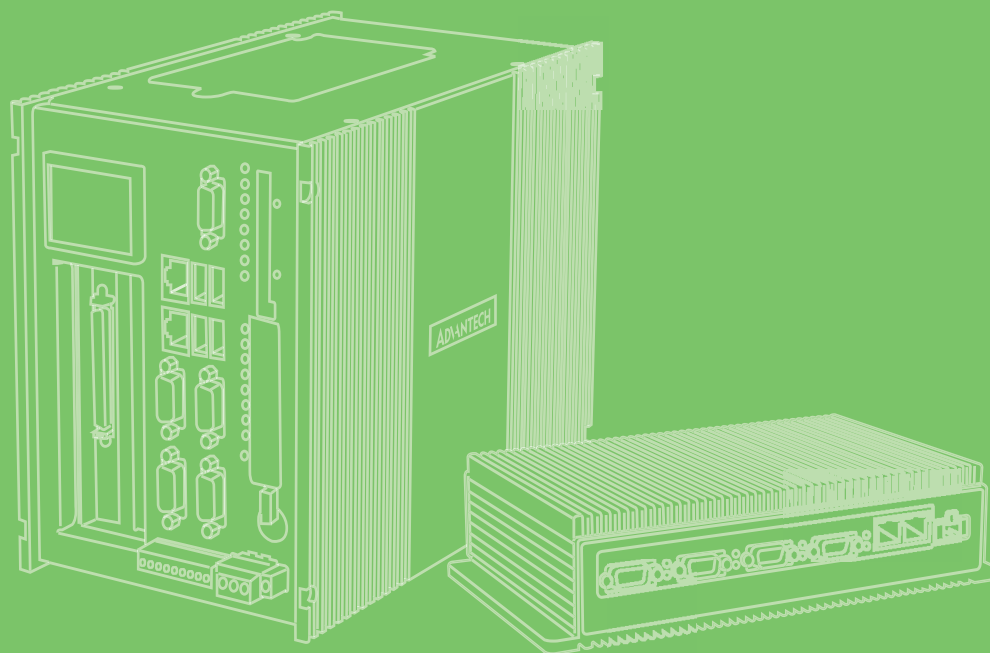


User Manual



SPC-815 SPC-821 電腦

Multi-Touch Panel Computer
with Intel Skylake Processor
& Extension Units

VICPAS
HMI Parts Center

ADVANTECH

Enabling an Intelligent Planet

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<http://support.advantech.com/>

This Manual Covers the Following Models:

- SPC-821
SPC-821-6XXXXXXXXXXXXXXXXXX
SPC8216XXXXXXXXXXXXXXXXXX
(Where "x" may be any alphanumeric character, "-" or blank)

SPC-815
SPC-815-6XXXXXXXXXXXXXXXXXX
SPC8156XXXXXXXXXXXXXXXXXX
(Where "x" may be any alphanumeric character, "-" or blank)

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 products 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 at no 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 suspect that your product is defective product, 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. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain a return merchandise 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 a proof of purchase date are not eligible for warranty service.
5. Write the RMA number clearly on the outside of the packaging, and ship the package 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. Please 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.

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 website at www.advantech.com/support to obtain the latest product information.
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 Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from the PC chassis before manual handling. Do not touch any components on the CPU card or other cards while the PC is powered on.
- Disconnect the power before making any configuration changes. The sudden rush of power when connecting a jumper or installing a card may damage sensitive electronic components.

Safety Instructions

1. Read these safety instructions carefully.
2. Retain this user manual for future reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth for cleaning. Do not use liquid or spray detergents.
4. For pluggable equipment, the power outlet socket should be located near the equipment and easily accessible.
5. Protect the equipment from humidity.
6. Place the equipment on a reliable surface during installation. Dropping or letting the equipment 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. Ensure that the voltage of the power source is correct before connecting the equipment to a power outlet.
9. Position the power cord away from high-traffic areas. 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 from transient overvoltage.
12. Never pour 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 occurs, have the equipment checked by 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 operate according to the user manual.
 - The equipment has been dropped and damaged.
 - The equipment shows obvious signs of breakage.
15. Do not leave this equipment in an environment with a storage temperature of below -20 °C (-4 °F) or above 60 °C (140 °F).
16. Batteries that are incorrectly replaced are at risk of exploding. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.
17. In accordance with IEC 704-1:1982 specifications, the sound pressure level at the operator's position does not exceed 70 dB (A).
18. Please Keep the monitor out of direct sunlight, very strong bright lights and away from any other heat source. Lengthy exposure to this type of environment may result in discoloration and damage to the monitor.

DISCLAIMER: These instructions are provided according to the 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.*



Consignes de sécurité

1. Lire attentivement les instructions de sécurité
2. Conserver ce manuel pour utilisation ultérieure
3. Débranchez cet équipement de toute prise secteur avant de le nettoyer. Utilisez seulement un chiffon humide. N'utilisez pas de détergent liquide ou pulvérisé pour le nettoyage.
4. Gardez cet équipement à l'abri de l'humidité.
5. Placez cet équipement sur une surface fiable pendant l'installation. Le faire ou bien le laisser tomber peut causer des dégâts.
6. Les ouvertures sur l'enceinte servent à la convection de l'air. Protégez l'équipement contre la surchauffe. **NE COUVREZ PAS LES OUVERTURES.**
7. Assurez-vous que la tension de la source d'alimentation est correcte avant de connecter l'équipement à l'alimentation.
8. Placez le câble d'alimentation de manière à ce que personne ne puisse marcher dessus. Ne placez rien sur le câble d'alimentation.
9. Toutes les mises en garde et tous les avertissements sur l'équipement doivent être notés.
10. Si l'équipement n'est pas utilisé pendant une longue période, débranchez-le de la source d'alimentation pour éviter tout endommagement dû à une surtension transitoire.
11. Ne jamais verser de liquide dans une ouverture. Cela pourrait provoquer un incendie ou un choc électrique.
12. N'ouvrez jamais l'équipement. Pour des raisons de sécurité, l'équipement doit être ouvert uniquement par du personnel qualifié.
13. Si l'une des situations suivantes se présente, faites vérifier l'équipement par le personnel de service:
 - Un liquide a pénétré dans l'équipement.
 - L'équipement a été exposé à l'humidité.
 - L'équipement ne fonctionne pas bien, ou vous ne pouvez pas le faire fonctionner selon le manuel de l'utilisateur.
 - L'équipement est tombé et endommagé.
 - L'équipement présente des signes évidents de rupture.
14. **NE LAISSEZ PAS CET ÉQUIPEMENT DANS UN ENVIRONNEMENT OU LA TEMPÉRATURE DE STOCKAGE PEUT ÊTRE INFÉRIEURE À -20 ° C (-4 ° F) OU BIEN SUPÉRIEURE À 60 ° C (140 ° F). CECI POURRAIT ENDOMMAGER L'EQUIPEMENT. L'ÉQUIPEMENT DEVRAIT ÊTRE DANS UN ENVIRONNEMENT CONTRÔLÉ.**
15. **ATTENTION: DANGER D'EXPLOSION SI LA BATTERIE EST INCORRECTEMENT REMPLACÉE. REMPLACER SEULEMENT AVEC LE MÊME TYPE OU ÉQUIVALENT RECOMMANDÉ PAR LE FABRICANT, JETER LES BATTERIES USÉES SELON LES INSTRUCTIONS DU FABRICANT. VEUILLEZ CONTACTER LE FABRICANT, ADVANTECH, POUR LE REMPLACER.**

Le niveau de la pression acoustique à la position de l'opérateur, conformément à la norme CEI 704-1: 1982, ne dépasse pas 70 dB (A).

AVIS DE NON-RESPONSABILITÉ: Cet ensemble d'instructions est donné conformément à la CEI 704-1. Advantech décline toute responsabilité quant à l'exactitude des déclarations contenues dans ce document.

- "Si l'équipement est utilisé d'une manière non spécifiée par le fabricant, la protection fournie par l'équipement peut être compromise"
- Instructions pour l'installation dans un environnement de degré de pollution 2 (pour l'usage d'intérieur, altitude jusqu'à 2.000m) ou déclaration équivalente.

Avertissement! *DANGER D'EXPLOSION SI LA BATTERIE EST INCORRECTEMENT REMPLACÉE. REMPLACER SEULEMENT AVEC LE MÊME TYPE OU ÉQUIVALENT RECOMMANDÉ PAR LE FABRICANT, JETER LES BATTERIES USÉES SELON LES INSTRUCTIONS DU FABRICANT. VEUILLEZ CONTACTER LE FABRICANT, ADVANTECH, POUR LE REMPLACER.*



ATTENTION! *Pour éviter les chocs. Ne pas retirer le couvercle. Aucune pièce réparable par l'utilisateur. Pour l'entretien adressez-vous aux personnes qualifiées, s.v.p.*



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. 請勿在潮濕環境中試用設備。
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，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. 請將電源線佈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. 如遇下列情況，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；
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：請安全訓示符合 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。
23. 請避免顯示器遭受陽光直射，並遠離強光及其他熱源。若長時間接觸此類環境，顯示器可能會褪色及損壞。

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Chapter 1

General Information

1.1 Introduction

The SPC-800 series devices with a brand-new ID design can support an all-around IP65 waterproof casting design with general I/O connectors, with I/O cover all the wiring & cabling can be hidden invisible to ensure reliability & field wire simplicity.

SPC-800 is a hardware-solution based HMI product which supports industrial grade ARM/VESA mount system and push button extension supported. With the design to fit in the general industrial equipment, such as Rittal and Bernstein, SPC-800 can be a ubiquitous HMI in any kind of smart factory and even in the machines. By embedding an Intel® Skylake Core™ i3-6100U 2.3GHz processor (Dual Core), SPC-800 can support advanced graphical performance and easily fit in different applications to achieve IoT fantasy in the field.

The following are the key features:

- 15.6" HD (Full HD) / 21.5" Full HD TFT LED LCD display
- Intel Skylake Intel® Core™ U-series processor with independent GPU, advanced graphical performance
- 16:9 wide screen with PCT multi-touch
- Built-in function and home key button used for intuitive UI
- Anti-scratch touch surface: 7H hardness
- All-round IP65 protection with pole mount supported
- Front LED indicator to show operating status
- Silicone-Free for enclosure
- Supports ARM and VESA Mount
- Supports Rittal's CP40 & Bernstein's CS-480 B.flex mounting dimensions
- Front USB & Re-set Button to allow easily maintenance
- Supports RAFI FS22+ Series Push Buttons (UP to System waterproof IP65)



1.2 Packing List

- 1 x System
- 1 x Plug-In Block
- 1 x Ground Wire (100CM)
- 4 x SSD screws
- 1 x Cover IO
- 1 x SPC Driver DVD
- 1 x Registration and Warranty Card
- 4 x Pole Mounting Blake Screws

1.3 Specifications

1.3.1 System Kernel

- CPU: Intel Core i3 6100U / i5 6300U/ i7 6600U Processor
- BIOS: AMI UEFI 128 Mbit
- Graphic: Intel® HD Graphics 520
- Memory: 8GB SO-DIMM DDR3L; DRAM
- LAN: 10/100/1000 Base-T RJ-45 port x2
- Watchdog Timer: 1 ~ 255 sec (system)
- Storage: 2.5" SSD 64G MLC x 1(optional)
- OS: Microsoft® Win10 ,Win7, Linux

1.3.2 I/O Ports

- USB Port:
USB 2.0 x1(Front)
USB 3.0 x 2
USB 2.0 x 2 (Only service this internal device limitation)

1.3.3 Safety and Environment

Safety

- FCC Class A
- CE certificated

Environment

- **Operating Temperature:** -0 ~ 55°C (32 ~ 131°F)
- **Storage Temperature:** -20 ~ 60°C (-4 ~ 140°F)
- **Humidity:** 40°C @ 10~95% relative humidity (non-condensing, test times: 48hrs)
- **Ingress Protection:** All-round IP66 protection
- **Vibration:** 2 Grms (5 ~ 500 Hz) with SSD

