

# **User Manual**

# TPC-300 Series TPC-B510

Industrial Touch Panel Computer with 8th Gen. Intel® Core™ Processor



# Copyright

The documentation and the software included with this product are copyrighted 2020 by Advantech Co., Ltd. All rights are reserved. Advantech Co., Ltd. reserves the right to make improvements in the products described in this manual at any time without notice. No part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without the prior written permission of Advantech Co., Ltd. Information provided in this manual is intended to be accurate and reliable. However, Advantech Co., Ltd. assumes no responsibility for its use, nor for any infringements of the rights of third parties, which may result from its use.

# **Acknowledgments**

Intel and Pentium are trademarks of Intel Corporation.

Microsoft Windows and MS-DOS are registered trademarks of Microsoft Corp. All other product names or trademarks are properties of their respective owners.

This manual is applicable to the following models:

- TPC-312-R833A
- TPC-312-R853A
- TPC-312-R873A
- TPC-315-R833A
- TPC-315-R853A
- TPC-315-R873A
- TPC-317-R833A
- TPC-317-R853A
- TPC-317-R873A
- TPC-324W-P833A
- TPC-324W-P853A
- TPC-324W-P873A
- TPC-B510-833AE
- TPC-B510-853AE
- TPC-B510-873AE

Part No. 2003031500 Printed in China Edition 1 October 2020

# **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.
- 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

警告使用者: 這是甲類資訊產品, 在居住的環境中使用時, 可能會造成射頻干擾, 在 這種情況下,使用者會被要求採取某些適當對策。

# **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 -20 °C (-4 °F) or above 60 °C (140 °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
	4.0	1.2.6 Operating Systems	6
	1.3	I/O Layout	b
	1 /	Dimensions and Cutouts	0
	1.4	1 4 1 TPC-312 Series	7
		Figure 1.2 TPC-312 Dimensions	7
		1.4.2 TPC-315 Series	
		Figure 1.3 TPC-315 Dimensions	8
		1.4.3 TPC-317 Series	9
		Figure 1.4 TPC-317 Dimensions	9
		1.4.4 TPC-324W Series	10
		Figure 1.5 TPC-324W Dimensions	10
		1.4.5 TPC-B510 Series	11
		Figure 1.6 TPC-B510 Dimensions	11
Chapter	<b>2</b> 2.1	Transport and Unpacking	
		2.1.1 Transport	14
		2.1.2 Unpacking	14
		Figure 2.1 Power Connector and Power Lines	14
		Figure 2.2 Power Connector	15
	2.2	Panel Mounting	15
		Figure 2.3 Panel Mounting – Positioning	15
		Figure 2.4 Panel Mounting – Clamp Attachment	16
	2.2	Figure 2.5 Panel Mounting – Clamp Fixing	10
	2.5	Figure 2.6 VESA Mounting	17
	24	Cabinet Installation and Grounding	17
	2.1	2.4.1 Cabinet Installation	
		Figure 2.7 Cabinet Installation	18
		2.4.2 System Wiring	18
		Figure 2.8 System Wiring Diagram	19
	2.5	Power/Digital Ground and Earth/Ground	20
		Figure 2.9 TPC Chassis and Power Supply	20
Chapter	3	Windows Embedded Features	21
	3.1	Windows Embedded Features	22
	3.2	Unified Write Filter (UWF)	22
		Figure 3.1 Enabling UWF - Step 1	22
		Figure 3.2 Enabling UWF - Step 2	23
	3.3	UWF Overlay	23
		Figure 3.3 UWF Overlay Settings - Step 1	
		Figure 3.4 UVVF Overlay Settings - Step 2	

Appendix C	BIOS Setup	. 59
2.0		
B.5	Touch Driver Installation	55
B.4	Intel Management Engine Installation	52
B.3	LAN Driver Installation	49
B.2	Intel Graphics Driver Installation	46
B.1	Intel Chipset Software Installation Utility	44
Appendix B	<b>Driver Installation &amp; Configuration</b>	. 43
	Table A.17:SIM Connector (CN10)	41
	A.3.13 SIM Connector (CN10)	41
	Table A.16: Audio Connector (CN38)	40
	A.3.12 Audio Connector (CN38)	40
	Table A.15:DisplayPort Connector (CN36)	39
	A.3.11 DisplayPort Connector (CN36)	39
	I able A.14:COM2 RS-232 Connector (COM2)	39
	A.J. IU UUMZ KS-232 CONNECTOR (UUMZ)	39
	Table A. 13.001/11 K3-232/422/485 CONNECTOF (COM1)	ა პბ იი
	A.3.9 UUIVII KO-232/422/485 UONNECIOF (UUIVII)	პბ იი
	I ADIE A. I Z:UOB UONDECIOF (UNZ1)	პბ
	Table A.11: USB Connector (CN19, CN20)	37
	A.3.8 USB Connectors (CN19, CN20, CN21)	37
	Table A.10:LED	37
	Table A.9: LAN RJ45 Connector (CN9)	36
	A.3.7 LAN RJ45 Connector (CN9)	36
	Table A.8: Power Input Connector (CN1)	36
	A.3.6 Power Input Connector (CN1)	36
	Table A.7: M.2 (B-Key) Slot (CN26 PCIe/USB/SATA)	35
	A.3.5 M.2 (B-Key) Slot (CN26 PCIe/USB/SATA)	35
	Table A.6: M.2 (M-Key) Slot (CN17 NVMe/SATA Storage).	34
	A.3.4 M.2 (M-Key) Slot (CN17 NVMe/SATA Storage)	34
	Table A.5: Mini PCIe Slot (CN31 MINIPCIE)	33
	A.3.3 Mini PCIe Slot (CN31 MINIPCIE)	33
	Table A.4: SATA Power Connector (CN24)	32
	A.3.2 SATA Power Connector (CN24)	32
	Table A.3: SATA Connector (CN37)	31
	A.3.1 SATA Connector (CN37)	31
A.3	Connector Pin Definition	31
	Table A.2: CMOS Clear Function (JP1)	31
	A.2.1 CMOS Clear Function (JP1)	31
A.2	Jumper Settings, and Descriptions	31
	Table A.1: Connectors and Jumpers	
	Figure A.2 Board Layout - Underside View	30
	Figure A.1 Board Layout - Top View	30
A. I	A 1 1 Board Lavout	ວບ ດດ
Λ 1	lumper and Connector Locations	20
Appendix A	Serial Port Settings	. 29
		21
	Figure 3.9 HORM Settings - Step 1	، 21 27
3.4	HURM	20
2.4	Figure 3.7 UWF Overlay Settings - Step 5	
	Figure 3.6 UWF Overlay Settings - Step 4	25
	Figure 3.5 UWF Overlay Settings - Step 3	25

C.1	Entering Setup	. 60

C.1.1	Main Setup	61
C.1.2	Advanced BIOS Features Setup	
C.1.3	Chipset Configuration	71
C.1.4	Security	73
C.1.5	Boot	74
C.1.6	Save & Exit	75

х



**General Information** 

# 1.1 Introduction

The TPC-300 series touch panel computers are human machine interfaces (HMIs) equipped with an Intel® Core ™ i3-8145UE dual-core (2.20 GHz)/i5-8365UE quad-core (1.60 GHz)/i7-8665UE quad-core (1.70 GHz) processor and feature displays that range from 12" to 23.8" in size.

TPC-B510 is a modular computing box that features an Intel® Core<sup>™</sup> i3-8145UE dual-core (2.20 GHz)/i5-8365UE quad-core (1.60 GHz)/i7-8665UE quad-core (1.70 GHz) processor that can be flexibly integrated with Advantech's FPM display modules according to specific usage requirements. For information about the FPM display module series, visit the Advantech website.

