:3)
- **Max. Resolution:** 1280x1024
- **Max. Color:** 16.7M
- **Luminance (cd/m^2):** 300
- **Viewing Angle (H°/V°):** 160°/140°
- **Backlight Life:** 50,000 hrs
- **Contrast Ratio:** 800:1

1.2.4 Touchscreen

TPC-312 EHL

- **Lifespan:** 36 million touches at a single point
- **Light Transmission:** Above 75%
- **Resolution:** Linearity
- **Type:** 5-wire analog resistive

TPC-315 EHL

- **Lifespan:** 36 million touches at a single point
- **Light Transmission:** Above 75%
- **Resolution:** Linearity
- **Type:** 5-wire analog resistive

TPC-317 EHL

- **Lifespan:** 36 million touches at a single point
- **Light Transmission:** Above 75%
- **Resolution:** Linearity
- **Type:** 5-wire analog resistive

1.2.5 Safety and Environmental

1.2.5.1 Safety

- FCC Class A
- CE certified

1.2.5.2 Environmental

TPC-312 EHL

- **Humidity:** 10 ~ 95% RH @ 40 °C/104 °F, non-condensing
- **Ingress Protection:** IP66-rated front panel
- **Operating Temperature:** -20 ~ 60 °C/-4 ~ 140 °F (without airflow)
- **Storage Temperature:** -30 ~ 70 °C/-22 ~ 158 °F
- **Vibration Protection:** With SSD: 1 Grms (5 ~ 500 Hz) (operating, random)

TPC-315 EHL

- **Humidity:** 10 ~ 95% relative humidity @ 40 °C/104 °F, non-condensing
- **Ingress Protection:** IP66-rated front panel
- **Operating Temperature:** -20 ~ 60 °C/-4 ~ 140 °F (without airflow)
- **Storage Temperature:** -30 ~ 70 °C/-22 ~ 158 °F
- **Vibration Protection:** With SSD: 1 Grms (5 ~ 500 Hz) (operating, random)

TPC-317 EHL

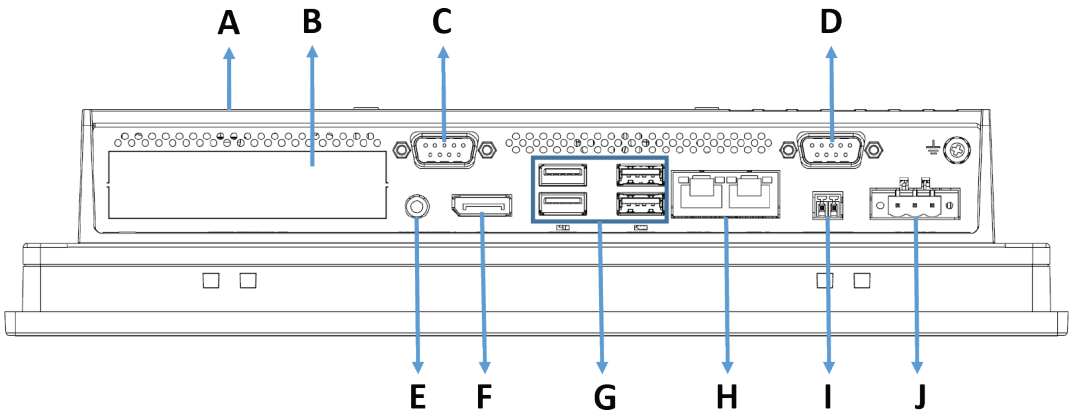
- **Humidity:** 10 ~ 95% RH @ 40 °C/104 °F, non-condensing
- **Ingress Protection:** IP66-rated front panel
- **Operating Temperature:** -20 ~ 60 °C/-4 ~ 140 °F (without airflow)
- **Storage Temperature:** -30 ~ 70 °C/-22 ~ 158 °F
- **Vibration Protection:** With SSD: 1 Grms (5 ~ 500 Hz) (operating, random)

1.2.6 Operating Systems

- Windows 10
- Android
- AdvLinux

1.3 I/O Layout

The I/O the layout for TPC-300 Elkhart Lake Series is shown in Figure 1.1.



A. Default HDD/SSD Bay
B. iDoor slot
C. RS-232/422/485
D. RS-232
E. Audio line out/ mic in
F. Display Port
G. USB 3.2/2.0
H. LAN (10/100/1000)
I. Remote Power Button
I. Power Receptor

Figure 1.1 I/O Layout

1.4 Dimensions and Cutouts

1.4.1 TPC-312 EHL

- **Weight (Net):** 4.2 kg/ 9.26 lb
- **Dimensions (W x H x D):** 311.8 x 238 x 67 mm/ 12.28 x 9.37 x 2.64 in
- **Cutout Dimensions (L x H):** 303 x 229 mm/ 11.93 x 9.02 in

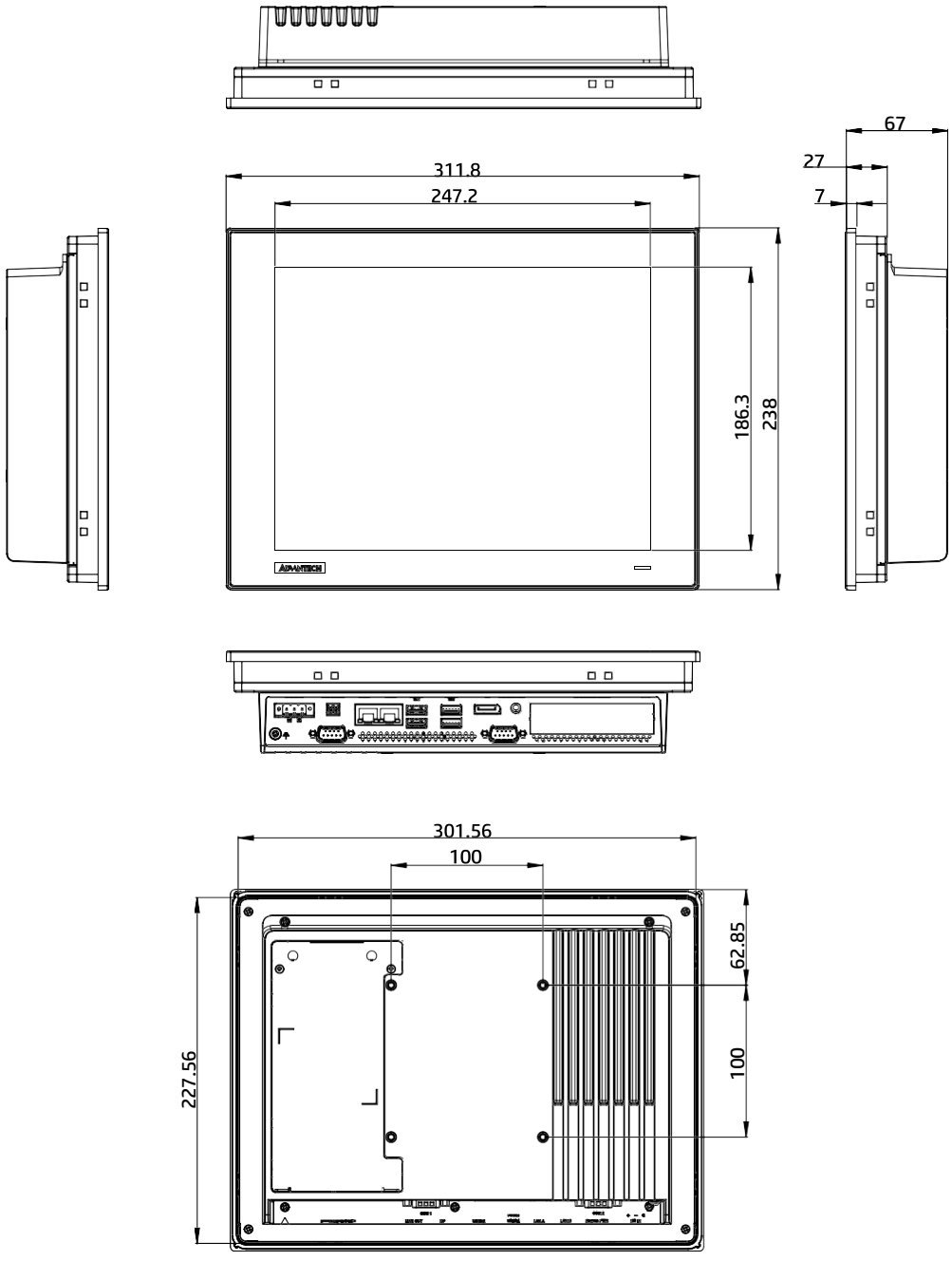
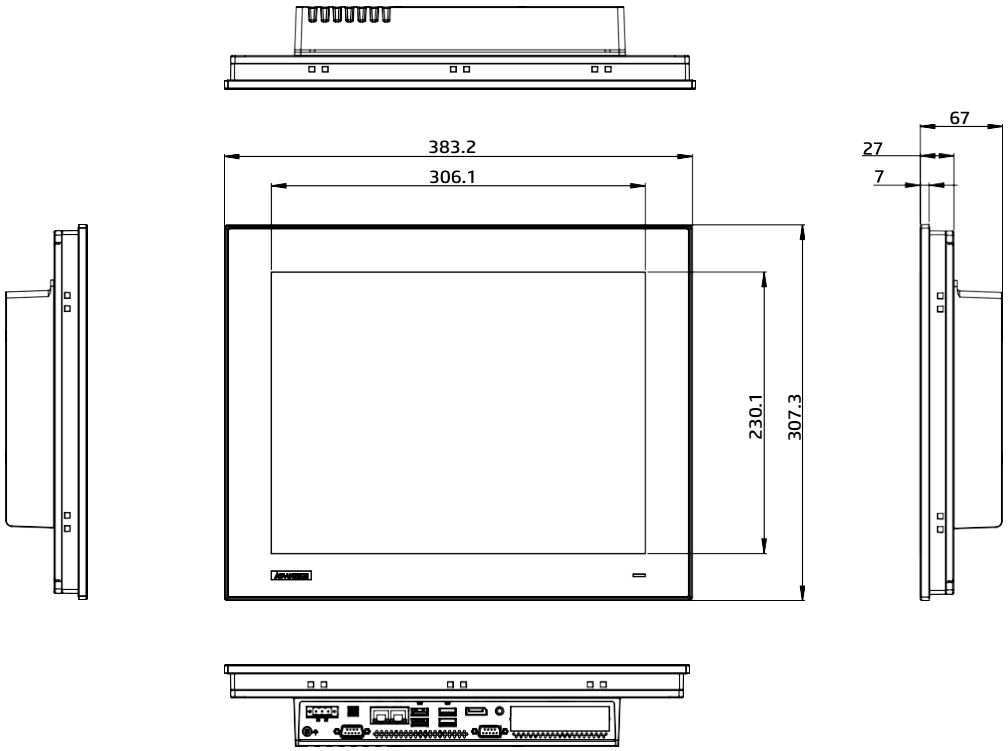