1.4 Panel PC Specifications

1.4.1 Without Button extension for built in SPC-815-6X3AG & SPC-821-6X3AG Panel PC

Advantech Part Number		SPC-815			SPC-821		
		SPC-815-633AG	SPC-815-653AG	SPC-815-673AG	SPC-821-633AG	SPC-821-653AG	SPC-821-673AG
General	Weight	7.83 Kg(W/O ARM Mount) 8.2 Kg(W ARM Mount) 8.63Kg(W Vesa Mount)			10.63Kg(W/O ARM Mount) 11 Kg(W ARM Mount) 11.43Kg(W Vesa Mount)		
	System Dimension (W x D x H mm)	402.19mm x 333.19mm x 67mm (W/O ARM Mount) 402.19mm x 333.19mm x 160mm (W ARM Mount) 402.2mm x 333.2mm x 86.6mm (W Vesa Mount)			546.69mm x 420.34mm x 67mm (W/O ARM Mount) 546.69mm x 420.34mm x 160mm (W ARM Mount) 546.69mm x 420.34mm x 86.6mm (W Vesa Mount)		
	Board Dimension (W x D x H mm)	105 x 145 x 24 mm					
	Enclosure	Front bezel: Die cast aluminum alloy Back housing: Die cast aluminum alloy					
	Mounting	ARM mounting (Pendant and Pedestal) VESA mounting					
	Power Input Voltage	24VDC +25%/- 20%					
	Power Consumption	Typical: 35W, Max: 60W					
	System Design	Fanless					
System Hardware	CPU	Skylake Intel® i3-6100U @2.3GHz	Skylake Intel® i5-6300U @2.4GHz	Skylake Intel® i7-6600U @2.6GHz	Skylake Intel® i3-6100U @2.3GHz	Skylake Intel® i5-6300U @2.4GHz	Skylake Intel® i7-6600U @2.6GHz
	GPU	Intel® HD Graphics 520					
	Memory	8GB DDR3L					
	Storage	1 SATA connectors (SSD) (SATA 3.0: Max Raw Transfer rate 6GT/s)					
I/O	Ethernet Ports	10/100/1000 Base-T RJ-45 port x2 GbE1: LAN chip: Intel® i219 GbE, Intel®, IEEE1588/802.1as, 802.3az, Auto-negotiation GbE2: LAN chip: Intel® i210-IT x1(controller) GbE, 802.1Qav, IEEE1588/802.1AS, 802.3az, support Jumbo frames(9.5KB)i210 oscillator design for synchronization					
	USB	USB 2.0 x 2, USB 2.0 x 1 (Front), USB 3.0 x 2					

Display	Display Type	TFT LCD		TFT LCD
	Display Size	15.6" 16:9		21.5" 16:9
	Max. Resolution	HD 1366 X 768/FHD 1920 X1080		FHD 1920x1080
	LCD Luminance (cd/m²)	400		250
	Backlight MTBF (hrs)	50,000		
	Touch screen	Projected capacitive 10 point multitouch		
	View Angel	Horizontal	170° / 170°	
Vertical		130° / 170°		178°
Other	LED	Off – “dark” (using “smoke effect”)		
		ON – “green”		
		Standby – “orange”		
Button	Emergency button	Without Emergency Button		
	Push button	Without Push Butoon		
	Button Cable SPEC	Without Button		
Environment	Humidity	85% @ 40°C (non-condensing)		
	Operating Temperature	0 ~ 55°C (without airflow)		
	Storage Temperature	-20 ~ 60°C		
	Shock Protection	IEC 60068-2-27		
	Vibration Protection	IEC 60068-2-64 (Random 2G)		

1.4.2 Button extension for built in SPC-815-6X3AP & SPC-821-6X3AP Panel PC

Advantech Part Number		SPC-815			SPC-821		
		SPC-815-633AP	SPC-815-653AP	SPC-815-673AP	SPC-821-633AP	SPC-821-653AP	SPC-821-673AP
General	Weight	7.83 Kg(W/O ARM Mount) 8.2 Kg(W ARM Mount) 8.63Kg(W Vesa Mount)			10.63Kg(W/O ARM Mount) 11 Kg(W ARM Mount) 11.43Kg(W Vesa Mount)		
	System Dimension (W x D x H mm)	402.19mm x 333.19mm x 67mm (W/O ARM Mount) 402.19mm x 333.19mm x 160mm (W ARM Mount) 402.2mm x 333.2mm x 86.6mm (W Vesa Mount)			546.69mm x 420.34mm x 67mm (W/O ARM Mount) 546.69mm x 420.34mm x 160mm (W ARM Mount) 546.69mm x 420.34mm x 86.6mm (W Vesa Mount)		
	Board Dimension (W x D x H mm)	105 x 145 x 24 mm					
	Enclosure	Front bezel: Die cast aluminum alloy Back housing: Die cast aluminum alloy					
	Mounting	ARM mounting (Pendant and Pedestal) VESA mounting					
	Power Input Voltage	24VDC +25%/- 20%					
	Power Consumption	Typical: 35W, Max: 60W					
	System Design	Fanless					
System Hardware	CPU	Skylake Intel® i3-6100U @2.3GHz	Skylake Intel® i5-6300U @2.4GHz	Skylake Intel® i7-6600U @2.6GHz	Skylake Intel® i3-6100U @2.3GHz	Skylake Intel® i5-6300U @2.4GHz	Skylake Intel® i7-6600U @2.6GHz
	GPU	Intel® HD Graphics 520					
	Memory	8GB DDR3L					
	Storage	1 SATA connectors (SSD) (SATA 3.0: Max Raw Transfer rate 6GT/s)					
I/O	Ethernet Ports	10/100/1000 Base-T RJ-45 port x2 GbE1 : LAN chip: Intel® i219 GbE, Intel®, IEEE1588/802.1as, 802.3az, Auto-negotiation GbE2 : LAN chip: Intel® i210-IT x1(controller) GbE, 802.1Qav, IEEE1588/802.1AS, 802.3az, support Jumbo frames(9.5KB)i210 oscillator design for synchronization					
	USB	USB 2.0 x 2, USB 2.0 x 1 (Front), USB 3.0 x 2					

Display	Display Type	TFT LCD		TFT LCD
	Display Size	15.6" 16:9		21.5" 16:9
	Max. Resolution	HD 1366 X 768/FHD 1920 X1080		FHD 1920x1080
	LCD Luminance (cd/m²)	400		250
	Backlight MTBF (hrs)	50,000		
	Touch screen	Projected capacitive 10 point multitouch		
	View Angel	Horizontal	170° / 170°	
Vertical		130° / 170°		178°
Other	LED	Off – “dark” (using “smoke effect”)		
		ON – “green”		
		Standby – “orange”		
	Screw	Torx screws be used in outside		
Button	Emergency button	RAFI 22 FS+ (2NC) 1.30.273.511/0300 Emergency Stop button *1		
	Push button	RAFI 22 FS+ Push button (1NC1NO) ,Green(1.30.270.021/2500),Red (1.30.270.021/2300),Blue (1.30.270.021/2600)		
	Button Cable SPEC	28# , support 24V 0.5A		
Environment	Humidity	85% @ 40°C (non-condensing)		
	Operating Temperature	0 ~ 55°C (without airflow)		
	Storage Temperature	-20 ~ 60°C		
	Shock Protection	IEC 60068-2-27		
	Vibration Protection	IEC 60068-2-64 (Random 2G)		

Note! There might be several bright or dark pixels on the LCD. This phenomenon is normal in today's LCD manufacturing.



1.5 Power

- **Input Voltage:** 24VDC (Typical)
- **Power Consumption:** 35W (Typical)

This product is intended to be supplied by a Listed Power Adapter or DC power source, rated 24Vdc, 2.5A minimum and TMA 55 degree C minimum, if need further assistance, please contact Advantech for further information.

1.6 I/O Ports Arrangement

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

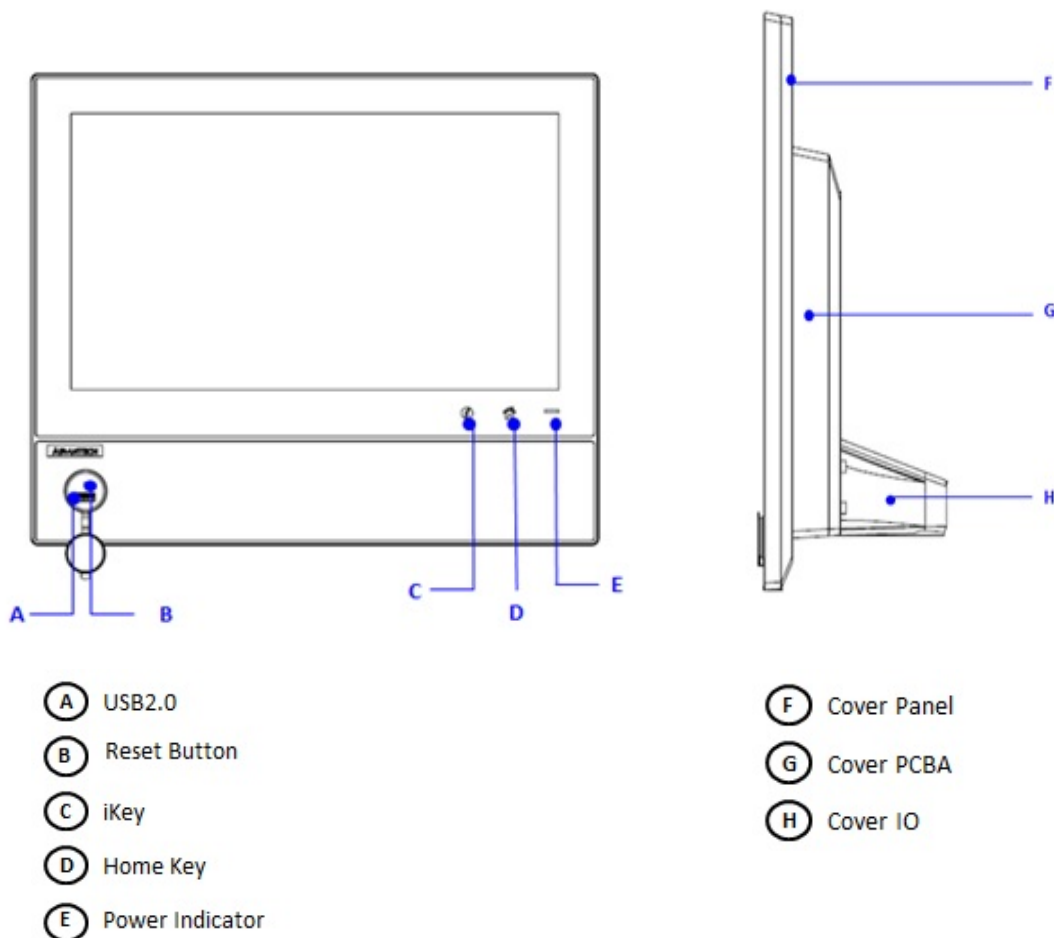


Figure 1.1 SPC-800 Front view and Side view

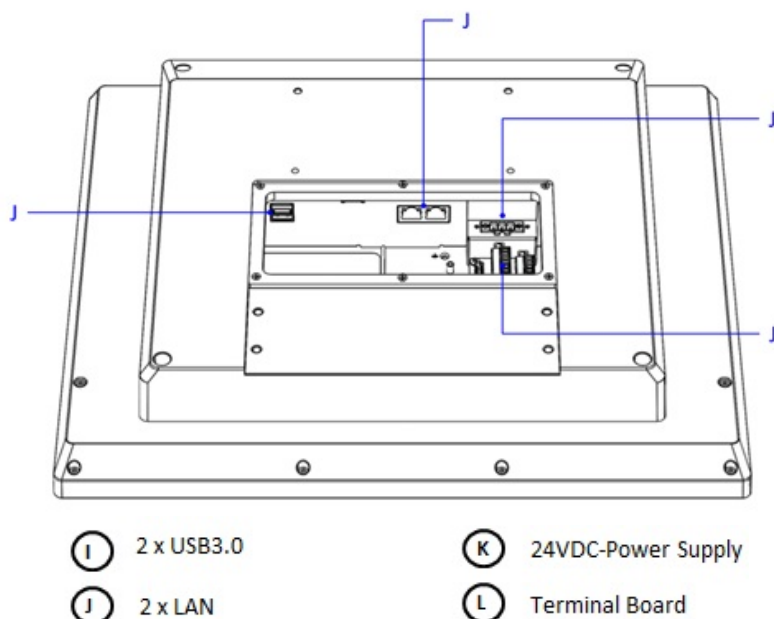


Figure 1.2 SPC-800 Rear View- I/O Port Arrangement

1.7 Hardware Specifications

SPC-815

- **Weight:** 7.83kg
- **Dimensions (W x H x D):** 402x 333 x 67mm (15.83" x 13.11" x 2.64")

