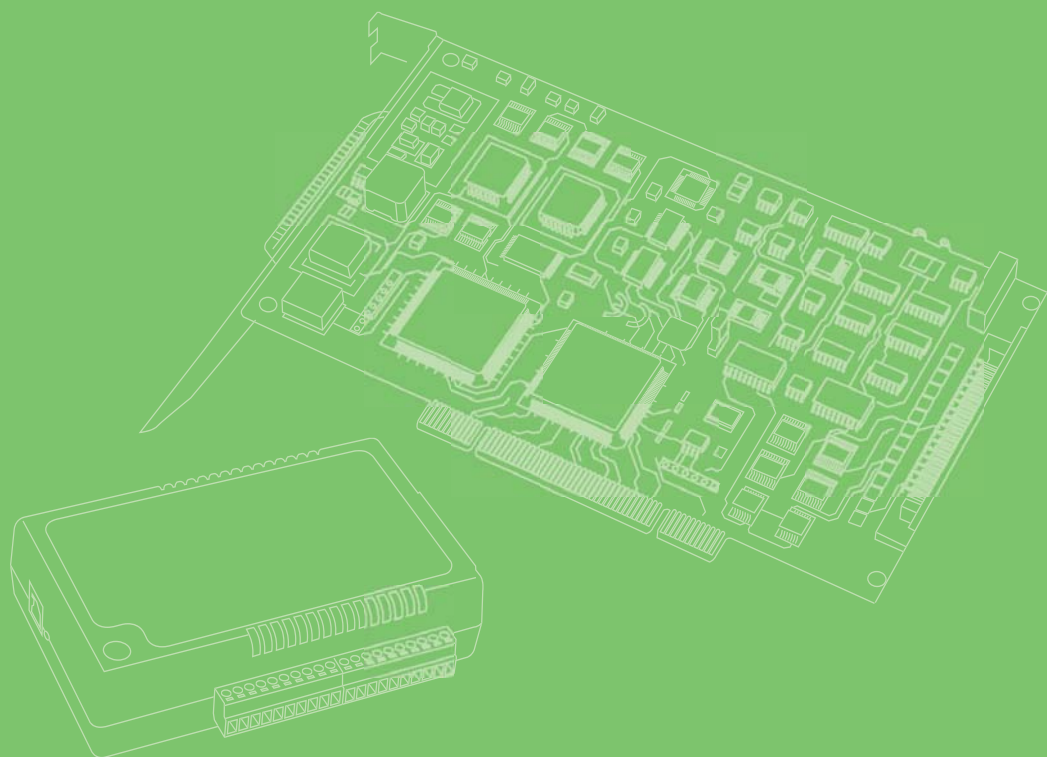


User Manual



TPC-5212W/TPC-5172T/ TPC-5152T/TPC-B500 Series

電腦

Intel® 6th Generation Core i
Computer

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：電腦	型號（型式）：TPC-5212W（系列型號參見說明書）					
Equipment name	Type designation (Type)					
單元 Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛 Lead (Pb)	汞 Mercury (Hg)	鎘 Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr ⁺⁶)	多溴聯苯 Polybrominated 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、卡筍）	—	○	○	○	○	○
配件（線材）	—	○	○	○	○	○
記憶卡	—	○	○	○	○	○
<p>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.</p> <p>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.</p> <p>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.</p>						

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：電腦		型號（型式）：TPC-5172T（系列型號參見說明書）				
Equipment name		Type designation (Type)				
單元 Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛 Lead (Pb)	汞 Mercury (Hg)	鎘 Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr ⁺⁶)	多溴聯苯 Polybrominated 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、卡筍）	—	○	○	○	○	○
配件（線材）	—	○	○	○	○	○
記憶卡	—	○	○	○	○	○
<p>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.</p> <p>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.</p> <p>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.</p>						

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：電腦 Equipment name	型號（型式）：TPC-5152T（系列型號參見說明書） Type designation (Type)					
單元 Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛 Lead (Pb)	汞 Mercury (Hg)	鎘 Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr ⁺⁶)	多溴聯苯 Polybrominated 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、卡筍）	—	○	○	○	○	○
配件（線材）	—	○	○	○	○	○
記憶卡	—	○	○	○	○	○
<p>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.</p> <p>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.</p> <p>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.</p>						

Copyright

The documentation and the software included with this product are copyrighted 2017 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.

Acknowledgements

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 Covers the Following Models:

■ TPC-5212W

TPC-5212W-633AE, TPC-5212W-673AE; TPC-5212W-634AE, TPC-5212W-674AE;
TPC5212W63A1701ET; TPC5212W63A1702ET; TPC5212W63A1703E-T;
TPC5212W63A1704ET; TPC5212W63A1705ET; TPC5212W63A1801ET;
TPC5212W63A1802ET; TPC5212W63A1803E-T; TPC5212W63A1804ET;
TPC5212W63A1805ET; TPC5212W63A1901ET; TPC5212W63A1902ET;
TPC5212W63A1903E-T; TPC5212W63A1904ET; TPC5212W63A1905ET;
TPC5212W63A2001ET; TPC5212W63A2002ET; TPC5212W63A2003E-T;
TPC5212W63A2004ET; TPC5212W63A2005ET; TPC5212W67A1701ET;
TPC5212W67A1702ET; TPC5212W67A1703E-T; TPC5212W67A1704ET;
TPC5212W67A1705ET; TPC5212W67A1801ET; TPC5212W67A1802ET;
TPC5212W67A1803E-T; TPC5212W67A1804ET; TPC5212W67A1805ET;
TPC5212W67A1901ET; TPC5212W67A1902ET; TPC5212W67A1903E-T;
TPC5212W67A1904ET; TPC5212W67A1905ET; TPC5212W67A2001ET;
TPC5212W67A2002ET; TPC5212W67A2003E-T; TPC5212W67A2004ET;
TPC5212W67A2005ET;

■ TPC-5172T

TPC-5172T-633AE; TPC-5172T-673AE; TPC-5172T-634AE; TPC-5172T-674AE;
TPC5172T63A1701E-T; TPC5172T63A1702E-T; TPC5172T63A1703E-T;
TPC5172T63A1704E-T; TPC5172T63A1705E-T; TPC5172T63A1801E-T;
TPC5172T63A1802E-T; TPC5172T63A1803E-T; TPC5172T63A1804E-T;
TPC5172T63A1805E-T; TPC5172T63A1901E-T; TPC5172T63A1902E-T;
TPC5172T63A1903E-T; TPC5172T63A1904E-T; TPC5172T63A1905E-T;
TPC5172T63A2001E-T; TPC5172T63A2002E-T; TPC5172T63A2003E-T;
TPC5172T63A2004E-T; TPC5172T63A2005E-T; TPC5172T67A1701E-T;
TPC5172T67A1702E-T; TPC5172T67A1703E-T; TPC5172T67A1704E-T;
TPC5172T67A1705E-T; TPC5172T67A1801E-T; TPC5172T67A1802E-T;
TPC5172T67A1803E-T; TPC5172T67A1804E-T; TPC5172T67A1805E-T;
TPC5172T67A1901E-T; TPC5172T67A1902E-T; TPC5172T67A1903E-T;

TPC5172T67A1904E-T; TPC5172T67A1905E-T; TPC5172T67A2001E-T;
TPC5172T67A2002E-T; TPC5172T67A2003E-T; TPC5172T67A2004E-T;
TPC5172T67A2005E-T;

■ TPC-5152T

TPC-5152T-633AE; TPC-5152T-673AE; TPC-5152T-634AE; TPC-5152T-674AE;
TPC5152T63A1701E-T; TPC5152T63A1702E-T; TPC5152T63A1703E-T;
TPC5152T63A1704E-T; TPC5152T63A1705E-T; TPC5152T63A1801E-T;
TPC5152T63A1802E-T; TPC5152T63A1803E-T; TPC5152T63A1804E-T;
TPC5152T63A1805E-T; TPC5152T63A1901E-T; TPC5152T63A1902E-T;
TPC5152T63A1903E-T; TPC5152T63A1904E-T; TPC5152T63A1905E-T;
TPC5152T63A2001E-T; TPC5152T63A2002E-T; TPC5152T63A2003E-T;
TPC5152T63A2004E-T; TPC5152T63A2005E-T; TPC5152T67A1701E-T;
TPC5152T67A1702E-T; TPC5152T67A1703E-T; TPC5152T67A1704E-T;
TPC5152T67A1705E-T; TPC5152T67A1801E-T; TPC5152T67A1802E-T;
TPC5152T67A1803E-T; TPC5152T67A1804E-T; TPC5152T67A1805E-T;
TPC5152T67A1901E-T; TPC5152T67A1902E-T; TPC5152T67A1903E-T;
TPC5152T67A1904E-T; TPC5152T67A1905E-T; TPC5152T67A2001E-T;
TPC5152T67A2002E-T; TPC5152T67A2003E-T; TPC5152T67A2004E-T;
TPC5152T67A2005E-T;

Product Warranty (2 years)

Advantech warrants to you, 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 which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which 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 of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

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 you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is 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 kind of cable is available from Advantech. Please contact your local supplier for ordering information.

FCC Class A

Note: 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 which case the user will be required to correct the interference at his own expense.

警告使用者

這是甲類測試產品，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的對策。

Technical Support and Assistance

1. Visit the Advantech web site at www.advantech.com/support where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
 - 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

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated into the equipment.
 - The equipment has been exposed to moisture.
 - The equipment does not work well, or you cannot get it to work according to the user's manual.
 - The equipment has been dropped and damaged.
 - The equipment has obvious signs of breakage.
15. **DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20°C (-4°F) ~ 60°C (140°F) for UNO-2484G.**
16. **CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.**

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Caution! *Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.*



Danger d'explosion si la batterie est mal REMPLACÉ. REMPLACER UNIQUEMENT PAR LE MEME TYPE OU EQUIVALENT RECOMMANDÉ PAR LE FABRICANT, jeter les piles usagées SELON LES INSTRUCTIONS DU FABRICANT.

