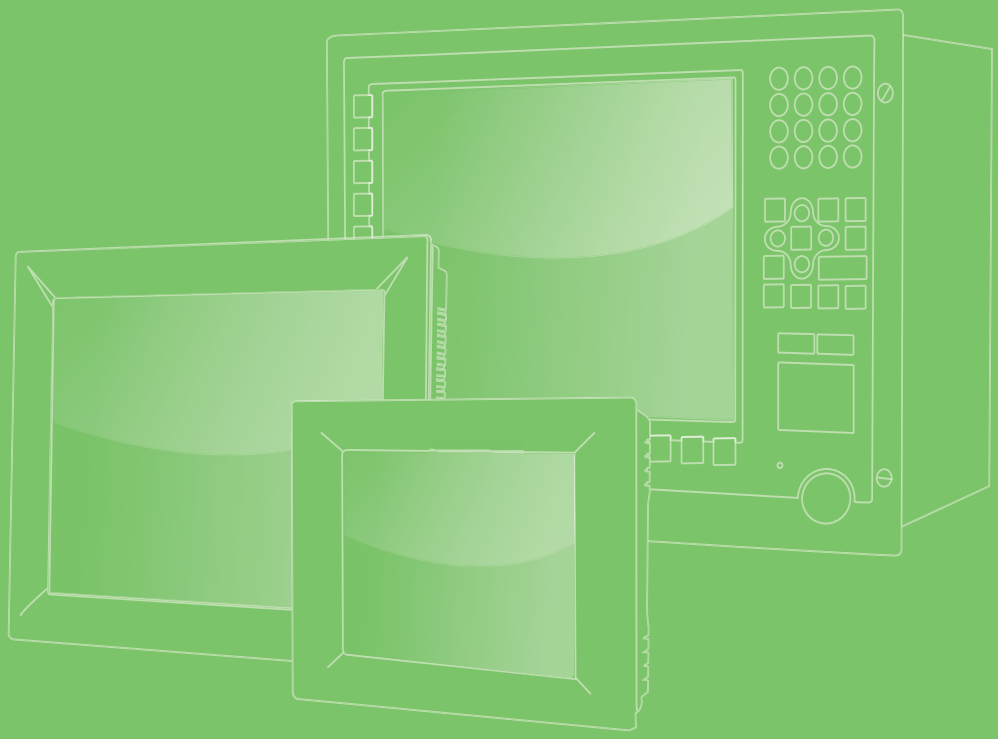

User Manual

TPC-651T-Exxx
TPC-651H-Exxx

Industrial Touch Panel Computers with Intel® Atom™ Processors

ADVANTECH

Enabling an Intelligent Planet

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Acknowledgements

This Manual Covers the Following Models:

- TPC-651T (5.7" & 6.5")
- TPC-651H (5.7")

Part No. xxxxxxxxxxxxx Edition 1

Printed in Taiwan February 2015

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 merchandize 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.

Technical Support and Assistance

1. Visit the Advantech web site at http://support.advantech.com 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) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
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.*

Attention! Danger d'explosion si la pile est remplacée de façon incorrecte. Remplacez seulement avec le même type ou équivalent recommandé par le fabricant. disposer des piles usagées selon les instructions du fabricant.

Chapter 1

General Information

1.1 Introduction

The TPC-651T/TPC-651H Touch Panel Computer is a state-of-the-art Human Machine Interface featuring a 5.7”/6.5” display and Intel Atom™ E3827 1.75 GHz Processor

The key features are as follows:

- **True-flat touch screen**
  TPC-651T is a true-flat touch screen designed with IP66 front protection. (TPC-651H is with traditional TPC bezel for IP65 front protection)
- **Fanless**
  By using a low-power processor, the system does not have to rely on fans, which often are unreliable and causes dust to circulate inside the equipment.
- **Wide operating temperature**
  TPC-651T supports -20 ~ 60°C wide operating temperature solution to provide flexibility in harsh environments.
- **Bright Display**
  The TFT LED LCD display suits industrial demands for clear interfaces. Wide Operating Temperature & Isolation Protection.

1.2 Specifications

1.2.1 System Kernel

- **CPU:** Intel® Atom™ E3827 1.75 GHz Processor
- **BIOS:** AMI UEFI BIOS
- **VGA:** Integrated in Intel® Atom™ E3827
- **Ethernet:** 10/100/1000Base-T x 2
- **Watchdog Timer:** EC watchdog timer; 1.0 second timeout period
- **Storage:**
  CFast slot x 1
  2.5" SATA HDD/SSD slot x 1 (optional, accessory TPC-1251T-EHKE required)

1.2.2 I/O Ports

- RS-232 x 1, RS-232/422/485 x 1
- USB 3.0 x 1
- USB 2.0 x 1
- Full-size Mini PCIe Card x1

1.2.3 O/S support

- Microsoft® Windows
  - WES7 64bit
  - WE8S 64bit
  - Windows 7 32bit/64bit
  - Windows 8 64bit
    (see Appendix B, Chapter C for BIOS set up before installing Windows 8.X)

1.2.4 Safety and Environment

Safety

- FCC Class A
- CE certificated
- The front bezel is compliant with IP66 for true flat models and IP65 for the TPCs with the traditional front bezel

Environment

- **Operating Temperature:**
  - -20 ~ 60°C (-4 ~ 140°F)
- **Storage Temperature:**
  - -30 ~ 70°C (-22 ~ 158°F)
- **Humidity:** 40°C @ 10~95% relative humidity (non-condensing)
- **Vibration:**
  With CFast: 2 Grms (5~500 Hz)
  With HDD: 1 Grms (5 ~ 500 Hz)
  (Operating, random vibration)

1.3 LCD Specifications

	TPC-651T/TPC-651H (5.7")	TPC.651T (6.5')
Display Type	TFT LED LCD	TFT LED LCD
Size	5.7"	6.5"
Maximum Resolution	640 x 480 (VGA)	640 x 480 (VGA)
Maximum Colors	262K	262K
Viewing Angle (CR≥10)	160°/140°	160°/140°
Luminance (cd / m2)	550	800
Contrast Ratio	800:1	600:1
Operating Temperature	-30 ~ 85°C	-30 ~ 80°C
Backlight Lifetime	50,000 hours	50,000 hours
Backlight	LED	LED

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 Touchscreen Specifications

- **Touch Type:** 5- wire Resistive
- **Base Glass Construction:** Tempered glass
- **Resolution:** 640 x 480 (following resolution of system)
- **Light Transmission:** 80% ± 3% (Measured by BYK-Gardner)
- **Controller:** USB Interface
- **Lifespan:** 1 million touches at single point

Note! *Touchscreen ITO maybe crash duo to heavy usage .*

1.5 Power

- **Input Voltage:** 24V_{DC} +/- 20% (the fuse will become an open circuit if the input level exceeds 32 V_{DC})
- **Typical:** 24 V_{DC} @ 0.8 Amp

1.6 I/O Ports Arrangement

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

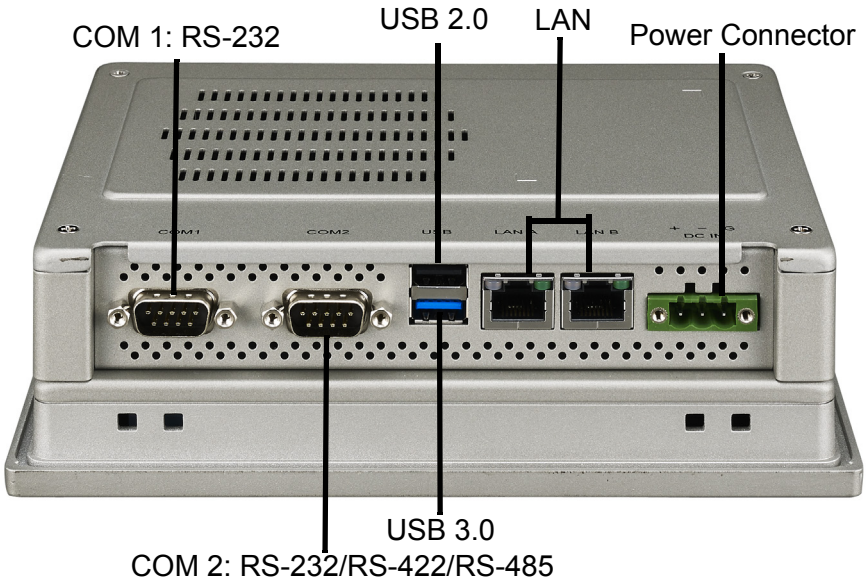


Figure 1.1 I/O Port Arrangement

1.7 Panel Mounting

1. There is a rubber waterproof gasket on the AL front bezel. Make sure the water-proof gasket is in position before installing TPC into the panel opening.
2. Install the TPC into the panel opening.
3. Take the clamps and long screws from the accessory box. Hook the clamps to the holes around the four sides of the bezel. Insert the screws into 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”).

1.8 Dimensions and Cutout

TPC-651T

- **Weight:** 1.5 kg
- **Dimensions (W x H x D):** 199 x 152 x 58.9 mm (7.83" x 5.98" x 2.32")
- **Cutout:** 189.1 x 142.1 mm (7.44" x 5.59")

TPC-651H

- **Weight**: 1.5 kg
- **Dimensions (W x H x D)**: 195 x 148 x 58 mm (7.68" x 5.83" x 2.28")
- **Cutout**: 189.1 x 142.1 mm (7.44" x 5.59")

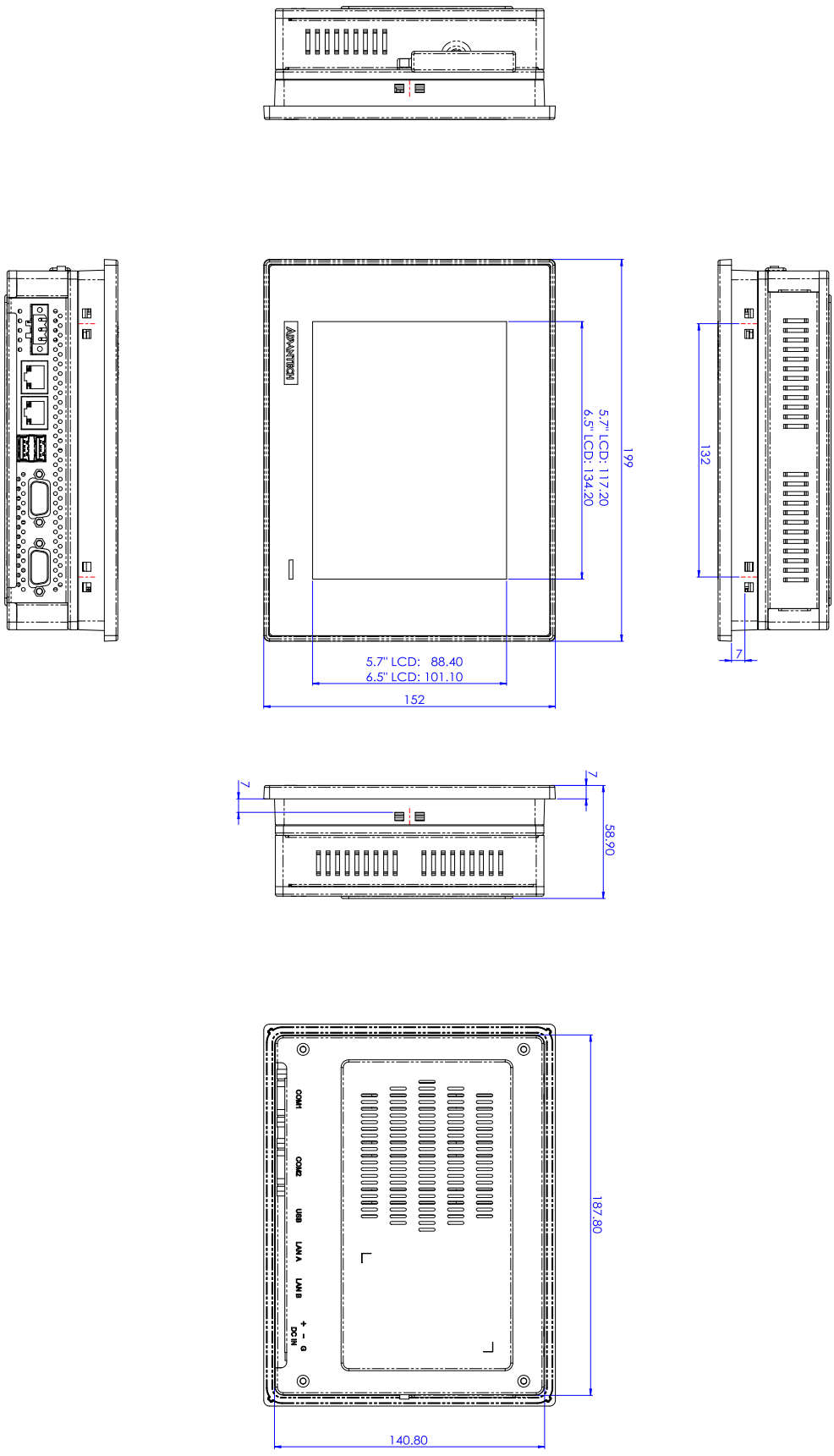


Figure 1.2 TPC-651T Dimensions

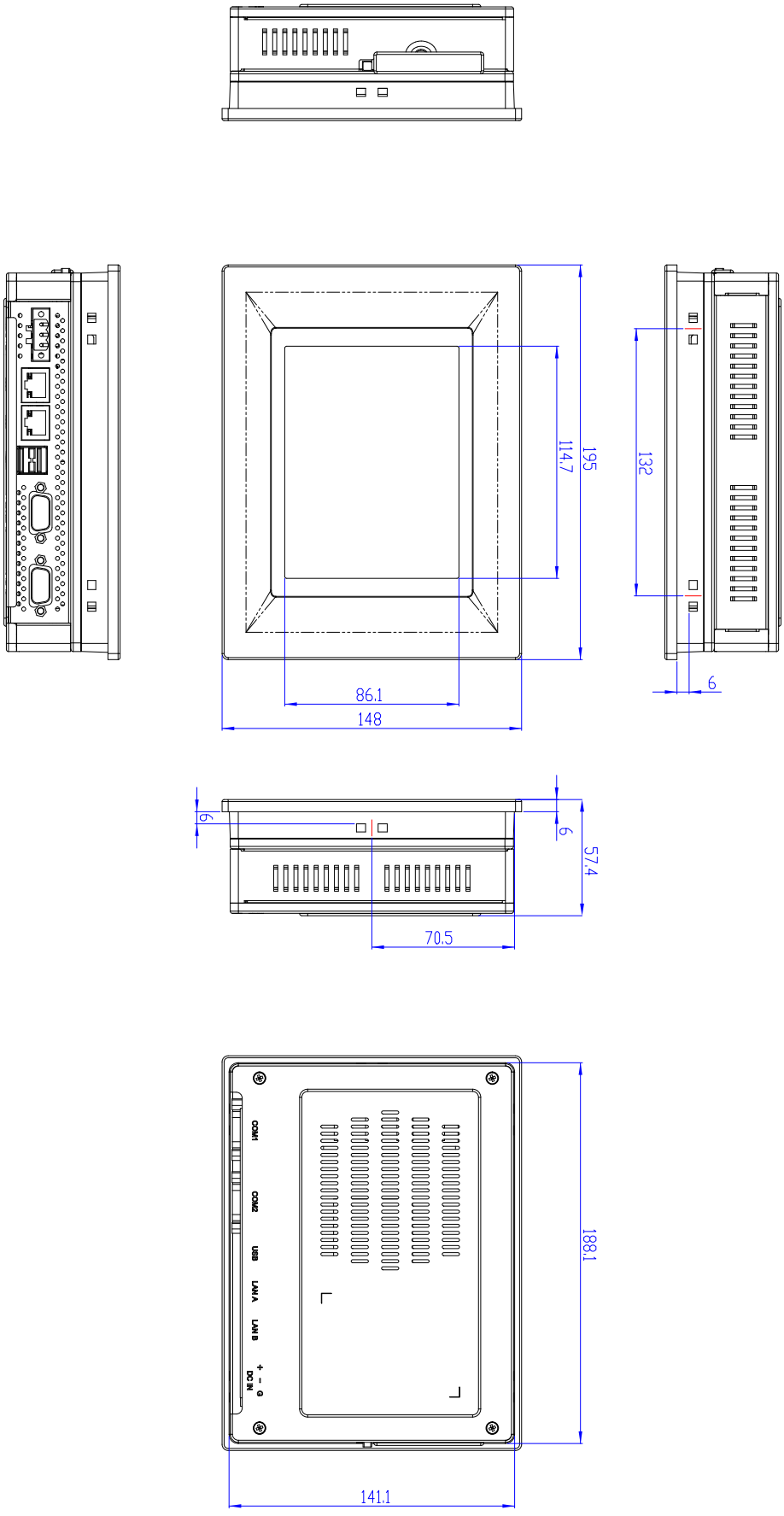


Figure 1.3 TPC-651H Dimensions

Chapter 2

System Setup

2.1 System Setup

You can easily get TPC started by following the below steps.