#### **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
- NVMe High-Speed Storage

M.2 (M key) connector supports NVMe PCIe x4 for high-speed storage

- 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 (L x W x H):
  - TPC-312: 410.4 x 343.4 x 68 mm/16.16 x 13.52 x 2.68 in
  - TPC-315: 383.2 x 307.3 x 66.5 mm/15.09 x 12.1 x 2.62 in
  - TPC-317: 410.4 x 343.4 x 68 mm/16.16 x 13.52 x 2.68 in
  - TPC-324W: 595.9 x 374.1 x 70 mm/23.46 x 14.73 x 2.76 in
  - TPC-B510: 269 x 203 x 40 mm/10.6 x 8.0 x 1.6 in
- Enclosure:
  - Front bezel: Die cast aluminum alloy
  - Rear housing: Die cast aluminum alloy
- Mount Options: VESA, desktop, wall, or panel
- Power Input:  $24 V_{DC} \pm 20\%$

■ Watchdog Timer: 15 ~ 255 sec (system)

#### Weight (Net):

- TPC-315: 5.8 kg/12.79 lb
- TPC-324W: 9.3 kg/20.5 lb
- TPC-B510: 2.6 kg/5.73 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-315: 36.79 W (typical)
  24 V<sub>DC</sub>, minimum 5A, minimum operating temperature 55 °C/131 °F
- TPC-324W: 56.31 W (typical)
  24 V<sub>DC</sub>, minimum 5A, minimum operating temperature 50 °C/122 °F
- TPC-B510: 28.64 W (typical)
  24 V<sub>DC</sub>, minimum 5A, minimum operating temperature 55 °C/131°F

### 1.2.2 System Hardware

■ CPU: 8th gen. Intel® Core™ i

Model Number	Processor
TPC-312-R833A	Intel® Core™ i3- 8145UE, 2.20 GHz
TPC-312-R853A	Intel® Core™ i5-8365UE, 1.60 GHz
TPC-312-R873A	Intel® Core™ i7-8665UE, 1.70 GHz
TPC-315-R833A	Intel® Core™ i3- 8145UE, 2.20 GHz
TPC-315-R853A	Intel® Core™ i5-8365UE, 1.60 GHz
TPC-315-R873A	Intel® Core™ i7-8665UE, 1.70 GHz
TPC-317-R833A	Intel® Core™ i3- 8145UE, 2.20 GHz
TPC-317-R853A	Intel® Core™ i5-8365UE, 1.60 GHz
TPC-317-R873A	Intel® Core™ i7-8665UE, 1.70 GHz
TPC-324W-P833A	Intel® Core™ i3- 8145UE, 2.20 GHz
TPC-324W-P853A	Intel® Core™ i5-8365UE, 1.60 GHz
TPC-324W-P873A	Intel® Core™ i7-8665UE, 1.70 GHz
TPC-B510-833AE:	Intel® Core™ i3- 8145UE, 2.20 GHz
TPC-B510-853AE:	Intel® Core™ i5-8365UE, 1.60 GHz
TPC-B510-873AE:	Intel® Core™ i7-8665UE, 1.70 GHz

- Memory: 8GB 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 (M-key): 2280 SATA; NVMe PCIe x4
  - 1 x M.2 (B-key): 2242 SATA; 3042/3052 LTE/5G slot 7
  - 1 x 2.5" SATA SSD

#### I/O Ports:

- 2 x RS-232/422/485
- 1 x USB 2.0
- 4 x USB3.2 (Gen 2)
- 1 x iDoor slot
- 1 x DisplayPort (video output)
- 1 x Audio Line-Out/Mic-In

### 1.2.3 LCD Panel

#### TPC-312

- Display Type: XGA TFT LED LCD
- **Display Size:** 12" (4:3)
- Max. Resolution: 1024x768
- Max. Color: 16.2M
- Luminance (cd/m<sup>2</sup>): 300
- Viewing Angle (H°/V°): 178°/178°
- Backlight Life: 50,000 hrs
- Contrast Ratio: 1000:1

#### TPC-315

- Display Type: XGA TFT LED LCD
- **Display Size:** 15" (4:3)
- Max. Resolution: 1024x768
- Max. Color: 16.7M
- Luminance (cd/m<sup>2</sup>): 300
- Viewing Angle (H°/V°): 176°/176°
- Backlight Life: 70,000 hrs
- Contrast Ratio: 2000:1

#### TPC-317

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

#### **TPC-324W**

- **Display Type:** FHD TFT LED LCD
- **Display Size:** 23.8" (16:9)
- Max. Resolution: 1920x1080
- Max. Color: 16.7M
- Luminance (cd/m<sup>2</sup>): 350
- Viewing Angle (H°/V°): 178°/178°
- Backlight Life: 50,000 hrs
- Contrast Ratio: 1000:1

### 1.2.4 Touchscreen

TPC-312

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

#### TPC-315

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

#### TPC-317

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

#### TPC-324W

- Light Transmission: 90% ± 3%
- **Type:** Projected capacitive



The TPC-B510 modular computing box does not come with a display or touch panel.

### 1.2.5 Safety and Environmental

#### 1.2.5.1 Safety

- FCC Class A
- CE certified

#### 1.2.5.2 Environmental

#### **TPC-312**

- Humidity: 10 ~ 95% RH @ 40 °C/104 °F, non-condensing
- Ingress Protection: IP66-rated front panel
- Operating Temperature: -10 ~ 55 °C/14 ~ 131 °F (without airflow)
- Storage Temperature: -20 ~ 70 °C/-4 ~ 158 °F
- Vibration Protection: With SSD: 1 Grms (5 ~ 500 Hz) (operating, random)

#### TPC-315

- Humidity: 10 ~ 95% relative humidity @ 40 °C/104 °F, non-condensing
- Ingress Protection: IP66-rated front panel
- **Operating Temperature:** -10 ~ 55 °C/14 ~ 131°F (without airflow)
- Storage Temperature: -20 ~ 70 °C/-4 ~ 158 °F
- Vibration Protection: With SSD: 1 Grms (5 ~ 500 Hz) (operating, random)

#### **TPC-317**

- Humidity: 10 ~ 95% RH @ 40 °C/104 °F, non-condensing
- Ingress Protection: IP66-rated front panel
- **Operating Temperature:** -10 ~ 55 °C/14 ~ 131 °F (without airflow)
- **Storage Temperature:** -20 ~ 70 °C/-4 ~ 158 °F)
- Vibration Protection: With SSD: 1 Grms (5 ~ 500 Hz) (operating, random)

#### **TPC-324W**

- Humidity: 10 ~ 95% relative humidity @ 40 °C/104 °F, non-condensing
- Ingress Protection: IP66-rated front panel
- **Operating Temperature:** -10 ~ 50 °C/14 ~ 122 °F (without airflow)
- **Storage Temperature:** -20 ~ 70 °C/-4 ~ 158 °F
- Vibration Protection: With SSD: 1 Grms (5 ~ 500 Hz) (operating, random)

#### TPC-B510

- Humidity: 10 ~ 95% relative humidity @ 40 °C/104 °F, non-condensing
- Ingress Protection: IP66-rated front panel
- **Operating Temperature:** -10 ~ 55 °C/14 ~ 131 °F (without airflow)
- Storage Temperature: -20 ~ 70 °C/-4 ~ 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 Series and TPC-B510 is shown in Figure 1.1.



#### Figure 1.1 I/O Layout

# **1.4 Dimensions and Cutouts**

### 1.4.1 TPC-312 Series

- Weight (Net): TBD
- 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): 303 x 229 mm/11.93 x 9.02 in





7

### 1.4.2 TPC-315 Series

- Weight (Net): 5.8 kg/12.79 lb
- Dimensions (L x W x H): 383.2 x 307.3 x 66.5 mm/15.09 x 12.1 x 2.62 in
- Cutout Dimensions (L x H): 374.5 x 298.5 mm/14.74 x 11.75 in











Figure 1.3 TPC-315 Dimensions

### 1.4.3 TPC-317 Series

- Weight (Net): TBD
- 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





9

### 1.4.4 TPC-324W Series

- Weight (Net): 9.3 kg/20.5 lb
- Dimensions (L x W x H): 595.9 x 374.1 x 70 mm/23.46 x 14.73 x 2.76 in
- Cutout Dimensions (L x W): 587 x 365.3 mm/23.11 x 14.38 in









Figure 1.5 TPC-324W Dimensions

### 1.4.5 TPC-B510 Series

- Weight (Net): 2.6 kg/5.73 lb
- Dimensions (L x W x H): 269 x 203 x 40 mm/10.6 x 8.0 x 1.6 in



Figure 1.6 TPC-B510 Dimensions



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.
- Connect the power connector to the 24 V<sub>DC</sub> 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

 Secure the clamps in place using the M4 x 25L screws provided in the accessory box. Torque: 5 kgf-cm (0.5 Nm)



Figure 2.5 Panel Mounting – Clamp Fixing

# 2.3 VESA Mounting

- 1. The TPC-300 series and TPC-B510 support VESA mounting (100x100).
- 2. M4 x 10 screws 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 four M4 screws.