安全指示

1. 請仔細閱讀此安全操作說明。
2. 請妥善保存此用戶手冊供日後參考。
3. 用濕抹布清洗設備前，請確認拔除電源線。請勿使用液體或去污噴霧劑清洗設備。
4. 對於使用電源線的設備，設備周圍必須有容易接觸到的電源插座。
5. 請勿在潮濕環境中使用設備。
6. 請在安裝前確保設備放置在可靠的平面上，意外摔落可能會導致設備損壞。
7. 設備機殼的開孔適用於空氣對流，從而防止設備過熱。**請勿覆蓋開孔。**
8. 當您連接設備到電源插座前，請確認電源插座的電壓符合要求。
9. 請將電源線布置在人們不易絆倒的位置，請勿在電源線上覆蓋任何雜物。
10. 請注意設備上所有的警告標示。
11. 如果長時間不使用設備，請拔除與電源插座的連結，避免設備被超標的電壓波動損壞。
12. 請勿讓任何液體流入通風口，以免引起火災或短路。
13. 請勿自行打開設備。為了確保您的安全，請透過經認證的工程師來打開設備。
14. 如欲下列情況，請由專業人員維修：
 - 電源線或插頭損壞；
 - 設備內部有液體流入；
 - 設備曾暴露在過度潮濕環境中使用；
 - 設備無法正常工作，或您無法透過用戶手冊來正常工作；
 - 設備摔落或損壞；
 - 設備有明顯外觀損壞。
15. 請勿將設備放置在超出建議溫度範圍的環境，即不要低於 -20°C (-4°F) 或高於 60°C (140°F)，否則可能會造成設備損壞。
16. 注意：若電池更換不正確，將有爆炸危險。因此，只可以使用製造商推薦的同一種或者同等型號的電池進行替換。請按照製造商的指示處理舊電池。
17. 根據 IEC 704-1:1982 規定，操作員所在位置音量不可高於 70 分貝。
18. 限制區域：請勿將設備安裝於限制區域使用。
19. 免責聲明：該安全指示符合 IEC 704-1 要求。研華公司對其內容之準確性不承擔任何法律責任。
20. 使用過度恐傷害視力。
21. 使用 30 分鐘請休息 10 分鐘。
22. 未滿 2 歲幼兒不看螢幕，2 歲以上每天看螢幕不要超過 1 小時。

Contents

Chapter 1 General Information1

1.1	Introduction	2
1.2	Features	2
1.2.1	System Kernel.....	2
1.2.2	O/S support.....	2
1.2.3	Certification and Environment.....	2
1.3	LCD & Touch Specifications	3
1.4	Power	4
1.5	I/O Port Arrangement.....	4
	Figure 1.1 I/O Port Arrangement	4
1.6	Panel Mounting	5
	Figure 1.2 Panel Mounting.....	5
1.7	Dimensions and Cutout.....	6

Chapter 2 System Setup7

2.1	Transport and Unpacking.....	8
2.2	System Setup.....	8
	Figure 2.1 Install SSD - 1.....	8
	Figure 2.2 Install SSD - 2.....	8
	Figure 2.3 Power Connector and Power Lines.....	9
	Figure 2.4 Power Receptor & Button Pin Assignment.....	9
2.3	Driver Installation	10
2.3.1	Installation of Touch Screen driver	10
2.3.2	Installation of Watchdog driver.....	10
2.4	Panel Mounting	12
2.5	Cabinet Installation and Earth Grounding setup	14
2.6	Power/Digital Ground and Earth Ground	15
2.7	Installation of extension.....	16
2.7.1	Installation of M.2(2280) SSD	16
	Figure 2.5 Install M.2 SSD-1.....	16
	Figure 2.6 Install M.2 SSD-2.....	16
	Figure 2.7 Install M.2 SSD-3.....	17
2.7.2	Installation of iDoor	17
	Figure 2.8 Install iDoor-1	17
	Figure 2.9 Install iDoor-2	18
	Figure 2.10 Install iDoor-3	18
	Figure 2.11 Install iDoor-4	19
2.7.3	Installation of the riser card.....	19
	Figure 2.12 Install M.2 SSD-1.....	19
	Figure 2.13 Install M.2 SSD-2.....	20
	Figure 2.14 Install Riser-Card-1.....	20
	Figure 2.15 Install Riser-Card-2.....	21
	Figure 2.16 Install Riser-Card-3.....	21

Chapter 3 Features in Windows Embedded23

3.1	Features in Windows Embedded	24
3.2	Enhanced Write Filter (EWF)	24
3.3	File-Based Write Filter (FBWF).....	26

Chapter A Easy Installation..... 27

A.1	Easy Installation.....	28
A.2	UI Operating Process.....	30
	Table A.1: Status indicator table.....	30
	Table A.2: Button code definition.....	34
A.3	COM1: RS-232	35
A.4	COM2: RS-232/422/ 485	35
A.5	RS-422/ 485 mode setting by BIOS.....	36

Chapter 1

General Information

1.1 Introduction

TPC-5000 Touch Panel Computer is a state-of-the-art Modular designed Human Machine Inter-face featuring displays ranging from 12" to 21.5" and Intel 6th Core i CPU provides the high computing performance in a compact fan-less system.

The key features are as follows:

- **Modular Design**
Front panel and computing box are separated to provide flexibility, easy to upgrade and maintain and fast to customization.
- **Intel 6th Generation Core i7/i3/Celeron with 8GB/4GB DDR4 SDRAM**
Latest Intel technology, performance enhanced by 20%.
- **mPCIe Slot**
Internally mounted computer expansion cards, replaces the mSATA standard, Supports 6 Gbit/s speed.
- **Fanless**
By using a low-power processor, the system does not have to rely on fans, which often are unreliable and cause dust to circulate inside the equipment.
- **Bright Display**
The TFT LED LCD display suits industrial demands for clear interfaces. Wide Operating Specifications Temperature & Isolation Protection.

1.2 Features

1.2.1 System Kernel

- **CPU:**
Intel 6th Generation Core i7-6600U 2.60GHz
Intel 6th Generation Core i3-6100U 2.30GHz
Intel 6th Generation Celeron 3955U 2.00GHz
- **BIOS:** AMI UEFIBIOS
- **VGA:**
Intel® HD Graphics 520 for i7/i3 version
Intel® HD Graphics 510 for Celeron version
- **Ethernet:** 10/100/1000Base-T x3(2 x Intel® I210, 1 x Intel® I219)
- **Watchdog Timer:** EC watchdog timer; 1 ~ 255 sec(system)
- **Storage:**
M.2(2280) SATA slot x1, 2.5" SATA SSD slot x1, CFAST Slot x1 (Optional by iDoor)
- **I/O Ports:**
1 x RS-232, 1 xRS-232/422/485, 2 x USB3.0, 2 x USB2.0, Audio line out x1, DisplayPort 1.4 out x1

1.2.2 O/S support

Microsoft® Windows WES7 32bit/64bit /Windows7 32bit/64bit /Windows 8.1 64bit/
Windows 10 IoT Enterprise LTSC

1.2.3 Certification and Environment

Certification

- FCC Class A
- CE certificated


- UL
- CCC
- BSMI
- The front bezel is compliant with IP66

Environment

- **Operating Temperature:** -0 ~ 55°C (32 ~ 131°F)
- **Storage Temperature:** -20 ~ 60°C (-4 ~ 140°F)
- **Humidity:** 10 ~ 95% RH @ 40°C, non-condensing
- **Vibration:** With SSD: 3Grms (5 ~ 500 Hz) (Operating, random vibration)

1.3 LCD & Touch Specifications

Category		Item	12.1"	15"	17"	18.5"	21.5"
LCD	Display Type	XGATFT LEDLCD	XGATFT LEDLCD	XGATFT LEDLCD	SXGATFT LEDLCD	HDT-FTLEDLCD	FullHDT-FTLEDLCD
	Max. Resolution	1024 x768	1024 x768	1280 x1024	1366 x768	1920 x1080	
	Max. Color	16.2 M	16.2M	16.7 M	16.7 M	16.7 M	
	Luminance (cd/m ²)	600	400	350	300	300	
	Viewing Angle (H/V°)	160/140	160/140	160/140	170/160	178/178	
	Backlight Life	50,000	50,000	50,000	50,000	50,000	
	Contrast Ratio	700:1	700:1	800:1	1000:1	5000:1	
Touch	Type	5-wire Resistive	Projected Capacitive	Projected Capacitive	Projected Capacitive	Projected Capacitive	
	Light Transmission	81% ± 3%	90% ± 3%	90% ± 3%	90% ± 3%	90% ± 3%	
System	Temperature	Operating	0~55°C (32~131°F)	0~55°C (32~131°F)	0~55°C (32~131°F)	0~55°C (32~131°F)	0~55°C (32~131°F)
		Storage	-20~60°C (-4~140°F)	-20~60°C (-4~140°F)	-20~60°C (-4~140°F)	-20~60°C (-4~140°F)	-20~60°C (-4~140°F)
	Power Consumption	31W Typical, 90W Max.	32W Typical, 90W Max.	42W Typical, 90W Max.	36W Typical, 90W Max.	40W Typical, 90W Max.	
	iKey built in	No	Yes	Yes	Yes	Yes	

Note!  There might be several bright or dark pixels on the LCD. This phenomenon is normal in today's LCD manufacturing. Inspection criteria are following specifications defined by LCD vendor.

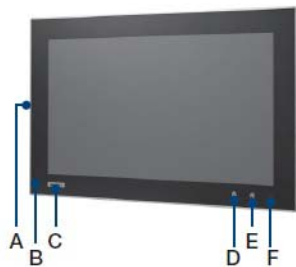
1.4 Power

- **Input Voltage:** 24VDC +/-20%
- **Typical:**
 - TPC-5122T: 24 VDC @ 3.7 Amp
 - TPC-5152T: 24 VDC @ 3.7 Amp
 - TPC-5172T: 24 VDC @ 3.7 Amp
 - TPC-5182W: 24 VDC @ 3.7 Amp
 - TPC-5212W: 24 VDC @ 3.7 Amp

1.5 I/O Port Arrangement

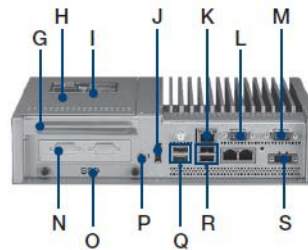
The arrangement of the I/O ports is shown in Figure 1.1.

Front View



- A. Wi-Fi antenna
- B. NFC card reader
- C. Logo
- D. iKey
- E. Home key
- F. Power indicator

Rear View



- G. Half-size PCIe
- H. 2 x mPCIe
- I. M.2 for storage
- J. DisplayPort
- K. 3 x LAN
- L. RS-232
- M. RS-232/422/485
- N. iDoor
- O. SSD bay
- P. Audio out
- Q. 2 x USB 3.0
- R. 2 x USB 2.0
- S. Power input

Figure 1.1 I/O Port Arrangement

1.6 Panel Mounting

1. There is an adhesive waterproof gasket on the Mg front bezel. Make sure the waterproof gasket is in position before installing TPC into the panel opening.
2. Install the TPC into the panel opening.
3. Find the clamps and long screws in the accessory pack. Hook the clamps to the holes around the four sides of the bezel. Insert the screws in to every clamp and fasten them. These screws will push the mounting panel and fix the unit.
4. The suggested mounting panel thickness is less than 6 mm(0.236”).