Figure 1.2 TPC-312 EHL Dimensions

1.4.2 TPC-315 EHL

- **Weight (Net):** 5.15 kg/ 11.35 lb
- **Dimensions (W x H x D):** 383.2 x 307.3 x 67 mm/ 15.09 x 12.10 x 2.64 in
- **Cutout Dimensions (L x H):** 374.5 x 298.5 mm/ 14.74 x 11.75 in



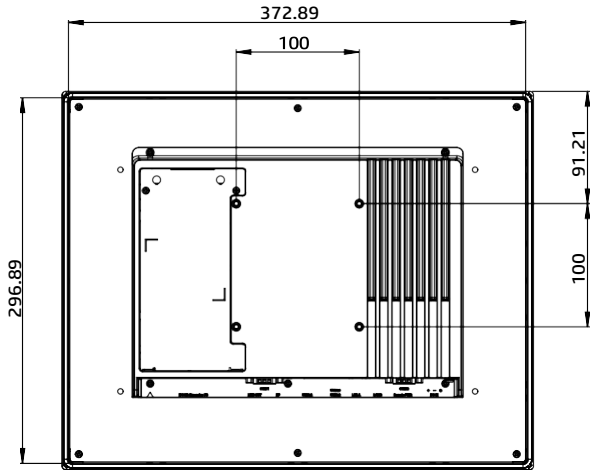


Figure 1.3 TPC-315 EHL Dimensions

1.4.3 TPC-317 EHL

- **Weight (Net):** 6.1 kg/ 13.45 lb
- **Dimensions (L x W x H):** 410.4 x 343.4 x 68 mm/ 16.16 x 13.52 x 2.68 in
- **Cutout Dimensions (L x H):** 401.3 x 334.8 mm/ 15.80 x 13.18 in

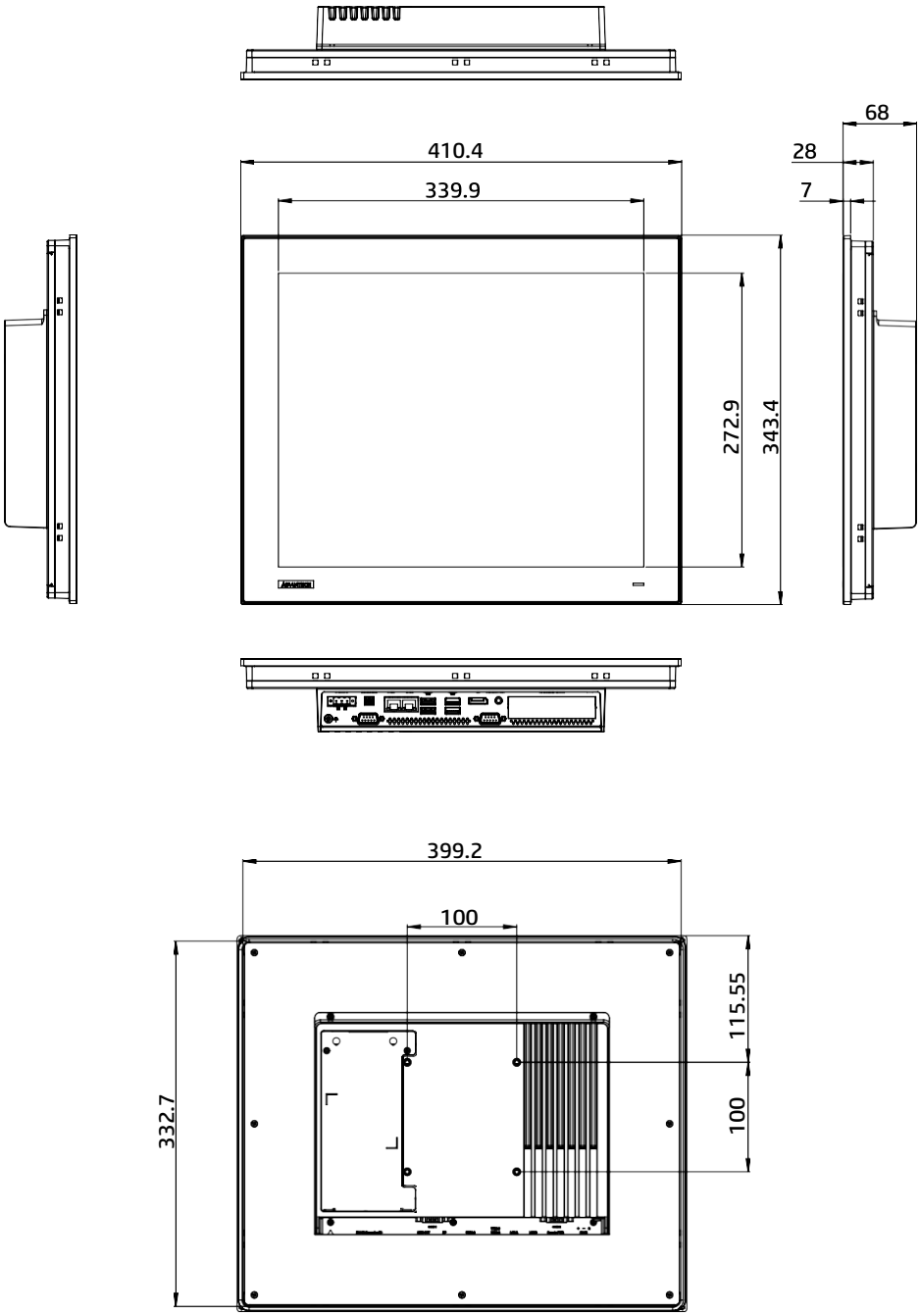


Figure 1.4 TPC-317 EHL Dimensions

Chapter 2

Installation

2.1 Transport and Unpacking

2.1.1 Transport

After accepting delivery of the product, check the packaging for visible signs of damage during transit. Additionally, check the contents of the shipment for completeness by comparing it with the order details. If you notice any shipping damage or inconsistencies between the contents and your order, inform the responsible delivery service immediately.