1. Unpack the TPC 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

2. Install a CFast® card containing the operating system.

Figure 2.2 Install CFast Memory Card
(Mylar in accessory box can be attached to CFast card for easy extraction)

Warning! *It is suggested to turn OFF system power as you plug in or pull out the memory card, even though the CompactFlash memory is hot swappable.*

Il est 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 V_{DC} power lines. The power lines can either be of some power adapter or in-house power source.

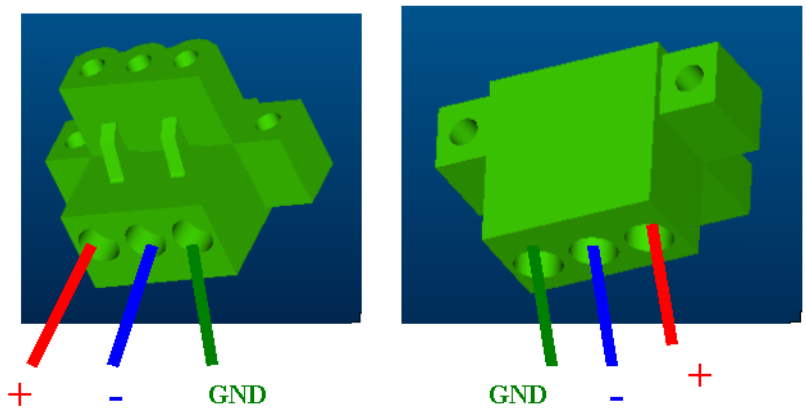


Figure 2.3 Power Connector and Power Lines

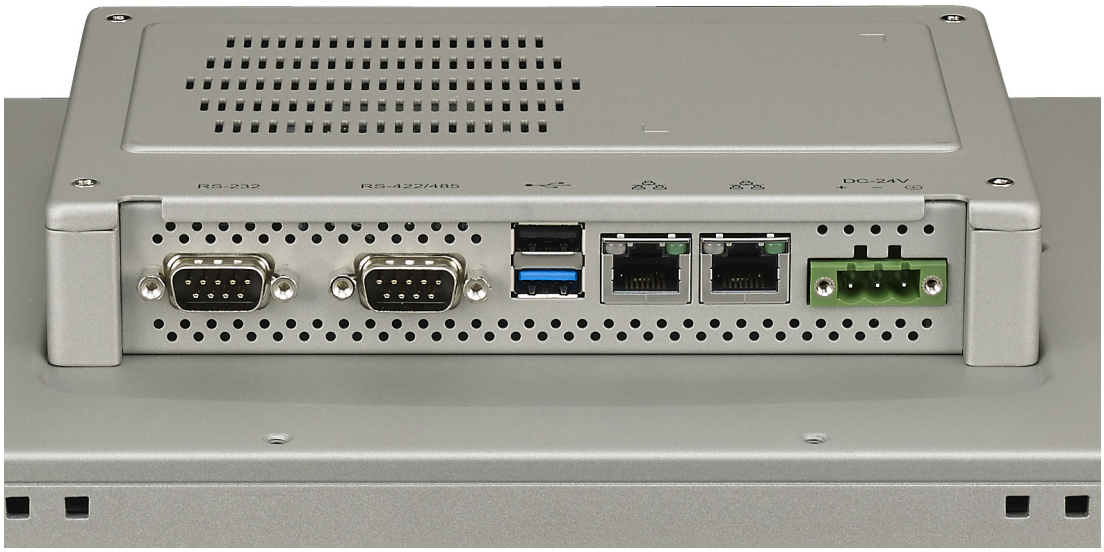


Figure 2.4 Power Receptor & Button Pin Assignment

4. Plug the power lines into the system power receptor.
5. Supply power to the system
6. Calibrate the touchscreen.

Note! *If you want to install the touchscreen driver & use the touchscreen utility, please refer the user manual which is "PenMount 6000 Installation-Guide" in the CD-ROM.*

2.1.1 Installing the Drivers

After installing your system software, you will be able to set up the Ethernet, VGA, and touchscreen functions. All drivers are stored in a CDROM disc entitled “TPC-651T” which can be found in your accessory box.

The various drivers in the CD-ROM disc have their own text files which help users install the drivers and understand their functions. These files are a very useful supplement to the information in this manual.

Note! *The drivers and utilities used for the TPC-651T panel PCs are subject to change without notice. If in doubt, check Advantech's website or contact our application engineers for the latest information regarding drivers and utilities.*

2.2 Transport and Unpacking

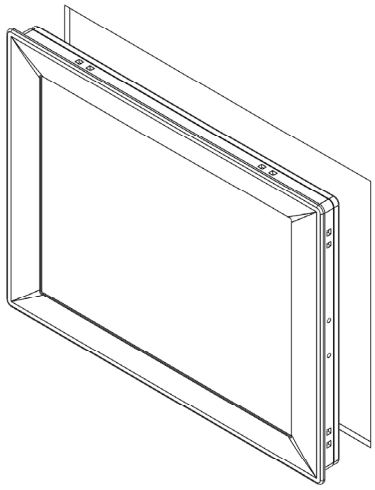
When accepting a delivery, please check the packaging for visible transport damage and check the delivery for completeness by comparing it with your order. If you notice any shipping damage or inconsistencies between the contents and your order, please inform the responsible delivery service immediately.

During transport, 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.

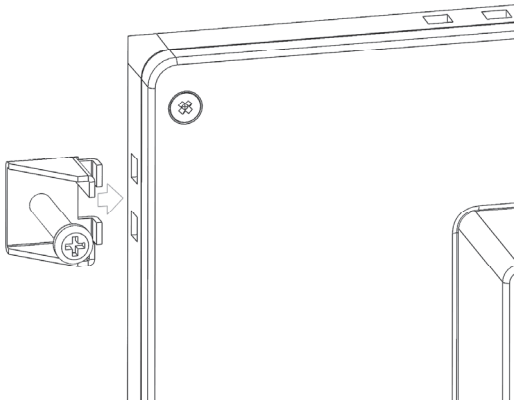
If the TPC is transported in cold weather or is exposed to extreme variations in temperature, make sure that moisture (condensation) does not build up on or inside the HMI device. Moisture can result in short-circuits in electrical circuits and damage the device. To avoid that, please store the TPC in 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.

2.3 Panel Mounting

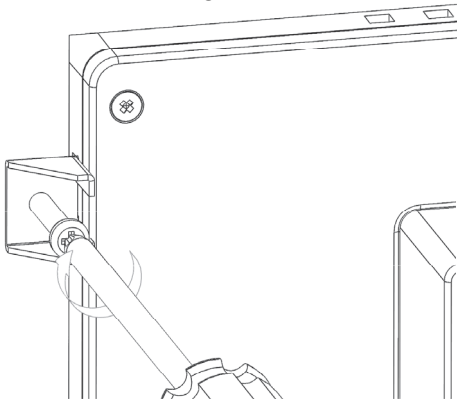
1. Position the TPC against the panel.



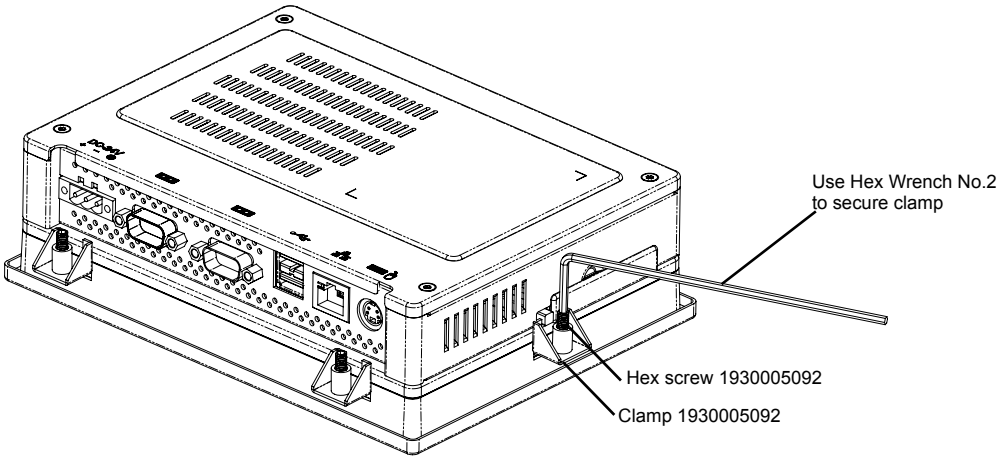
2. Insert the clamps into the side of the TPC.



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



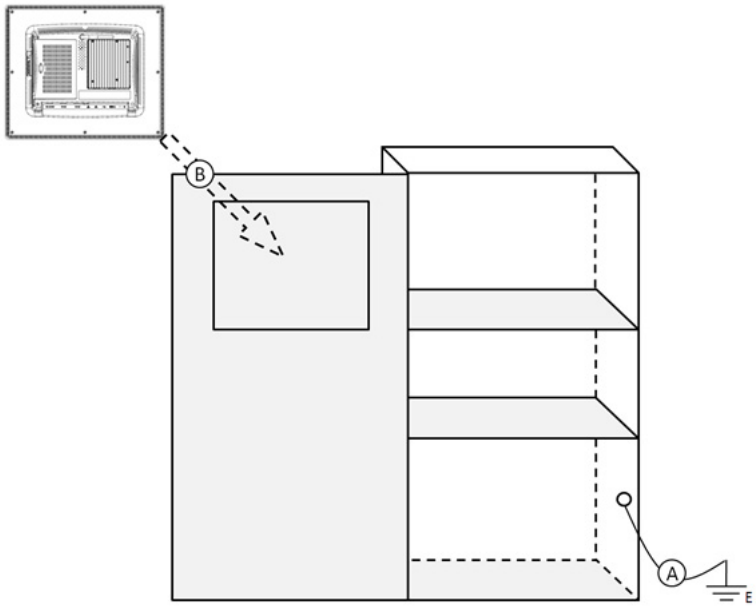
4. Smaller screws are included with the TPC-651T/TPC-651H, use these to avoid blocking CFast slot or I/O ports.



2.4 Cabinet Installation and Earth Grounding setup

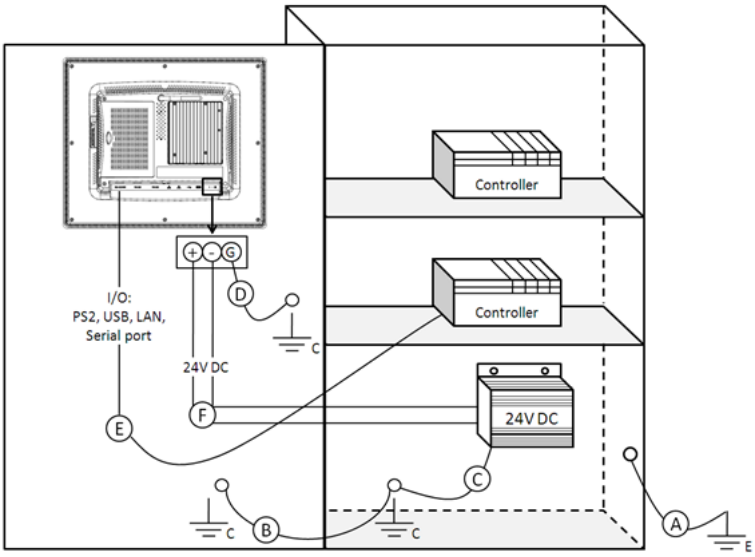
Please follow the following steps to setup TPC-651T/TPC-651H, and please pay attention that Ground pin of TPC-651T should be connected to earth ground. Under this circumstance, TPC-651T could have the best performance such as EMI immunity, ESD immunity, Surge immunity and also system isolation. If the TPC-651T/TPC-651H is embedded in the cabinet, the TPC-651T's ground, cabinet's ground and earth ground should be connected together.

1. Embed TPC-651T/TPC-651H into the cabinet.



Step A: Connect the cabinet to earth ground.
Step B: Embed null TPC-651T 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-651T/TPC-651H 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-651T/TPC-651H.

While completing step A to F step by step, you can supply power to TPC-651T/TPC-651H now.

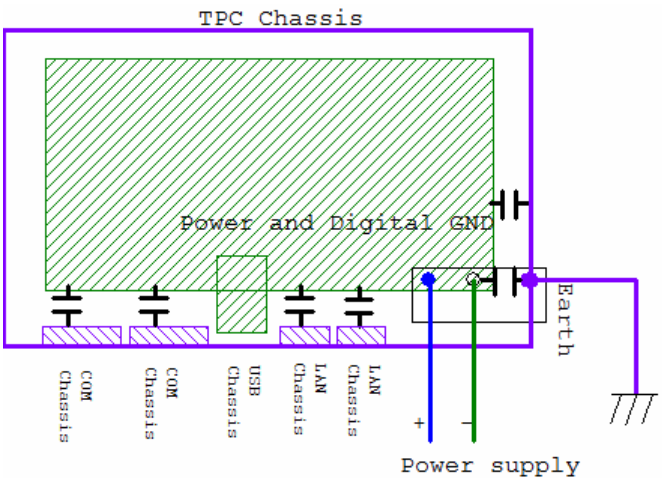
Note! *Make sure all wires follow the installation guidelines or it may cause issues.*

Note! *If you install a USB device or Mini PCIe card on the TPC-651T/TPC-651H, 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.*

2.5 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.