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



*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.



Windows Embedded Features

## **3.1 Windows Embedded Features**

The TPC devices support embedded Windows platforms. This chapter outlines the important features (UWF and HORM) that are provided with the Windows 10 Enterprise LTSB operating system.

# 3.2 Unified Write Filter (UWF)

A Unified Write Filter (UWF) intercepts all write attempts to a protected volume and redirects those write attempts to a virtual overlay. This improves the reliability and stability of your device and reduces the wear on write-sensitive media, such as flash memory media like SSDs.

#### Important

UWF is unable to protect external removable drives, USB devices, or flash drives.

The overlay does not mirror the entire volume, but dynamically grows to keep track of redirected writes. Generally the overlay is stored in system memory, although a portion of the overlay can be cached on a physical volume.

#### Note

UWF fully supports the NTFS file system; however, during device startup, NTFS file system journal files can write to a protected volume before UWF has loaded and started protecting the volume. Advantech provides a utility to operate UWF. Refer to the steps below to enable the utility.

1. Click Start Menu -> Advantech -> Embedded Lockdown Manager -> Enable Unified Write Filter

🔒 Advantech Embedde	×			
Unified Write Filter Key	board Filter Shell	Launcher		
. Unified Write Filter	Unified Write Filter Configures Unified	is Disabled. HORM Write Filter (UWF) k	is Disabled. ockdown options	HORM Direction
	SettingType	CurrentValue	PendingValueAfterReboot	Enable Unified
	Overlay Size	1024	1024	Write Filter
	Overlay Storage	RAM	RAM	Overlay Settings
				Restart

Figure 3.1 Enabling UWF - Step 1

K	eyboard Filter	Shell Launcher		
ilte	Unified Write You must rest more change	Filter will be Enabled at tart the device in order fi s and restart once all ch	fter system restart. HORM is Disal or changes to take effect. You can nanges are completed.	bled. continue to make <u>HORM Direction</u>
	SettingType	CurrentValue	PendingValueAfterReboot	Disable Unified
	Overlay Size	1024	1024	Write Filter
	Overlay S A	Overlay Settings		
		? Do you want to	Enable HORM	
		Yes	No	
				Restart

# 3.3 UWF Overlay

Advantech Em Unified Write Filte

UWF protects the contents of a volume by redirecting all write operations on that volume to the overlay, which is a virtual representation of the changes to the volume. Conceptually, an overlay is similar to a transparency overlay on an overhead projector. Any change that is made to the transparency overlay affects the projected picture as it is seen by the viewer. However, if the transparency overlay is removed, the underlying picture remains unchanged.

UWF can store the overlay either entirely on RAM (RAM-based) or in a pre-allocated file on the system volume (disk-based). Advantech provides a utility for configuring a UWF overlay. Refer to the steps below to enable this function.

### Note

UWF function must be disabled in order to configure a UWF overlay. After the configuration is complete, UWF function can be enabled again.

1. Click Start Menu -> Advantech -> AdvELM -> Overlay Settings

🤒 Advantech Emb	Advantech Embedded Lockdown Manager X						
Unified Write Filter	Unified Write Filter Keyboard Filter Shell Launcher						
. Unified Write F	ilter Unified Wri Configures	e Filter Unified	is Disabled. HC Write Filter (UV	ORM is Disabled. VF) lockdown opti	ons		
	SettingTyp Overlay Siz	e	CurrentValue	PendingVa	lueAfterReboot	Enable Unified Write Filter	
	Overlay Sto	rage	RAM	RAM		Overlay Settings	
						Enable HORM	
						Restart	



2. Input the desired size (MB).

#### Important

When setting up a RAM-based overlay, be sure to leave sufficient available RAM to meet the minimum RAM requirements for system operation. For example, if the OS requires at least 2GB of RAM, and your device has 4GB of RAM, set the size of the overlay to 2GB or less.

OverlaySetting					x
Size: 1024	МВ				
Memory (RAM)					
🔿 Disk Only					
Overlay settings can o New Settings will be a is restarted.	only be o pplied o	changed if the Unifie once the Unified Writ	d Write Filter is le Filter is enabl	currently disable ed and the devi	ed. ce
ОК		Cancel		Apply	

Figure 3.4 UWF Overlay Settings - Step 2

3. Select the mode (RAM or Disk).

Ονε	erlaySetting		x
Siz	e: 1024	МВ	
	Memory (RAM)		
	🔿 Disk Only		
	Overlay settings can or New Settings will be ap is restarted.	nly be changed if the Unifi plied once the Unified Wi	ed Write Filter is currently disabled. rite Filter is enabled and the device
	ОК	Cancel	Apply

Figure 3.5 UWF Overlay Settings - Step 3

4. Click OK or Apply.

OverlaySetting ×	
Size: 1024 MB	
Memory (RAM)	
O Disk Only	
Overlay settings can only be changed if the Unified Write Filter is currently disabled. New Settings will be applied once the Unified Write Filter is enabled and the device is restarted.	
OK Cancel Apply	

Figure 3.6 UWF Overlay Settings - Step 4

5. Click Restart and select Yes to reboot the system. The size will be changed upon boot up.

Advantech Embedded Lockdown Manager				
Unified Write Filter	Keyboard Filter	Shell Launcher		
Wnified Write Filter  Unified Write Filter is Disabled. HORM is Disabled.  Configures Unified Write Filter (UWF) lockdown options				
				HORM Direction
	SettingType	e CurrentValue	PendingValueAfterReboot	Enable Unified
	Overlay S	Advantech Embedded Loo	th Embedded Lockdown Manager X	
		Yes	No	
				Restart

Figure 3.7 UWF Overlay Settings - Step 5

## 3.4 **HORM**

HORM stands for Hibernate Once/Resume Many. Devices with HORM enabled can be quickly shut down and restarted into a preconfigured state, even in the event of a sudden power loss.

#### Important

To setup a HORM environment, follow the steps below.

- Ensure UWF is enabled.
- Ensure that the volume(s) is protected.
- The system must not have any file, folder, or registry exclusions configured for UWF.
- The UWF overlay must be set to RAM-based mode because HORM does not support disk-based mode.