During transportation, the product should be protected from excessive mechanical stress. If the product is transported or stored without packaging, shocks, vibrations, pressure, and moisture may impact the unprotected unit. Damaged packaging indicates that ambient conditions have already had a massive impact on the device. Therefore, we recommend using the original packaging during transportation and storage.

If the device is transported in cold weather or exposed to extreme temperature variations, ensure that moisture (condensation) does not accumulate on or inside the device. Moisture can cause electrical circuits to short and damage the device. To avoid exposure to moisture, store the device in a dry place. Additionally, ensure the device is at room temperature before switching it on. If you notice condensation has occurred, wait for approximately 12 hours to allow the device to dry completely before switching it on.

2.1.2 Unpacking

1. Unpack the TPC device.
2. Connect the power connector to the 24 V_{DC} power lines of a power adapter or in-house power source.

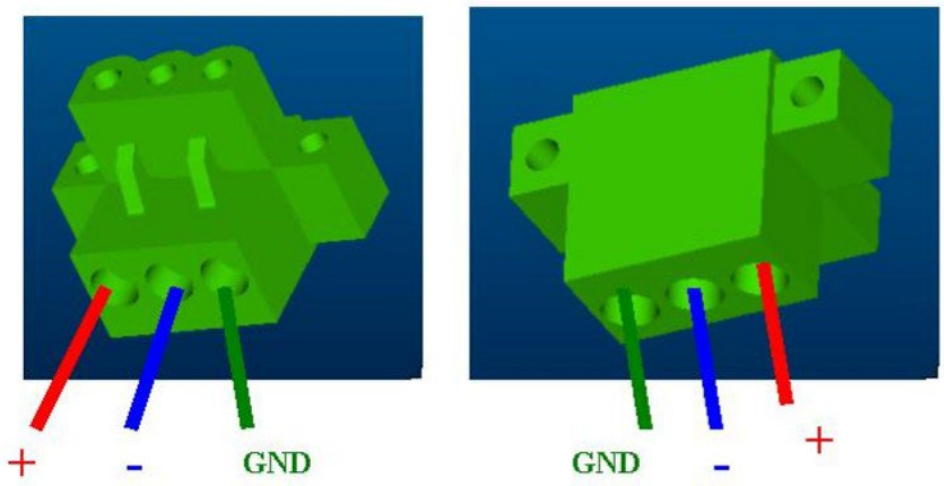


Figure 2.1 Power Connector and Power Lines

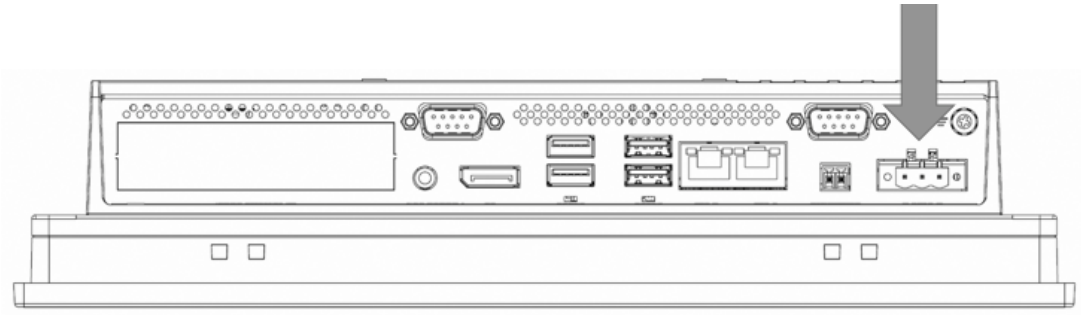


Figure 2.2 Power Connector

3. Plug the power lines into the system power receptor.
4. Power on the system.
5. Calibrate the touchscreen.

2.2 Panel Mounting

1. Position the TPC panel computer against the panel mount.

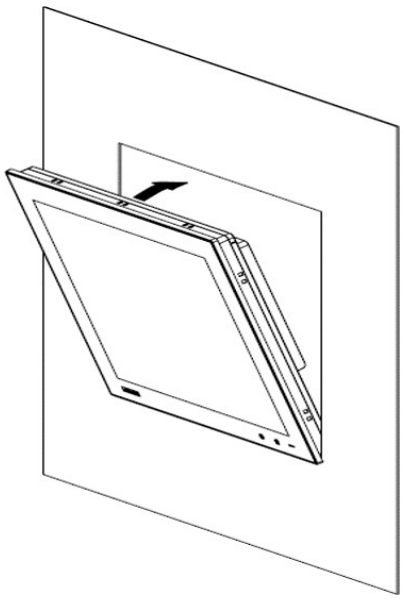


Figure 2.3 Panel Mounting – Positioning

2. Attach clamps to the side of the TPC panel computer.

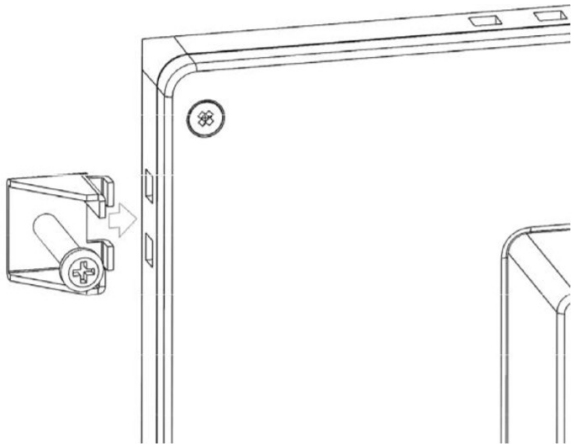


Figure 2.4 Panel Mounting – Clamp Attachment

3. Secure the clamps in place using following suggested screws provided in the accessory box.
   TPC-312: M4*25L, Qty.8 PCS
   TPC-315: M4*25L, Qty.10 PCS
   TPC-317: M5*25L, Qty.10 PCS
   Torque: 5 kgf-cm (0.5 Nm)

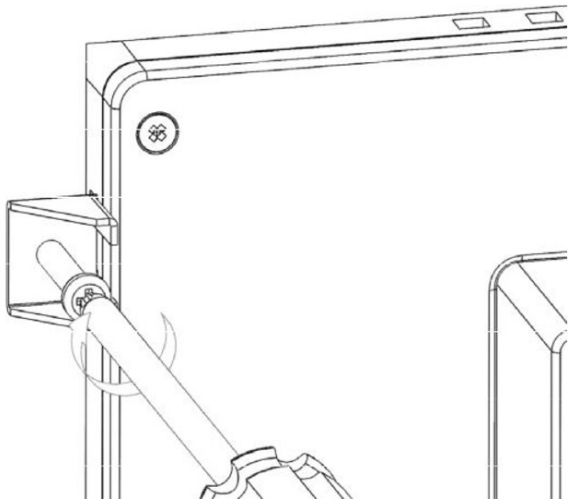


Figure 2.5 Panel Mounting – Clamp Fixing

2.3 VESA Mounting

1. TPC-300 Elkhart Lake series support VESA mounting (100x100).
2. M4 x 10L screws provided in the accessory box are recommended for attaching the TPC devices to the VESA mount bracket.
3. Affix the VESA mount bracket at the top of the rear of the TPC device and fasten in place using following screws:
   TPC-312: M4*25L, Qty.8 PCS
   TPC-315: M4*25L, Qty.10 PCS
   TPC-317: M5*25L, Qty.10 PCS
   Torque: 5 kgf-cm (0.5 Nm)