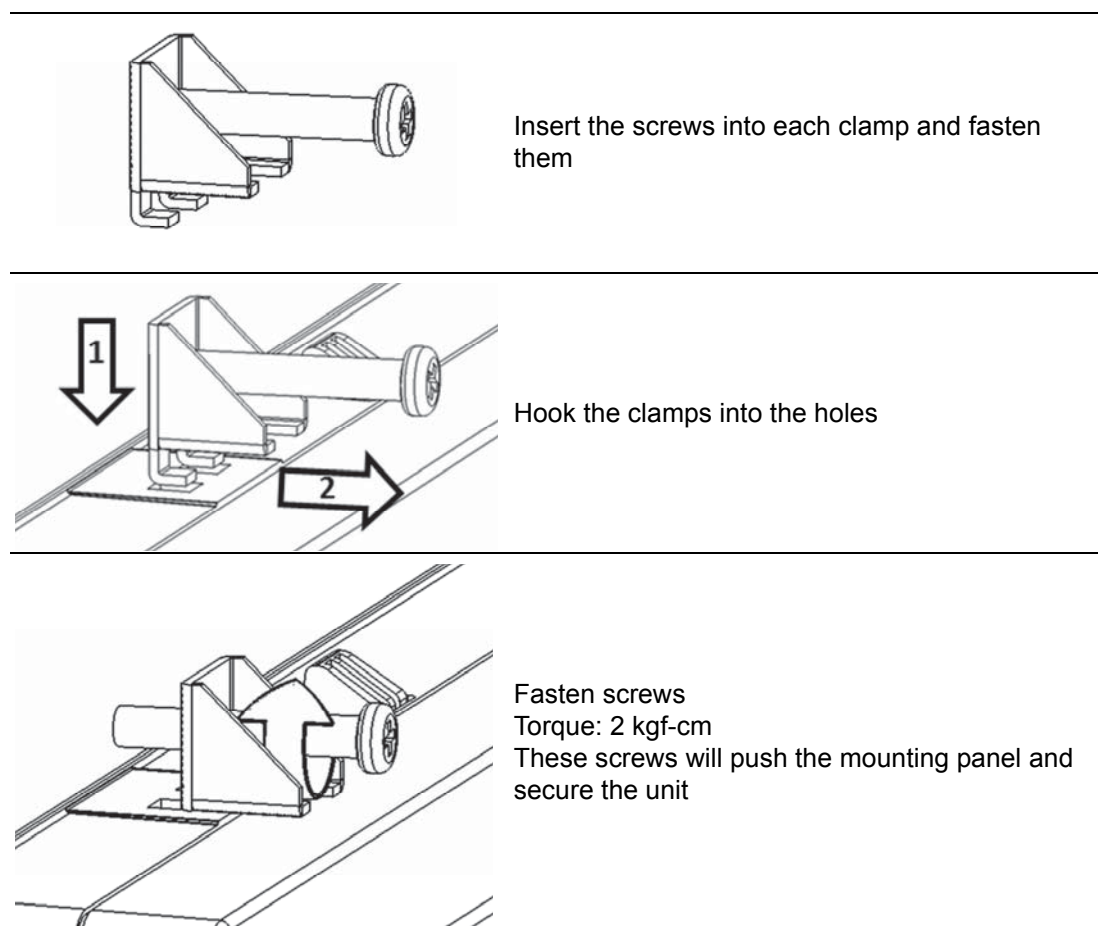
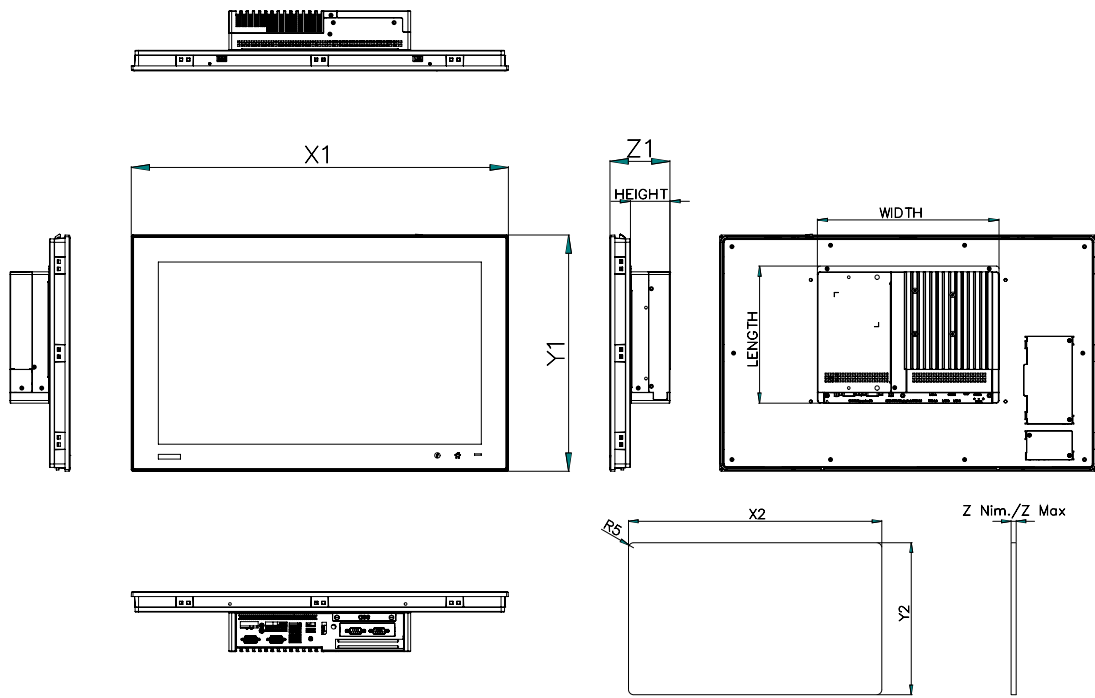


Figure 1.2 Panel Mounting

1.7 Dimensions and Cutout



TPC-B500 Box Dimension: W269 x L203 x H58.5

Chapter 2

System Setup

2.1 Transport and Unpacking

When accepting a delivery, please check the packaging for visible transport damage and check the delivery for completeness by comparing it with your order. If you notice any shipping damage or inconsistencies between the contents and your order, please inform the responsible delivery service immediately.

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

If the TPC is transported in cold weather or is exposed to extreme variations in temperature, make sure that moisture (condensation) does not build up on or inside the HMI device. Moisture can result in short-circuits in electrical circuits and damage the device. To avoid that, please store the TPC in a dry place and bring the TPC to room temperature before starting it up. If condensation occurs, a delay time of approximately 12 hours must be allowed to make sure the TPC is completely dry before the TPC is switched on.

2.2 System Setup

1. To remove the SSD bay by the hand screw (blue ones).




Figure 2.1 Install SSD - 1

2. Put the SSD on the bay and lock on it with the SSD screws attached in the box.



Figure 2.2 Install SSD - 2

- Warning!** *It is suggested turning OFF the system power to plug in or pull out the memory card, even though the CFast storage is hotswappable.*
 *Ilest suggéré de désactiver l'alimentation du système que vous branchez ou retirez le carte mémoire, même si la mémoire CompactFlash est remplaçable à chaud.*

3. Connect the power connector to the 24 VDC power lines. The power lines can either be of some power adapter or in-house power source.

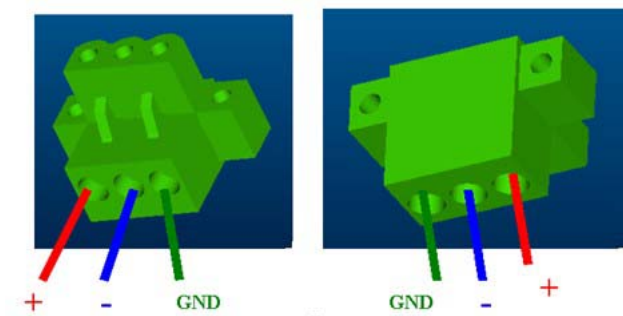


Figure 2.3 Power Connector and Power Lines

4. Plug the power lines into the system power receptor.



Figure 2.4 Power Receptor & Button Pin Assignment

5. Attach power to the system.
6. Calibrate the touch screen (only for 12" monitor).

2.3 Driver Installation

2.3.1 Installation of Touch Screen driver

Windows 7, Windows 8 & Windows 10 has the built-in multi-touch driver to support.

2.3.2 Installation of Watchdog driver

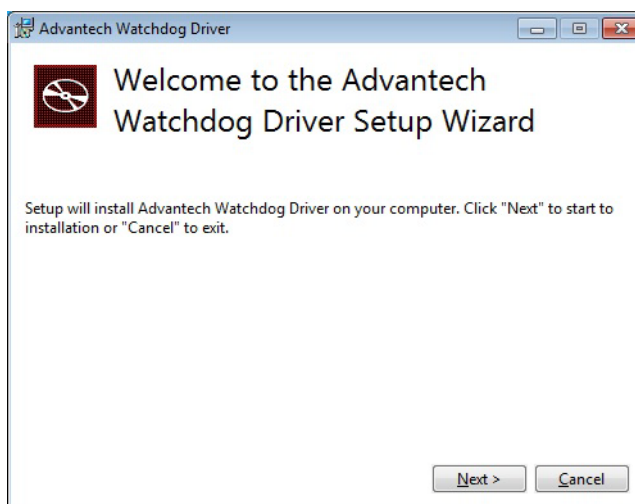
Installation is required. If there is no existing installation of Advantech Watchdog WDM driver on your computer, take the following steps to install Advantech Watchdog WDM driver.

How to install Advantech Watchdog WDM driver

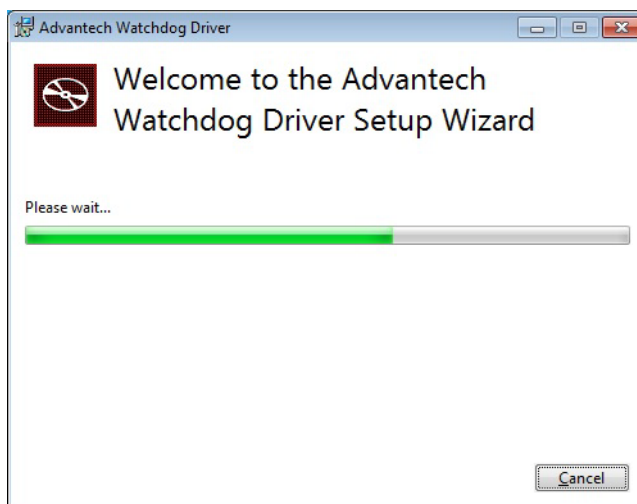
1. Verify that your computer meets the hardware and software requirements to run Advantech Watchdog WDM driver.
For more information, see Environments.
2. If you do not already have the installer of Advantech Watchdog WDM driver, download it from Advantech official Web site.
3. From Control Panel, remove any existing installation of Advantech Watchdog WDM driver from your computer.
4. With administrator-level privilege on your computer, run the installer of Advantech Watchdog WDM driver.