#### Note

HORM cannot be used on a Unified Extensible Firmware Interface (UEFI) device. The installation procedure for UEFI always creates a hidden system partition and the UWF cannot protect hidden partitions. Because HORM requires all fixed partitions to be protected, HORM cannot be used on any devices that contain a hidden partition, including UEFI-capable devices.
Click Start Menu -> Advantech -> Embedded Lockdown Manager -> Enable HORM

🔒 Advantech Embedde	🔒 Advantech Embedded Lockdown Manager 🛛 🗙			
Unified Write Filter Ke	yboard Filter Shell	Launcher		
Unified Write Filter     Wolumes     File Exclusions     Megistry Exclusion	Unified Write Filter is Enabled. HORM is Disabled. Configures Unified Write Filter (UWF) lockdown options <u>HORM Direction</u>			
	SettingType	CurrentValue	PendingValueAfterReboot	Disable Unified
	Overlay Size	1024	1024	Write Filter
	Overlay Storage	RAM	RAM	Overlay
				Settings
				Enable HORM
< >				Restart

Figure 3.8 HORM Settings - Step 1

2. Click Yes in the popup dialog window.

🤒 Advantech Embe	Advantech Embedded Lockdown Manager X							
Unified Write Filter	Key	board Filter	Shell	Launcher				
Unified Write Filter Unified Write Filter is Enabled. HORM is Disabled.     Configures Unified Write Filter (UWF) lockdown options     File Funktionen								
Registry Exc	lus							HORM Direction
		SettingType	•	CurrentValu	ue	PendingValueAft	erReboot	Disable Unified
		Overlay Size		1024		1024		Write Filter
		HORM Sett	ing				×	Overlay Settings
		Are you su	re to ci	reate HORM e	envirom	ent and then hiber	nate?	Enable HORM
				[	(	OK Ca	ncel	
<	>							Restart





Serial Port Settings

# A.1 Jumper and Connector Locations

#### A.1.1 Board Layout



Figure A.1 Board Layout - Top View



Figure A.2 Board Layout - Underside View

	Τορ			
Label Function				
BAT1				
CN1	Power input connector			
CN3	DDR4 SODIMM I			
CN7	Remote power button			
CN9	LAN RJ45 connector			
CN10	SIM connector			

Table A.1: Connectors and Jumpers				
CN17	M.2 (M-Key) clot (NVMe/SATA ctorage)			
CN19	USB connectors			
CN20	USB connectors			
CN21	USB connectors			
CN24	SATA power connector			
CN26	M.2 (B-Key) slot (PCIe/USB/SATA)			
CN31	Mini PCIe slot			
CN36	DisplayPort connector			
CN37	SATA connector			
CN38	Audio connector			
COM1	COM1 RS-232/422/485 connector			
COM2	COM2 RS-232 connector			
JP1	CMOS clear runction			
	Bottom			
CN2	DDR4 SODIMM II			
CN16	Light sensor connector			
CN22	Internal USB connector			
CN23	Reserved connector (P-CAP touch)			

# A.2 Jumper Settings, and Descriptions

## A.2.1 CMOS Clear Function (JP1)

Table A.2: CMOS Clear Function (JP1)				
Description	This jumper is used to enable/disable the CMOS clear function.			
Default	(1-2)			
(2-3)	Enable (Clear CMOS)			
(1-2)	Disable			



# A.3 Connector Pin Definition

#### A.3.1 SATA Connector (CN37)

Table A.3: SATA Connector (CN37)				
Pin	Signal	Description		

Table A.3	Table A.3: SATA Connector (CN37)			
1	GND	GND		
2	A+	Signal pair A: TX+/-		
3	A-	(Transmit)		
4	GND	GND		
5	B-	Signal pair B: RX+/		
6	B+	(Receive)		
7	GND	GND		



#### A.3.2 SATA Power Connector (CN24)

Table A.4: SATA Power Connector (CN24)			
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 Mini PCIe Slot (CN31 MINIPCIE)

Tab	le A.5: Mini F	Cle Slot (CN31 MIN	IPCIE	Ξ)	
Pin	Signal	Description	Pin	Signal	Description
52	+3.3V aux/ +3.3V	PCI1.1 was +3.3V, PCI1.2 was +3.3V aux	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_PWR- SEL	The pin to select the Pin 2, 52 power output for +3.3V aux or +3.3V (PCI1.1 is reserved and PIC1.2 is GND)
42	NC	NC	41	+3.3V aux	
40	GND		39	+3.3V aux	
38	USB_D+	USB serial data inter- face is compliant with USB 2.0 specifications	37	GND	
36	USB_D-		35	GND	
34	GND		33	PETp0	PCI express differential transmit pair
32	SMB_DATA	SMBus data signals are compliant with SMBus 2.0 specifications	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	+3.3V aux / +3.3V	PCI1.1 was +3.3V , PCI1.2 was +3.3V aux	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-ini- tiated wake event.

- \* +3.3V aux is suspend power; power output to device +3.3V/1.1A
- \* +3.3V is core power
- \* +1.5V is core power; power output to device +1.5V/0.5A

#### A.3.4 M.2 (M-Key) Slot (CN17 NVMe/SATA Storage)

Tabl	able A.6: M.2 (M-Key) Slot (CN17 NVMe/SATA Storage)				
Pin	Signal	Pin	Signal		
		75	GND		
74	3.3V	73	VIO_CFG(I) or GND		
72	3.3V	71	GND		
70	3.3V	69	PEDET = GND (SATA), PEDET = NC (PCle)		
68	SUSCLK (O) (0/1.8V/3.3V)	67	NC		
	Connector key M		Connector key M		
	Connector key M		Connector key M		
	Connector key M		Connector key M		
	Connector key M		Connector key M		
58	NC	57	GND		
56	NC	55	REFCLKp		
54	PEWAKE# (I/O) (0/1.8V/3.3V) or NC	53	REFCLKn		
52	CLKREQ# (I/O) (0/1.8V/3.3V) or NC	51	GND		
50	PERST# (O) (0/1.8V/3.3V) or NC	49	PETp0/SATA-A+		
48	NC	47	PETn0/SATA-A-		
46	NC	45	GND		
44	ALERT# (I) (0/1.8V)	43	PETp0/SATA-B-		
42	SMB_DATA (I/O)(0/1.8V)	41	PETn0/SATA-B+		
40	SMB_CLK (I/O) (0/1.8V)	39	GND		
38	DEVSLP (O) (SATA) or GND (USB)	37	PETp1		
36	USB_D- or NC	35	PETn1		
34	USB_D+ or NC	33	GND		
32	NC or GND (USB)	31	PERp1		
30	PLA_S3# (I) (0/1.8V/3.3V) or NC	29	PERn1		
28	NC	27	GND		
26	NC	25	PETp2		
24	NC	23	PETn2		
22	VIO 1.8V or NC	21	GND		
20	NC	19	PERp2		
18	3.3V	17	PERn2		
16	3.3V	15	GND		
14	3.3V	13	PETp3		
12	3.3V	11	PETn3		
10	DAS/DSS (I/O)/ LED_1# (I) (0/3.3V)	9	GND		
8	PLN# (O)(0/1.8/3.3V) or NC	7	PERp3		
6	PWRDIS (O)(0/1.8/3.3V) or NC	5	PERn3		
4	3.3V	3	GND		
2	3.3V	1	GND		

## A.3.5 M.2 (B-Key) Slot (CN26 PCIe/USB/SATA)

Tab	Table A.7: M.2 (B-Key) Slot (CN26 PCIe/USB/SATA)				
Pin	Signal	Pin	Signal		
		75	CONFIG_2		
74	3.3V/VBAT	73	VIO_CFG (I) or GND		
72	3.3V/VBAT	71	GND		
70	3.3V/VBAT	69	CONFIG_1		
68	SUSCLK (O) (0/1.8V/3.3V)	67	RESET# (O) (0/1.8V)		
66	SIM DETECT (O)	65	ANTCTL3 (I)(0/1.8V)		
64	COEX_RXD (I) (0/1.8V)	63	ANTCTL2 (I)(0/1.8V)		
62	COEX_TXD (O) (0/1.8V)	61	ANTCTL1 (I)(0/1.8V)		
60	COEX3 (I/O) (0/1.8V)	59	ANTCTL0 (I)(0/1.8V)		
58	NC	57	GND		
56	NC	55	REFCLKp		
54	PEWAKE# (I/O) (0/1.8V/3.3V)	53	REFCLKn		
52	CLKREQ# (I/O) (0/1.8V/3.3V)	51	GND		
50	PERST# (O) (0/1.8V/3.3V)	49	PETp0/SATA-A-		
48	GPIO_4 (I/O) (0/1.8V)	47	PETn0/SATA-A-		
46	GPIO_3 (I/O) (0/1.8V)	45	GND		
44	GPIO_2 (I/O)/ALERT# (I)/(0/1.8V)	43	PETp0/SATA-B-		
42	GPIO_1 (I/O)/SMB_DATA (I/O)/(0/ 1.8V)	41	PETn0/SATA-B+		
40	GPIO_0 (I/O)/SMB_CLK (I/O)/(0/1.8V)	39	GND		
38	DEVSLP (O)	37	PERp1/USB3.1-Tx+/SSIC-TxP		
36	UIM_PWR (I)	35	PERn1/USB3.1-Tx-/SSIC-TxN		
34	UIM_DATA (I/O)	33	GND		
32	UIM_CLK (I)	31	PERp1/USB3.1-Rx+/SSIC-RxP		
30	UIM_RESET (I)	29	PERn1/USB3.1-Rx-/SSIC-RxN		
28	PLA_S2# (I) GPIO_8 (I/O) (0/1.8V)	27	GND		
26	GPIO_10 (I/O)(0/1.8V)	25	DPR (O) (0/1.8V)		
24	GPIO_7 (I/O)(0/1.8V)	23	GPIO_11 (I/O) (0/1.8V)		
22	GPIO_6 (I/O)(0/1.8V)	21	CONFIG_0		
20	GPIO_ (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	11	GND		
10	GPIO_9/DAS/DSS (I/O)/ LED_1# (I) (0/ 3.3V)	9	USB_D-		
8	W_DISABLE1# (O) (0/1.8V/3.3V)	7	USB_D+		
6	FULL_CARD_POWER_OFF# (O) (0/ 18.V or 3.3V)	5	GND		
4	3.3V	3	GND		
2	3.3V	1	CONFIG_3		