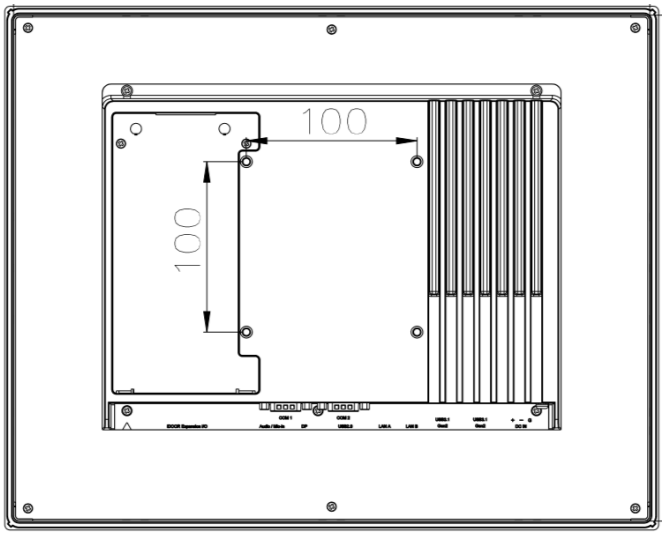


Figure 2.6 VESA Mounting

2.4 Cabinet Installation and Grounding

Follow these instructions to install the TPC device into a cabinet. The grounding pin should be physically connected to the earth/ground. The TPC device is designed for optimum EMI immunity, ESD immunity, surge immunity, and system isolation. If the TPC device is installed in a cabinet, the TPC device ground, cabinet ground, and earth/ground should be connected together.

2.4.1 Cabinet Installation

1. Connect the cabinet to the earth/ground.
2. Install the TPC device into the cabinet without I/O or power cables.

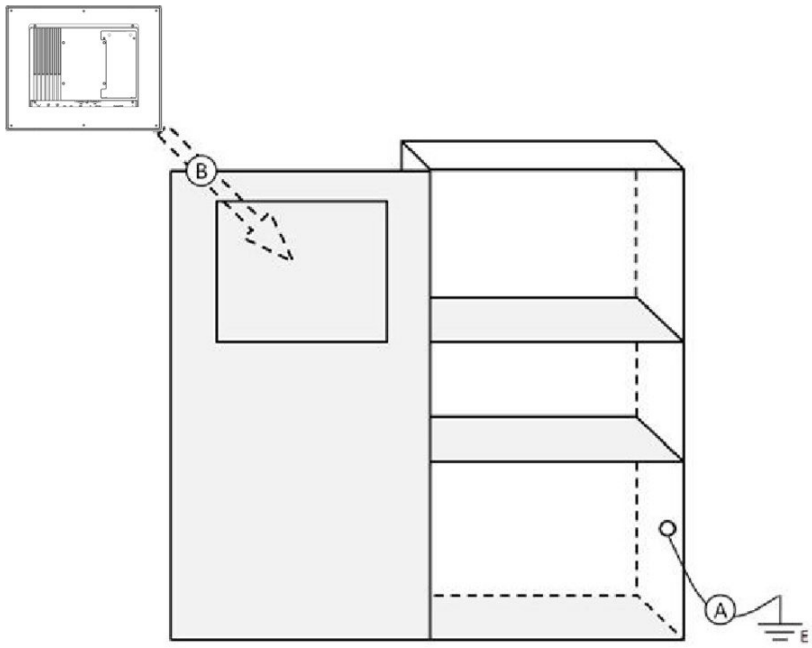


Figure 2.7 Cabinet Installation

2.4.2 System Wiring

1. Connect the cabinet to the earth/ground.
2. Ensure that all cabinets have been grounded together.
3. Connect the ground of the power supply to the cabinet.
4. Connect the ground pin of TPC device to the cabinet.
5. Connect the I/O to the controller if needed.
6. Connect the V+ and V- of the power supply to the TPC device.
7. After completing the above steps, activate the power supply.

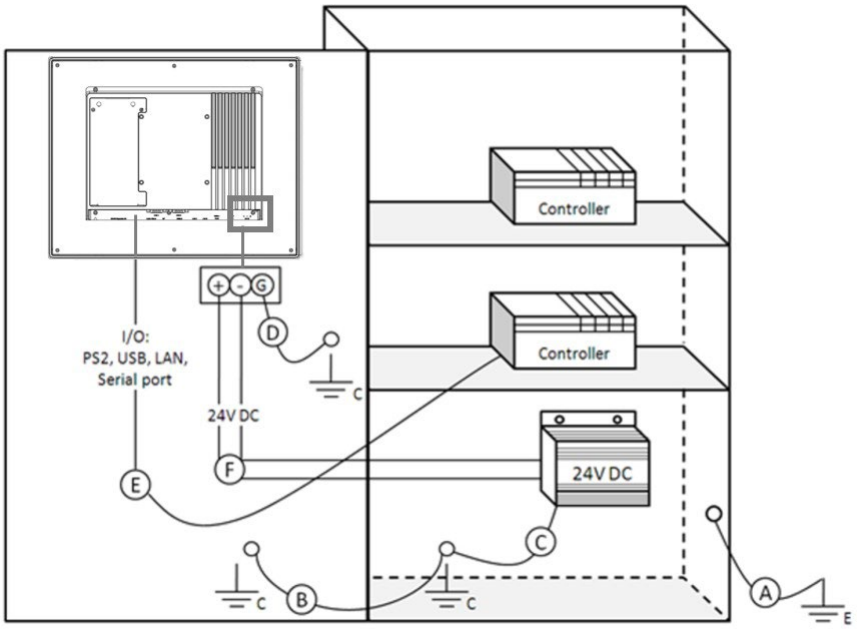


Figure 2.8 System Wiring Diagram

Note! *Ensure all wiring follows the installation guidelines to avoid performance issues.*

Note! *If a USB device or mini PCIe card is installed in the TPC device, double check the voltage between V- and earth/ground. If the voltage is not equal, short the V- and earth/ground wires.*

.

2.5 Power/Digital Ground and Earth/Ground

The power/digital ground blocks external electrical interference to the chassis, thereby ensuring that bad grounding does not cause electric shocks. This is known as Level 1 isolation, which is not typically implemented in consumer-grade devices.

- TPC chassis and ground (Power Pin 3) are short.
- TPC chassis and power/digital ground are open.

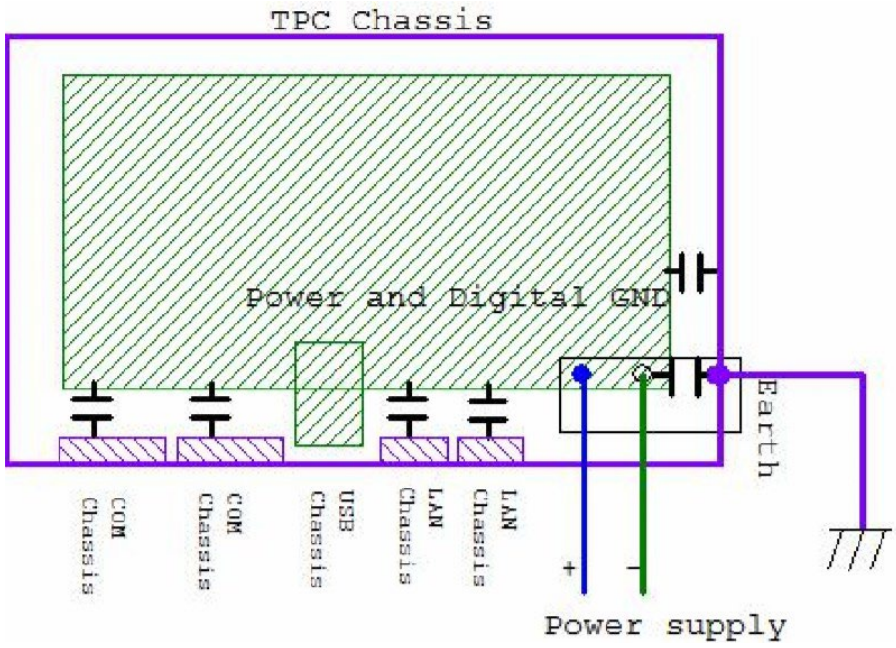


Figure 2.9 TPC Chassis and Power Supply

The TPC devices are industrial-grade products. The hardware is designed to protect against external interference and eliminate the risk of electric shock. To ensure isolation protection, the following must be considered:

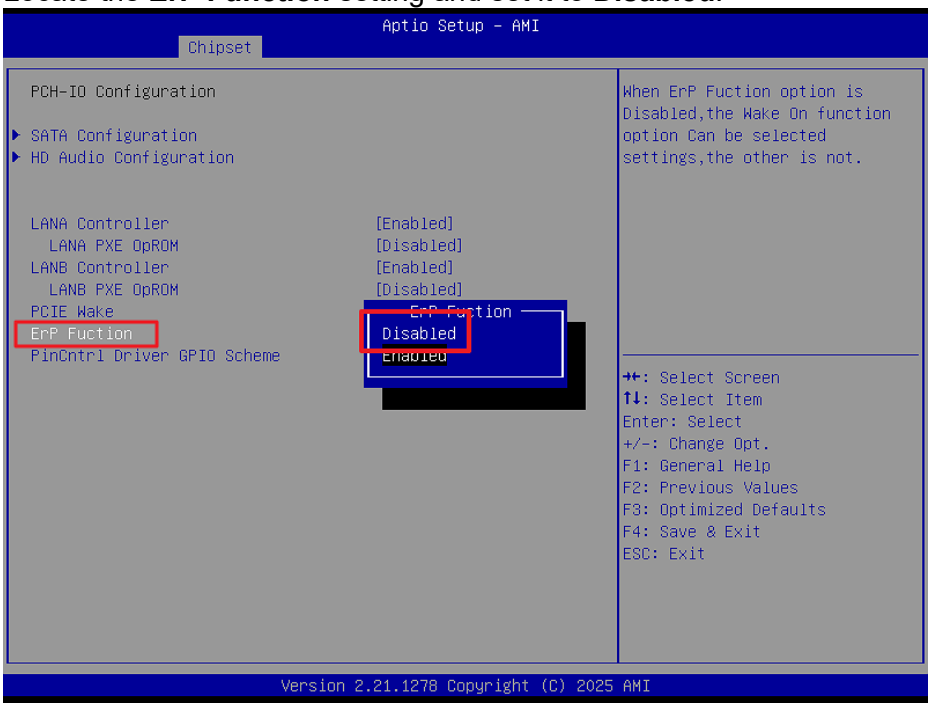
- The Ethernet connection is isolated. LAN connections will not affect the isolation design.
- General USB devices are built to minimize EMI and ESD issues, such as a chassis or digital short. The TPC devices block EMI and ESD, protecting USB devices from damage. The devices are designed to use Power GND as a vent path to ensure Power GND and Chassis GND do not differ abnormally.
- For various COM port designs, long-distance connections can cause voltage differences between the two COM port chassis. Therefore, the shell ground of the cable must be isolated to the signal digital ground.

Use of a third-party device or cable can disrupt Level 1 isolation. In such circumstances, users should short all grounds (Power GND/Digital GND/Earth GND) and ensure adequate earth/ground connection.

2.6 Enabling Wake On Touch

To use the Wake On Touch feature, you must disable the **ErP Function** in the BIOS. Follow the steps below:

1. Restart your system and enter the BIOS setup (usually by pressing **Del** during startup).
2. Navigate to:
   Chipset > **PCH-IO Configuration**
3. Locate the **ErP Function** setting and set it to **Disabled**.



4. Save and exit the BIOS.

Once ErP is disabled, the Wake On Touch feature will be enabled.

Appendix A

Serial Port Settings

A.1 Jumper, Dip Switch, and Connector

A.1.1 Board Layout

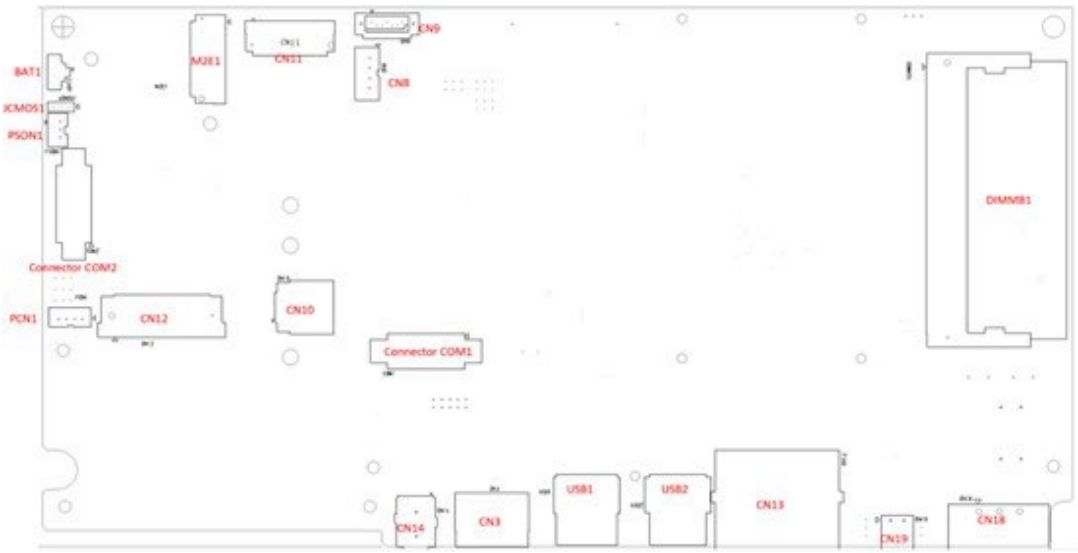


Figure A.1 Board Placement - Top

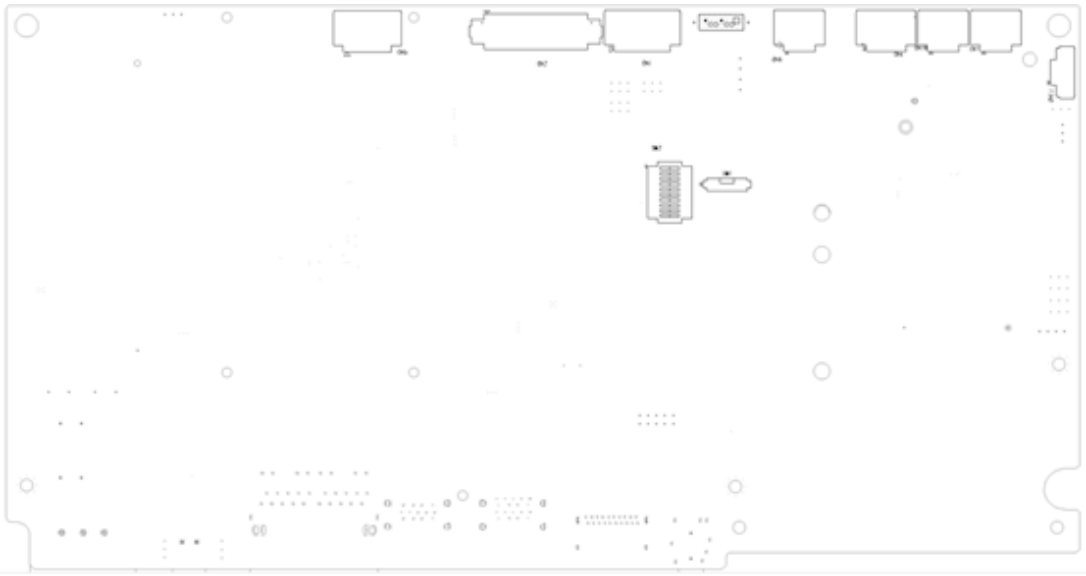


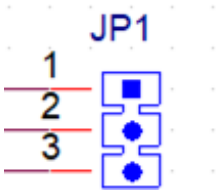
Figure A.2 Board Placement - Bottom

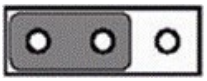
Table A.1: Connectors and Jumpers	
Top	
Label	**Function**
BAT1	RTC connector
JCMOS1	CMOS Clear
PSON1	AT/ATX Jumper setting
CN3	DP connector
CN8	SATA power connector
CN9	SATA connector
CN10	SIM connector
CN11	M.2 B key slot (USB3.0/SATA)
CN12	Mini PCIE slot
CN13	LAN RJ45 connector
CN14	Audio connector
CN18	Power in connector
CN19	Remote key connector
Connector COM1	COM1- RS232/422/485 COM2- RS232
Connector COM2 (Reserved)	COM3- RS232 reserved COM4- RS232 reserved
USB1	USB connector
USB2	USB connector
DIMMB1	DDR4 SODIMM
PCN1	i-Door Power 24V
M2E1	M.2 E key slot
SW3	B-Key 5G Setting