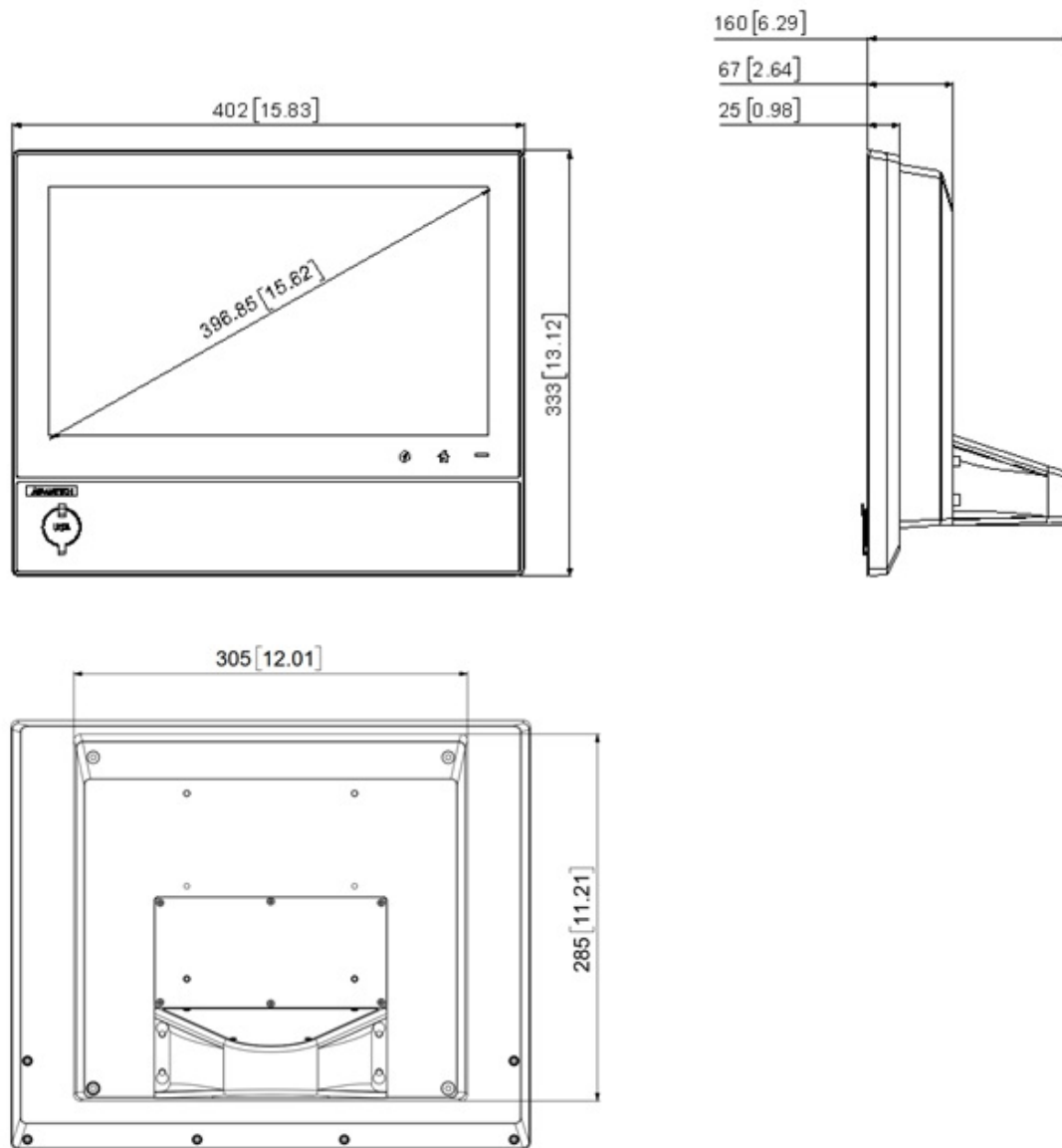


Figure 1.3 SPC-815 Dimensions

SPC-821

- **Weight:** 10.63kg
- **Dimensions (W x H x D):** 547 x 420 x 67 mm (21.54" x 16.54" x 2.64")

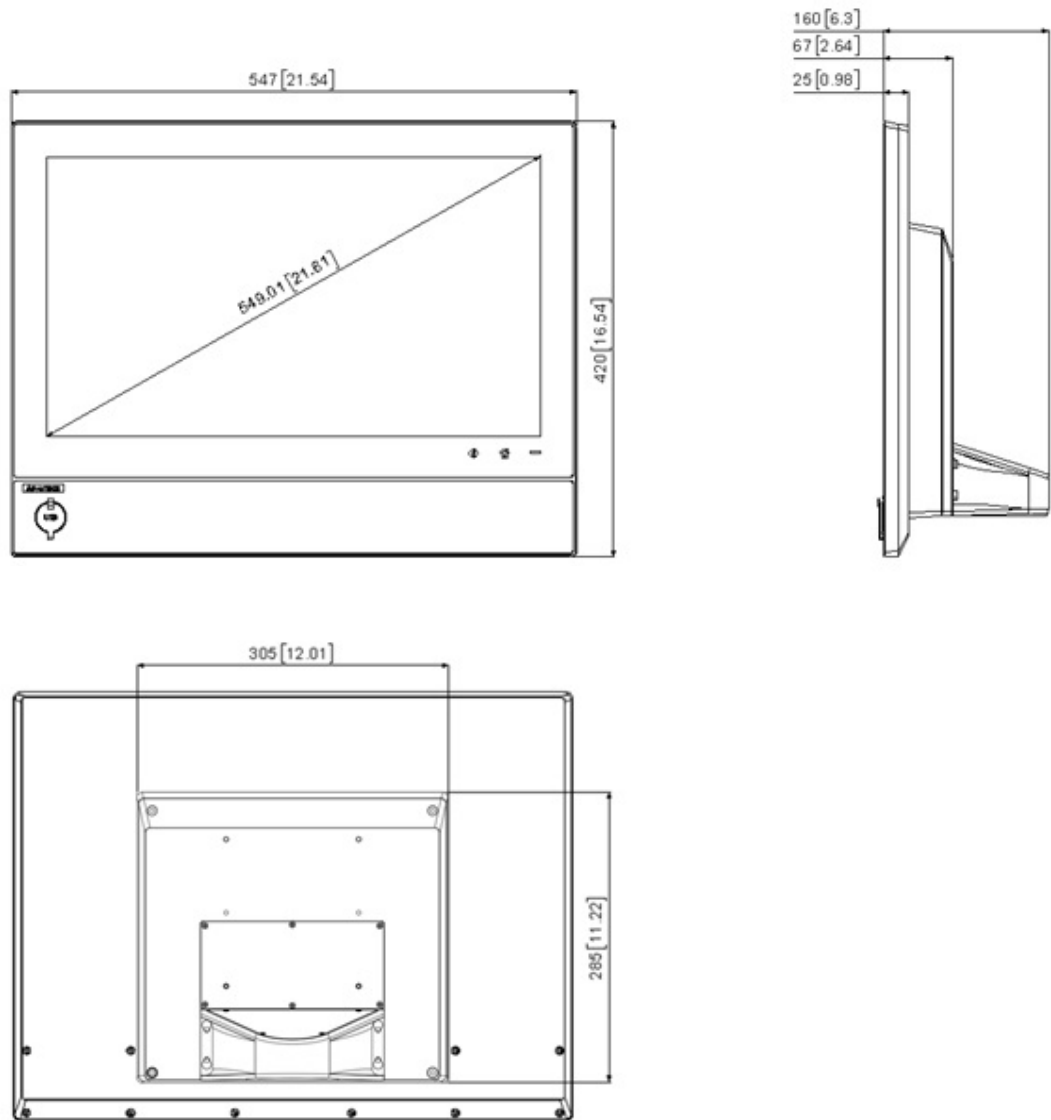


Figure 1.4 SPC-821 Dimensions

Chapter 2

System Setup

2.1 Scope of Delivery

You can easily get SPC-800 started by following the below steps. The SPC-800 series.

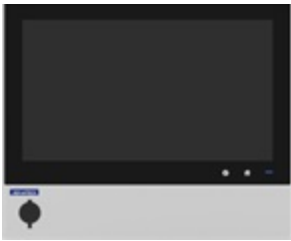





Unpack the SPC package. Check the packing list at the beginning of this manual to make sure all items have been included.



Figure 2.1 Unpack the Package

The following components are included in the scope of delivery of the SPC-800 device.

2.1.1 Accessory BOX

Name	Figure	Qty	Name	Figure	Qty
Base Unit device		1	SSD Screw		4
Plug-In Block		1	SPC Driver		1
Ground Wire (100CM)		4	Registration and Warranty Card		1

2.1.2 Pole Mount Kit BOX

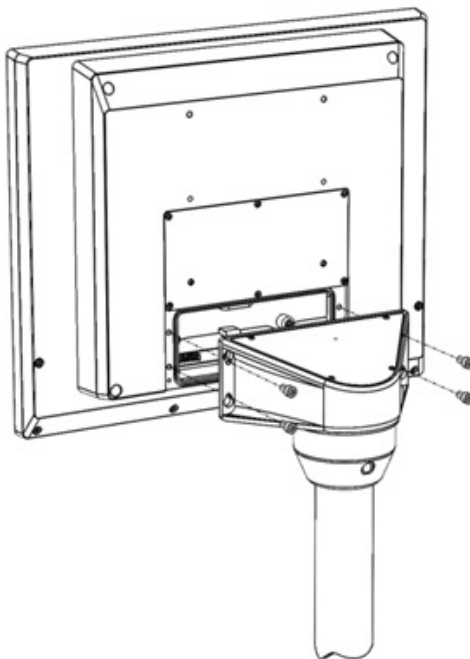
Name	Figure	Qty	Name	Figure	Qty
Cover IO		1	Pole Mounting Black Screw		4

2.2 System Setup

SPC-800 devices install Cover IO

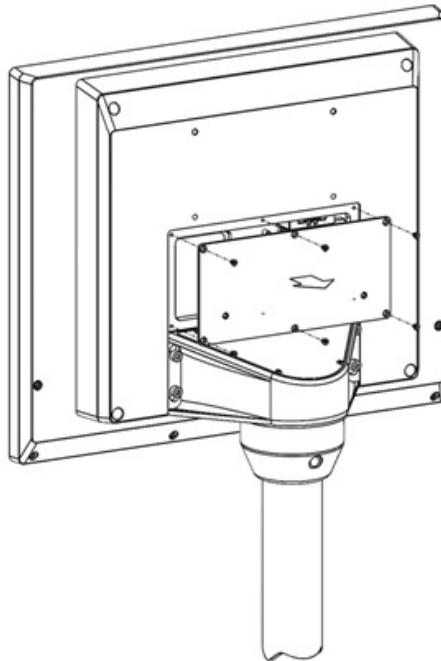
1. The Base Unit standard product contains SPC-800 device, Cover IO and ARM screws.
Fix 2 pcs with M5 x 10 screws on the Cover IO screw hole location (Do not fasten screw)
2. Place Cover IO to product and fasten 2pcs Screws.
3. Fix 2 pcs with M5 x 10 screws on the other Cover IO screw hole location

The following figure shows an example.

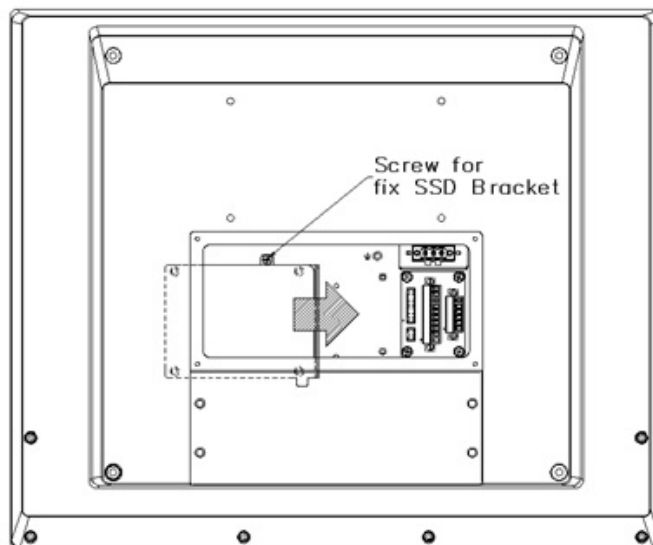


SPC-800 devices install SSD

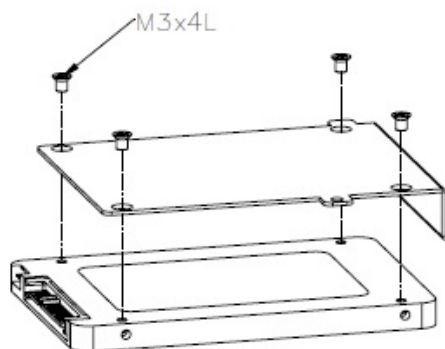
1. Remove the M3 x 6pcs screws from the PCBA bracket.