Below is an example of Advantech Watchdog WDM driver Setup. If you want to stop the setup, press the "Cancel" button in the setup program. The Setup program will stop the procedure automatically.

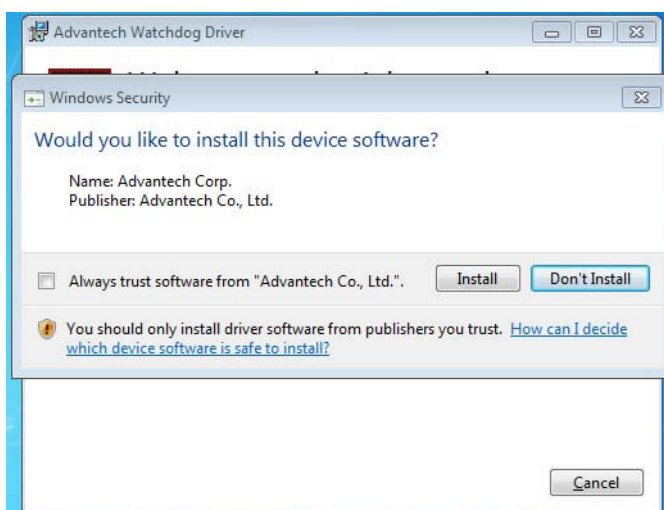
1. Run the Setup program. When the setup program is running, click the "Next >" button in "Advantech Watchdog Driver Setup Wizard".



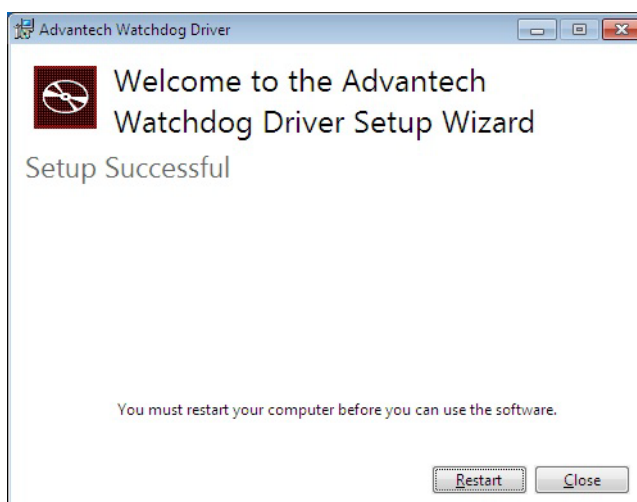
2. The installation is running. Please wait for completion.



3. Click the "Install" button to continue the installation of Advantech Watchdog WDM driver.

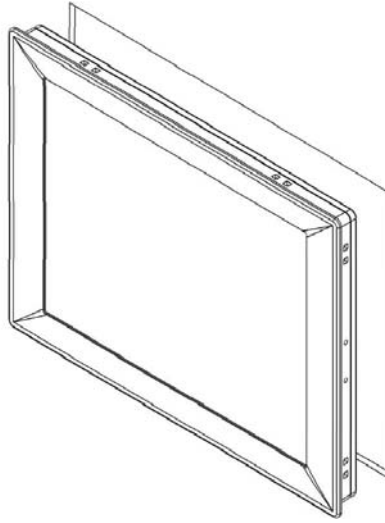


4. Click on "Restart" button or "Close" button on the "Advantech Watchdog Driver" to complete the setup program.

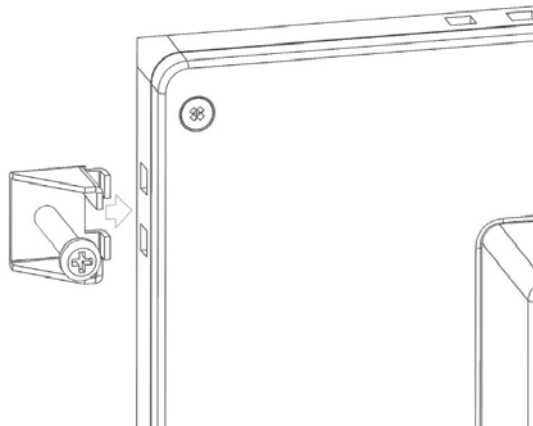


2.4 Panel Mounting

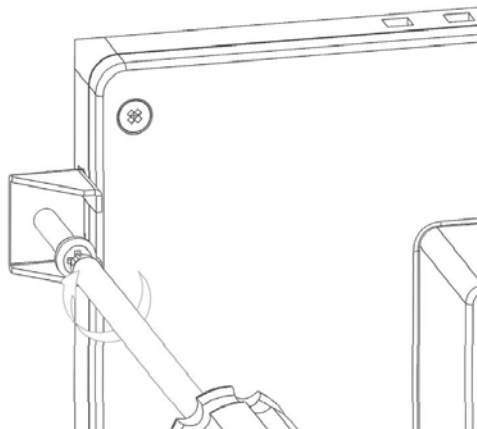
1. Position the TPC against the panel.



2. Insert the clamps into the side of the TPC.



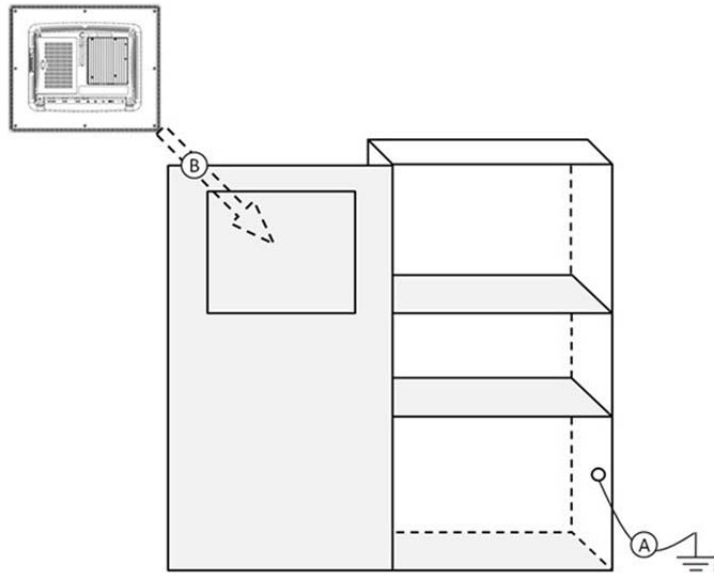
3. Secure the clamp to the panel using the included screws.



2.5 Cabinet Installation and Earth Grounding setup

Follow the following steps to setup TPC system, and please pay attention that Ground pin of TPC system should be connected to earth ground. Under this circumstance, TPC system could have the best performance such as EMI immunity, ESD immunity, Surge immunity and also system isolation. If the TPC system is embedded in the cabinet, the TPC system's ground, cabinet's ground and earth ground should be connected together.

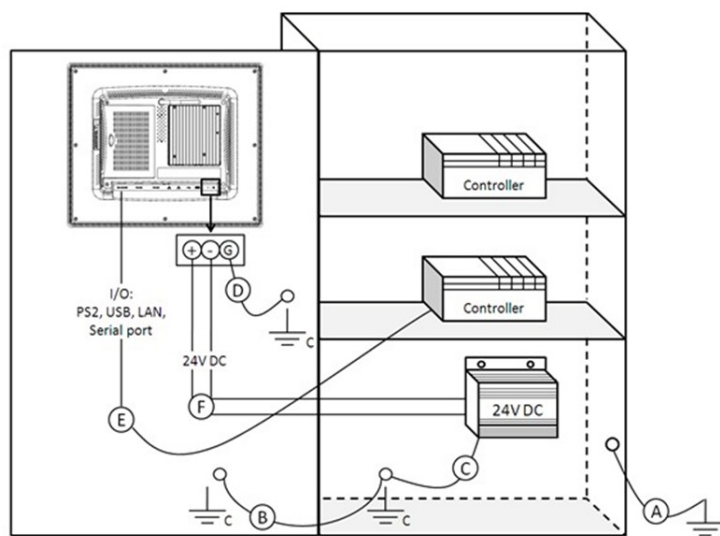
1. Install the TPC system into the cabinet.



Step A: Connect the cabinet to earth ground.

Step B: Embed null TPC system into the cabinet without any I/O cable and power.

2. System wiring.



Step A: Connect the cabinet to earth ground.

Step B: Ensure that all cabinet has been grounded together.

Step C: Connect the ground of the power supply to the cabinet.

Step D: Connect the ground pin of TPC system to the cabinet.

Step E: Connect the I/O to the controller if needed.

Step F: Connect the V+ and V- of power supply to TPC system.

While completing step A to F step by step, you can supply power to TPC system now.

Note! Make sure all wires follow the installation guidelines or it may cause.

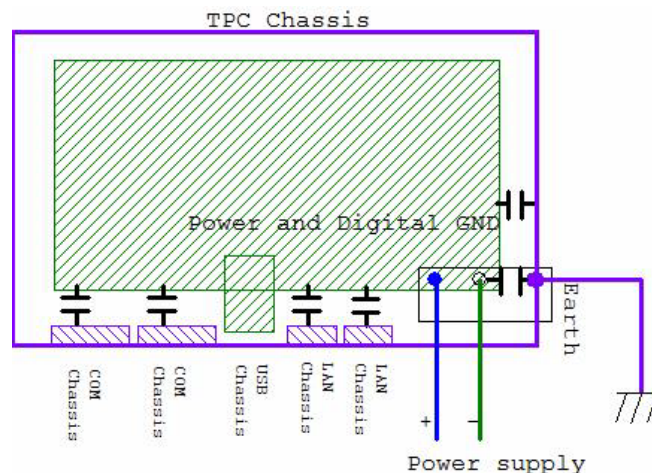


If you need to install device or Mini PCIe card on the TPC system, please double check the voltage between V- and earth ground, if the voltage is not almost equal with each other, we suggest to short V- and earth ground with wiring.

2.6 Power/Digital Ground and Earth Ground

The purpose is to block all the external interference on the chassis, and prevent any possibility of bad grounding design to cause electric shock of people. This is so called level 1 isolation which consumer PC do not implement this kind of design.