A.2 Jumper Settings, and Descriptions

A.2.1 CMOS Clear Function (JCMOS1)

Table A.2: CMOS Clear Function	
Description	This jumper is used to select CMOS Clear Enable/Disable.
Default	(1-2)
(2-3)	Enable (Clear CMOS)
(1-2)	Normal



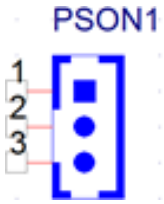


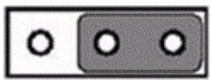
(1-2) Normal

(2-3) Enable (Clear CMOS)

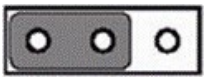
A.2.2 AT/ATX Jumper Setting (PSON1)

Table A.3: AT/ATX Function	
Description	This jumper is used to select CMOS Clear Enable/Disable.
Default	(1-2)
(2-3)	ATX
(1-2)	AT





(1-2) AT

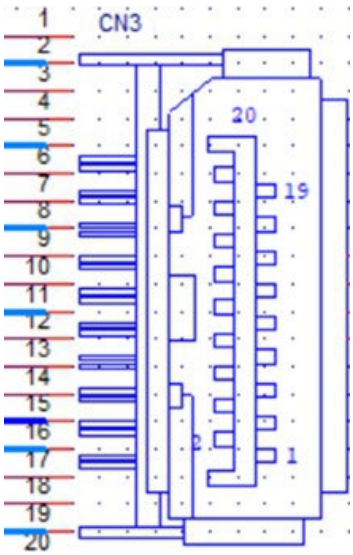


(2-3) ATX

A.3 Connector Pin Definition

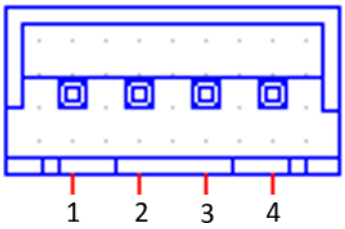
A.3.1 DP connector (CN3)

Table A.4: 1654006275 DisplayPort Conn. 20P 1.40mm 90D DIP 3VD11203	
Pin	**Signal**
1	DP_TX 0(p)
2	GND
3	DP_TX 0(n)
4	DP_TX 1(p)
5	GND
6	DP_TX 1(n)
7	DP_TX 2(p)
8	GND
9	DP_TX 2(n)
10	DP_TX 3(p)
11	GND
12	DP_TX 3(n)
13	AUX_EN
14	DP_config
15	AUX_CH(p)
16	GND
17	AUX_CH(n)
18	Hot Plug
19	GND
20	DP_PWR



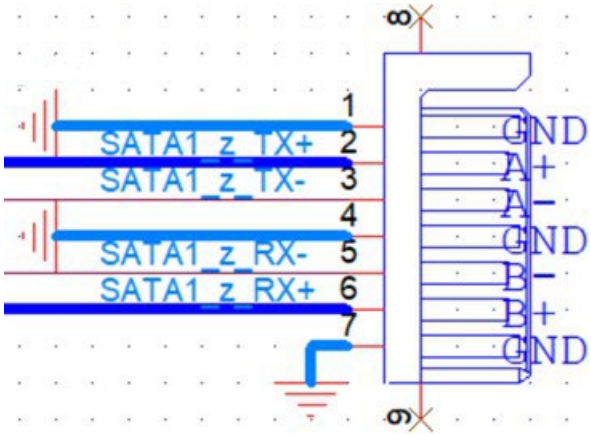
A.3.2 SATA Power Connector (CN8)

Table A.5: 1655001154 WAFER BOX 2.0mm 5P 180D(M) DIP WO/Pb JIH VEI		
Pin	**Signal**	**Description**
1	+V5SATA	SATA power output 5V/1A
2	GND	GND
3	GND	GND
4	+V12SATA	SATA power output 12V/0.5A



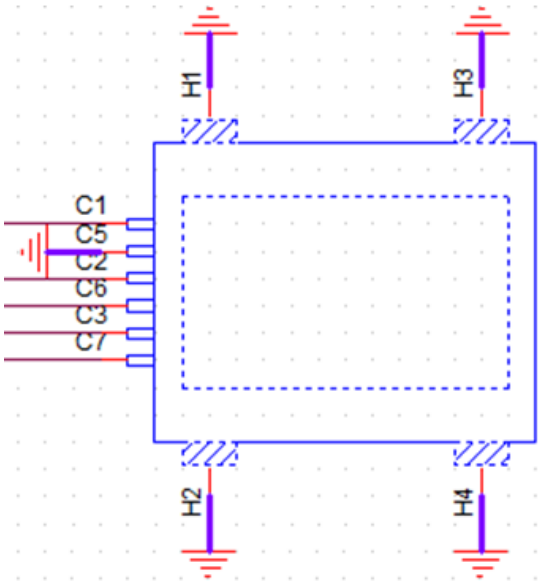
A.3.3 SATA Connector (CN9)

Table A.6: 1654013471-01 SATA 7P/1.27mm/(F)/NY46/VA/G15u/D/BK/H8.45mm		
Pin	**Signal**	**Description**
1	GND	GND
2	A+	Signal Pair A : TX+/- (Transmit)
3	A-	
4	GND	GND
5	B-	Signal Pair B : RX+/ (Receive)
6	B+	
7	GND	GND



A.3.4 SIM connector (CN10)

Table A.7: 1654013260-01 Nano SIM Card 6P/1.27mm/(F)/LCP/RA/GFL/S/BK/H1.5	
Pin	**Signal**
1	PWR
2	RESET
3	CLK
4	NA
5	GND
6	VPP
7	DATA



A.3.5 M.2 B key slot (CN11 USB3.0/SATA)