- TPC Chassis and Earth (Power pin3) are short,
- TPC Chassis and Power / Digital GND are OPEN



The TPC is and 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:

- The Ethernet is isolated, a LAN connection will not impact the isolation design.
- 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.
- 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

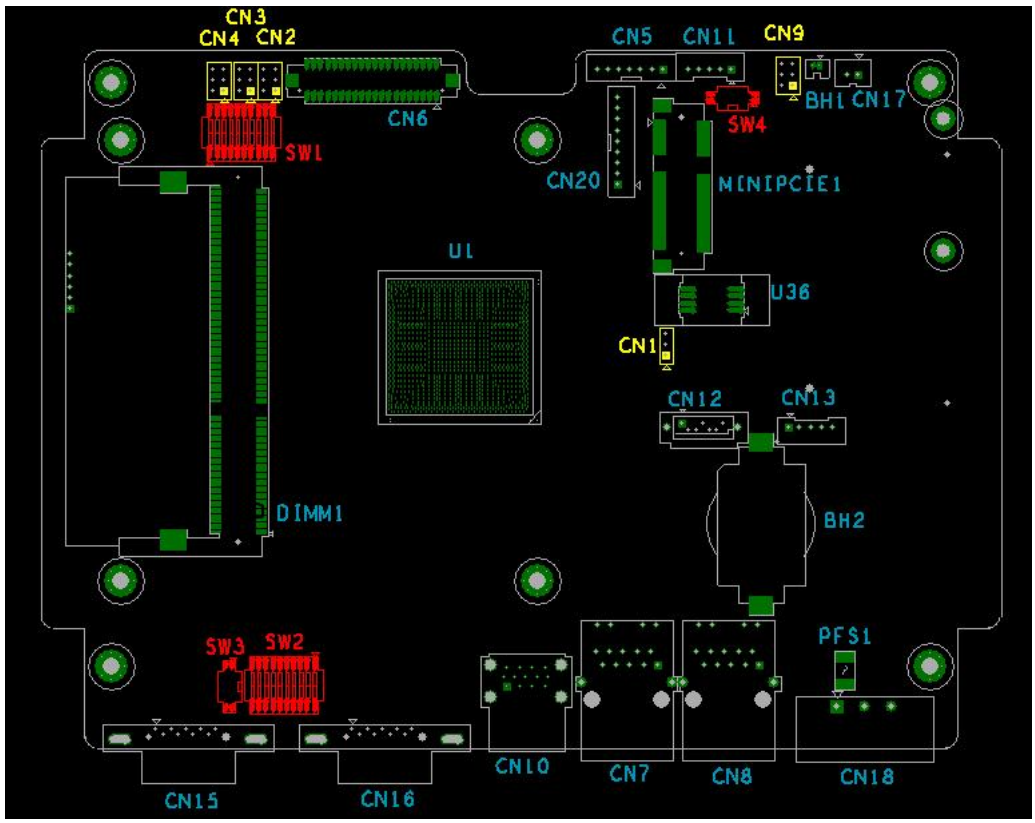
In real cases, many customers may break the level 1 isolation by 3rd party Device or cable design, in this situation, we need to consider making all the GND short (Power GND/Digital GND/Earth GND), and ensure customers have good Earth GND connection.

Appendix A

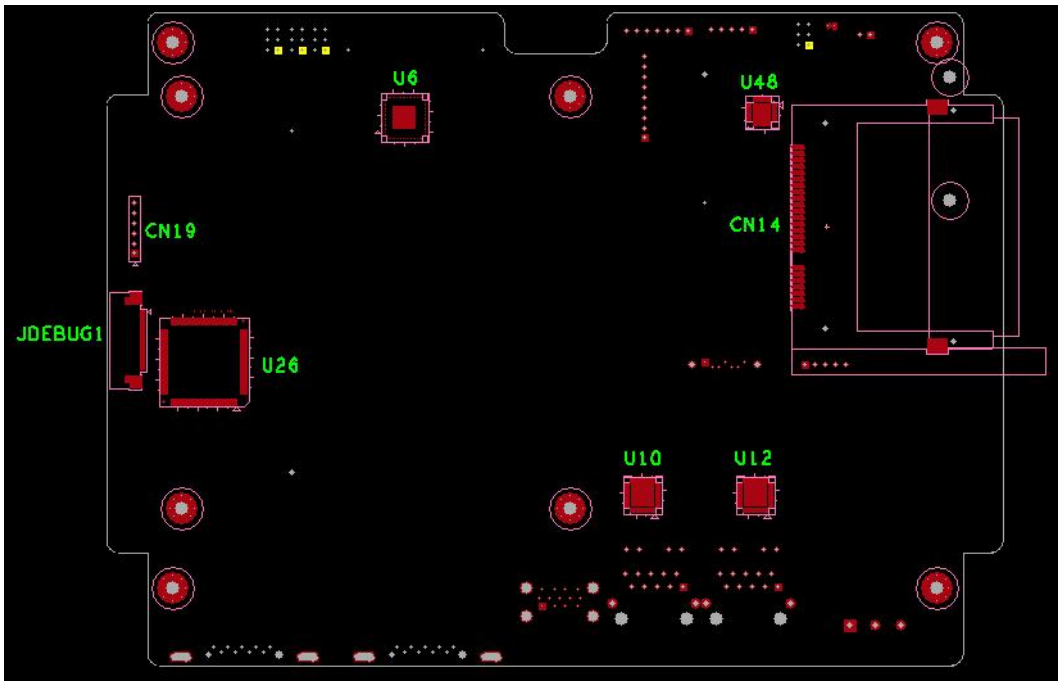
Serial Port Settings

A.1 Jumper, Dip switch and Connector location

A.1.1 Top

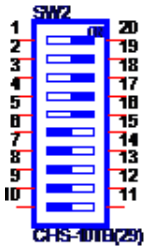
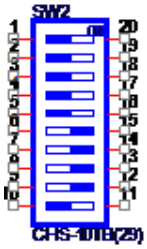
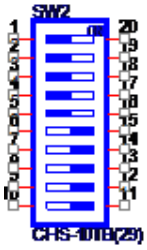
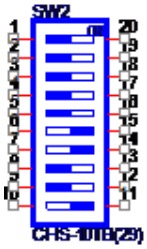


A.1.2 Bottom



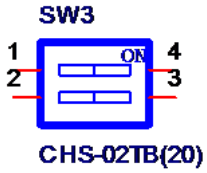
A.2 Switch Setting

COM2 RS232/422/485 mode setting (SW2)

	COM2 RS232/422/485 mode setting	
Description	This switch is used to select COM2 RS232/422/485 mode setting	
Default	RS232 mode	
RS232 Mode	Bit 1,2,3,4,5 ON Bit 6,7,8,9,10 OFF	
RS422 Master Mode	Bit 1,2,3,4,5,10 OFF Bit 6,7,8,9 ON	
RS422 Slave Mode	Bit 1,2,3,4,5 OFF Bit 6,7,8,9,10 ON	
RS485 Mode	Bit 1,2,3,4,5,8,9 OFF Bit 6,7,10 ON	

A.2.1 Termination Resistor Select (SW3)

	Termination Resistor Select	
Description	This switch is used to select Termination Resistor (120 ohm) for long distance transmission or device matching.	
Default	Bit1 off & Bit2 off (ISO_COM2_DATA+ & ISO_COM2_RX-)	
ISO_COM2_DATA+	Pin 1	Default
ISO_COM2_RX-	Pin 2	
ISO_COM2_R_RX+	Pin 3	
ISO_COM2_R_DATA-	Pin 4	

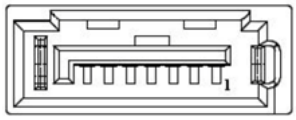


A.3 Connector Pin Definition

A.3.1 SATA connector (CN12)

1654004659 Serial ATA 7P 1.27mm 180D(M) DIP WATM-07DBN4A3B83.12

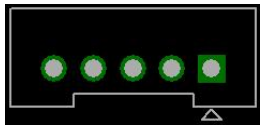
Pin	Signal	Description
1	GND	GND
2	A+	Signal Pair A : TX+/- (Transmit)
3	A-	
4	GND	GND
5	B-	Signal Pair B : RX+/ (Receive)
6	B+	
7	GND	GND



A.3.2 SATA Power connector (CN13)

1655000453 WAFER BOX 2.0mm 5P 180D(M) DIP WO/Pb JIH VEI

Pin	Signal	Description
1	+V3.3SATA	SATA power output 3.3V/1A
2	+V5SATA	SATA power output 5V/1A
3	+V12SATA	SATA power output 12V/0.5A
4	GND	GND
5	GND	GND



A.3.3 Mini PCIE slot (MINIPCIE)

1654002538 MINI PCI E 52P 6.8mm 90D SMD AS0B226-S68N7H

Supports PCI1.1, PCI1.2 Power Definition

Pin	Signal	Description	Pin	Signal	Description
52	+3.3Vaux / +3.3V	PCI1.1 was +3.3V, PCI1.2 was +3.3Vaux	51	Reserved	NC
50	GND		49	Reserved	NC
48	+1.5V		47	Reserved	NC
46	NC	NC	45	Reserved	NC
44	NC	NC	43	PIN43_MPCIE_PWRSEL	The pin to select the Pin 2, 52 power output for +3.3Vaux or +3.3V (PCI1.1 was Reserved and PIC1.2 was GND
42	NC	NC	41	+3.3Vaux	
40	GND		39	+3.3Vaux	
38	USB_D+	USB serial data interface compliant to the USB 2.0 specification	37	GND	
36	USB_D-		35	GND	
34	GND		33	PETp0	PCI Express differential transmit pair
32	SMB_DATA	SMBus data signal compliant to the SMBus 2.0 specification	31	PETn0	
30	SMB_CLK		29	GND	
28	+1.5V		27	GND	
26	GND		25	PERp0	PCI Express differential receive pair
24	+3.3Vaux		23	PERn0	
22	PERST#	Functional reset to the card	21	GND	
20	W_DISABLE#	Active low signal. This signal is used by the system to disable radio operation on add-in cards that implement radio frequency applications. When implemented, this signal requires a pull-up resistor on the card.	19	Reserved	NC
18	GND		17	Reserved	NC
	Key	Key		Key	Key
16	NC	NC	15	GND	
14	NC	NC	13	REFCLK+	
12	NC	NC	11	REFCLK-	
10	NC	NC	9	GND	
8	NC	NC	7	CLKREQ#	Reference clock request signal
6	1.5V		5	NC	NC
4	GND		3	NC	NC
2	+3.3Vaux / +3.3V	PCI1.1 was +3.3V , PCI1.2 was +3.3Vaux	1	WAKE#	Open Drain active Low signal. This signal is used to request that the system return from a sleep/suspended state to service a function initiated wake event.

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

A.3.4 CFast slot (CN14)

1653004849 CFast 24P 1.27mm 90D(M) SMD N7G24-A0B2RA-10-0HT-

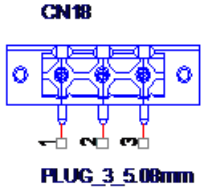
The host is connected to the CFast Card using a 7+17 pin connector

Pin	Segment	CFast Name	Description
S1	SATA	SGND	Ground for signal integrity
S2	SATA	A+	Signal Pair A : TX+/- (Transmit)
S3	SATA	A-	
S4	SATA	SGND	Ground for signal integrity
S5	SATA	B-	Signal Pair B : RX+/ (Receive)
S6	SATA	B+	
S7	SATA	SGND	Ground for signal integrity
	Key		
	Key		
PC1	PWR/CTL	CDI	NC
PC2	PWR/CTL	GND	GND
PC3	PWR/CTL	TBD	NC
PC4	PWR/CTL	TBD	NC
PC5	PWR/CTL	TBD	NC
PC6	PWR/CTL	TBD	NC
PC7	PWR/CTL	GND	GND
PC8	PWR/CTL	LED1	CF_PHYRDY LED
PC9	PWR/CTL	LED2	CF_HDDA LED
PC10	PWR/CTL	IO1	NC
PC11	PWR/CTL	IO2	NC
PC12	PWR/CTL	IO3	NC
PC13	PWR/CTL	PWR	CFast Power output to Device +3.3V / 1.2A
PC14	PWR/CTL	PWR	
PC15	PWR/CTL	PGND	Ground for Power return
PC16	PWR/CTL	PGND	
PC17	PWR/CTL	CDO	NC

A.3.5 Power in connector (CN18)

1652003104 PLUG-IN BLOCK 3P 5.08mm 90D(M) DIP ME050-50803

Pin	Signal	Description
1	Power IN V+	24VDC +-20% Power in
2	Power IN V– (GND)	
3	GND_EARTH	The GND_EARTH to connect a Screw hole for short with the chassis GND

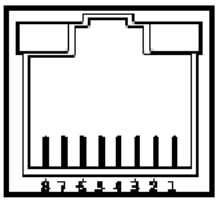


A.3.6 LAN RJ45 connector (CN7,CN8)

1652002996 PHONE JACK RJ45 14P 90D(M) DIP RTA-195AAK1A

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

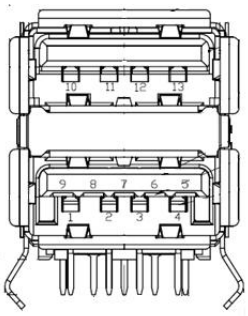
	Left LED		Right LED
10Link	**100Link**	**1000 Link**	**Active**
Off	Orange	Green	Green



A.3.7 USB connector (CN10)

1654010199 USB Conn. 2.0+3.0 13P 90D(F) DIP UEA1112C-UHS6-4

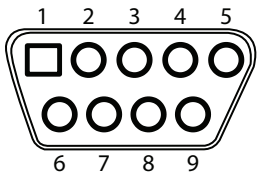
Pin	Signal	Description
1, 10	USB VBUS	USB Power output ,USB2.0 5V/0.5A and USB3.0 5V/0.9A
2, 11	USB_P-	USB2.0 date -
3, 12	USB_P+	USB2.0 date +
4,13	GND	Ground for Power return
5	SSRX-	USB3.0 RX -
6	SSRX+	USB3.0 RX +
7	GND_DRAIN	Ground for signal return
8	SSTX-	USB3.0 TX -
9	SSTX+	USB3.0 TX +



A.3.8 COM1 RS232 connector (CN15)

1654000056 D-SUB Conn. 9P 90D(M) DIP 070241MR009S200ZU

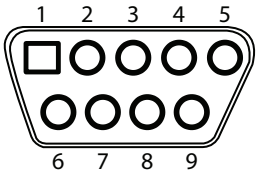
Pin	RS232
1	DCD
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI



A.3.9 COM2 RS232/422/485 connector (CN16)

1654000056 D-SUB Conn. 9P 90D(M) DIP 070241MR009S200ZU

Pin	RS232	RS422	RS485
1	DCD	TX-	D-
2	RX	TX+	D+
3	TX	RX+	
4	DTR	RX-	
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		