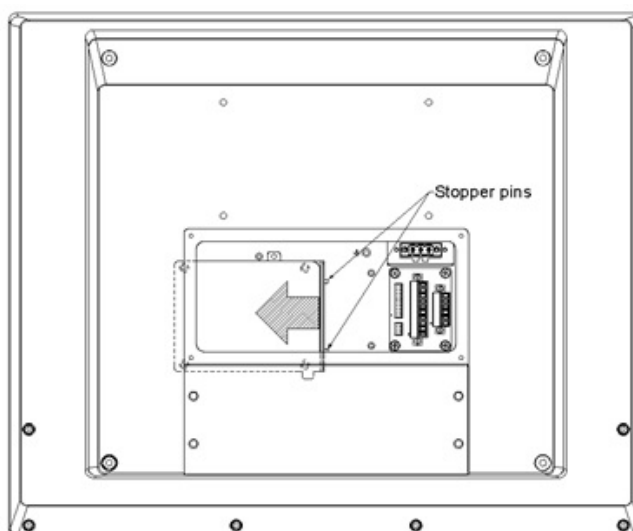
2. Remove the M3 x 1pc screw from the SSD bracket. And pull the SSD bracket to the right side.



3. Install the SSD into the SSD bracket and fix it with the M3 x 4pcs screw.



4.
 - a. Place the SSD bracket to the position in the device.
(There are two Pins that can hold the SSD bracket against Pin)
 - b. Pull it to the left to confirm that the iron part is fixed with the middle bracket.
 - c. Install the SSD bracket and fixed with M3 x 1pc screw



2.3 Mounting the SPC-800 device

The section describes the mounting of the device to a support ARM or VESA system using example figures. SPC-815 and SPC-821 are the same design and same component for Pendant and Pedestal mounting. (no additional component is needed) And VESA mount is optional. We use icotek German vendor for Cable Entry and design 100 x 100mm standard VESA compliant hole to allow wall and accessory mounting option.

Warning! *Make sure that fasteners are adequately dimensioned during installation. Make sure to consider the weight of the device and the forces acting on the device when dimensioning.*



Inadequately dimensioned fasteners or insufficient lock may cause the device to fall down. Serious physical injury may result.

The device must be mounted securely.

2.3.1 SPC-800 device for support ARM Mounting

Note! **Base Unit Product accessory without a pole mounting**



The SPC-800 devices are designed for mounting with the base cover IO. If you install the device with an ARM mounting, you must the corresponding relative size and screw hole position can support the weight of the device or purchase a pole with Advantech

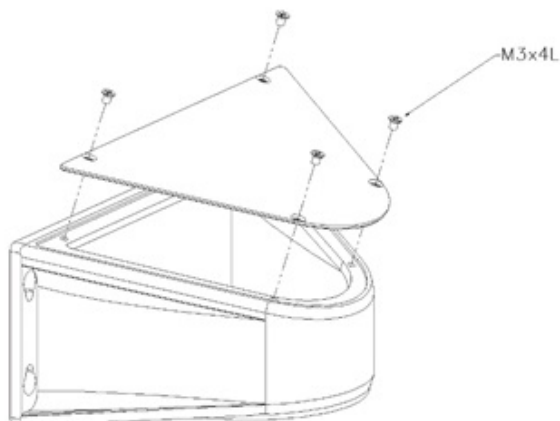
Requirement

- Pole Mount x 1pc

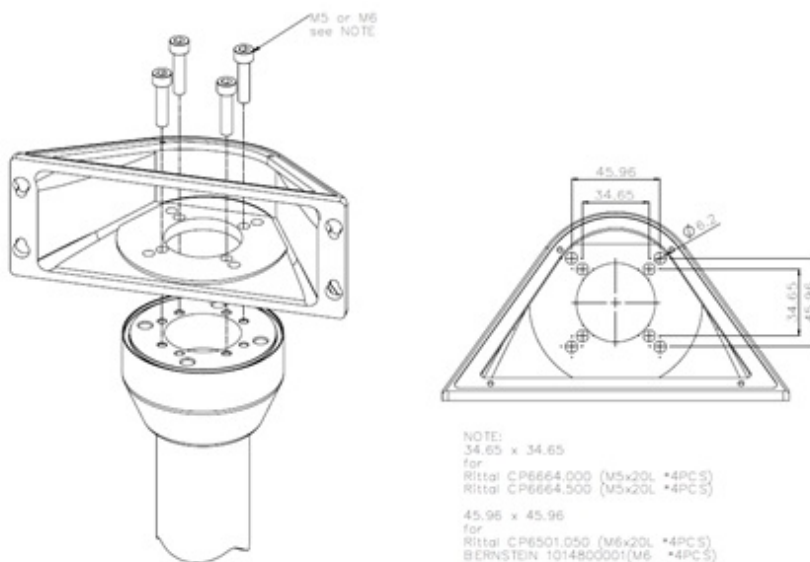


Installation Procedure

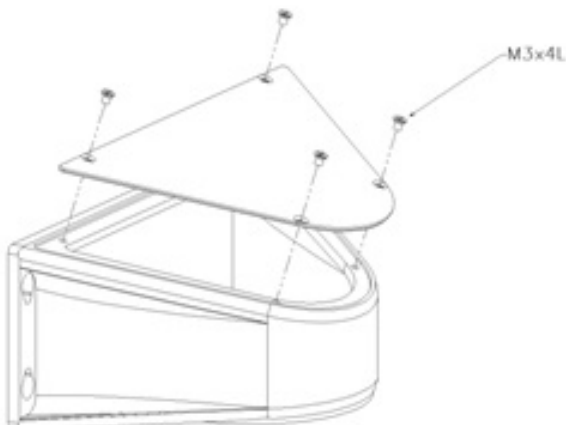
1. Loosen the M3 x 4pcs screws of IO Bracket.



2. Attach the IO with M5 or M6 x 4pcs screws to the interface of the support pole mount.



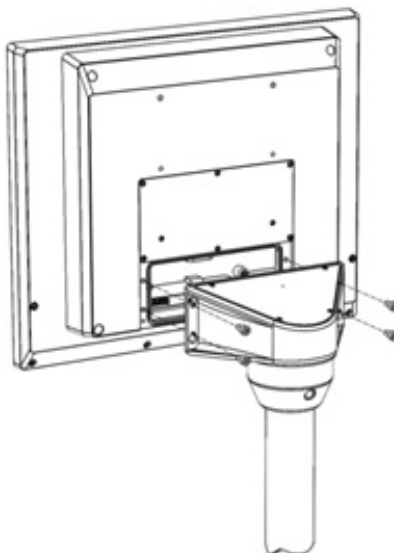
3. Fasten the OP bracket with cover IO by the screw.



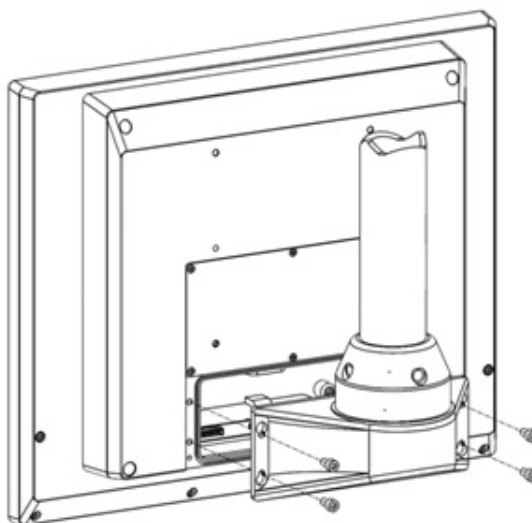
4. Attach the device with M5x 4pcs screws to the IO from back side. Make sure that the connection cables whether put into the pole mount.

Installation Procedure (Pendant and Pedestal mounting)

1. Loosen the M5 x 4pcs screws from IO (Pedestal mount)



2. Attach the device with M5x 4pcs screws to the IO from the back side. Make sure that the connection cables whether put into the Pendant mount.



2.3.2 SPC-800 device for support VESA Mounting

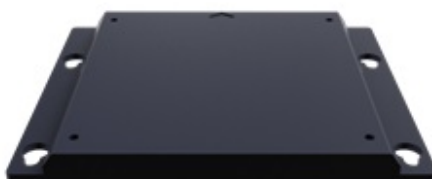
Note! *Base Unit Product accessory without a VESA mounting and Cable Entry*



The SPC-800 devices are designed for mounting with the base cover IO. If you install the device with a VESA mounting, you must use 100 x100 standard VESA compliant hole to allow wall and accessory mounting option and can purchase the cable suitable for you through Advantech Entry

Requirement

- VESA Kit x 1pc






- VESA Screw x 4pcs



- Cable Entry Cover x 1pcs



- Cable Entry x 1pcs (Choose the suitable for equipment application)

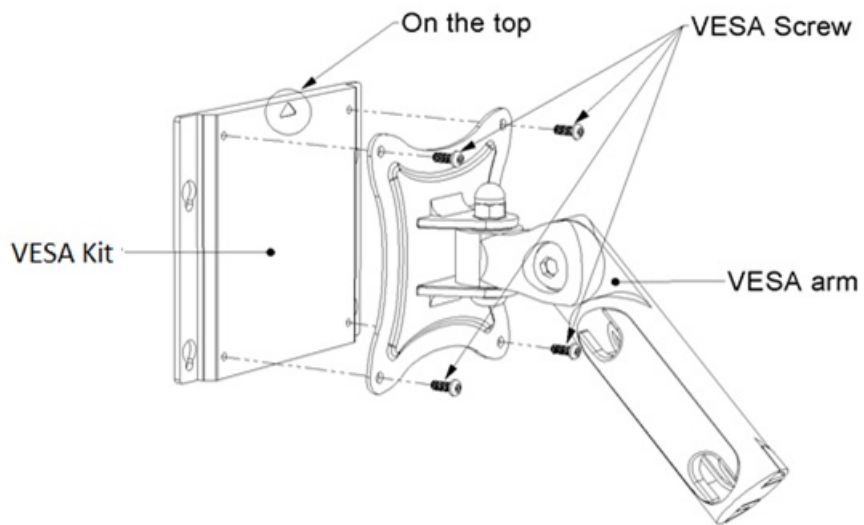
Item	Product Specifications	Figure	IP Rating
1	Split cable entry system KEL-ER-E5 for routing and Sealing up to 5 cables with connector (Cable diameters from 1 to 16 mm)		IP65 IP66
2	Split cable entry system KEL-ER 10 for routing and sealing cables with connectors, (Cable diameters from 1 to 16 mm and 16 to 35 mm)		IP65 IP66
3	Split cable entry system KEL-ER 24 for routing and sealing cables with connectors (cable diameters from 1 to 16 mm and 16 to 35 mm)		IP65 IP66

- Round Cable of Type (Choose the suitable for equipment application)

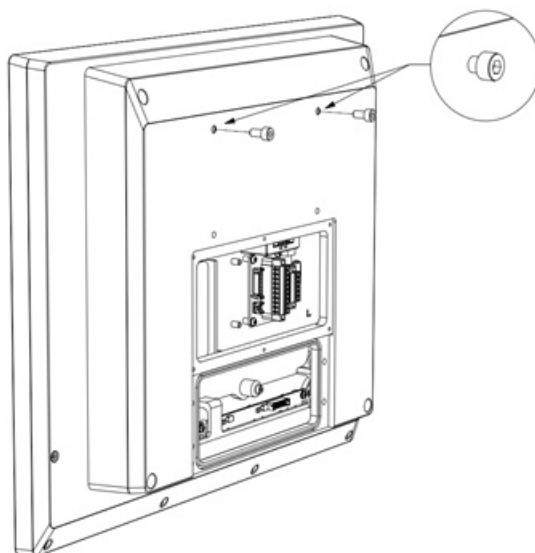
Product Specifications	Figure
icoteck Round cable 13-14 mm 41313 KT13 bk	
icoteck Round cable 9-10 mm 41309 KT 9 bk	
icoteck Round cable 7-8 mm 41307 KT 7 bk	
icoteck Round cable 6-7 mm 41306 KT 6 bk	
icoteck Round cable 5-6 mm 41305 KT 5 bk	
icoteck Round cable 4-5 mm 41304 KT 4 bk	
icoteck Round cable 3-4 mm 41303 KT 3 bk	
icoteck Blank grommet 41351 BTK bk	

Installation Procedure

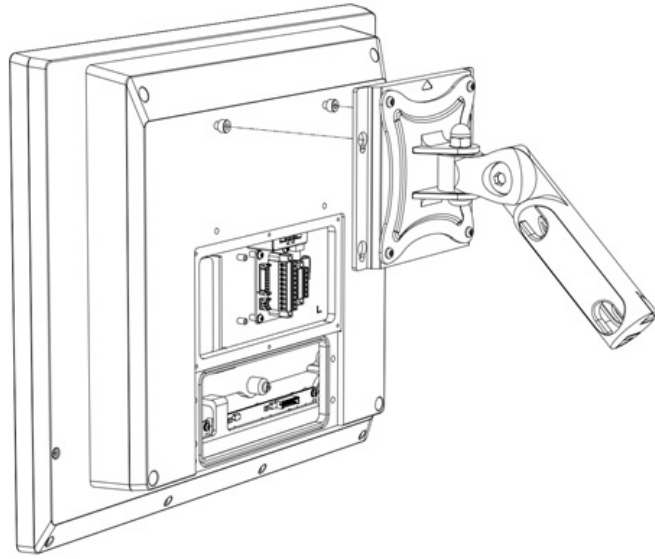
1. Install VESA ARM to the VESA adapter by M4 x 4pcs screws.