Table A.8: 1654011348-01 NGFF 75P/0.5mm/(F)/LCP/RA/GFL/S/BK/ H8.50/B-key

Pin	Signal	Signal	Pin
		CONFIG_2	75
74	3.3 V/VBAT	VIO_CFG (I) or GND	73
72	3.3 V/VBAT	GND	71
70	3.3 V/VBAT	CONFIG_1	69
68	SUSCLK (O)(0/1.8V/3.3V)	RESET# (O)(0/1.8V)	67
66	SIM DETECT (O)	ANTCTL3 (I)(0/1.8V)	65
64	COEX_RXD (I)(0/1.8V)	ANTCTL2 (I)(0/1.8V)	63
62	COEX_TXD (O)(0/1.8V)	ANTCTL1 (I)(0/1.8V)	61
60	COEX3 (I/O)(0/1.8V)	ANTCTL0 (I)(0/1.8V)	59
58	NC	GND	57
56	NC	REFCLKp	55
54	PEWAKE# (I/O)(0/1.8V/3.3V)	REFCLKn	53
52	CLKREQ# (I/O)(0/1.8V/3.3V)	GND	51
50	PERST# (O)(0/1.8V/3.3V)	PETp0/SATA-A+	49
48	GPIO_4 (I/O)(0/1.8V)	PETn0/SATA-A-	47
46	GPIO_3 (I/O)(0/1.8V)	GND	45
44	GPIO_2 (I/O)/ALERT# (I)/(0/1.8V)	PERp0/SATA-B-	43
42	GPIO_1 (I/O)/SMB_DATA (I/O)/(0/1.8V)	PERn0/SATA-B+	41
40	GPIO_0 (I/O)/SMB_CLK (I/O)/(0/1.8V)	GND	39
38	DEVSLP (O)	PETp1/USB3.1-Tx+/SSIC-TxP	37
36	UIM_PWR (I)	PETn1/USB3.1-Tx-/SSIC-TxN	35
34	UIM_DATA (I/O)	GND	33
32	UIM_CLK (I)	PERp1/USB3.1-Rx+/SSIC-RxP	31
30	UIM_RESET (I)	PERn1/USB3.1-Rx-/SSIC-RxN	29
28	PLA_S2# (I)/GPIO_8 (I/O) (0/1.8V)	GND	27
26	GPIO_10 (I/O) (0/1.8V)	DPR (O) (0/1.8V)	25
24	GPIO_7 (I/O) (0/1.8V)	GPIO_11 (I/O) (0/1.8V)	23
22	GPIO_6 (I/O)(0/1.8V)	CONFIG_0	21
20	GPIO_5 (I/O)(0/1.8V)	CONNECTOR KEY B	
	CONNECTOR KEY B	CONNECTOR KEY B	
	CONNECTOR KEY B	CONNECTOR KEY B	
	CONNECTOR KEY B	CONNECTOR KEY B	
	CONNECTOR KEY B		
10	GPIO_9/DAS/DSS (I/O)/LED_1# (I)(0/3.3V)	GND	11
8	W_DISABLE1# (O)(0/1.8V/3.3V)	USB_D-	9
6	FULL_CARD_POWER_OFF# (O)(0/1.8V or 3.3V)	USB_D+	7
4	3.3 V	GND	5
2	3.3 V	GND	3
		CONFIG_3	1

A.3.6 Mini PCIE Slot (CN12)

Table A.9: 1654011230-01 MINIPCIExpress 52P 0.8mm RVS H=9.9mm 90D(F) SMD Support PCI1.1, PCI1.2 Power Definition					
Pin	**Signal**	**Description**	**Pin**	**Signal**	**Description**
52	+3.3Vaux / +3.3V	PCI1.1 was +3.3V, PCI1.2 was +3.3Vaux	51	Reserved	NC
50	GND		49	Reserved	NC
48	+1.5V		47	Reserved	NC
46	NC	NC	45	Reserved	NC
44	NC	NC	43	PIN43_MP-CIE_PWRSEL	The pin to select the Pin 2, 52 power output for +3.3Vaux or +3.3V (PCI1.1 was Reserved and PIC1.2 was GND
42	NC	NC	41	+3.3Vaux	
40	GND		39	+3.3Vaux	
38	USB_D+	USB serial data interface compliant to the USB 2.0 specification	37	GND	
36	USB_D-		35	GND	
34	GND		33	PETp0	PCI Express differential transmit pair
32	SMB_DATA	SMBus data signal compliant to the SMBus 2.0 specification	31	PETn0	
30	SMB_CLK		29	GND	
28	+1.5V		27	GND	
26	GND		25	PERp0	PCI Express differential receive pair
24	+3.3Vaux		23	PERn0	
22	PERST#	Functional reset to the card	21	GND	
20	NC		19	Reserved	NC
18	GND		17	Reserved	NC
	Key	Key		Key	Key
16	NC	NC	15	GND	
14	NC	NC	13	REFCLK+	
12	NC	NC	11	REFCLK-	
10	NC	NC	9	GND	
8	NC	NC	7	CLKREQ#	Reference clock request signal
6	1.5V		5	NC	NC
4	GND		3	NC	NC
2	+3.3Vaux / +3.3V	PCI1.1 was +3.3V, PCI1.2 was +3.3Vaux	1	WAKE#	Open Drain active Low signal. This signal is used to request that the system return from a sleep/suspended state to service a function initiated wake event.

* +3.3Vaux was suspend Power, power out to device +3.3V/1.1A
* +3.3V was core power
* +1.5V was core power, power out to device +1.5V/0.5A

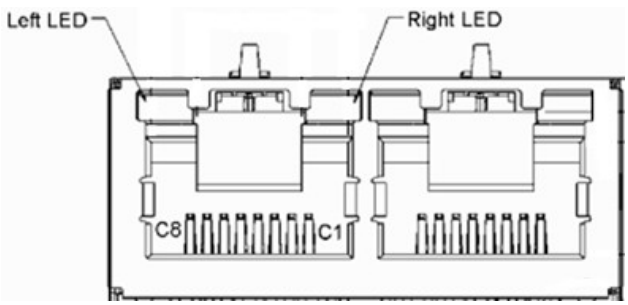
A.3.7 LAN RJ45 Connector (CN13)

Table A.10: 1652006625-01 PHONE JACK RJ45 28P DIP RTB-19GB9J1A

RJ45 Pin	Signal	Description
1	MDI0+	In BASE-T: Media Dependent Interface[0]: 1000BASE-T: In MDI configuration, MDI[0]+/- corresponds to BI_DA+/- and in MDI-X configuration MDI[0]+/- corresponds to BI_DB+/-. 10BASE-T and 100BASE-TX: In MDI configuration, MDI[0]+/- is used for the transmit pair and in MDIX configuration MDI[0]+/- is used for the receive pair.
2	MDI0-	
3	MDI1+	In BASE-T: Media Dependent Interface[1]: 1000BASE-T: In MDI configuration, MDI[1]+/- corresponds to BI_DB+ and in MDI-X configuration MDI[1]+/- corresponds to BI_DA+/-. 10BASE-T and 100BASE-TX: In MDI configuration, MDI[1]+/- is used for the receive pair and in MDI-X configuration MDI[1]+/- is used for the transmit pair.
6	MDI1-	
4	MDI2+	In BASE-T: Media Dependent Interface[3:2]: 1000BASE-T: In MDI and in MDI-X configuration, MDI[2]+/- corresponds to BI_DC+/- and MDI[3]+/- corresponds to BI_DD+/-. 100BASE-TX: Unused. 10BASE-T: Unused.
5	MDI2-	
7	MDI3+	
8	MDI3-	

Table A.11: LED

Left LED			Right LED
10 Link	100 Link	1000 Link	Active
Off	Orange	Green	Green

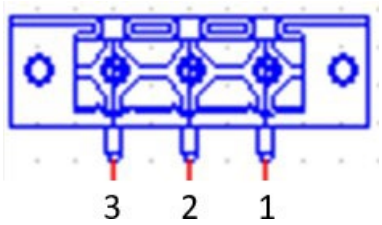


A.3.8 Audio Connectors (CN14)

Table A.12: 1654014004-01 Phone JK 6P/LCP/RA(F)/G-FL/S/O3.5mm/BK	
Pin	**Signal**
1	LOUT1_L
2	LOUT1_R
3	GND
4	MIC
5	HP_detection
6	GND

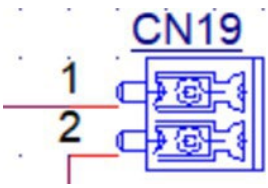
A.3.9 Power in connector (CN18)

Table A.13: 1652003104 PLUG-IN BLOCK 3P 5.08mm 90D(M) DIP ME050-50803		
Pin	**Signal**	**Description**
1	Power IN V+	24VDC +-20% Power in
2	Power IN V– (GND)	
3	GND_EARTH	The GND_EARTH to connect a Screw hole for short with the chassis GND



A.3.10 Remote key connector (CN19)

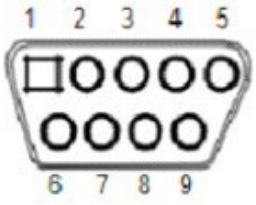
Table A.14: 1652000055 Terminal BLOCK 2P 3.5mm 90D(M) DIP	
Pin	**Signal**
1	POWER BUTTON
2	GND