## A.3.6 Power Input Connector (CN1)

Table A.8: Power Input Connector (CN1)			
Pin	Signal	Description	
1	Power In V+	24V+-20% Power in	
2	Power In V– (GND)		
3	GND_EARTH	Used to connect a screw hole to the chassis GND for shorting.	



## A.3.7 LAN RJ45 Connector (CN9)

Table A.S	Table A.9: LAN RJ45 Connector (CN9)				
RJ45 Pin	Signal	Description			
1	MDI0+	In BASE-T:			
2	MDI0-	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.			
3	MDI1+	In BASE-T:			
6	MDI1-	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.			
4	MDI2+	In BASE-T:			
5	MDI2-	Media-dependent interface[3:2]:			
7	MDI3+	1000BASE-1: In MDI and in MDI-X configuration, MDI[2]+/- corresponds to			
8	MDI3-	BI_DC+/- and MDI[3]+/- corresponds to BI_DD+/ 100BASE-TX: Unused. 10BASE-T: Unused.			

Table A.10: LED				
	Left	LED	Right LED	
10 Link	100 Link	1000 Link	Active	
Off	Orange	Green	Green	



#### A.3.8 USB Connectors (CN19, CN20, CN21)

Table A.11: USB Connector (CN19, CN20)			
Pin	Signal	Description	
1, 10	USB VBUS	USB power output, USB 3.0 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
i j	 -51)	4
	الفحد	1
[ĽĽĥ	┑ᆞᅀᠲ└ᅳ	1
		Ш

Table A.12: USB Connector (CN21)			
Signal	Description		
USB VBUS	USB power output, USB 2.0 5V/0.5A and USB 3.0 5V/0.9A		
USB_P-	USB2.0 date -		
USB_P+	USB2.0 date +		
GND	Ground for power return		



## A.3.9 COM1 RS-232/422/485 Connector (COM1)



Table A.13: COM1 RS-232/422/485 Connector (COM1)				
Pin	RS232	RS422	RS485	
1	DCD	TX-	Data-	
2	RX	TX+	Data+	
3	ТХ	RX+		
4	DTR	RX-		
5	GND	GND	GND	
6	DSR			
7	RTS			
8	CTS			
9	RI			

#### A.3.10 COM2 RS-232 Connector (COM2)

Table /	A.14: COM2 RS-2	32 Connector (COM2	)	
Pin	RS232	Pin	RS232	
1	DCD	2	DCD	
3	RX	4	RX	
5	ТХ	6	ТХ	
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.3.11 DisplayPort Connector (CN36)

Table A.15: Display	Table A.15: DisplayPort Connector (CN36)			
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)			

Table A.15:	DisplayPort Connector	(CN36)
16	GND	
17	AUX_CH(n)	
18	Hot plug	
19	GND	
20	DP_PWR	



#### A.3.12 Audio Connector (CN38)

Table A.16: Audio	o Connector (CN38)
Pin	Signal
1	LOUT1_L
2	LOUT1_R
3	GND
4	MIC
5	HP_detection
6	GND

# Appendix A Serial Port Settings

## A.3.13 SIM Connector (CN10)

Table A.17: SIM Connector (CN10)		
Pin	Signal	
1	PWR	
2	RESET	
3	CLK	
4	NA	
5	GND	
6	VPP	
7	DATA	





Driver Installation & Configuration

# **B.1 Intel Chipset Software Installation Utility**

Follow the steps below to install the Intel Chipset Software Installation Utility.

- 1. Launch <Driver Root Path>\01-MIO-5373\_Chipset Driver\_Win10(32&64bit).
- 2. Install SetupChipset.exe.

File Home	Share	View Application Tools					~ 🕐
$\leftarrow$ $\rightarrow$ $\sim$ $\uparrow$ $\square$ « 01-MIO-537 » 01-MIO-5373_Chipset Drvier_Win10(32&64bit) » $\checkmark$				✓ Ö Search 01-MI		0-5373_Chipset .	,P
4 Outidh annar		Name ^	Date modified	Туре		Size	
		DriverFiles	5/3/2019 1:41 PM	2019 1:41 PM File folder			
Desktop	× ∎ * <b>⊻</b> ≵	💼 mup	5/3/2019 1:41 PM	XML D	Document	709 KB	
Downloads		🗹 闄 SetupChipset	5/3/2019 1:41 PM	Application		2,880 KB	
Documents	*	WixLicenseNote	5/3/2019 1:39 PM	Text D	ocument	4 KB	
Pictures	*						
💻 This PC							
CES_X64FREO (I	D:)						
💣 Network							

3. Click Next.

Intel(R) Chipset Device Software	(intel)
You are about to install the following product:	
Intel(R) Chipset Device Software	
It is strongly recommended that you exit all programs before c	ontinuing.
Press Next to continue, or press Cancel to exit the setup progra	ım.
	lext Cancel

#### 4. Click Accept.



5. Click Install.

Intel(R) Chipset Device Software Readme File Information	intel
***************************************	******
* Product: Intel(R) Chipset Device Softwark * Target PCH/Chipset:	are
* 10.1.27.2: Intel(R) 400 Series	s Chipset Family
* 10.1.19.1: Intel(R) Atom(TM) H	Processor C3000 produc
* 10.1.16.7: Intel(R) 300 Series	s Chipset Family
* Intel(R) C240 Serie	es Chipset Family
* 10.1.15.6: Intel(R) 300 Series	s Chipset Family
* 10.1.14.7: 8th Gen Intel(R) Co	ore (TM)
* 10.1.13.3: Intel(R) Celeron(R)	)/Pentium(R) Processor
* 10.1.12.2: Intel(R) 495 Series	s Chipset Family
* 10.1.11.4: Intel(R) 200 series	s chipset family
* Intel(R) 300 series	s chipset family
* 10.1.10.4: Intel(R) Xeon(R) pr	rocessor E3-1200 v6 pr
* 7th Generation Inte	el(R) Core(TM) process
* 10.1.9.2: Intel(R) C620 serie	es chipset
* 10.1.8.6: Intel(R) Xeon(R) pr	rocessor P family
* 10.1.7.3: Intel(R) Xeon(R) pr	rocessor E3-1500 v5 pr∨
<	>
Back	Install Cancel

6. Click Restart Now to complete the installation.



## **B.2** Intel Graphics Driver Installation

Follow the steps below to install the Intel graphics driver.

- 1. Launch folder <Driver Root Path>\02-graphic\_winXX\_26.20.100.7871.
- 2. Install Setup.exe.