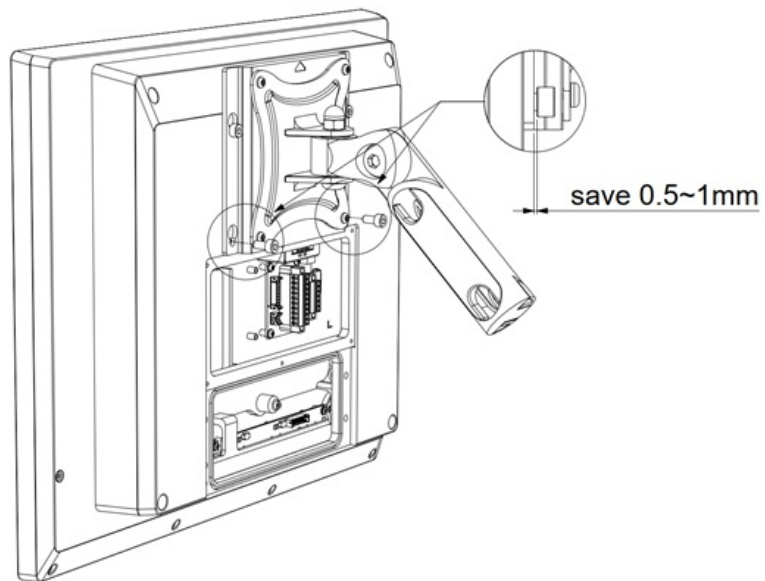
2. Fix 2 pcs of M5 screws into upside screw holes.



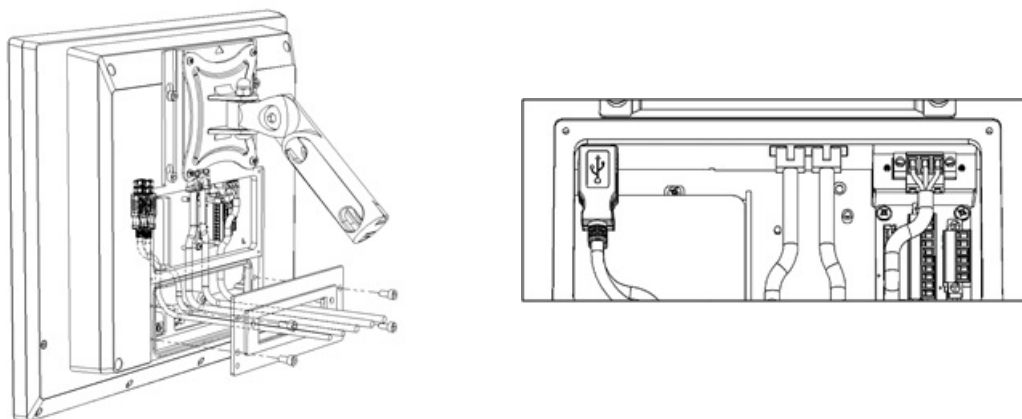
3. Fit into two holes with two screws



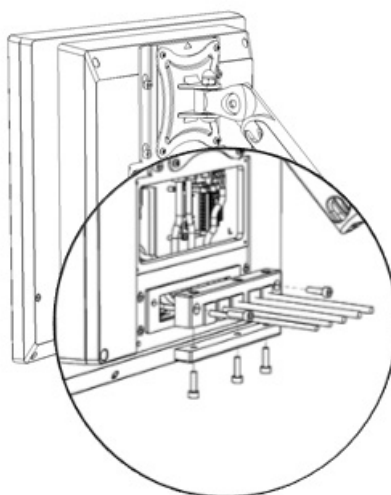
4. Fix 2 pcs of M5 screw into the body through the holes downside in the VESA kit.



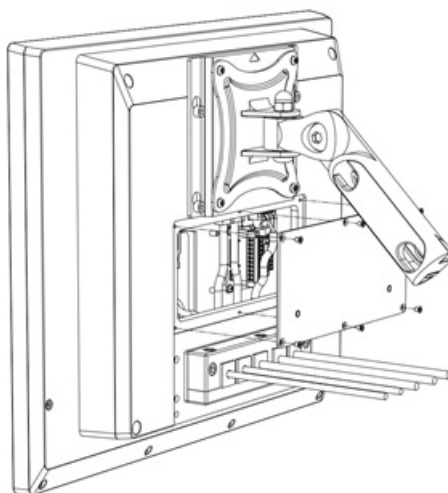
5. Arrange the cables through the opening of the cover and fix the cover by M5 x 4pcs screws.



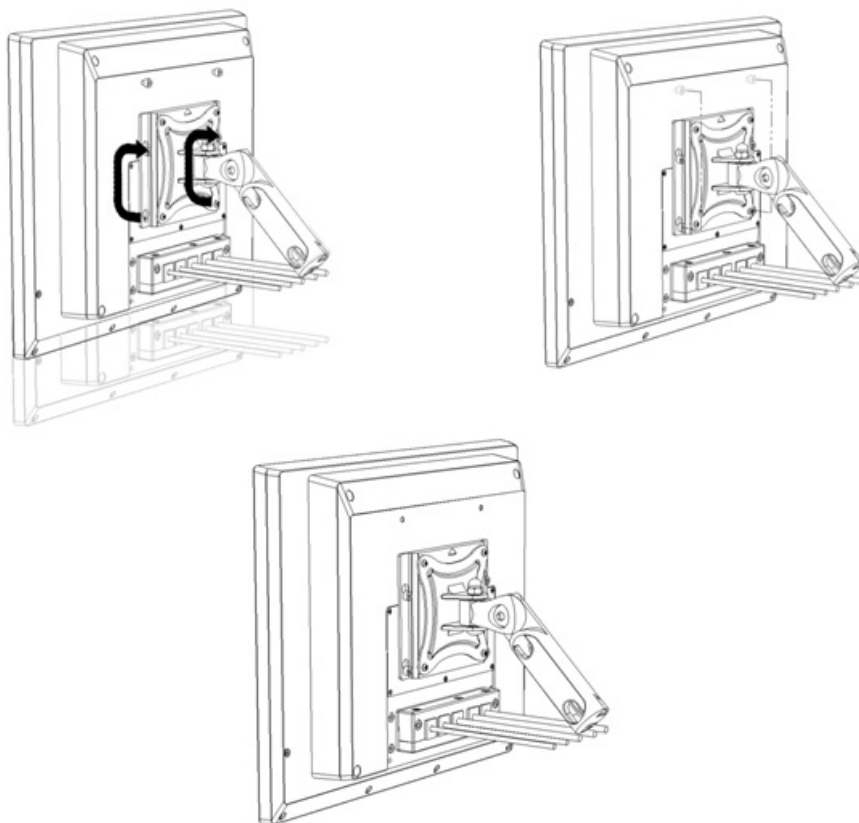
6. Fix the cables in the entry frame by 3pcs M5 screws and fix the entry to body by 2pcs M5 screws.



7. Fix the cover to body by 6pcs M3 screws.



8. Move the unit from downside to upside of VESA kit. And move the upside 2 screws to the screw holes downside of VESA kit. Finally, tighten the 4 screws.



2.4 SPC-800 Extension with Operator Controls

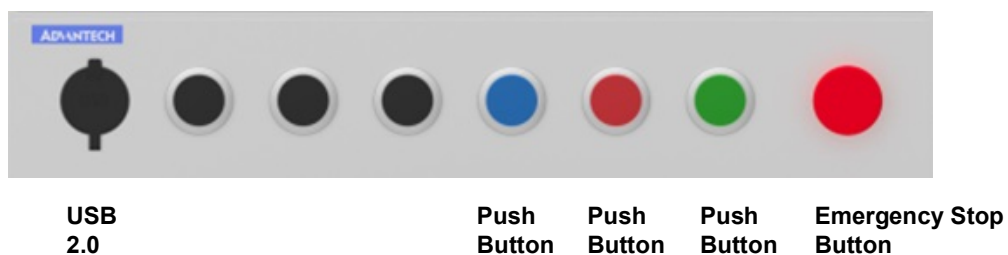
The following example shows a SPC-800 device with an Extension Unit.

SPC-800 device with operator controls extension can order these components (Push Button, PCBA, terminal plug and Screw) do it by yourself assembly or Comprehensive assembly also via Advantech (Build To Order)



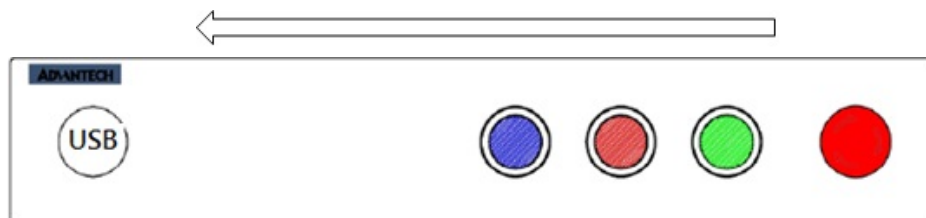
Base Unit design for Extension Unit

The Base Unit design is support to RAFI RAFIX 22 Buttons, and the rightmost button is reserved for Emergency Stop Button Push-button. And the other side design for Front USB location.

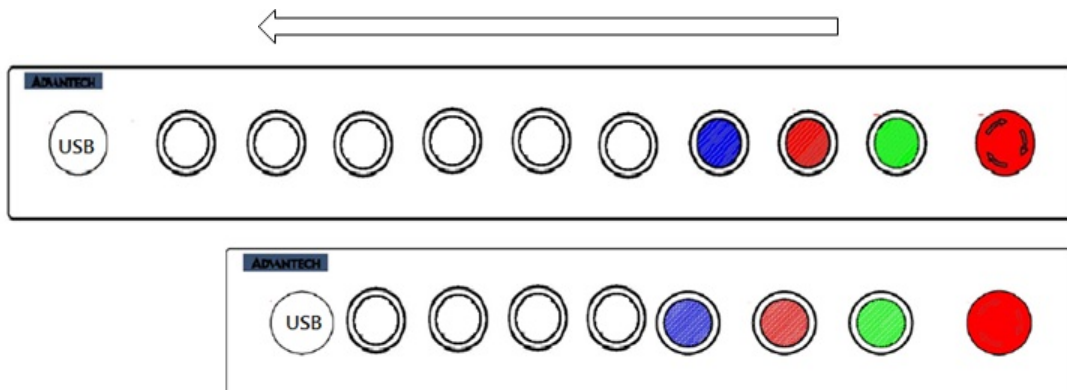


Customized for your Plant with Operator Controls

- **Extension Unit Size**, SPC-800 standard device with an operator is 15" and 21"
- **Push Button Hole**, SPC-800 operator controls design has pre-hole
 - (1.) 15" with seven pre-hole and USB location.
 - (2.) 21" with ten pre-hole and USB location.
- **Push Button with Extension Unit(Use four Button)**, Extension Unit 15" and 21", base unit operator controls from right to left location design is Emergency Stop Button, Green Push Button, Red Push Button, Blue Push Button and USB.