1. TPC Chassis and Earth (Power pin3) are short,
2. TPC Chassis and Power / Digital GND are OPEN



The TPC is an industrial grade product, designed to prevent external interference and the possibility of electric shock. To complete the isolation design, we need to consider the following:

1. The Ethernet is isolated, a LAN connection will not impact the isolation design.
2. For general USB devices, to solve EMI and ESD issues, they are designed as a chassis and digital short. But the TPC prevents damage to USB devices, ESD and EMI solutions are designed to use the Power GND as a vent path to ensure Power GND and Chassis GND will not have potential difference abnormalities.
3. For COM ports, since there are different COM port designs, long distance connection cause voltage level difference between the two COM port chassis. So the shell ground of cable must be isolated to signal digital ground

In real cases, many customers may break the level 1 isolation by 3rd party Device or cable design, in this situation, we need to consider making all the GND short (Power GND/DigitalGND/EarthGND), and ensure customers have good Earth GND connection.

2.7 Installation of extension

2.7.1 Installation of M.2(2280) SSD

1. Remove the 2 screws of the extension door.



Figure 2.5 Install M.2 SSD-1

2. Slide out the back door by hands.

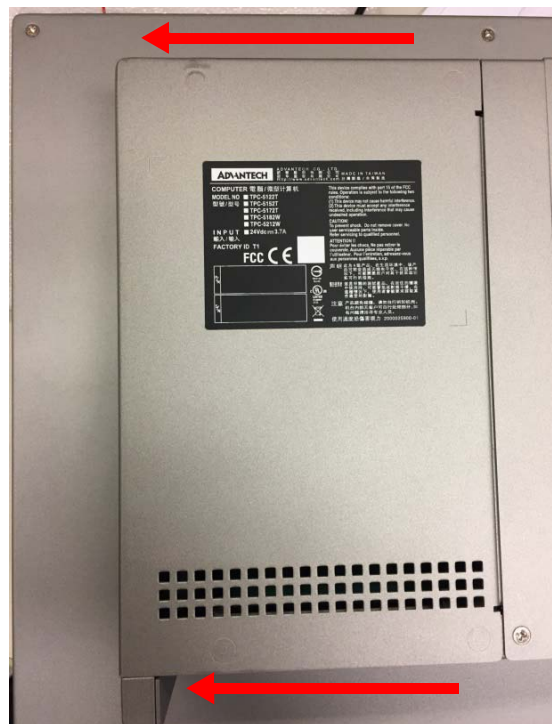


Figure 2.6 Install M.2 SSD-2

3. Insert the M.2(2280) SSD and tightening the screws attached on the screw holes.



Figure 2.7 Install M.2 SSD-3

2.7.2 Installation of iDoor

1. Remove the 2 screws of the extension door.



Figure 2.8 Install iDoor-1

- Slide out the back door by hands.



Figure 2.9 Install iDoor-2

- Remove the 2 screws of the iDoor.

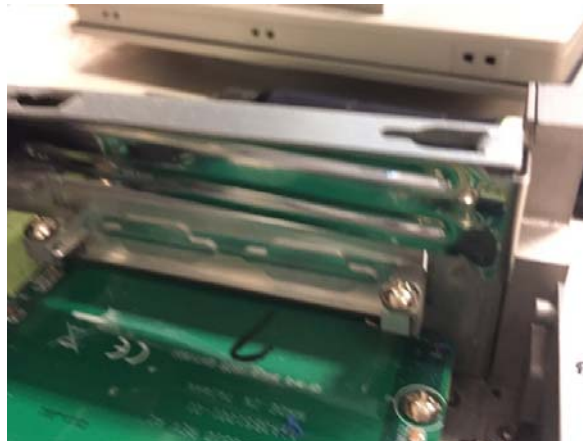


Figure 2.10 Install iDoor-3

4. Plug in the power cable and the signal cable

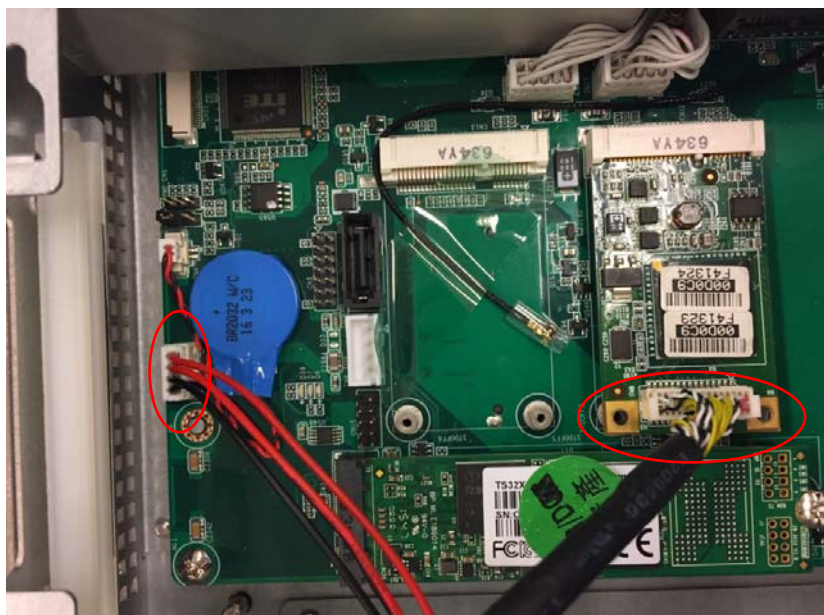


Figure 2.11 Install iDoor-4

5. Lock the iDoor and tighten the screws to fix it.

2.7.3 Installation of the riser card

1. Remove the 2 screws of the extension door.



Figure 2.12 Install M.2 SSD-1

- Slide out the back door by hands.



Figure 2.13 Install M.2 SSD-2

- Remove the screw of the door stop of the riser card



Figure 2.14 Install Riser-Card-1

4. Plug in the riser card by slide through the track.

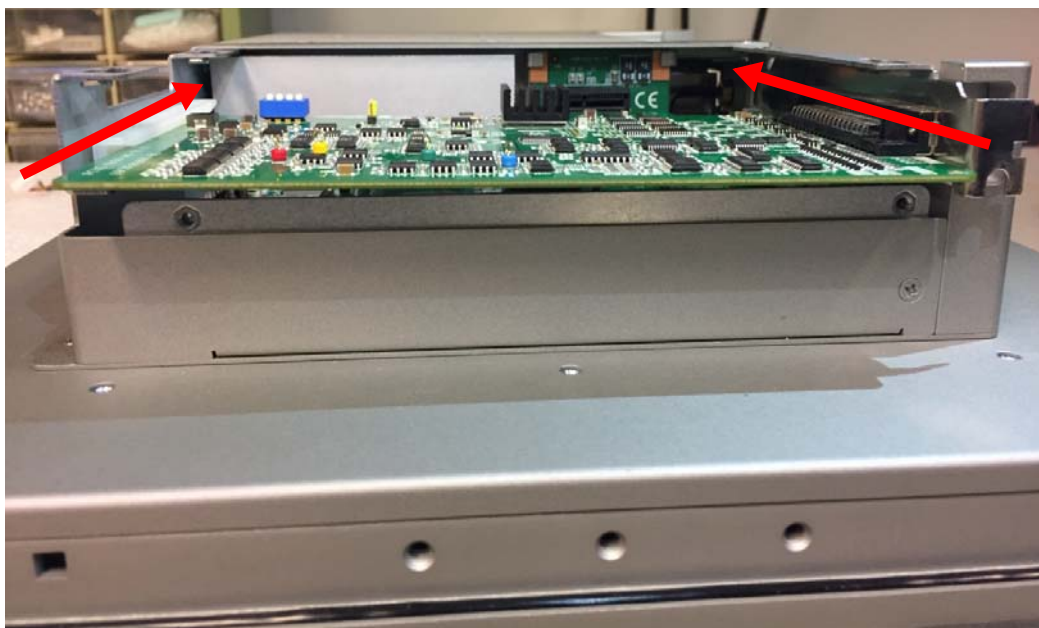


Figure 2.15 Install Riser-Card-2

5. Tightening the screw to fix the riser card.



Figure 2.16 Install Riser-Card-3

Chapter 3

Features in Windows
Embedded

3.1 Features in Windows Embedded

TPC product supports the embedded Windows platform. This section outlines the important features (EWF, FBWF, UWF and HORM), that are provided in WES7.

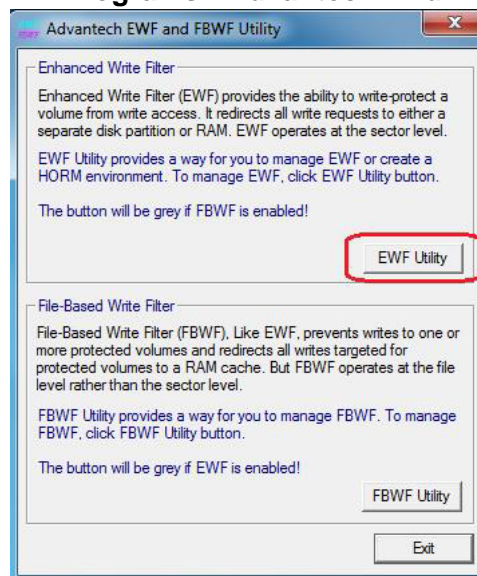
3.2 Enhanced Write Filter (EWF)

Enhanced Write Filter (EWF) and File-Based Write Filter (FBWF) redirect all writes targeted at protected volumes to a RAM or disk cache, called an overlay. The overlay stores changes made to the operating system, but is removed when the device is restarted, restoring the device to its original state. Note that there is no disk-based overlay support for Windows Embedded Standard7.

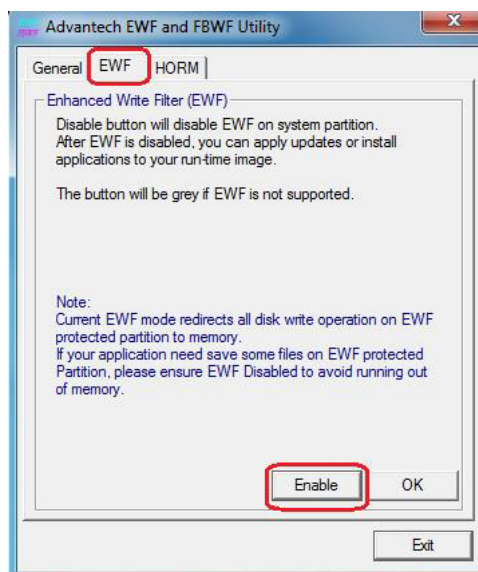
EWF works at the sector level on protected disks and allows you to commit changes so that they persist when the device is restarted. EWF is useful for thin clients that do not need to store cached information or receive frequent updates. Changes made to a system protected by EWF are stored in one or more layers that represent snapshots in time. Applying changes to an image applies all changes made to the operating system during a specific period of time.