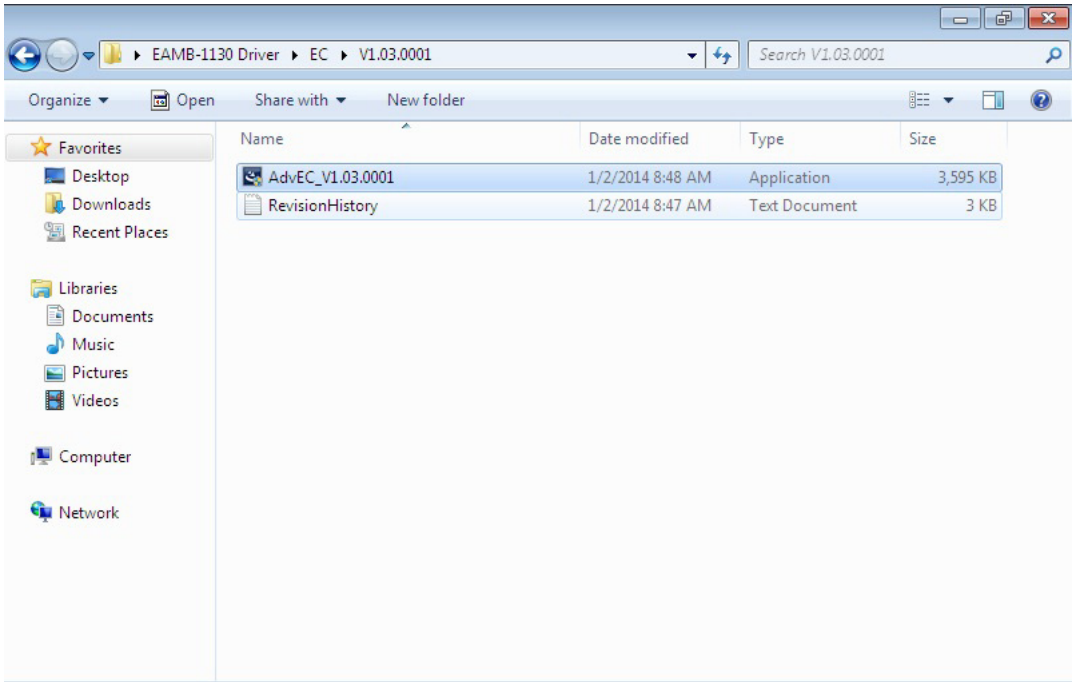
Appendix B

Driver Installation and Configuration

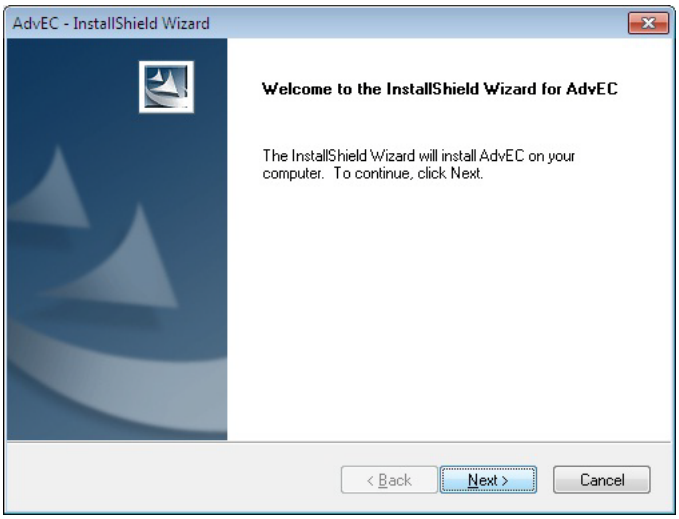
B.1 EC Driver Installation

Follow the steps below to install the EC drivers:

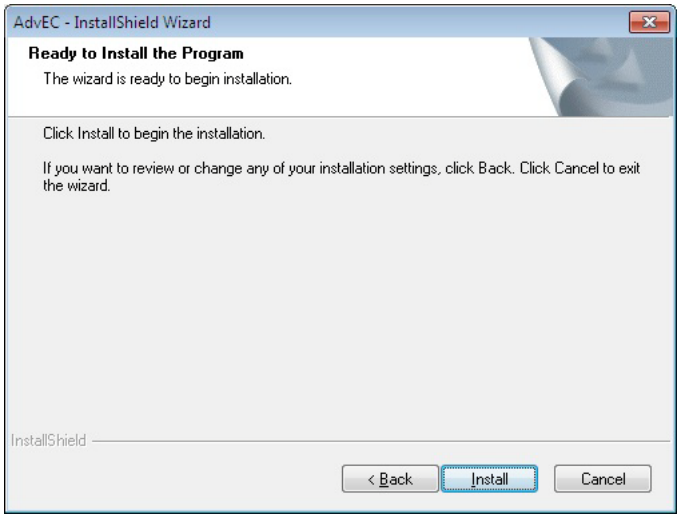
1. Launch folder \EC\Vx.xx.xxxx
2. Install AdvEC_Vx.xx.xxxx.exe



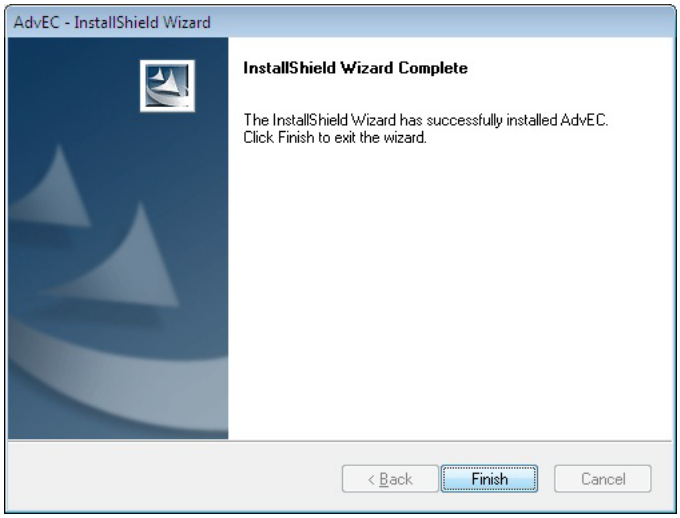
3. Click **Next**



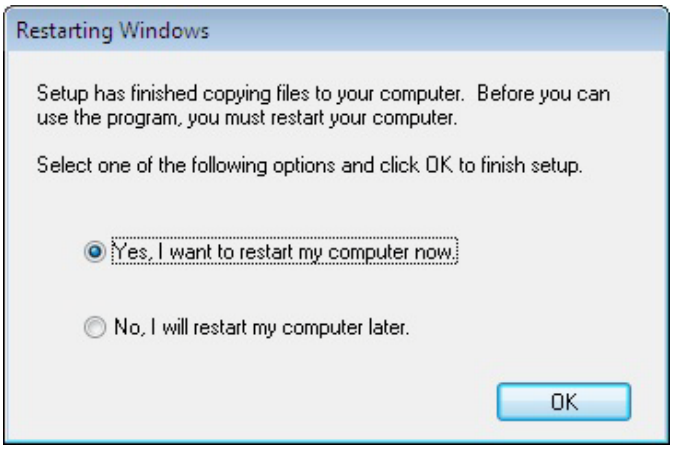
4. Click **Install**



5. Click **Finish**



6. Choose **Yes**, then click **OK** to restart

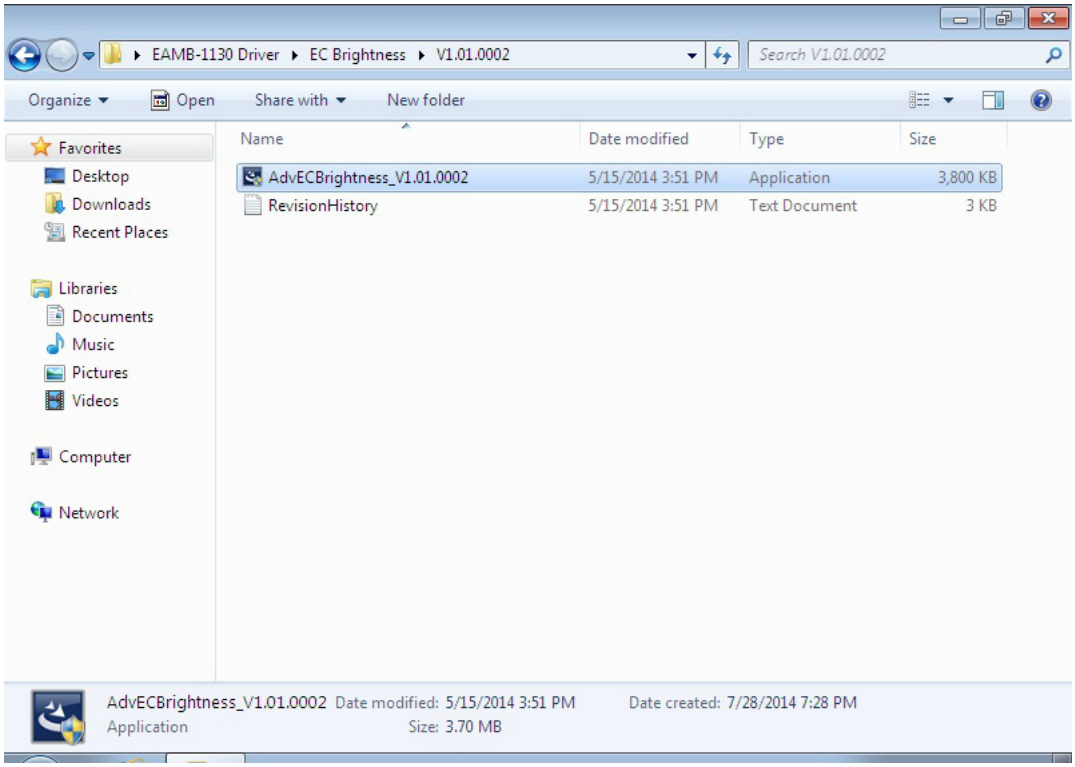


B.2 EC Brightness Control Tool Installation

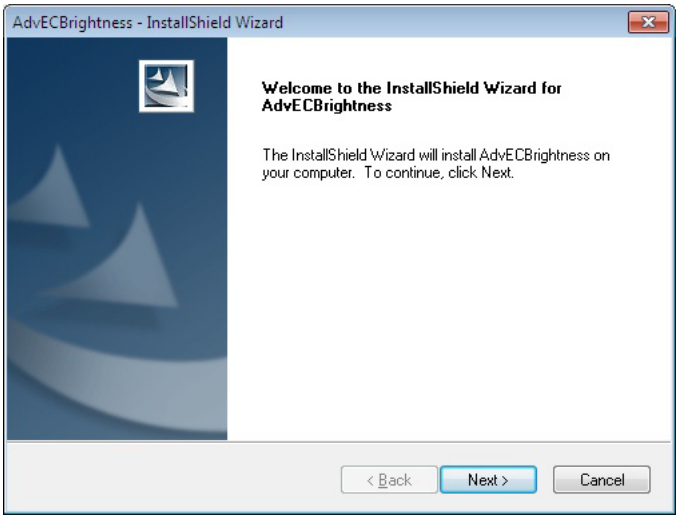
Note! *The EC driver must be installed first*

Follow the steps below to install the EC brightness control tool:

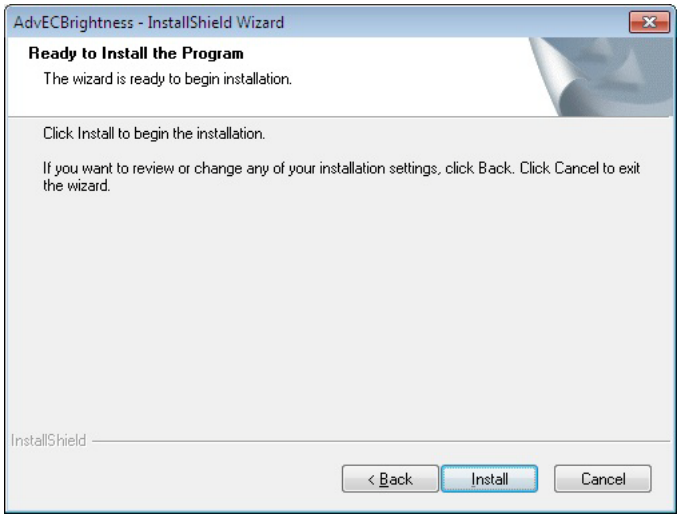
1. Launch folder \EC Brightness\Vx.xx.xxxx
2. Install AdvECBrightness_Vx.xx.xxxx.exe