- **Push Button with Extension Unit(Use All Button)**, Extension Unit 15" and 21", base unit operator controls from right to left location design is Emergency Stop Button, Red Push Button, Black Push Button, Blue Push Button, the other button color is White and USB



- **Freely configuration do it by yourself assembly**
- **Terminal Board PIN Define**

CN2	
10	S3 N/C Contact
9	S3 N/O Contact
8	S3 N/O Contact / N/C Contact
7	S2 N/C Contact
6	S2 N/O Contact
5	S2 N/O Contact / N/C Contact
4	S1 N/C Contact2
3	S1 N/C Contact2
2	S1 N/C Contact1
1	S1 N/C Contact1

CN1	
6	GND
5	LED4 in S4_24V
4	LED2 in S2_24V
3	S4 N/C Contact
2	S4 N/O Contact
1	S4 N/O Contact / N/C Contact



CN3	
6	NA
5	GND
4	S1 N/C Contact2
3	S1 N/C Contact1
2	S1 N/C Contact2
1	S1 N/C Contact1

CN4	
20	S2/S3/S4_1NC1NO
19	GND
18	NA
17	LED4 in S4_24V
16	NA
15	S4 N/C Contact
14	NA
13	S4 N/O Contact / N/C Contact
12	NA
11	S4 N/O Contact
10	GND
9	GND
8	NA
7	LED2 in S2_24V
6	S3 N/C Contact
5	S2 N/C Contact
4	S3 N/O Contact / N/C Contact
3	S2 N/O Contact / N/C Contact
2	S3 N/O Contact
1	S2 N/O Contact

■ Push Button of Type


Description	Picture
RAFIX 22 FS+ - Emergency stop pushbutton, not illuminable, reset by rotation, red arrows 1.30.273.511/0300	
RAFIX 22 FS+ - Pushbutton, illuminated, flush lens, round collar, metal front ring, momentary 1.30.270.021/2200	
RAFIX 22 FS+ - Drucktaster nicht beleuchtbar , flache Blende, Bund rund, Frontring Metall, tastend 1.30.270.021/0100	
RAFIX 22 FS+ - Pushbutton, illuminated, flush lens, round collar, metal front ring, momentary 1.30.270.021/2600	
RAFIX 22 FS+- Pushbutton, illuminated, flush lens, round collar, metal front ring, momentary 1.30.270.021/2300	
RAFIX 22 FS+- Pushbutton, illuminated, flush lens, round collar, metal front ring, momentary 1.30.270.021/2500	
RAFIX 22 FS+- Pushbutton, illuminated, flush lens, round collar, metal front ring, momentary 1.30.270.021/2400	
RAFIX 22 FS+- Pushbutton, non-illuminated, flush lens, round collar, metal front ring, momentary 1.30.270.021/0700	
RAFIX 22 FS+ - Keylock switch, round collar 1.30.255.321/0100 (Black) 1.30.255.321/0300 (Red) 1.30.255.321/0400 (Yellow) 1.30.255.321/0500 (Green) 1.30.255.321/0600 (Blue) 1.30.255.321/0700 (Grey) 1.30.255.321/0800 (silver-grey)	

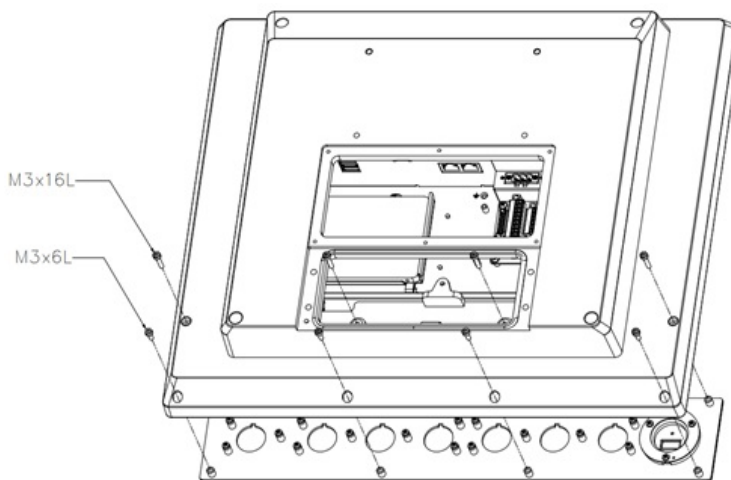
■ Type of Button's PCBA (include PCBA/Lamp Optional)

Description	Picture
RAFIX 22 FS+- Universal contact block, silver contacts, 1 NC, 1NO 1.20.126.203/0000	
RAFIX 22 FS+- Emergency stop contact block, silver contacts, 2 NC 1.20.126.604/0000	

Installation Procedure

1. Loosen the M5 x 4pcs screw of IO and remove the IO
2. Loosen the M3 x6pcs screw and loosen the M3 x6pcs screw of OP back side

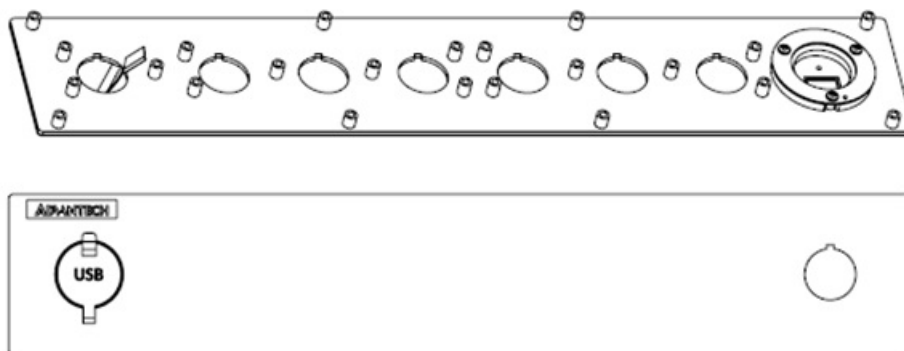
Note! *SPC-815 series are need loosen M3 x16L *4pcs and M3 x 6L*4pcs of OP back side*
 *SPC-821 series are need loosen M3 x16L *6pcs and M3 x 6L*6pcs of OP back side*



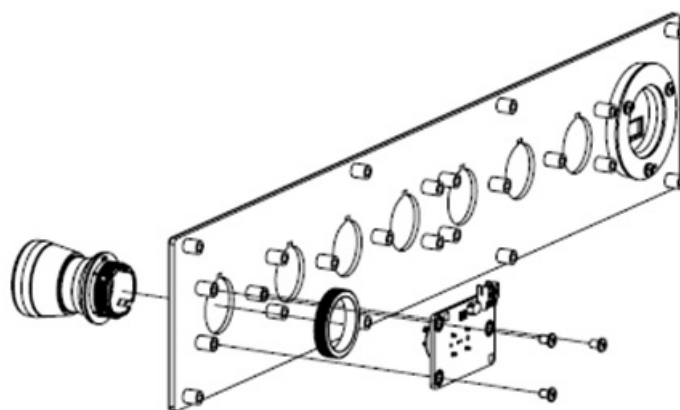
SPC-815
M3x16L *4 PCS
M3x6L *4 PCS

SPC-821
M3x16L *6 PCS
M3x6L *6 PCS

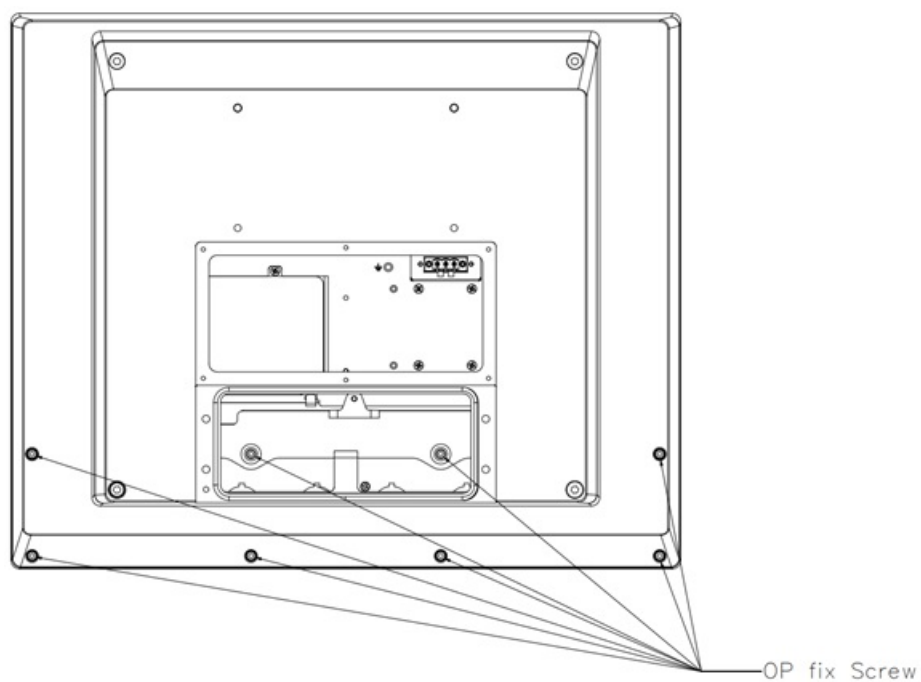
3. Pre-hole cut-outs



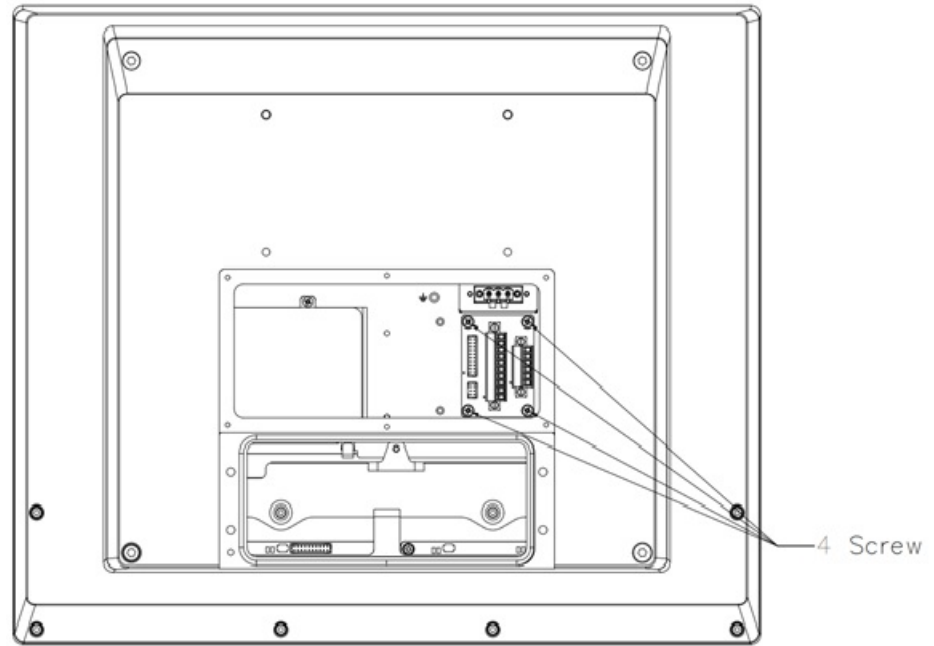
4. Fix the RAFI button assembly of the threaded ring.
5. Attach the Button's PCBA with M3 x 4pcs screw to the OP back side.



6. Fasten the OP back side by the screw.



7. Install the terminal Board with M3 x 4pcs screws.



2.5 Installing the Drivers

2.5.1 Installation of Touch Screen driver

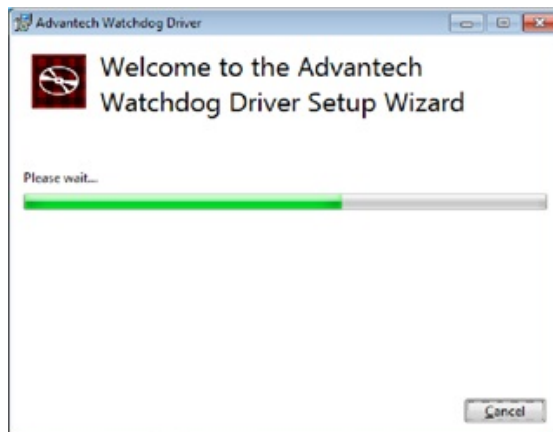
SPC-815/821 will use built-in PCT touch driver of OS If operating under Windows 10.

2.5.2 Installation of Watchdog driver

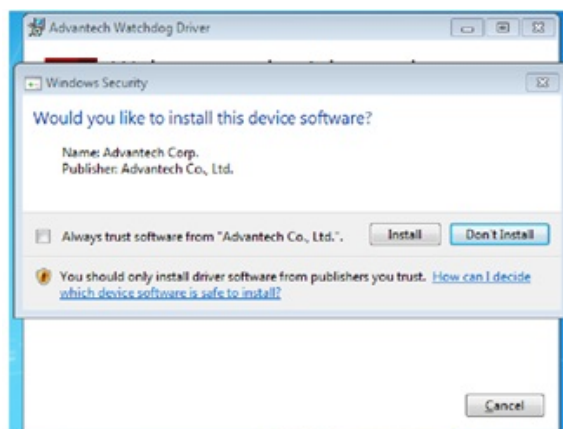
1. Run the Setup program. When the setup program is running, click the "Next >" button in "Advantech Watchdog Driver Setup Wizard".