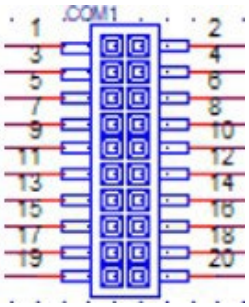


A.3.11 COM2 RS-232 Connector (COM2)

Table A.15: COM1 RS232/422/485 1653210260 BOX HEADER 10*2P 180D(M) 2.0mm SMD W/O Pb			
Pin	**RS232**	**RS422**	**RS485**
1	DCD	TX-	Data-
2	RX	TX+	Data+
3	TX	RX+	
4	DTR	RX-	
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		

Table A.16: COM2 RS232 1653210260 BOX HEADER 10*2P 180D(M) 2.0mm SMD W/O Pb			
Pin	**RS232**	**Pin**	**RS232**
1	DCD	2	DCD
3	RX	4	RX
5	TX	6	TX
7	DTR	8	DTR
9	GND	10	GND
11	DSR	12	DSR
13	RTS	14	RTS
15	CTS	16	CTS
17	RI	18	RI
19	NC	20	NC





A.3.12 USB Connector (USB1, USB2)

Table A.17: USB1 1654013480-01 USB 3.1 2x9P/2.0mm/PA66/(F)/RA/G30u/D/BU/H15.69		
Pin	**Signal**	**Description**
1, 10	USB VBUS	USB Power output, USB3.0 5V/0.9A
2, 11	USB_P-	USB2.0 date -
3, 12	USB_P+	USB2.0 date +
4, 13	GND	Ground for Power return
5, 14	SSRX-	USB3.0 RX -
6, 15	SSRX+	USB3.0 RX +
7, 16	GND_DRAIN	Ground for signal return
8, 17	SSTX-	USB3.0 TX -
9, 18	SSTX+	USB3.0 TX +

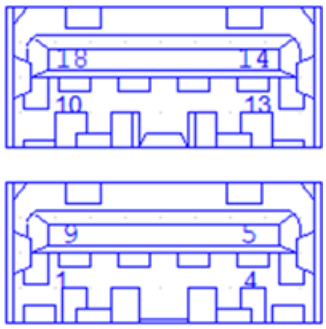
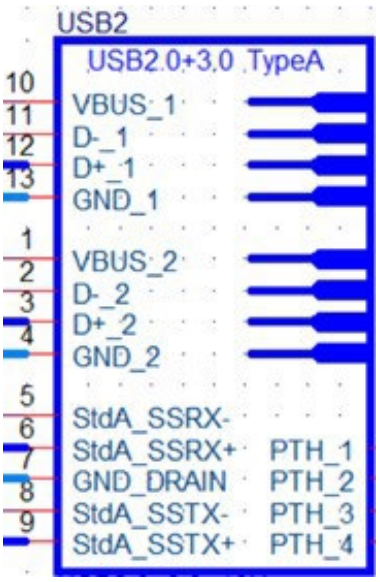


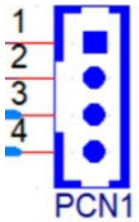
Table A.18: USB2 1654010199 USB Conn. 2.0+3.0 13P 90D(F) DIP UEA1112C-UHS6-4		
Pin	**Signal**	**Description**
1, 10	USB VBUS	USB Power output, USB3.0 5V/0.9A
2, 11	USB_P-	USB2.0 date-
3, 12	USB_P+	USB2.0 date+
4, 13	GND	Ground for Power return
5	SSRX-	USB3.0 RX-
6	SSRX+	USB3.0 RX+
7	GND_DRAIN	Ground for signal return
8	SSTX-	USB3.0 TX-
9	SSTX+	USB3.0 TX+



A.3.13 i-Door Power 24V (PCN1)

Table A.19: 1653006812-01 WTB Con. 4P 2.0mm 180D(M) DIP A2001WV2-4P-6T-5E

Pin	Description
1	24V
2	24V
3	GND
4	GND



A.3.14 M.2 E key slot (M2E1 PCIE/USB2.0)

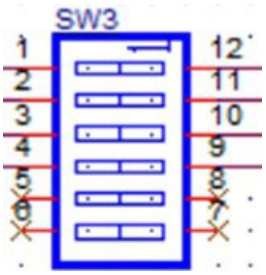
Table A.20: 1654012663-01 NGFF 75P/0.5mm/(F)/LCP/RA/GFL/S/BK/ H8.5mm/E-key

Pin	Signal	Signal	Pin
74	3.3 V	GND	75
72	3.3 V	RESERVED/REFCLKn1	73
70	UIM_POWER_SRC/GPIO_1/PEWAKE1#	RESERVED/REFCLKp1	71
68	UIM_POWER_SNK/CLKREQ1#	GND	69
66	UIM_SWP/PERST1#	RESERVED/PERn1	67
64	RESERVED	RESERVED/PERp1	65
62	ALERT# (I)(0/1.8 V)	GND	63
60	I2C_CLK (O)(0/1.8 V)	RESERVED/PETn1	61
58	I2C_DATA (I/O)(0/1.8 V)	RESERVED/PETp1	59
56	W_DISABLE1# (O)(0/3.3V)	GND	57
54	W_DISABLE2# (O)(0/3.3V)	PEWAKE0# (I/O)(0/3.3V)	55
52	PERST0# (O)(0/3.3V)	CLKREQ0# (I/O)(0/3.3V)	53
50	SUSCLK (O)(0/3.3V)	GND	51
48	COEX_TXD (O)(0/1.8V)	REFCLKn0	49
46	COEX_RXD (I)(0/1.8V)	REFCLKp0	47
44	COEX3 (I/O)(0/1.8V)	GND	45
42	VENDOR DEFINED	PERn0	43
40	VENDOR DEFINED	PERp0	41
38	VENDOR DEFINED	GND	39
36	UART_RTS (O)(0/1.8V)	PETn0	37
34	UART_CTS (I)(0/1.8V)	PETp0	35
32	UART_TXD (O)(0/1.8V)	GND	33
	CONNECTOR Key E	CONNECTOR KEY E	
	CONNECTOR Key E	CONNECTOR KEY E	
	CONNECTOR KEY E	CONNECTOR KEY E	
	CONNECTOR KEY E	CONNECTOR KEY E	
22	UART_RXD (I)(0/1.8V)	SDIO_RESET#/_TX_BLANKING (O)(0/1.8V)	23
20	UART_WAKE# (I)(0/3.3V)	SDIO_WAKE# (I) (0/1.8V)	21
18	GND	SDIO_DATA3 (I/O) (0/1.8V)	19
16	LED_2# (I)(OD)	SDIO_DATA2 (I/O) (0/1.8V)	17
14	PCM_OUT/I2S_SD_OUT (O)(0/1.8V)	SDIO_DATA1 (I/O) (0/1.8V)	15
12	PCM_IN/I2S_SD_IN (I)(0/1.8V)	SDIO_DATA0 (I/O) (0/1.8V)	13
10	PCM_SYNC/I2S_WS (I/O)(0/1.8V)	SDIO_CMD (I/O) (0/1.8V)	11
8	PCM_CLK/I2S_SCK (I/O)(0/1.8V)	SDIO_CLK/SYSCLK (O) (0/1.8V)	9
6	LED_1# (I)(OD)	GND	7
4	3.3 V	USB_D-	5
2	3.3 V	USB_D+	3
		GND	1

A.4 Switch Setting

A.4.1 B-Key 5G Setting (SW3)

Table A.21: 1654013260-01 Nano SIM Card 6P/1.27mm/(F)/LCP/RA/GFL/S/BK/H1.5		
	SIERA EM9190/9191	
Pin	OFF(left)	ON(right)
1	PCIE	USB
2	PCIE	USB
	AW-315	
3	5G model(USB3.0)	Download mode
4	5G model(USB3.0)	Download mode



ADVANTECH

Enabling an Intelligent Planet

www.advantech.com

Please verify specifications before quoting. This guide is intended for reference purposes only.

All product specifications are subject to change without notice.