Advantech provide utility to operate EWF. Refer below steps if you want to enable.

1. Click **Start Menu->All Programs->Advantech->AdvWF** and click **EWF Utility**.



2. Click **EFW tab**, and click **“Enable”** button.



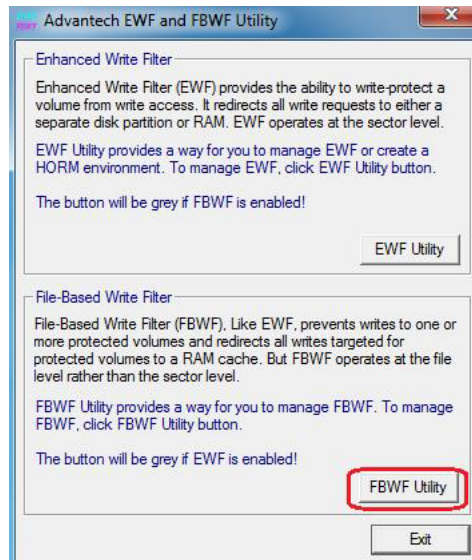
3. After the system is rebooted automatically, EWF enable.

3.3 File-Based Write Filter (FBWF)

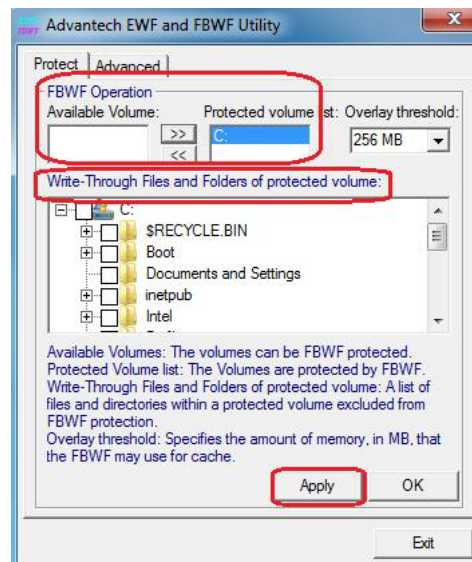
File-Based Write Filter (FBWF) works at the file level instead of the sector level on protected disks. By default, FBWF protects the whole disk, but selective write through exceptions can be granted to specific files and folders. Writes to folders with write-through exceptions will be persisted when the device restarts.

Advantech provide utility to operate FBWF. Refer below steps if you want to enable

1. Click **Start Menu->All Programs->Advantech->AdvWF** and click **FBWF Utility**.



2. Move volume you want to protect from “Available Volume” to “Protected Volume” and choose “Write-Through Files and Folders”.



3. Click “**Apply**”, and the system is rebooted automatically. Then FBWF enable.

Chapter **A**

Easy Installation

A.1 Easy Installation

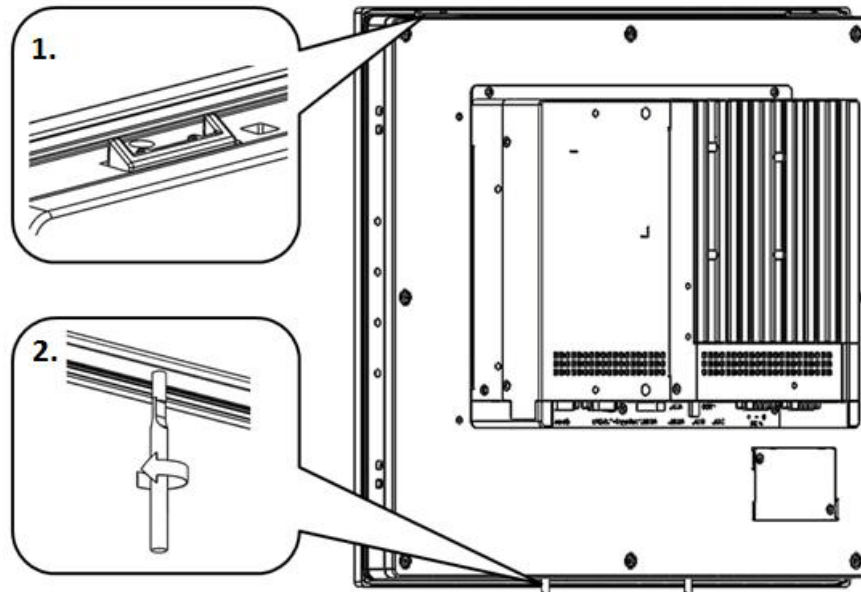
With easy installation, a person can complete panel mount process by himself, just follow following steps:

To install the TPC to the cabinet:

Step 1:

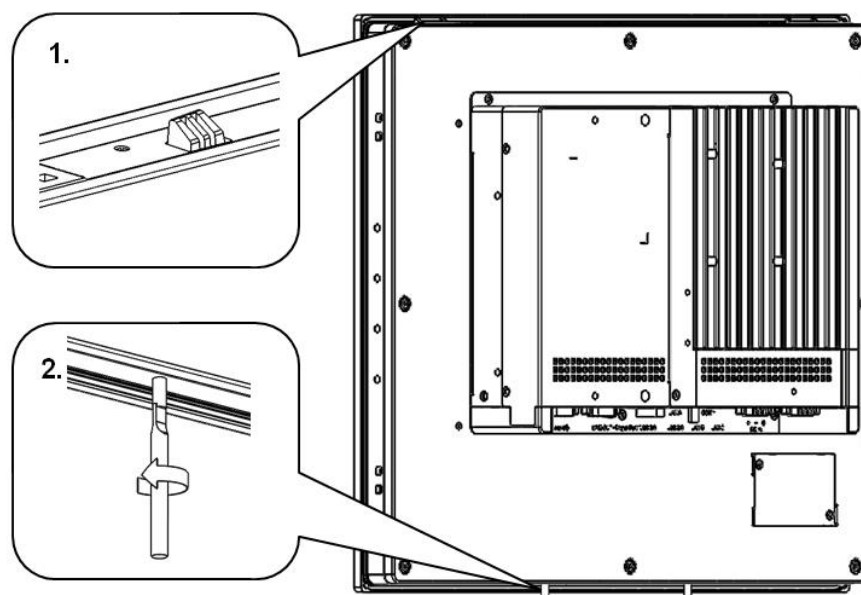
Models of 4:3 screen ratio

1. Snap hook on the top of TPC to hook TPC in the cabinet.
2. Release the pillar on the bottom of TPC for sitting in the cabinet.



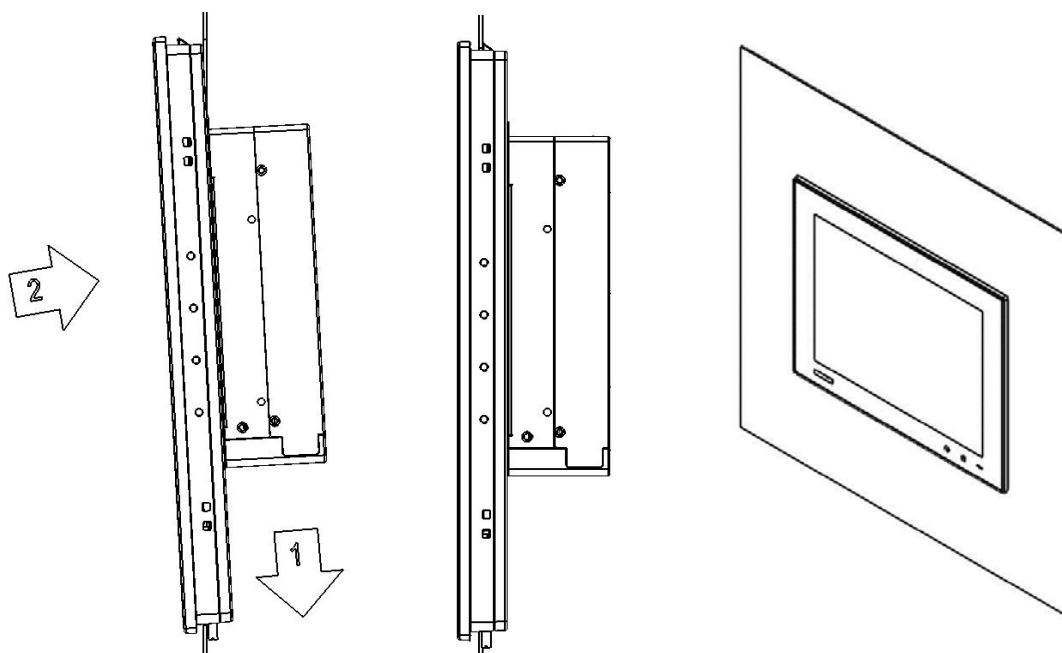
Models of 16:9 screen ratio

1. unscrew the screws of the snap hook on the top of TPC to release snap hooks.
2. Release the pillar on the bottom of TPC for sitting in the cabinet.

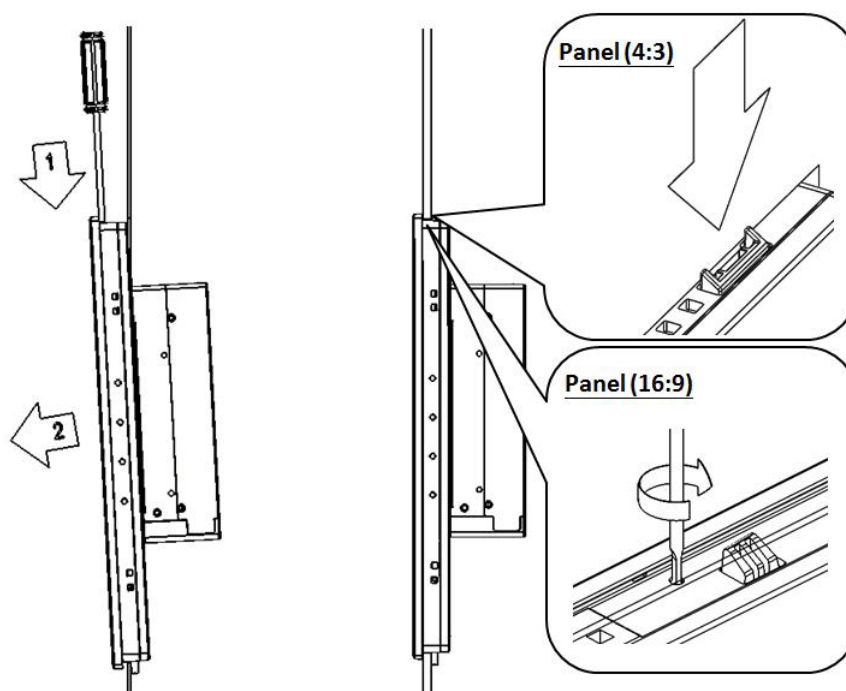


Step 2:

1. Sit TPC cross the cabinet wall.
2. Push the upper part of TPC to the wall until snap hooks flip back, the snap hook will hold the machine on the wall.