- The installation is running. Please wait for completion.



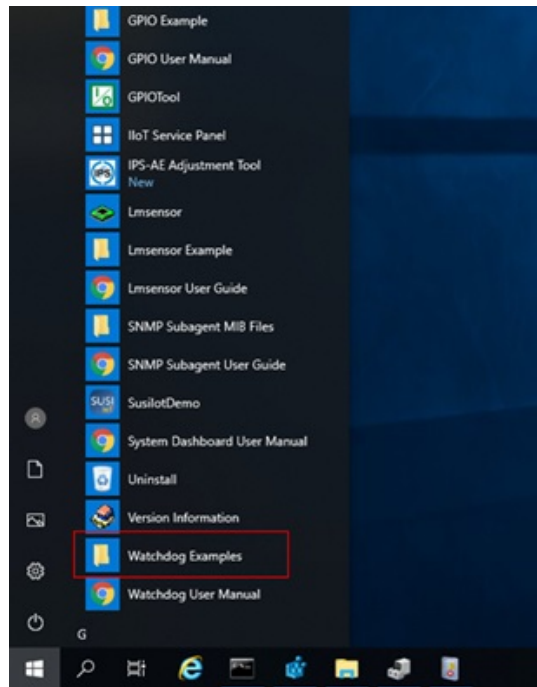
- Click the "Install" button to continue the installation of Advantech Watchdog KMDf driver



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

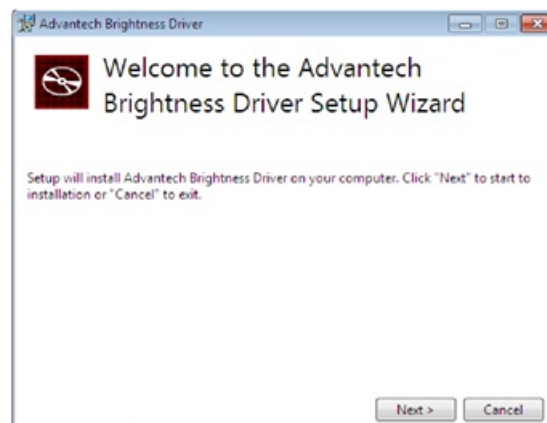


5. After installing Watchdog driver, a "Watchdog Service Configuration" icon will show in control panel.

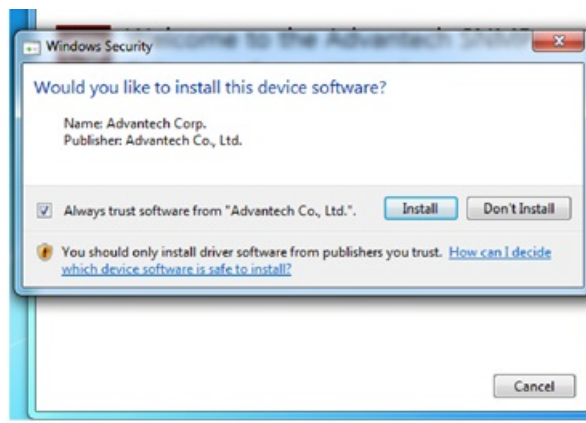


2.5.3 Installation of Brightness Control Driver

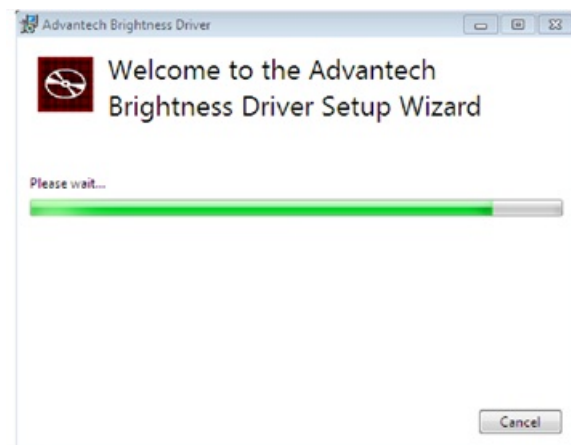
1. Run the Setup program.
2. When the setup program is running, click the "Next" button.



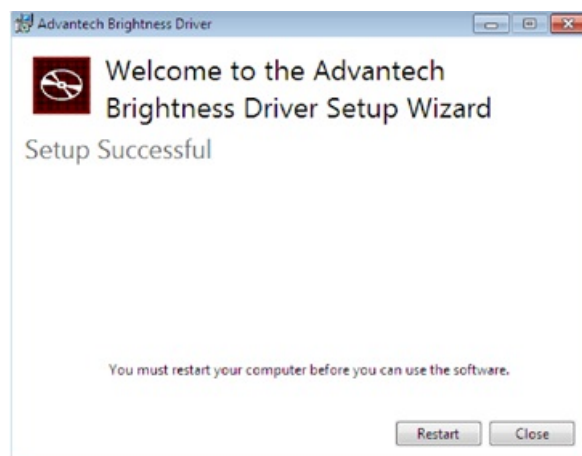
- To continue the installation, check Always trust software from “Advantech Co., Ltd.” and click Install to complete the driver installation.



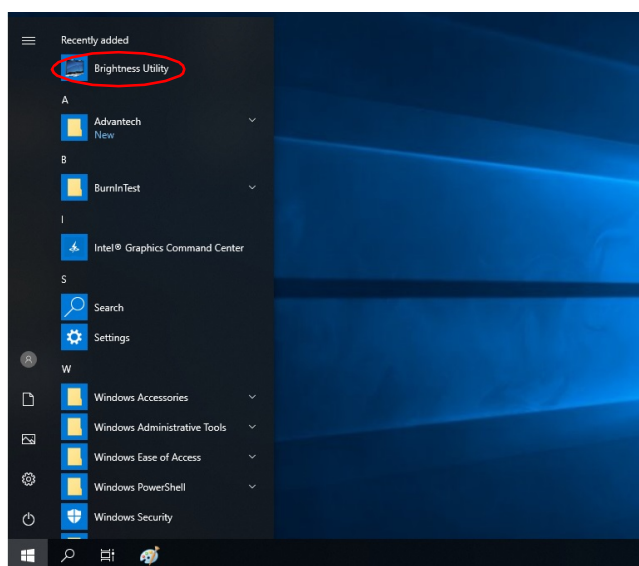
- The installation is running. Please wait for completion.



- Click Restart to reboot and finish the installation of Advantech Brightness Windows KMDf Driver.

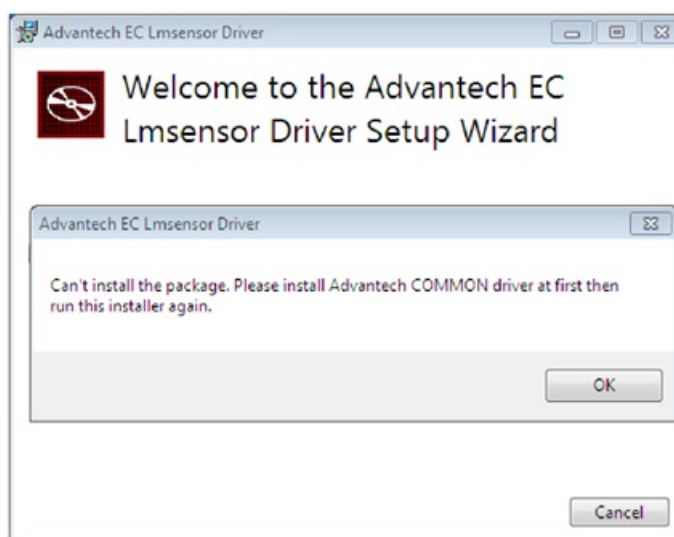


- After installing Brightness driver, a “Brightness Utility” icon will show in control panel.

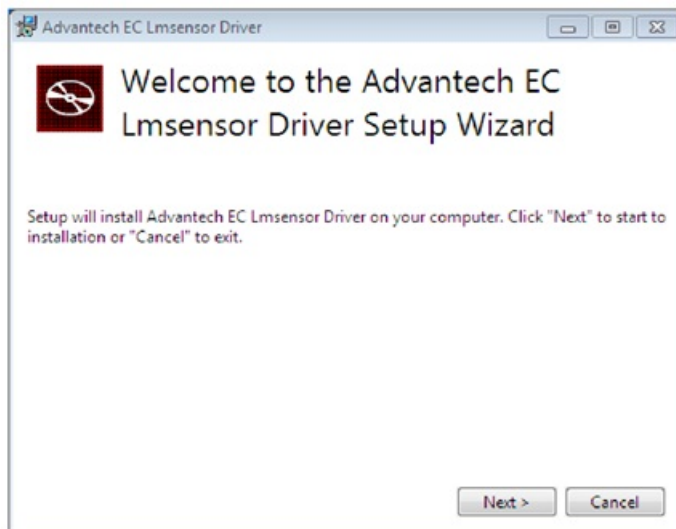


2.5.4 Installation of EC Lmsensor Driver

- Run the Setup program. Please install the AdvCOMMON driver first if the following error occurred during the installation.



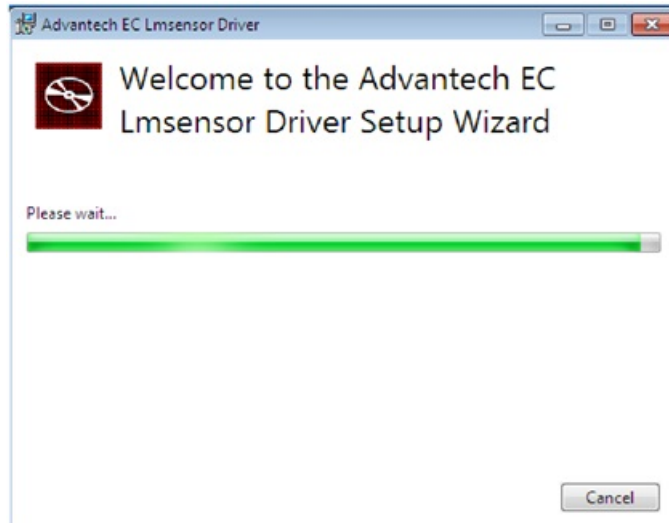
2. When the setup program is running, click the "Next" button.



3. To continue the installation, click the "Install" button.



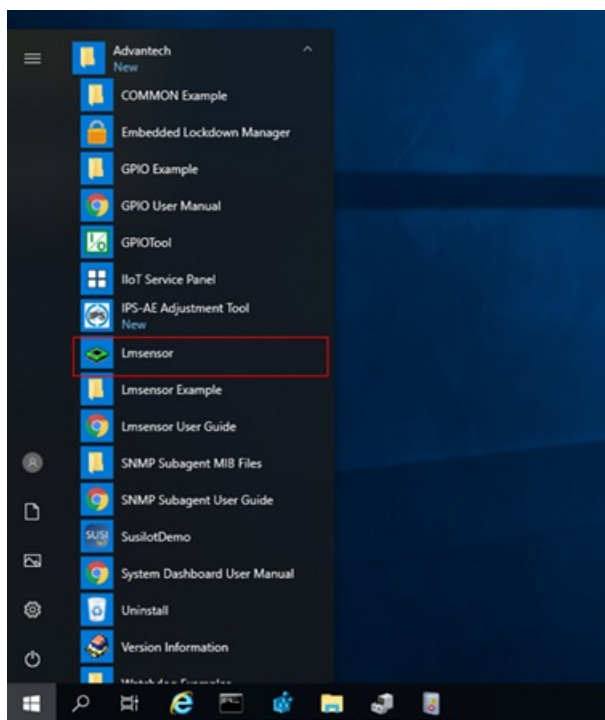
4. The installation is running. Please wait for completion.



5. Click the "Restart" button to reboot and finish the installation of Advantech Lmsensor device driver.



6. After installing Brightness driver, a "Lmsensor Utility" icon will show in star program manual.



Chapter 3

Features of Windows
Embedded OS

3.1 Features in Windows Embedded OS

SPC-800 product supports the embedded Windows OS platform. This chapter 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, which is known as an overlay. Although the overlay stores any changes made to the operating system, it is deleted when the device is restarted, restoring the device to its original state. Note that there is no disk-based overlay support for Windows Embedded Standard 7.

EWF works at the sector level on protected disks and allows users to implement changes that 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 provides a utility to run EWF. Follow the steps outlined below to enable this function.