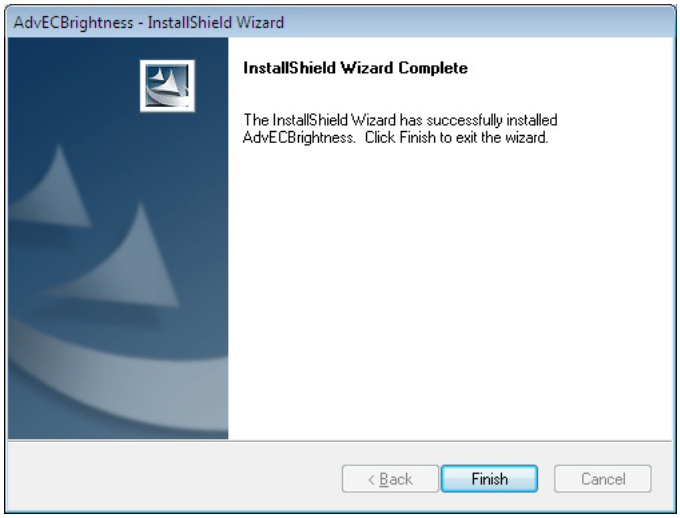
3. Click **Next**



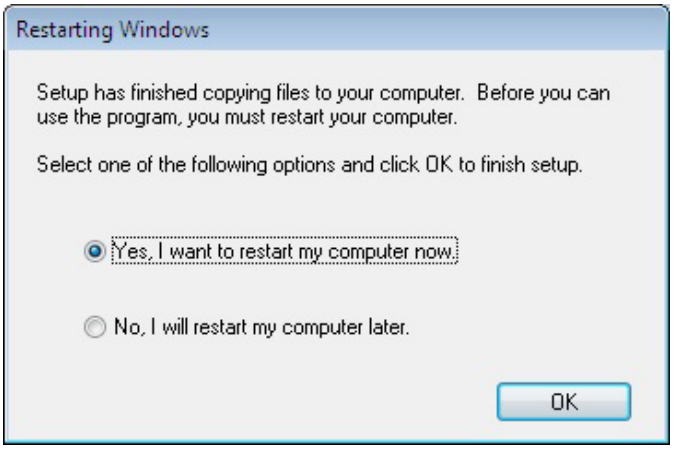
4. Click **Install**



5. Click **Finish**



6. Choose **Yes**, then click **OK** to restart

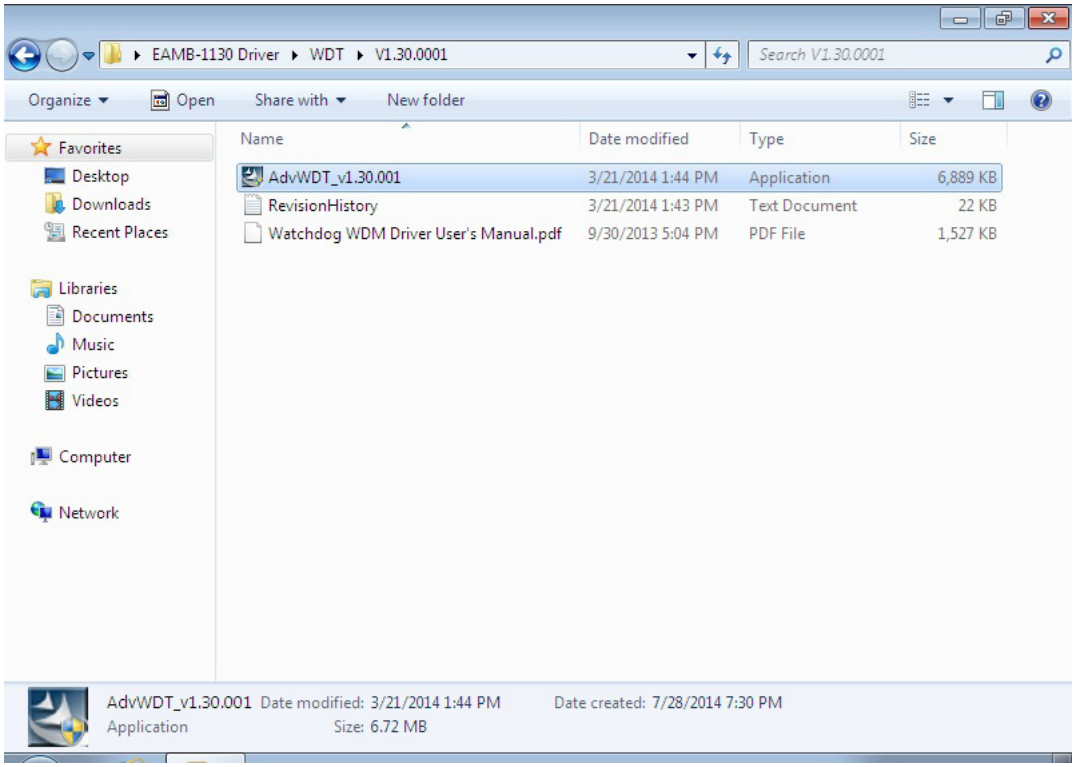


B.3 EC Watchdog Timer Driver Installation

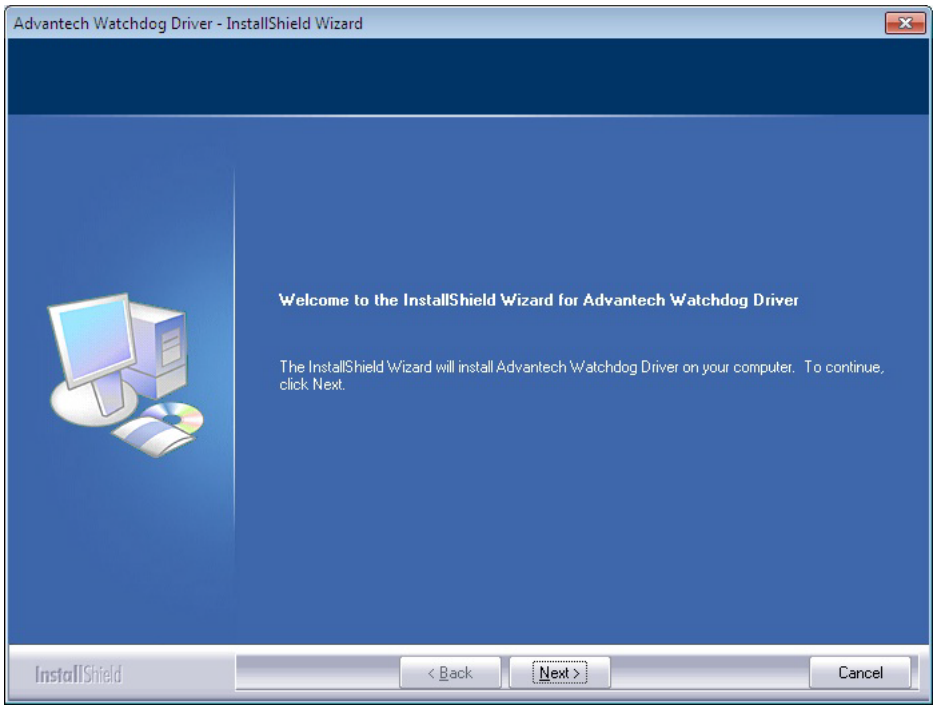
Note! *The EC driver must be installed first*

Follow the steps below to install the EC Watchdog Timer driver:

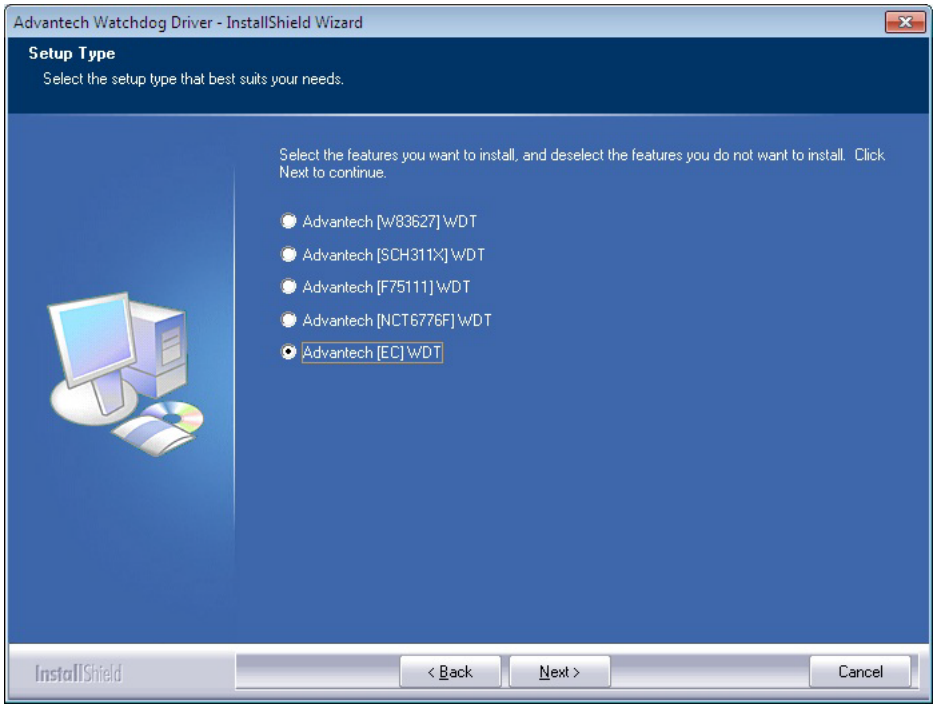
1. Launch folder \WDT\Vx.xx.xxxx
2. Install AdvWDT_Vx.xx.xxxx.exe



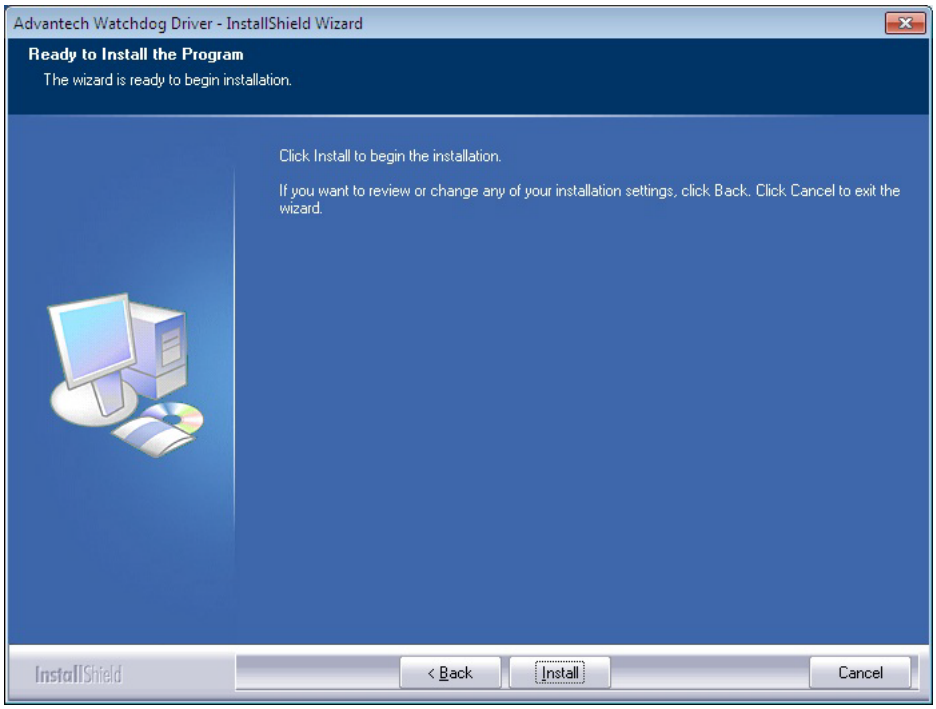
3. Click **Next**



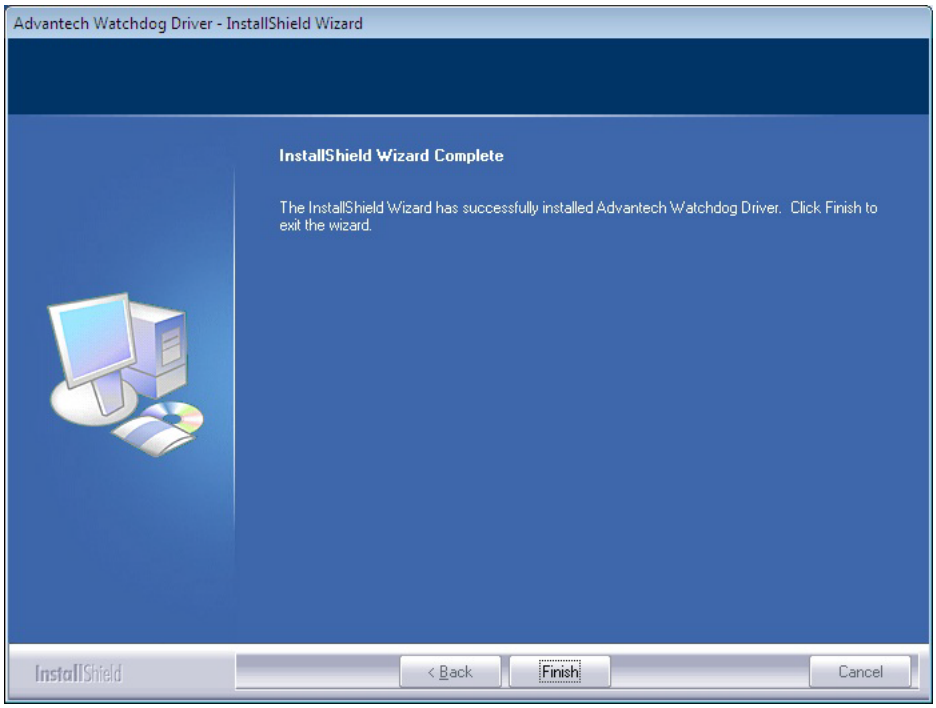
4. Choose **Advantech [EC]WDT**, then click **Next**



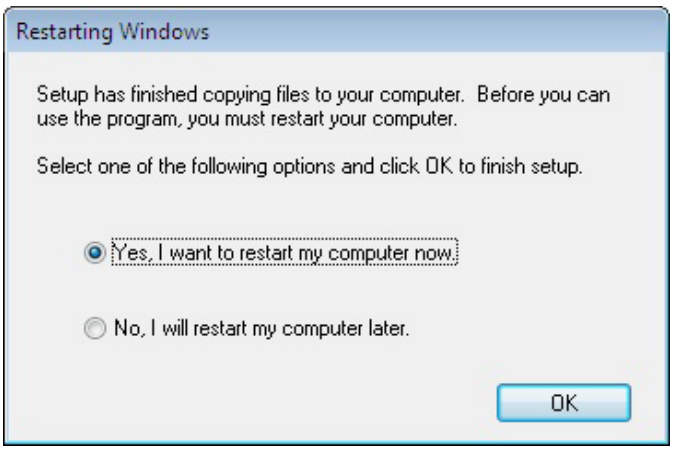
5. Click **Install**



6. Click **Finish**



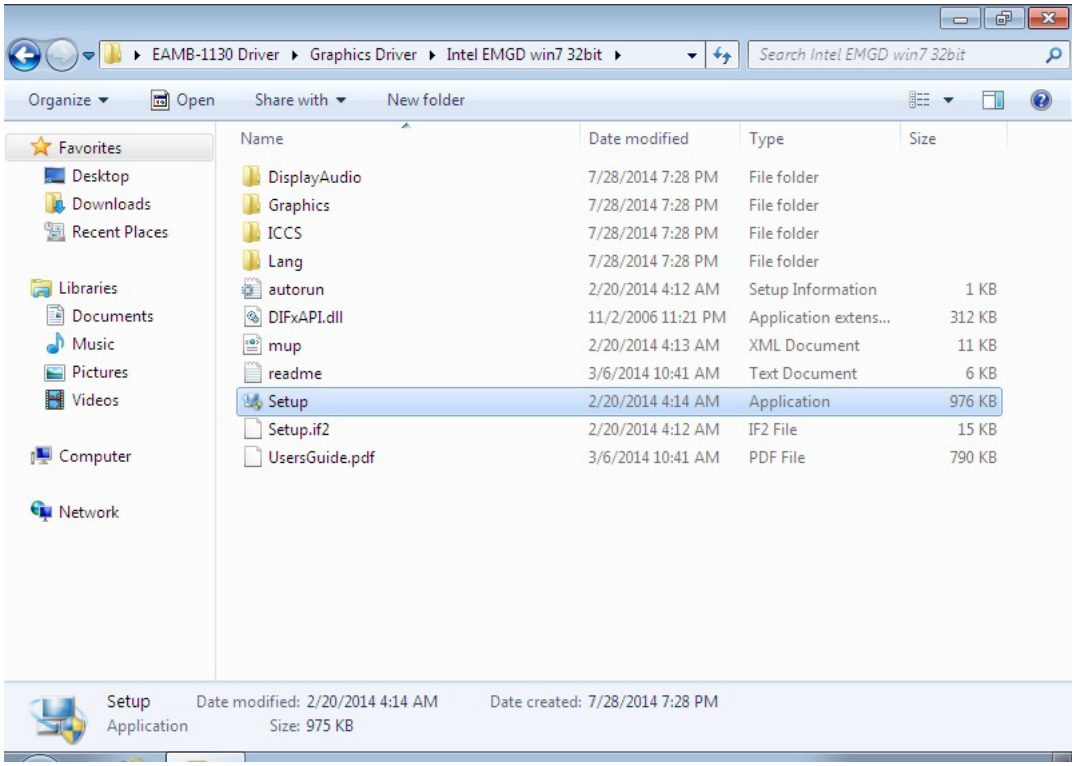
7. Choose **Yes**, then click **OK** to restart



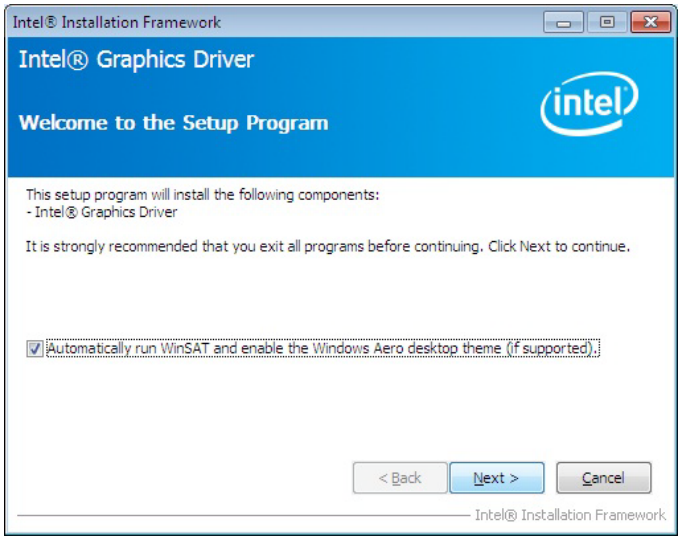
B.4 Intel Graphics Driver Installation

Follow the steps below to install the Intel Graphics driver:

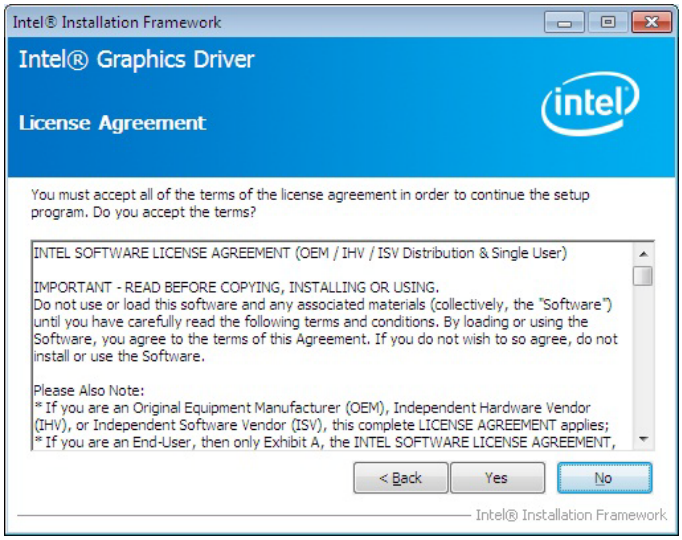
1. Launch folder \Graphics Driver\Intel EMGD win7 32 bit\
2. Install Setp.exe



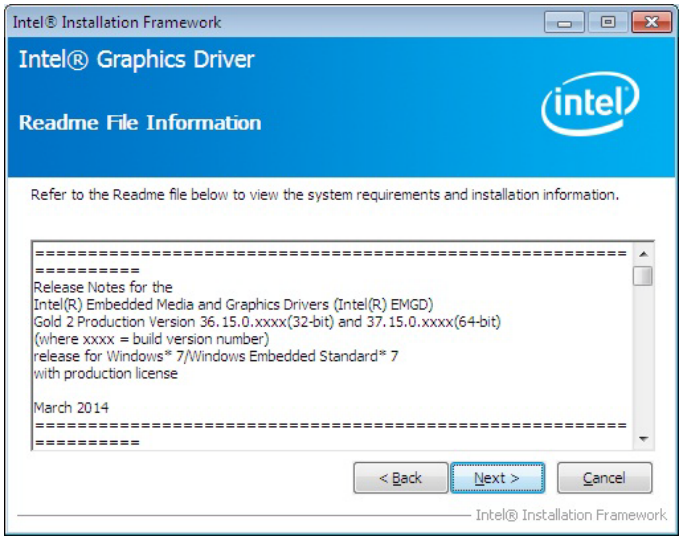
3. Click **Next**



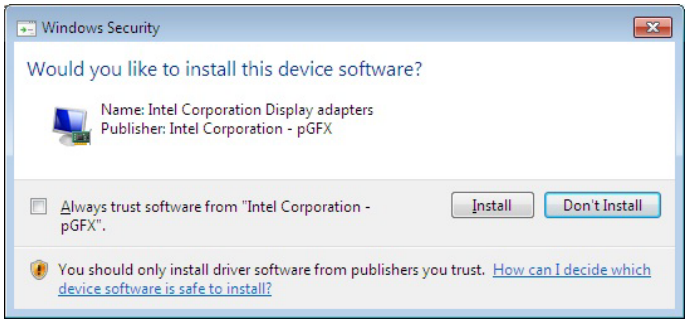
4. Click **Yes**



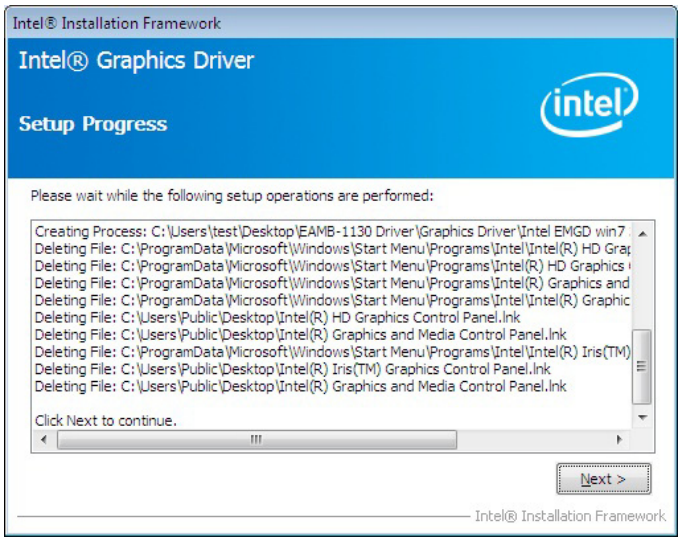
5. Click **Next**



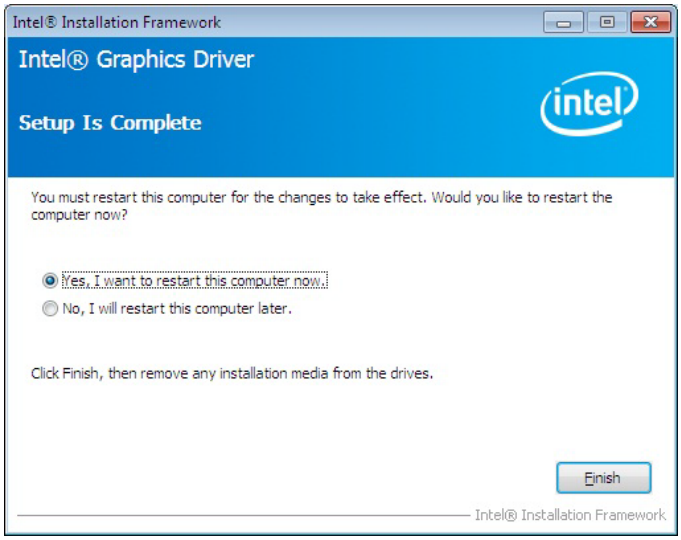
6. Click **Install**



7. Click **Next**



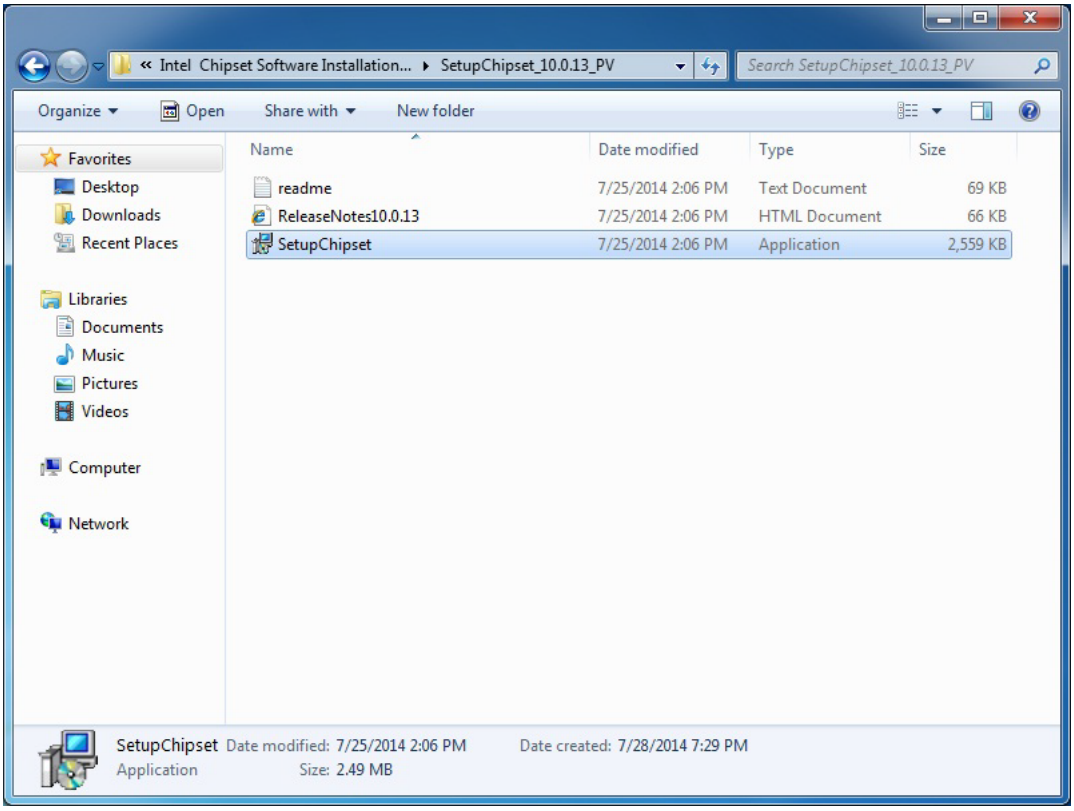
8. Choose **Yes**, then click **Finish** to restart



B.5 Intel Chipset Software Installation Utility Installation

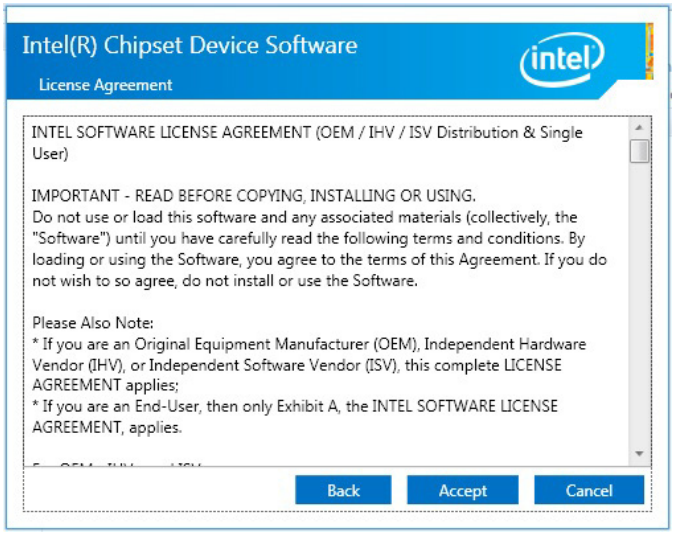
Follow the steps below to install the Intel Chipset Software Installation Utility:

1. Launch \Intel Chipset Software Installation Utility\SetupChipset_10.0.13_PV
2. Install SetupChipset.exe

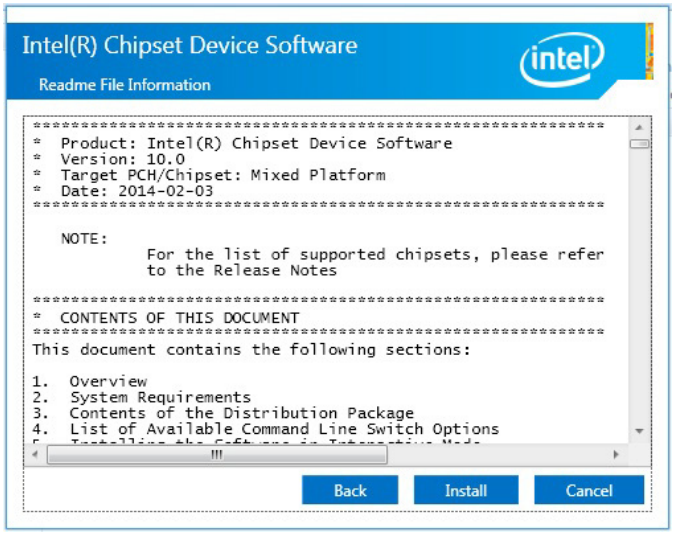


3. Click **Next**

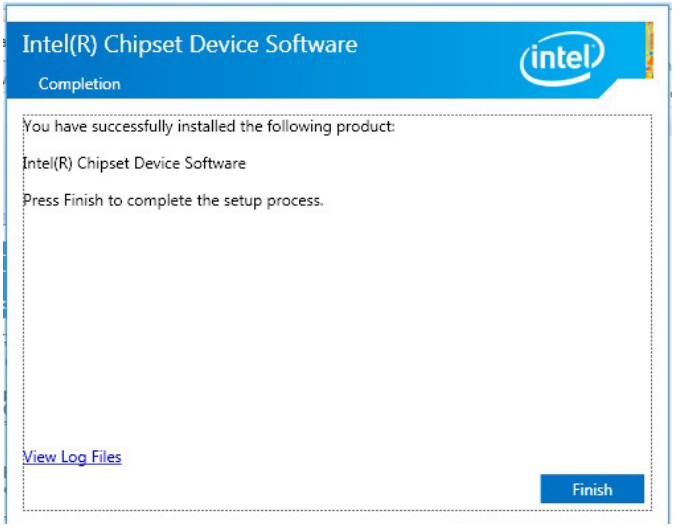
4. Click **Accept**



5. Click **Install**



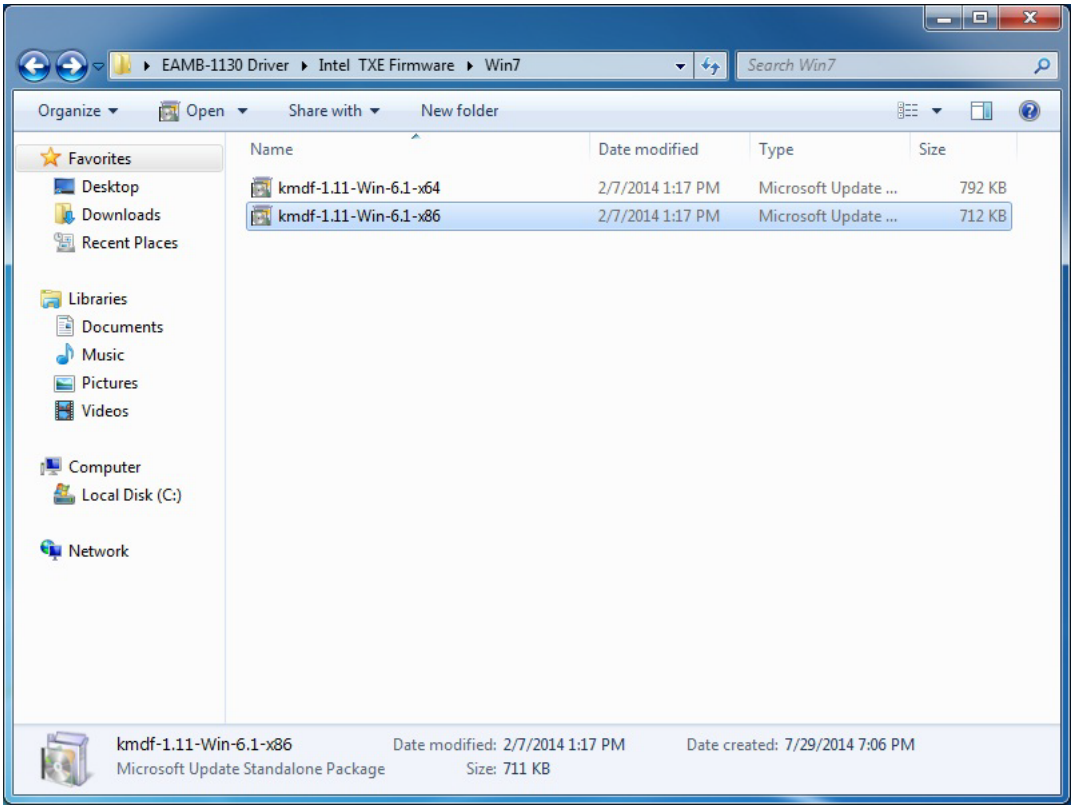
6. Click **Finish**



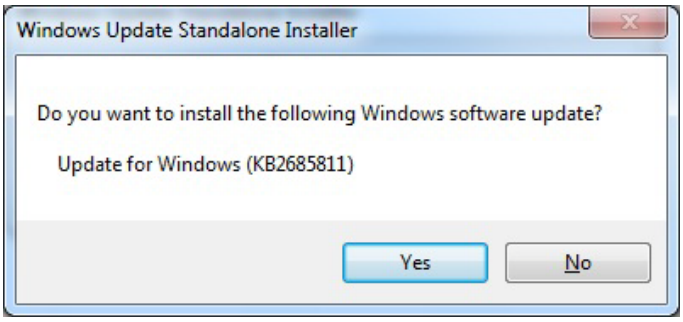
B.6 Intel® Trusted Execution Engine Driver Installation