4. Click Yes.

Intel® Installation Framework —		×
Intel® Graphics Driver		
License Agreement	(in	tel
You must accept all of the terms of the license agreement in order to continue the program. Do you accept the terms?	e setup	
SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & End User)		^
DO NOT DOWNLOAD, INSTALL, ACCESS, COPY, OR USE ANY PORTION OF THE UNTIL YOU HAVE READ AND ACCEPTED THE TERMS AND CONDITIONS OF THIS BY INSTALLING, COPYING, ACCESSING, OR USING THE SOFTWARE, YOU AGREE LEGALLY BOUND BY THE TERMS AND CONDITIONS OF THIS AGREEMENT.	SOFTWARI AGREEMEN E TO BE	Е \/T.
If You do not agree to be bound by, or the entity for whose benefit You act has authorized You to accept, these terms and conditions, do not install, access, cop Software and destroy all copies of the Software in Your possession.	not y, or use t	he V
< Back Yes	No tallation Fr	amework

Intel® Installation Framework —		×
Intel® Graphics Driver		
Readme File Information	(int	el
Refer to the Readme file below to view the system requirements and installation ir	nformation.	
Driver Version: 26.20.100.7811		^
Release Version: Production Version		а.
Operating System(s): Microsoft Windows* 10-64 (RS3) Microsoft Windows* 10-64 (RS4) Microsoft Windows* 10-64 (RS5) Microsoft Windows* 10-64 (19H1) Microsoft Windows* 10-64 (19H2)		~
<back next=""> Intel® Inst.</back>	Cance allation Fra	<b>el</b> mework

6. Click Next.



Appendix B **Driver Installation & Configuration** 

7. Select "Yes, I want to restart this computer now." Then click Finish.



# **B.3 LAN Driver Installation**

Follow the steps below to install the LAN driver.

- 1. Launch folder <Driver Root Path>\03-MIO-5373\_LAN Driver\_Win10(32&64bit).
- 2. Install Setup.exe.





#### 4. Click Next.

🛃 Intel(R) Network Connections Install Wizard	Х	
License Agreement Please read the following license agreement carefully.	D	
SOFTWARE LICENSE AGREEMENT	^	
DO NOT DOWNLOAD, INSTALL, ACCESS, COPY, OR USE ANY PORTION OF THE SOFTWARE UNTIL YOU HAVE READ AND ACCEPTED THE TERMS AND CONDITIONS OF THIS AGREEMENT. BY INSTALLING, COPYING, ACCESSING, OR USING THE SOFTWARE, YOU AGREE TO BE LEGALLY BOUND BY THE TERMS AND CONDITIONS OF THIS AGREEMENT. If You do not agree to be bound by, or the entity for whose benefit You act has not authorized You to accept, these terms and conditions, do not install, access, copy, or use the Software and destroy all copies of the Software in Your possession.		
Corporation, a Delaware corporation ("Intel") and You. "You" refers to you or your employer or other entity for whose benefit you act, as applicable. If you are agreeing to the terms and conditions of this Agreement on behalf of a company or other legal entity, you represent and	÷	
I accept the terms in the license agreement     Print     I do not accept the terms in the license agreement		
< Back Next > Cancel		

Intel(R) Network Connections Install Wize	ard		×
Setup Options Select the program features you want in	nstalled.		(intel)
Install:			
Device drivers Intel® PROSet Intel® Advanced Network Serv	vices		
Feature Description			
	< Back	Next >	Cancel

#### 6. Click Install.



7. Click Finish.

🛃 Intel(R) Network Connections Install Wizard	×
Install wizard Completed	(intel)
A shortcut has been created in the Start Menu. You can also create one on t desktop, if desired. To access new features, launch the Intel(R) PROSet Ada Configuration Utility from the Start Menu.	he apter
Additional Options: Create Desktop Shortcut Launch Intel(R) PROSet Adapter Configuration Utility	
< Back Finish	Cancel

# **B.4 Intel Management Engine Installation**

Follow the steps below to install the Intel Trusted Execution Engine driver.

- 1. 1.Launch folder <Driver Root Path>\LAN\Win7 \Install\_Win7\_7077\_XXX-\_XXXXXXXX.
- 2. Install SetupME.exe.





#### 4. Click Next.





#### 6. Click Finish.

Setup			×
Intel® Management Engine Components Completion		(intel	
You have successfully installed the following components: - Intel® Management Engine Interface - Serial Over LAN - Intel® Wireless Manageability Driver - Local Management Service - Intel® Management and Security Status - Intel® Trusted Connect Service			_
Click here to open log file location.			
Intel Corporation	< Back	Next >	Finish

# **B.5 Touch Driver Installation**

The PenMount touch driver is essential for the following TPC models. The driver must be installed before operation.

- TPC-312-R833A
- TPC-312-R853A
- TPC-312-R873A
- TPC-315-R833A
- TPC-315-R853A
- TPC-315-R873A
- TPC-317-R833A
- TPC-317-R853A
- TPC-317-R873A
- TPC-B510 series (when paired with a FPM-D12T panel module)
- 1. Launch folder <Driver Root Path>\PenMount Windows Universal Driver V2.4.6.383 (WHQL).
- 2. Install Setup.exe.





4. Click I Agree.

暑 PenMount Windows Universal Driver V2.4.6.383 Setup 🦳 🗌	$\times$
License Agreement	E
Please review the license terms before installing PenMount Windows Universal Driver V2.4.6.383.	
Press Page Down to see the rest of the agreement.	
PLEASE READ THE LICENSE AGREEMENT	^
PenMount touch screen driver software is only for using with	
PenMount touch screen controller or control board.	
Any person or company using a PenMount driver on any piece of	
equipment which does not utilize an Pen-Mount touch screen controller	
will be prosecuted to the full extent of the law.	¥
If you accept the terms of the agreement, dick I Agree to continue. You must accept the	
agreement to install PenMount Windows Universal Driver V2.4.6.383.	
Nullsoft Install System v3.03	
< Back I Agree Can	cel

5. Click Install.

🚇 PenMount Windows Universal Driver V2.4.6.383 Setup 🦳 🗌 🗙
Choose Install Location Choose the folder in which to install PenMount Windows Universal Driver V2.4.6.383.
Setup will install PenMount Windows Universal Driver V2.4.6.383 in the following folder. To install in a different folder, click Browse and select another folder. Click Install to start the installation.
Destination Folder           C:\Program Files\PenMount Windows Universal Driver         Browse
Space required: 0.0 KB Space available: 215.6 GB
Nullsoft Install System v3.03 < Back Install Cancel

6. Click Yes.



7. Click Finish.





**BIOS Setup** 

With the AMI BIOS Setup program, users can modify the BIOS settings and control various system features. This chapter describes the basic navigation of the BIOS Setup Utility.

Aptio Setup Utility – Main Advanced Chipset Security	Copyright (C) 2020 American Boot Save & Exit	Megatrends, Inc.
BIOS Information BIOS Vendor Core Version Compliancy Project Version Build Date and Time Access Level	American Megatrends 5.0.1.3 0.47 x64 UEFI 2.7; PI 1.6 EAMB 5520000U060X012 07/30/2020 16:59:09 Administrator	Set the Date. Use Tab to switch between Date elements. Default Ranges: Year: 2005–2099 Months: 1–12 Days: dependent on month
Memory Information Total Memory Memory Frequency	8192 MB 2400 MHz	
System Date System Time	[Fri 08/14/2020] [18:21:33]	<pre> ++: Select Screen  1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.20.1275. Co	pyright (C) 2020 American M	egatrends, Inc.

AMI's BIOS ROM has a built-in setup program that allows users to modify the basic system configuration. The setup information is stored in flash ROM to ensure it is retained when the system is powered off.

# C.1 Entering Setup

Turn on the computer and check for the patch code. If there is a number assigned to the patch code, it means that the BIOS supports your CPU. If there is no number assigned to the patch code, contact an Advantech application engineer to obtain an up-to-date patch code file. This will ensure that the CPU status is valid. After ensuring that you have a number assigned to the patch code, press <DEL> to access the BIOS Setup Utility.

#### C.1.1 Main Setup

Upon entering the BIOS Setup Utility, users will be on the Main setup screen. At any point during the configuration, users can return to the Main setup screen by selecting the Main tab. There are two Main setup options, which are described in this section. The Main setup screen is shown below.