**To remove the panel from cabinet:**

1. For cabinet thickness equals or less than 2mm, using stick $\text{Ø} \leq 4\text{mm}$ to pull out the panel; for cabinet thickness more than 2mm, push the snap hooks to pull out the panel, please make sure to hold the panel while push the snap hooks to release the panel.



Note! While using easy installation, the suggested mounting panel thickness is less than 2 mm (0.079"). When without easy installation, the suggested mounting panel thickness is less than 6 mm(0.236").



A.2 UI Operating Process

This section is to introduce how to operate HMI utility(GL_Utility), you can download the utility from Advantech's product support portal of the TPC at <http://support.advantech.com>. See the process below:

- As you can find 2 function buttons in the lower right corner of front panel,



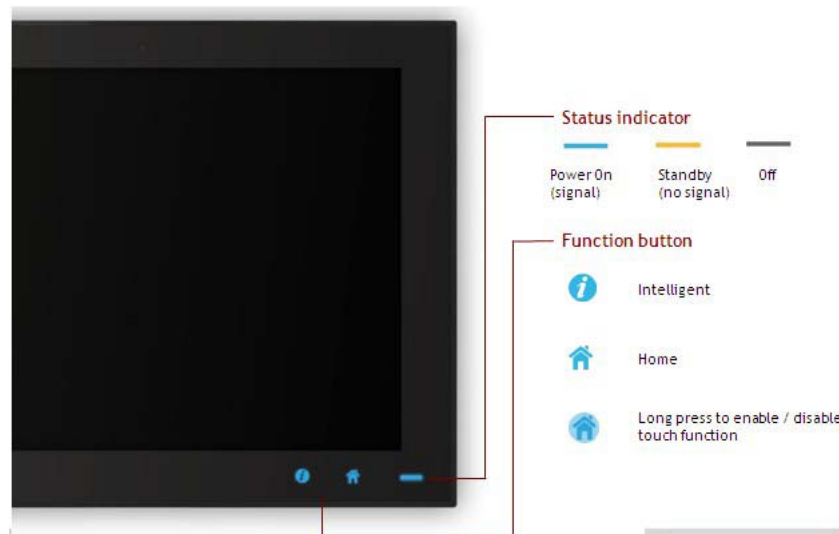
represents "intelligent" key while



represents "home" key. At the same time you can find status indicator show in following table:

Table A.1: Status indicator table

Indicator	Status
Green	Power on
Orange	Stand by
No light	Off



2. One press Home Key->



Home – Back to desktop (default setting)



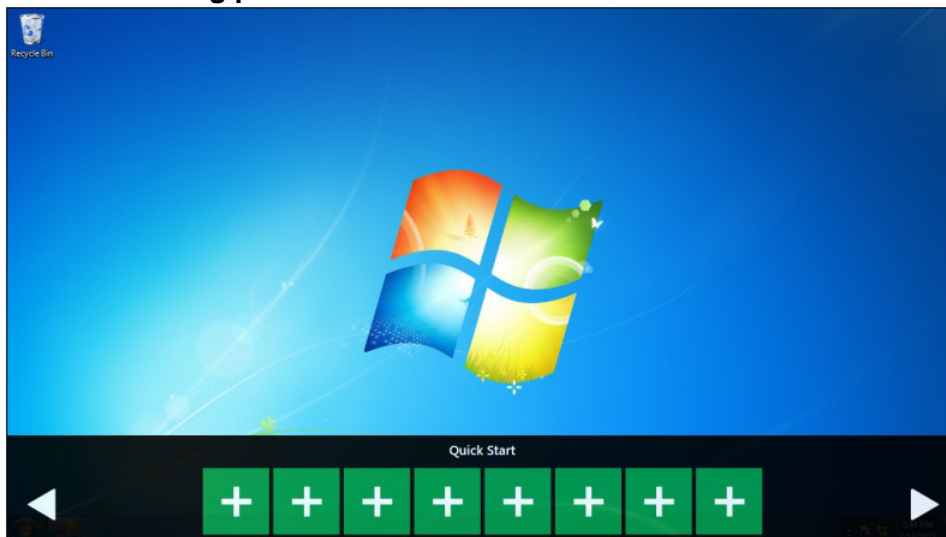
Home - Execute Home-key App (Set up in setting page)



3. Long press Home Key->



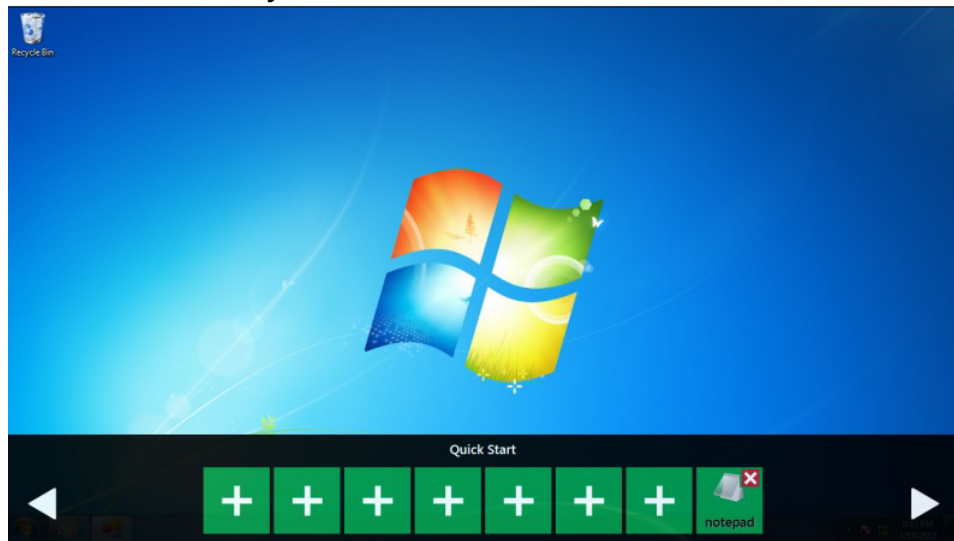
Home - Long press to disable / enable touch function



4. One press Intelligent Key->

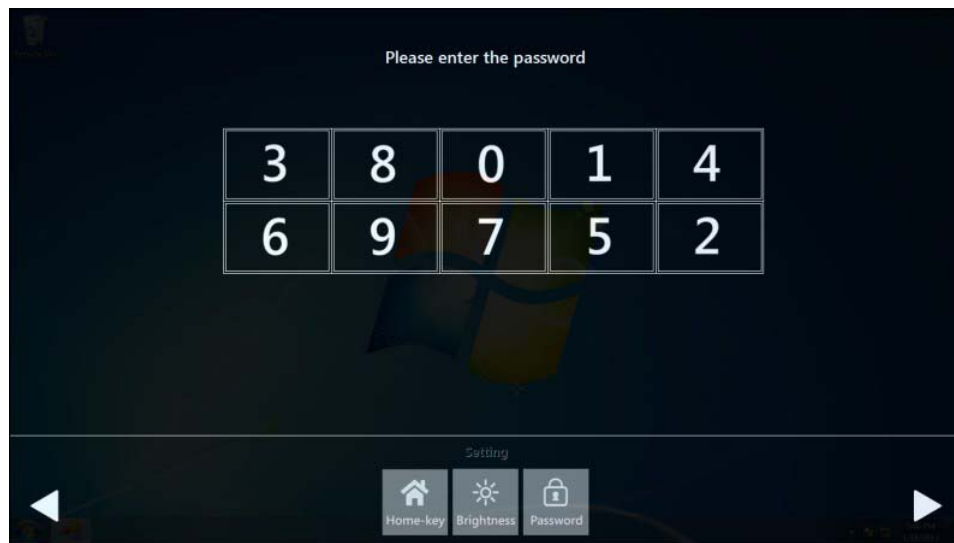


GLToolbar Utility



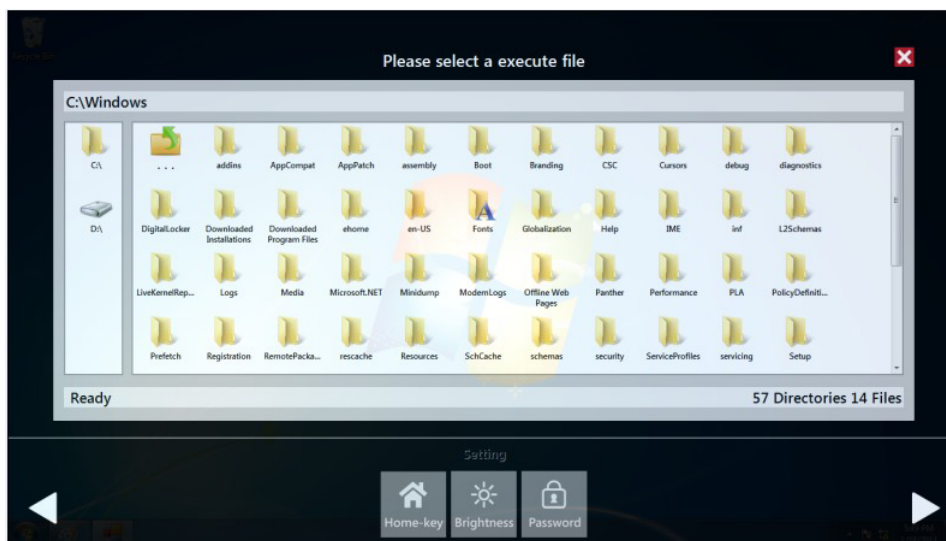
A. Quick start->

- Press “+” to add shortcut
- Long press the icon to perform “right click” until an “X” mark appears in upper right corner to “delete”