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

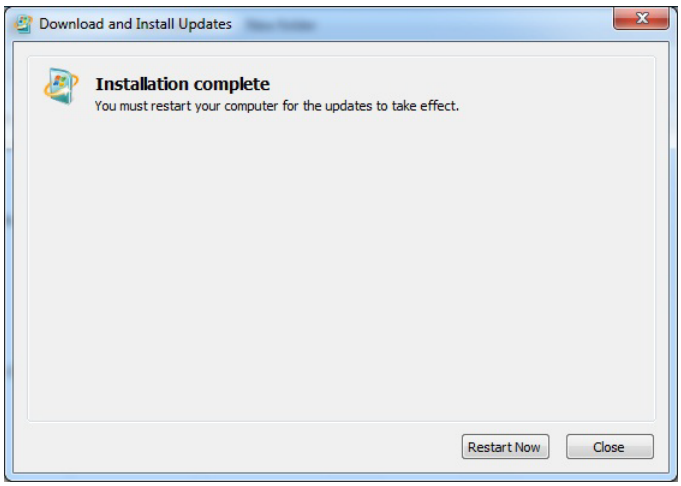
1. Launch folder \TXE\Intel TXE Firmware\Win7
2. Install kmdf-1.11-Win-6.1-x86.msu



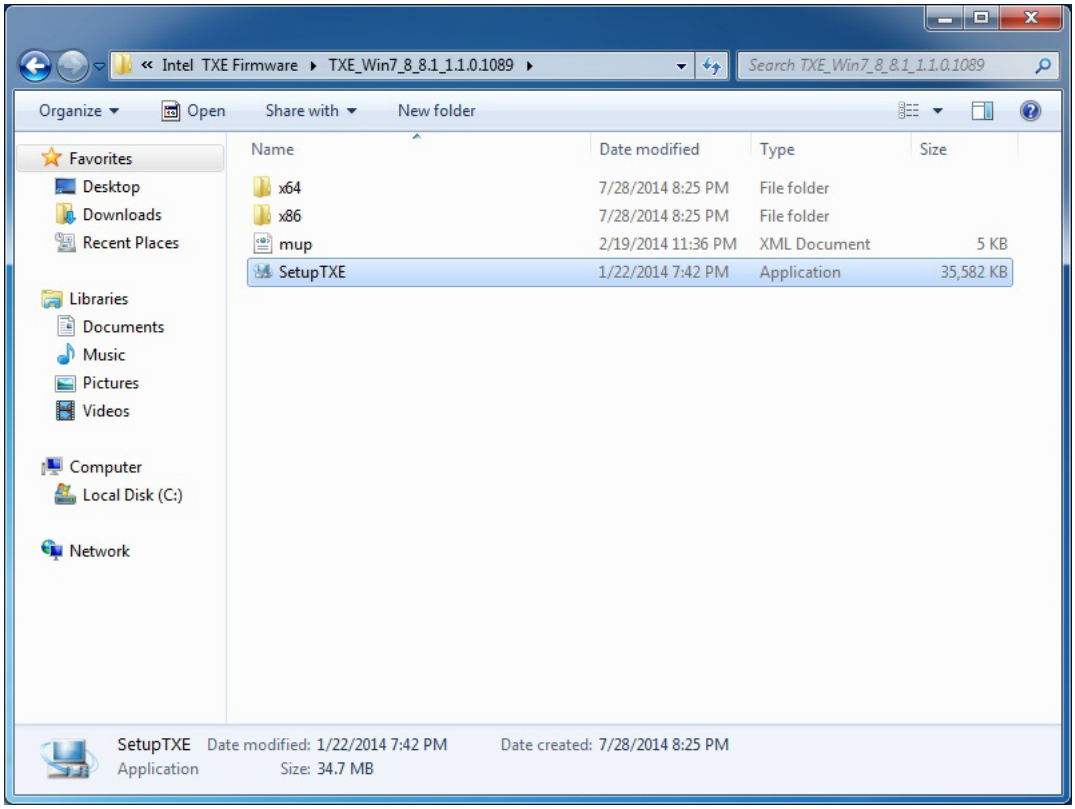
3. Click **Yes**



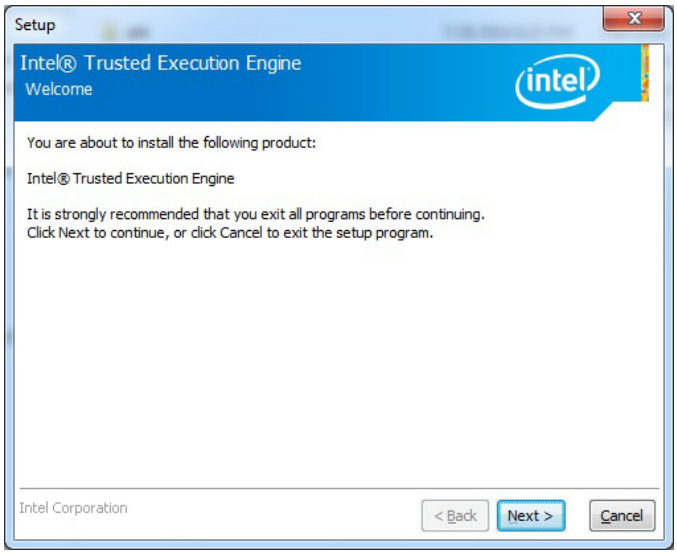
4. Click **Restart Now**, then the system will restart



5. Launch folder \\TXE\TXE_Win7_8_8.1_1.1.0.1089
6. Install SetupTXE.exe

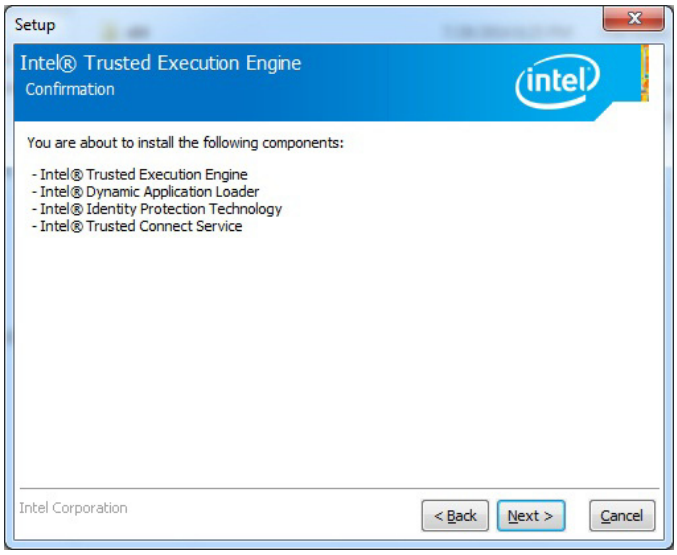


7. Click **Next**

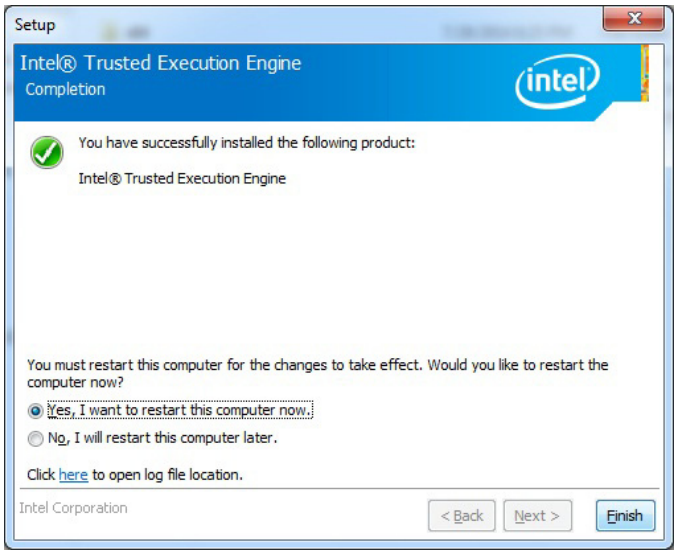


8. Click **Next**

9. Click Next



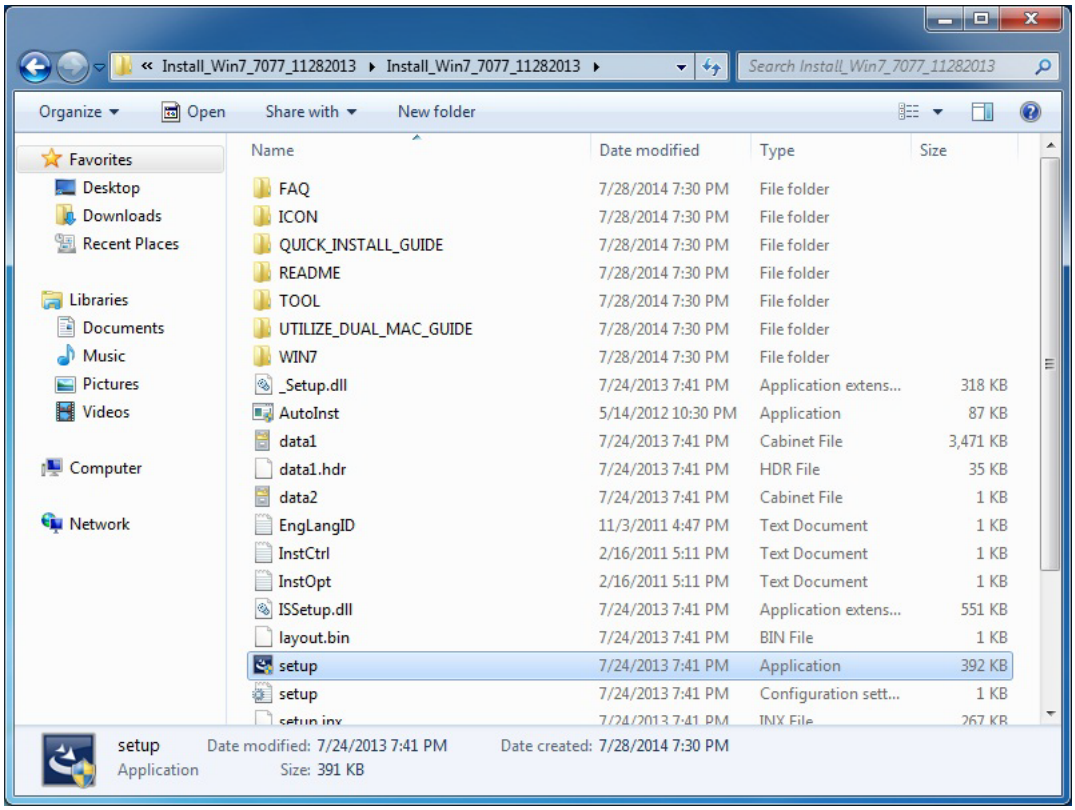
10. Choose **Yes**, then click **Finish** to restart.



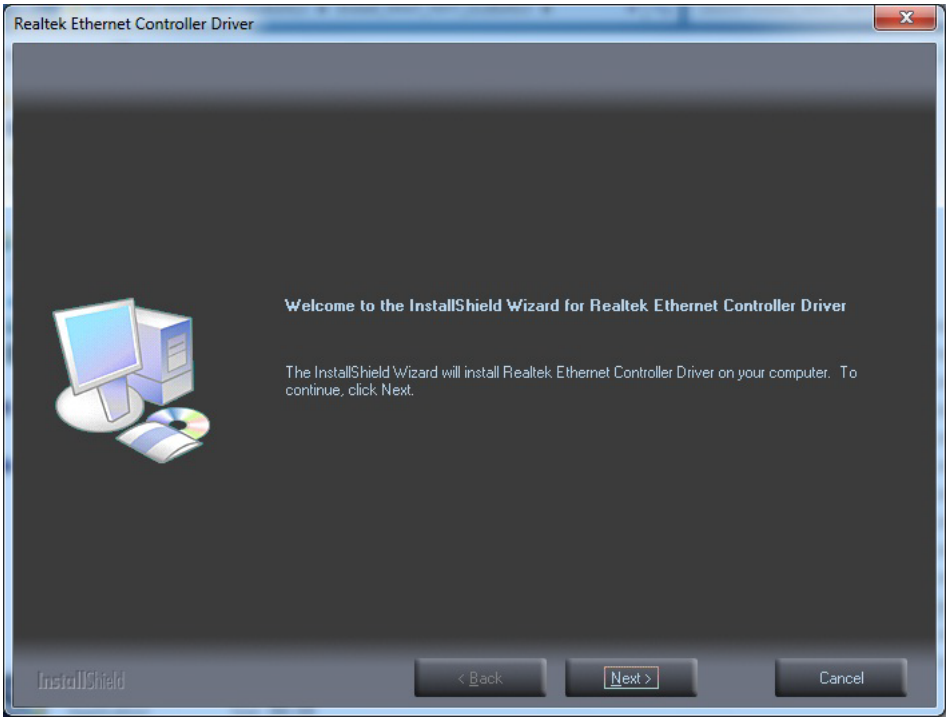
B.7 LAN Driver Installation

Follow the steps below to install the LAN driver:

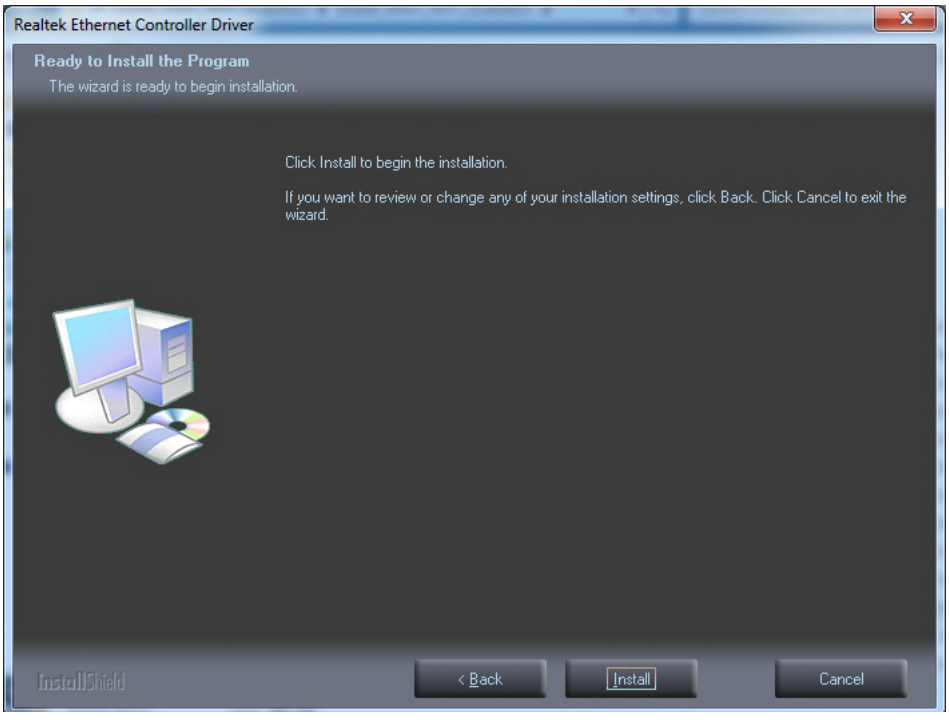
1. Launch folder \LAN\Win7 \Install_Win7_7077_11282013
2. Install setup.exe