Aptio Setup Utilit Main Advanced Chipset Securi	<mark>y – Copyright (C) 2020 Americ</mark> : ty Boot Save & Exit	an Megatrends, Inc.
BIOS Information BIOS Vendor Core Version Compliancy Project Version Build Date and Time Access Level	American Megatrends 5.0.1.3 0.47 x64 UEFI 2.7; PI 1.6 EAMB 5520000U060X012 07/30/2020 16:59:09 Administrator	Set the Date. Use Tab to switch between Date elements. Default Ranges: Year: 2005–2099 Months: 1–12 Days: dependent on month
Memory Information	0100 ND	
Memory Energy	0172 MB 2400 MH-	
Memory Frequency	2400 MH2	
System Date System Time	[Fri 08/14/2020] [18:21:33]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2 20 1275	Conuright (C) 2020 American	Megatrends Inc

The Main setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured, whereas options presented in blue can be configured. The right frame displays the key legend.

Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany an option.

#### System Time/System Date

Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values via the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must be entered in HH:MM:SS format.



Before installing a WinCE image, IDE configuration is required. Additionally, the SATA mode must be set to IDE mode in the BIOS to enable boot up.

#### C.1.2 Advanced BIOS Features Setup

Select the Advanced tab from the UNO-3272G setup screen to enter the Advanced BIOS Setup screen. Users can select any of the items in the left frame of the screen, such as ACPI Settings and hit <enter> to access the sub menu for that item. Users can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS setup screen is shown below. The sub menus are described on the following pages.

#### C.1.2.1 CPU Configuration



CPU Configuration Parameters
# C.1.2.2 Power & Performance



Aptio Setup Utility – Advanced	Copyright (C) 2020 American	Megatrends, Inc.
CPU – Power Management Control		Enable/Disable processor Turbo
Boot performance mode	[Max Non-Turbo Performance]	Step or Intel Speed Shift to
Turbo Mode C states	[Enabled] [Disabled]	
		↔: Select Screen ↑↓: Select Item
		Enter: Select +/-: Change Opt. E1: Concept Woln
		F1: General Help F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
Version 2.20.1275. C	opyright (C) 2020 American M	egatrends, Inc.

# CPU – Power Management Control

- Boot performance mode
- Turbo mode

This item allows users to enable/disable processor turbo mode (regular Intel Speed Step or Intel Speed Shift are available and should be enabled).

C States

This item allows users to enable/disable CPU power management. This will enable the CPU to go to C states when not 100% utilized.

- GT Power Management Control
  - RC6 (Render Standby)
  - Maximum GT Frequency

The maximum GT frequency can be configured by the user. Choose between 300 MHz (RPN) and 1000 MHz (RPO). Values outside this range will be clipped to min/max supported by the SKU.

 Disable Turbo GT Frequency Enabled: Turbo GT frequency will be disabled. Disabled: GT frequency is not limited.

# C.1.2.3 PCH-FW Configuration

navaneca		
ME Firmware Version ME Firmware Mode ME Firmware SKU ME Firmware Status 1 ME Firmware Status 2 ME State Manageability Features State ME Unconfig on RTC Clear Firmware Update Configuration	12.0.68.1606 Normal Mode Corporate SKU 0x90000255 0x80108106 [Enabled] [Disabled] [Enabled]	Enable/Disable Intel(R) Manageability features. NOTE: This option disables/enables Manageability Features support in FW. To disable support platform must be in an unprovisioned state first.
		<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

### ME State

### Manageability Features State

This item allows users to enable/disable Intel (R) manageability features. This option disables/enables firmware support for manageability features. To disable this item, the support platform must be in an unprovisioned state first.

ME Unconfig on RTC Clear When disabled, ME will not be unconfigured on RTC Clear.

# Firmware Update Configuration

This item allows users to configure the management engine technology parameters.

# C.1.2.4 ACPI Settings



## Enable ACPI Auto Configuration

This item allows users to enable/disable BIOS ACPI auto configuration.

### Enable Hibernation

This item allows users to enable/disable the system hibernation function (OS/S4 Sleep State). This option may not be available with some operating systems.

# ACPI Sleep State

This item allows users to select the highest ACPI sleep state when the Suspend button is pressed.

# C.1.2.5 Trusted Computing

Aptio Setup Utility Advanced	) — Copyright (C) 2020 America	n Megatrends, Inc.
TPM20 Device Found Firmware Version: Vendor: Security Device Support Active PCR banks Available PCR banks SHA-1 PCR Bank SHA256 PCR Bank Pending operation Platform Hierarchy Storage Hierarchy Endorsement Hierarchy TPM20 UEFI Spec Version Physical Presence Spec Version TPM 20 InterfaceType	7.63 IFX [Enable] SHA-1,SHA256 SHA-1,SHA256 [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [TGG_2] [1.3] [TIS]	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275.	Copyright (C) 2020 American	Megatrends, Inc.

### Security Device Support

This item allows users to enable/disable BIOS support for security devices. The OS will not show the security devices. The TCG EFI protocol and INT1A interface will not be available.

# SHA-1 PCR Bank

This item allows users to enable/disable SHA-1 PCR bank.

### SHA256 PCR Bank

This item allows users to enable/disable SHA256 PCR bank.

### Pending Operation

This item allows users to schedule an operation for the security device. **Note:** The computer must be restarted to change the security device state.

### Platform Hierarchy

This item allows users to enable/disable platform hierarchy.

### Storage Hierarchy

This item allows users to enable/disable storage hierarchy.

# Endorsement Hierarchy

This item allows users to enable/disable endorsement hierarchy.

# TPM2.0 UEFI Spec Version

This item allows users to select the TCG2 spec version supported. TCG\_1\_2: The compatible mode for Win8/10. TCG\_2: Supports new TCG2 protocol and event formats for Win10 or later.

# Physical Presence Spec Version This item allows users to enable support for PPI spec version 1.2 or 1.3.

**Note:** Some HCK tests may not support version 1.3.

# C.1.2.6 Embedded Controller Configuration

Aptio Setup Utility - Advanced	Copyright (C) 2020 American	Megatrends, Inc.
EC Firmware Version	I281CX0003	Select Ite8518 Power Saving Mode
EC Hardware Monitor CPU Temperature +VBAT +5VSB +24V Vcore	: +81 % : +2.878 V : +5.066 V : +24.256 V : +0.753 V	noue
Power Saving Mode Deep Sleep delay time	[Normal] 10	++: Select Screen †↓: Select Item Enter: Select +/-: Change Opt. F1: General Help
		F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275. Co	opyright (C) 2020 American M	egatrends, Inc.

# Power Saving Mode

This item allows users to select the Ite8518 power saving mode.

## Deep Sleep Delay Time

This item allows users to set the delay time for Deep Sleep mode.

# C.1.2.7 S5 RTC Wake Settings

Aptio Setup U Advanced	tility – Copyright (C) 2020 Americ	can Megatrends, Inc.
Wake system from S5	[Disabled]	Enable or disable System wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified. Select DynamicTime , System will wake on the current time + Increase minute(s)
		<pre> ++: Select Screen  14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.20	.1275. Copyright (C) 2020 Americar	n Megatrends, Inc.

# Wake System From S5

This item allows users to enable/disable system-wake-on alarm events. Select FixedTime, system will wake on the hr:min:sec specified. Select DynamicTime, system will wake on the current time + added minute(s).

# C.1.2.8 USB Configuration

Aptio Setup Utility – ( Advanced	Copyright (C) 2020 American	Megatrends, Inc.
USB Configuration		Enables Legacy USB support. AUTO ontion disables legacy
USB Module Version	23	support if no USB devices are connected. DISABLE option will
USB Controllers: 1 XHCI		keep USB devices available only for EFI applications.
USB Devices: 1 Drive, 2 Keyboards, 1 Mouse,	2 Hubs	
Legacy USB Support XHCI Hand-off	[Enabled]	
USB Mass Storage Driver Support USB S5 Wakeup Support	[Enabled] [Enabled]	
USB hardware delays and time-outs:		↔+: Select Screen ↑↓: Select Item
USB transfer time-out	[20 sec]	Enter: Select
Device power-up delay	[Auto]	F1: General Help F2: Previous Values
Mass Storage Devices:		F3: Optimized Defaults
USB Flash Disk 1100	[Auto]	F4: Save & Exit ESC: Exit
Version 2 20 1275 Cor	ouright (C) 2020 American M	adatrands Inc

# Legacy USB Support

This item allows users to enable/disable legacy USB support. The Auto option disables legacy support if no USB devices are connected. The Disable option reserves USB devices for EFI applications.