1. Access Start Menu->All Programs->Advantech-> AdvWF and then click EWF Utility.



2. Access the EWF tab and click on the “Enable” button.



3. After the system is rebooted automatically, EWF functionality will be enabled.

3.3 File-Based Write Filter (FBWF)

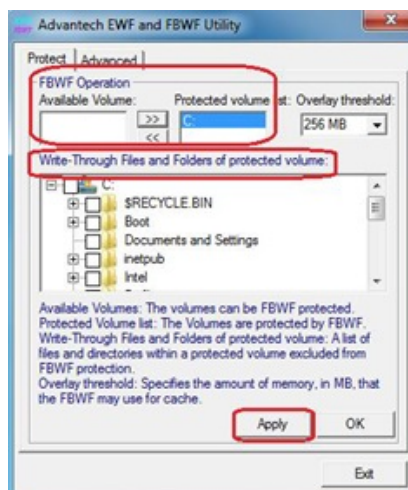
File-Based Write Filter (FBWF) works at the file level instead of the sector level on protected disks. By default, FBWF protects the entire disk. However, selective write through exceptions can be granted to specific files and folders. Writes to folders with write-through exceptions will persist when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

Advantech provides a utility to run FBWF. Follow the steps outlined below to enable this function.

1. Access Start Menu->All Programs->Advantech->AdvWF and the click on FBWF Utility.



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



3. Click “Apply”. The system will reboot automatically, after which FBWF will be enabled.

Appendix **A**

UI Operating Process

A.1 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 SPC-821/815 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
Blue	Power on
Orange	Stand by
No light	Off



- One press Home Key->

 **Home - Back to desktop (default setting)**

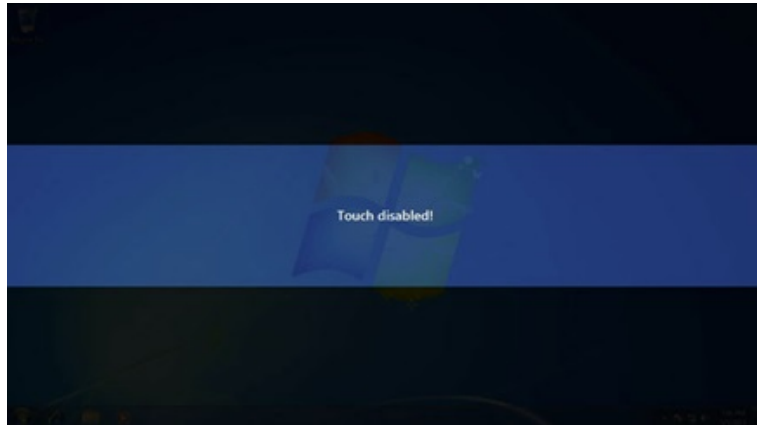
 **Home - Execute Home-key App (Set up in setting page)**



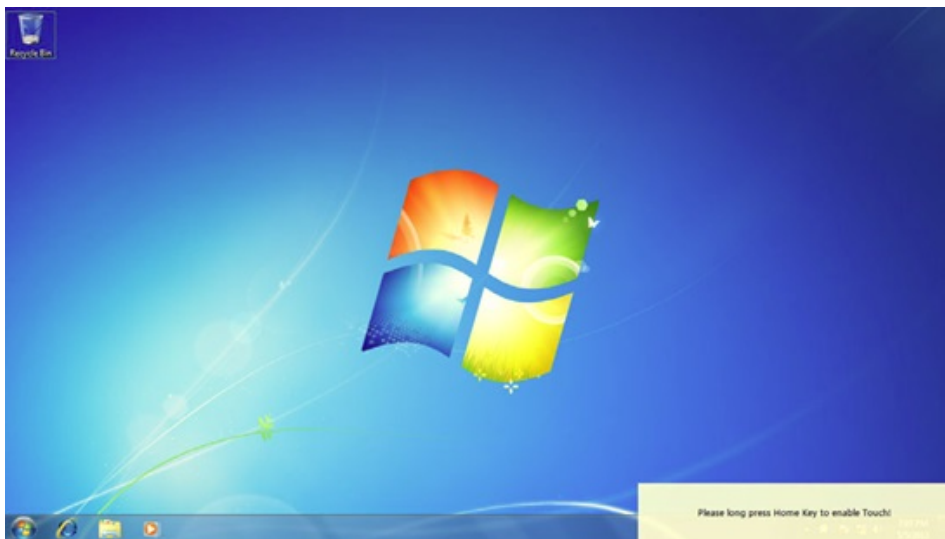
3. Long press Home Key->



Home - Long press to disable / enable touch function



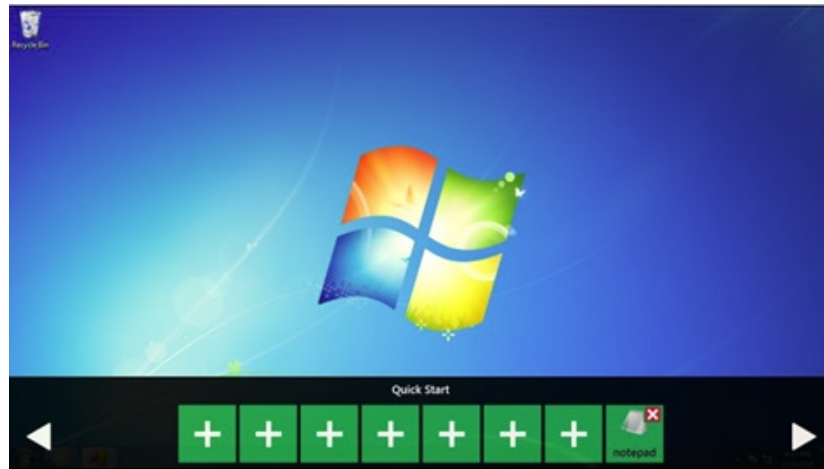
Note! When touch function is disabled, you'll see a message up in the lower right corner of screen



4. One press Intelligent Key->

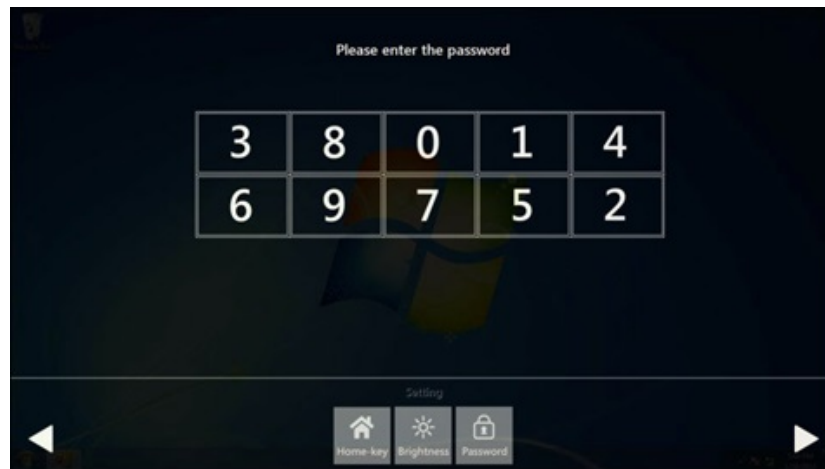


Intelligent - Advantech Intelligent Utility



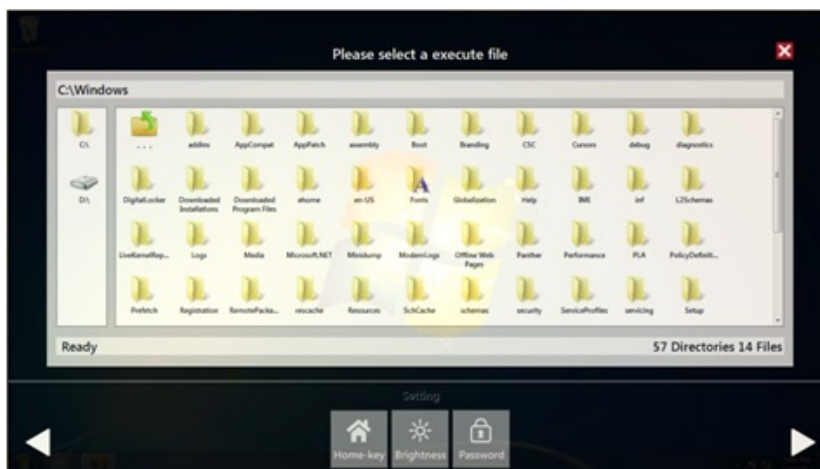
A. Quick start->

- 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".

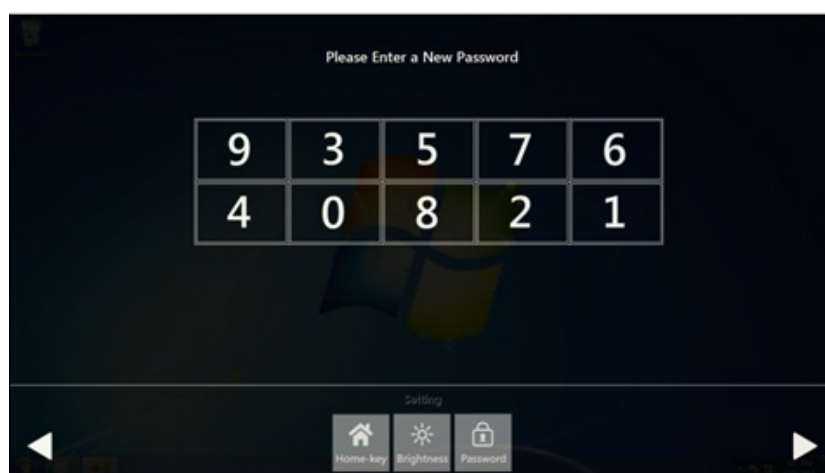
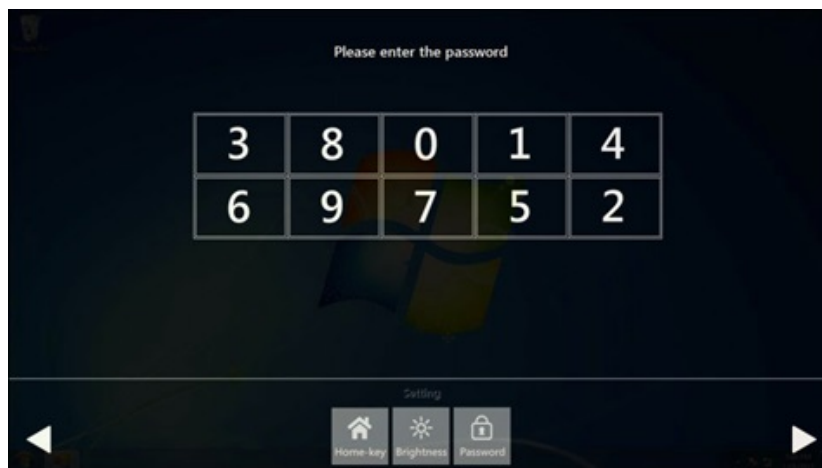


- Setting - Brightness: Brightness control from 1 to 8.

Note! *If you use other brightness setting tools such as iManager, remember not to adjust below 10 percent to prevent a black screen.*

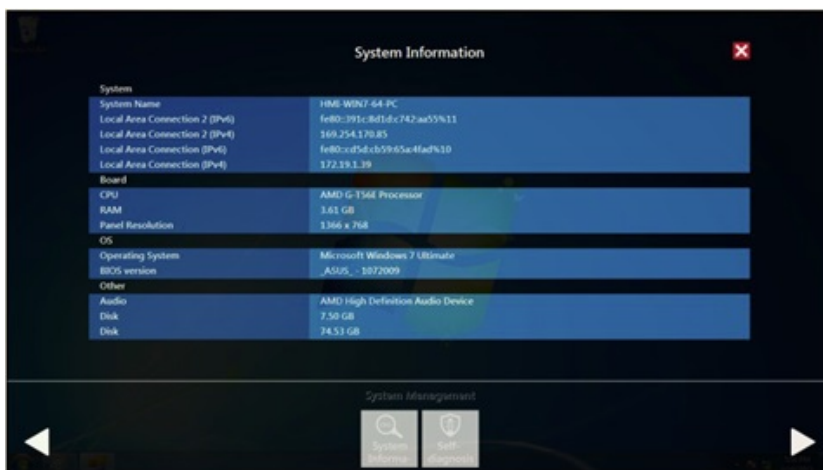


- Setting - Password: Change password function.



C. System management->

- System information:






Note!  SPC-815/821 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

www.advantech.com

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