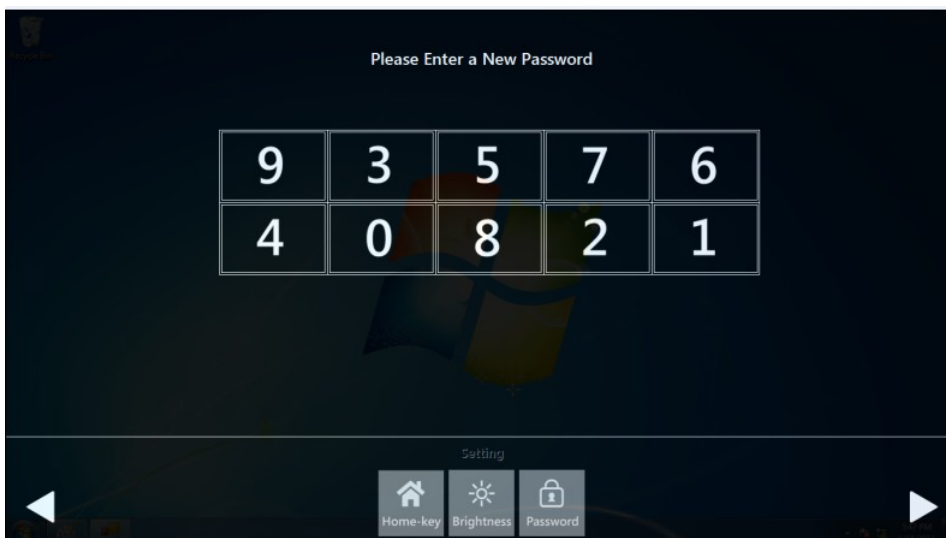
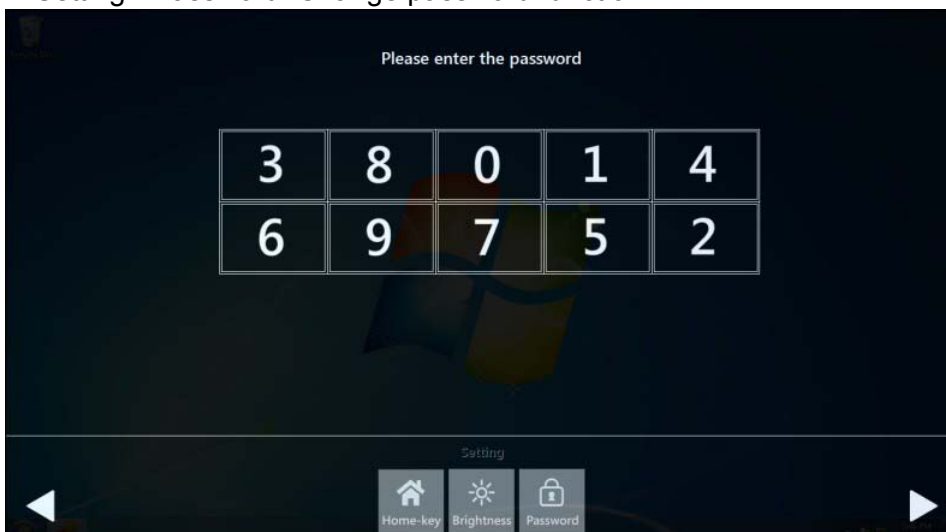


B. Setting ->

- Password confirmation for authority confirmation when first log in, default password is “1234” without input order to active.

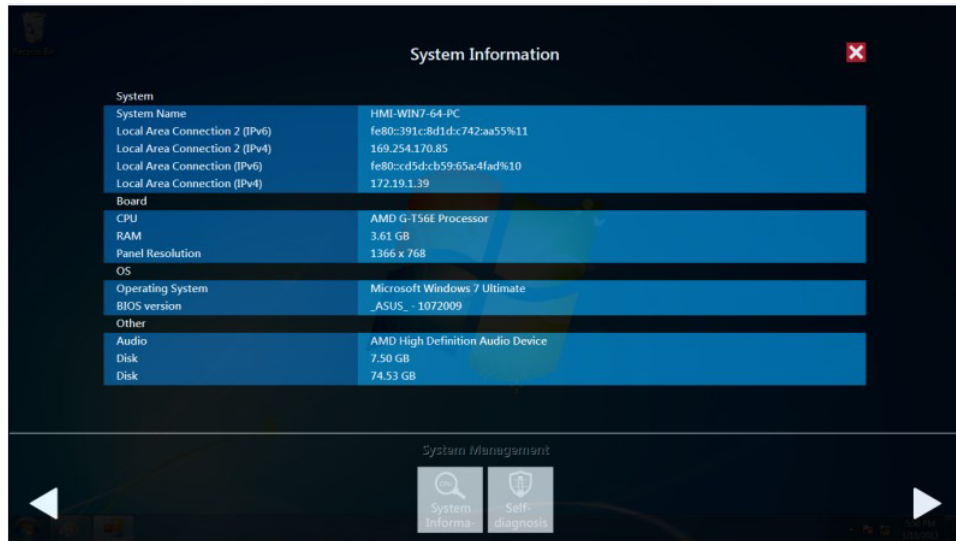


- Setting - Home-key: Select an execute file to set up as "Home-key" App, in default path is to show “desktop”
- Setting - Brightness: Brightness control from 1 to 8
- Setting - Password: Change password function



C. System management->

- System information:





- Self Diagnosis:



Note!* TPC-5000 series also provides open button code as following definition for customer's configuration to their Apps/SW applications. The codes are defined from general keyboard input.

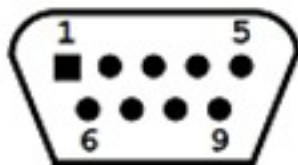


Table A.2: Button code definition

	One press	Long press
I key (icon) 	Ctrl+Shift+Alt+I	Ctrl+Shift+Alt+U
H Key (icon) 	Ctrl+Shift+Alt+H	Ctrl+Shift+Alt+L

A.3 COM1: RS-232

Pin Definition



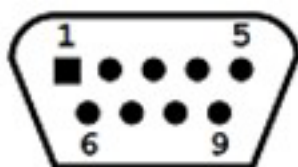
COM1

Pin	Signal
1	DCD
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

A.4 COM2: RS-232/422/ 485

The serial port COM2 on the TPC-5000 series are adjustable by BIOS. It can be set to RS-422 or RS-485 mode. This port is designed with auto data flow control capability. In other words, the TPC-5000 series can automatically detect the data flow direction at this port when the two wired RS-485 communication is activated.

Pin Definition

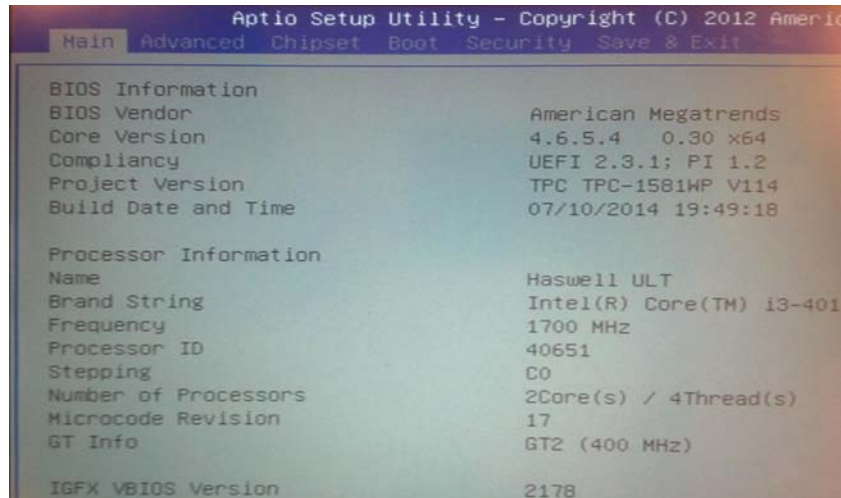


COM 2

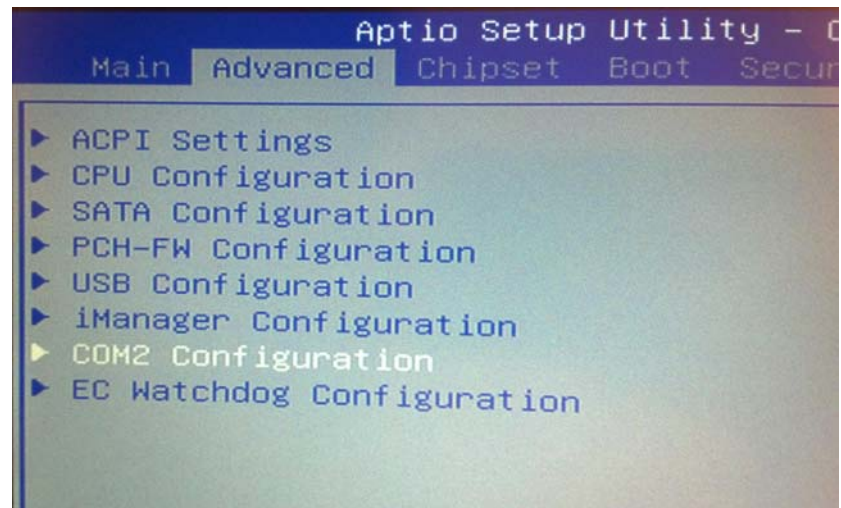
Pin	Signal	
	RS-422	RS-485
1	TX-	D-
2	TX+	D+
3	Rx+	-
4	Rx-	-
5	GND	GND
6	-	-
7	-	-
8	-	-
9	-	-

A.5 RS-422/ 485 mode setting by BIOS

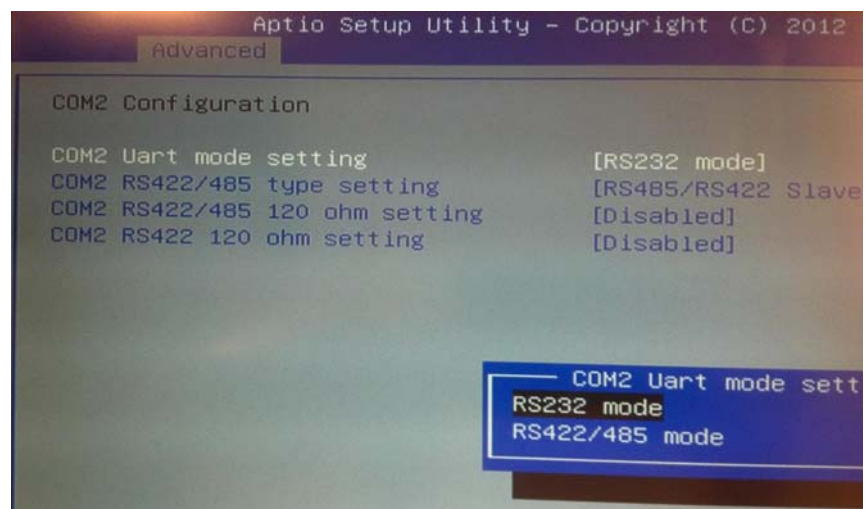
1. Enter into BIOS setup utility



2. Enter into Advanced tab and select Serial ports Configuration.



3. Select Serial Port 2 Configuration (COM2) for RS-422/ 485 mode setting.



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, electronic, photocopying, recording or otherwise, without prior written permission of the publisher.

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

© Advantech Co., Ltd. 2017