XHCI Hand-Off

This is a workaround for operating systems without XHCI hand-off support. The XHCI ownership change should be conducted by the XHCI driver.

USB Mass Storage Driver Support

This item allows users to enable/disable USB mass storage driver support.

### USB S5 Wakeup Support

This item allows users to enable/disable USB S5 wakeup support.

# USB Transfer Time-Out

This item allows users to set the time-out value for Control, Bulk, and Interrupt USB mass storage device transfers.

# Device Reset Time-Out

This item allows users to set the device reset command time-out.

### Device Power-Up Delay

This item allows users to Set the maximum time the device will take before reporting itself to the Host Controller. The Auto option uses the default value, which is 100 ms for a Root port. For a Hub port, the delay time is obtained from the Hub descriptor.

# USB Flash Disk 1100

Mass storage device emulation type. The Auto option emulates devices according to media format. Optical drives are emulated as "CDROM" drives. No media is emulated according to driver type.

# C.1.2.9 CSM Configuration

Aptio Setup Utility - ( Advanced	Copyright (C) 2020 American	Megatrends, Inc.
Compatibility Support Module Configu	ration	Enable/Disable CSM Support.
CSM Support	[Enabled]	
CSM16 Module Version	07.82	
Boot option filter	[UEFI only]	
Option ROM execution		
Network Storage Video Other PCI devices	[Do not launch] [UEFI] [UEFI] [UEFI]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.20.1275. Co	pyright (C) 2020 American Mu	egatrends, Inc.

# CSM Support

This item allows users to enable/disable CSM support.

## Boot Option Filter

This item allows users to control the priority of legacy/UEFI ROMs.

### Network

This item allows users to control the execution of UEFI and legacy network OpROM.

### Storage

This item allows users to control the execution of UEFI and legacy storage OpROM.

# Video

This item allows users to control the execution of UEFI and legacy video OpROM.

# Other PCI Devices

This item allows users to determine the OpROM execution policy for devices other than network, storage, and video.

# C.1.2.10 NVMe Configuration

# C.1.2.11 IT8768E Super IO Configuration

Aptio Setup Utility – Advanced	Copyright (C) 2020 American	Megatrends, Inc.
IT8768E Super IO Configuration		Set Parameters of Serial Port 1 (COMA)
Super IO Chip > Serial Port 1 Configuration > Serial Port 2 Configuration > Serial Port 3 Configuration > Serial Port 4 Configuration	IT8768E	
		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.20.1275. Cc	pyright (C) 2020 American M	egatrends, Inc.

- Serial Port 1 Configuration This item allows users to set the parameters of Serial Port 1 (COM A).
- Serial Port 2 Configuration
- Serial Port 3 Configuration
- Serial Port 4 Configuration

# Appendix C BIOS Setup

# C.1.3 Chipset Configuration

# C.1.3.1 System Agent (SA) Configuration

Aptio Setup Utility — <mark>Chipset</mark>	Copyright (C) 2020 American	Megatrends, Inc.
System Agent (SA) Configuration		Memory Configuration Parameters
SA PCIe Code Version VT–d	7.0.103.64 Supported	
<ul> <li>Memory Configuration</li> <li>Graphics Configuration</li> </ul>		++: Select Screen
		<pre>First Select Trem Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.20.1275. Cc	ppyright (C) 2020 American M	egatrends, Inc.

Memory Configuration

This item allows users to set the memory configuration parameters.

Graphics Configuration

# C.1.3.2 PCH-IO Configuration

Aptio Setup Utility Chipset	y – Copyright (C) 2020 Ame	erican Megatrends, Inc.
PCH-IO Configuration		PCI Express Configuration
<ul> <li>PCI Express Configuration</li> <li>SATA And RST Configuration</li> <li>USB Configuration</li> </ul>		36771183
LANA PXE OpROM Wake on LAN LANB PXE OpROM PCIE Wake State After G3	(Disabled) (Disabled) (Disabled) (Disabled) (Power Off)	
		++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275	. Copyright (C) 2020 Amer:	ican Megatrends, Inc.

# PCI Express Configuration

This item allows users to set the PCI express configuration settings.

# SATA and RST Configuration

# USB Configuration

# **XHCI** Compliance Mode

This item allows users to enable/disable Compliance mode. The default setting is disabled. This option must be enabled for Compliance mode testing.

# USB Port Disable Override

This item allows users to selectively enable/disable the corresponding USB port from reporting a device connection to the controller.

# Appendix C BIOS Setup

# C.1.4 Security

Aptio Setup Main Advanced Chipset	<mark>Utility – Copyright (C) 2020</mark> ( <mark>Security Boot Save &amp; Exit</mark>	American Megatrends, Inc.
Password Description		Set Administrator Password
If ONLY the Administrator' then this only limits acce only asked for when enteri If ONLY the User's passwor is a power on password and boot or enter Setup. In Se have Administrator rights. The password length must b in the following range: Minimum length	s password is set, ss to Setup and is ng Setup. d is set, then this must be entered to tup the User will e 3	
Maximum length	20	
Administrator Password		<pre> ++: Select Screen  1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help</pre>
HDD Security Configuration	:	F2: Previous Values
PO:TS8GSSD25S-S		F3: Optimized Defaults
P2:ADATA TM2S3334-2566D		F4: Save & EXIL ESC: Exit

Set Administrator Password

# C.1.5 Boot



### Setup Prompt Timeout

This item allows users to set the number of seconds to wait for setup activation key. 65535 (oxFFFF) means indefinite waiting.

### Bootup NumLock State

This item allows users to select the keyboard NumLock state.

- Quiet Boot This item allows users to enable/disable quiet boot option.
- Boot Option #1
- Boot Option #2
- Boot Option #3
- Boot Option #4

### Fast Boot

This item allows users to enable/disable fast boot, where a minimal set of devices is launched for active boot. This item does not affect BBS boot options.

# C.1.6 Save & Exit

Aptio Setup Utility – Copyright (C) 2020 American Main Advanced Chipset Security Boot <mark>Save &amp; Exit</mark>	Megatrends, Inc.
Save Options Save Changes and Exit Discard Changes and Exit	Exit system setup after saving the changes.
Save Changes and Reset Discard Changes and Reset	
Save Changes Discard Changes	
Default Options Restore Defaults Save as User Defaults	
Restore User Defaults	↔: Select Screen †∔: Select Item
Boot Override UEFI: Built-in EFI Shell	Enter: Select +/-: Change Opt.
Windows Boot Manager (P2: ADATA_IM2S3334-2566D)	F1: General Help
UEFI: USB Flash Disk 1100, Partition 1	F3: Optimized Defaults F4: Save & Exit ESC: Exit

- Save Charges and Exit This item allows users to exit the system setup after saving changes.
- Discard Changes and Exit
   This item allows users to exit the system setup without saving changes.

# Save Changes and Reset

This item allows users to reset the system after saving changes.

- Discard Changes and Reset This item allows users to reset the system without saving changes.
- Save Changes This item allows users to save any changes to the setup options.
- Discard Changes This item allows users to discard any changes to the setup options.
- Restore Defaults This item allows users to restore/load default values for all setup options.

### Save as User Defaults This item allows users to save all current settings as user defaults.

Restore User Defaults This item allows users to restore all setup options to the user default values.



# 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.

No part of this publication may be reproduced in any form or by any means, such as electronically, by photocopying, recording, or otherwise, without prior written permission from the publisher.

All brand and product names are trademarks or registered trademarks of their respective companies.

© Advantech Co., Ltd. 2020