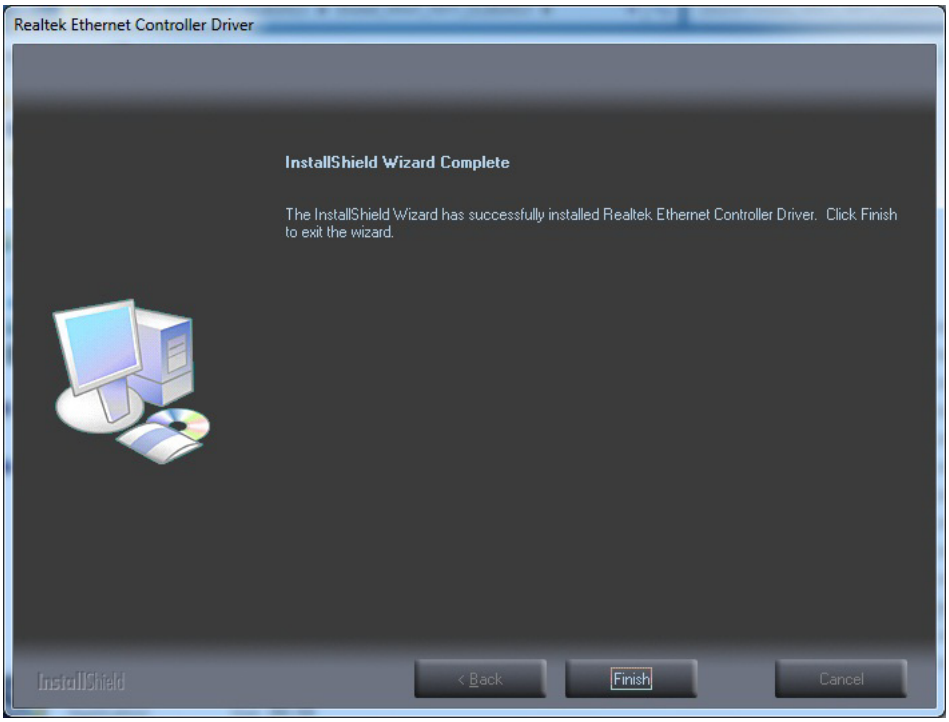
3. Click **Next**



4. Click **Install**



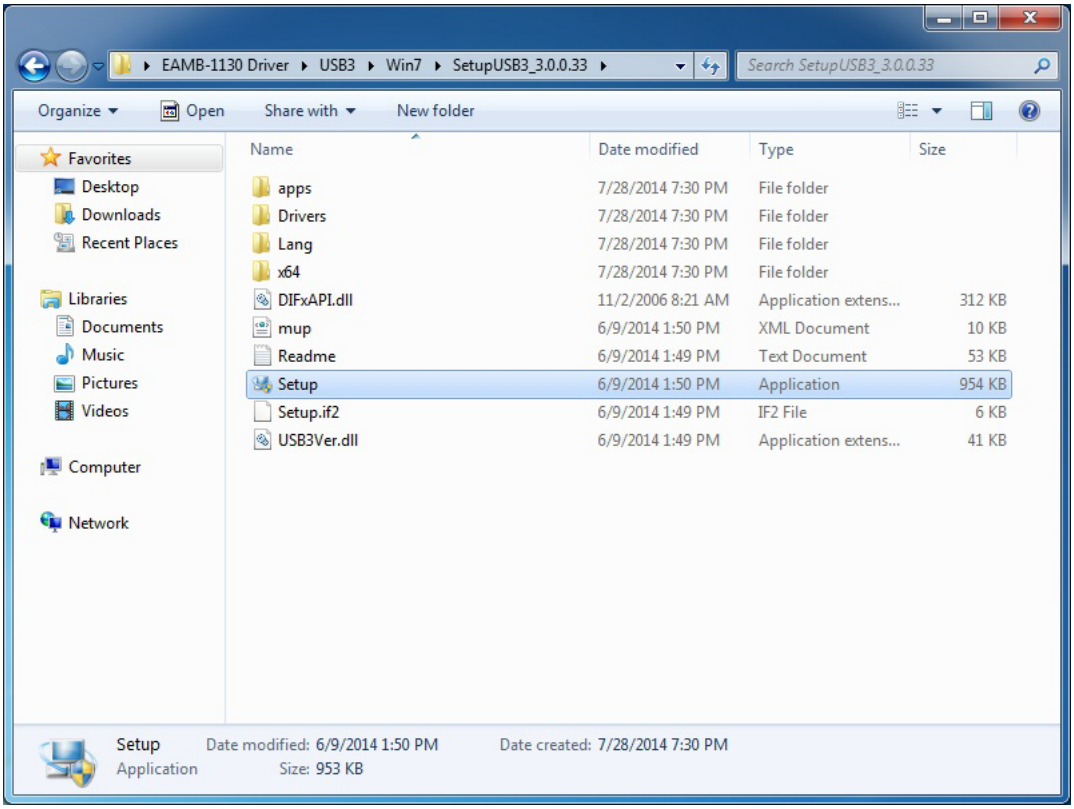
5. Click **Finish**



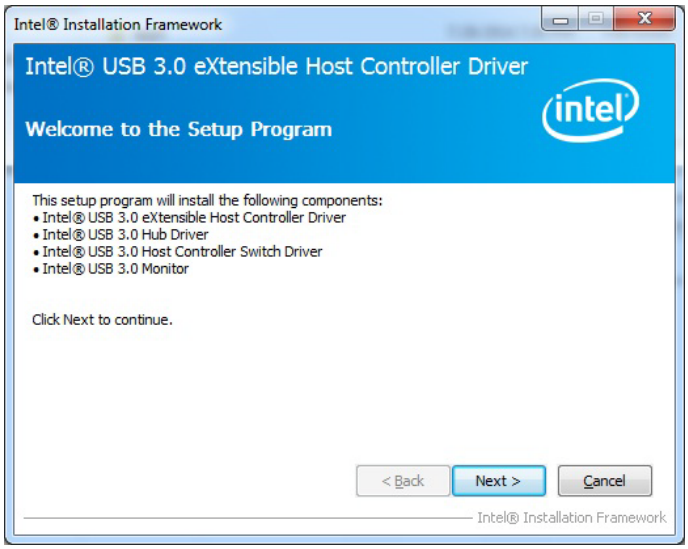
B.8 Windows 7 USB 3.0 Driver Installation

Follow the steps below to install the Windows 7 USB 3.0 driver:

1. Launch folder \USB3\Win7\SetupUSB3_3.0.0.33
2. Install Setup.exe

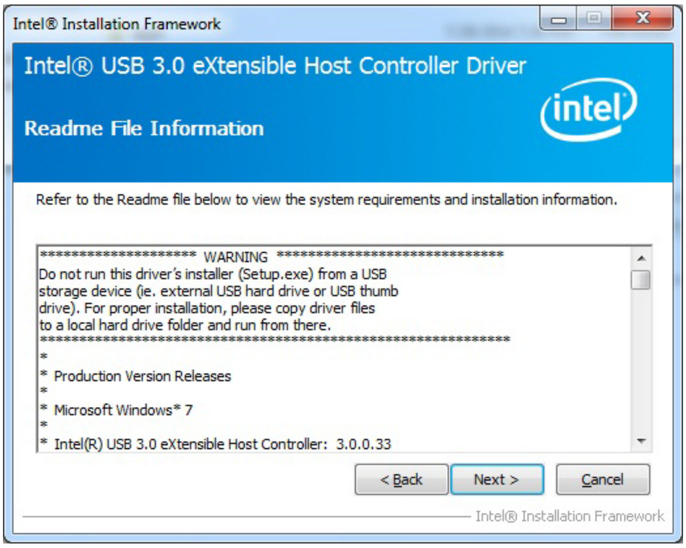


3. Click **Next**

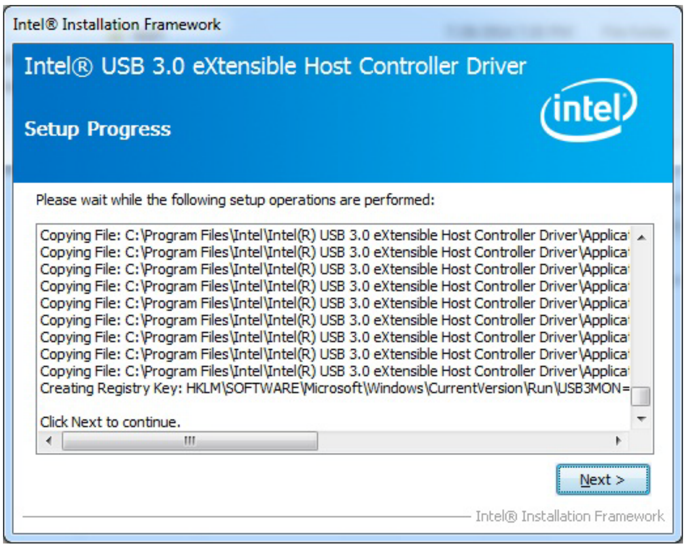


4. Click **Yes**

5. Click **Next**



6. Click **Next**

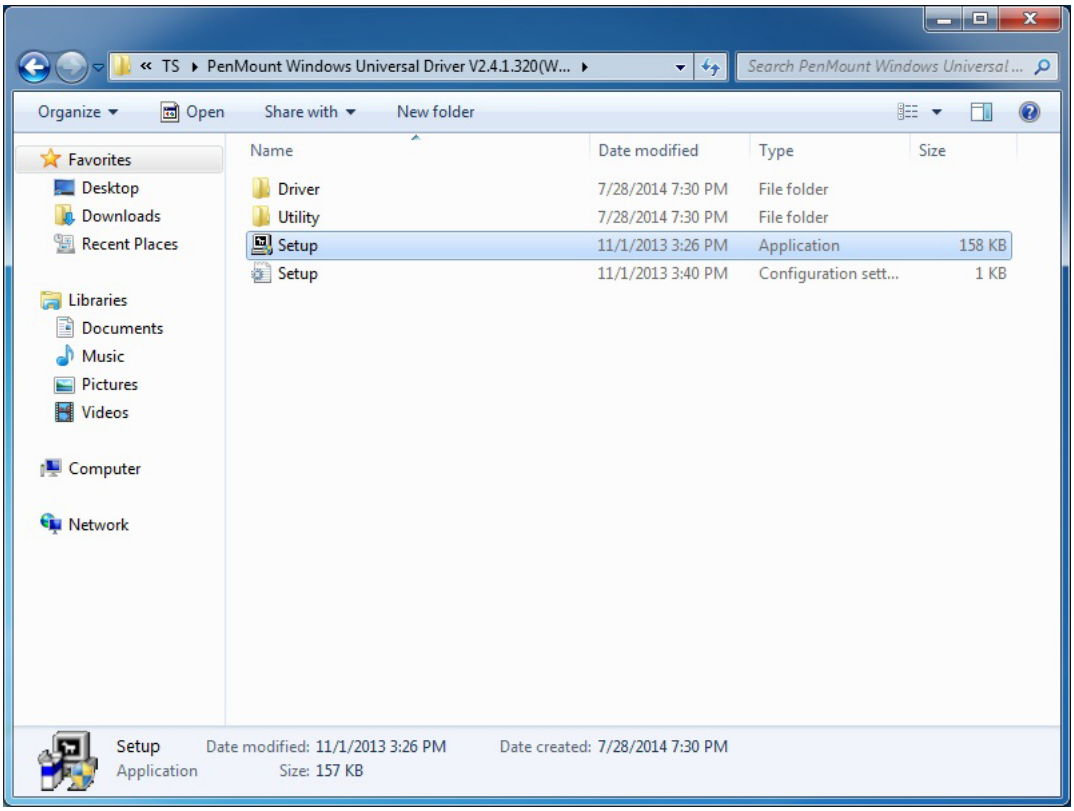


7. Choose **Yes**, then click **Finish** to restart

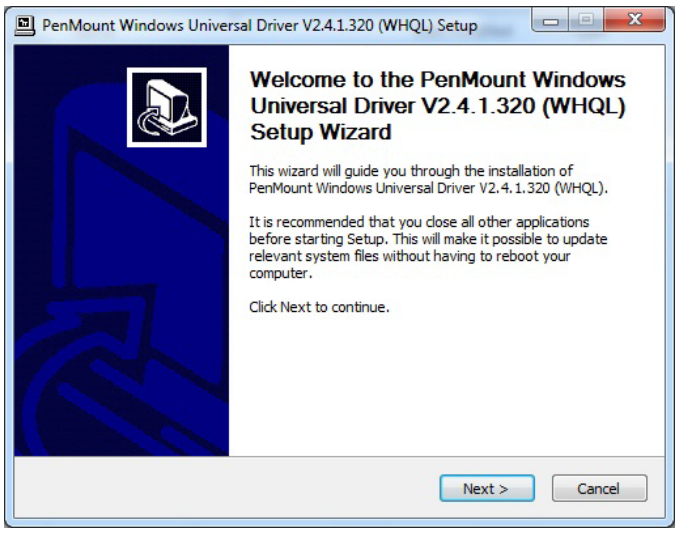
B.9 Touchscreen Driver Installation

Follow the steps below to install the touchscreen driver:

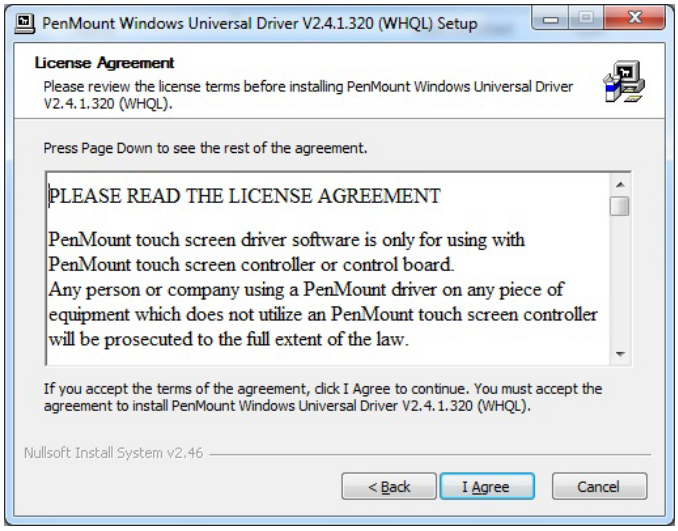
1. Launch folder \TS\PenMount Windows Universal Driver Vx.xx.xxxx(WHQL)
2. Install Setup.exe



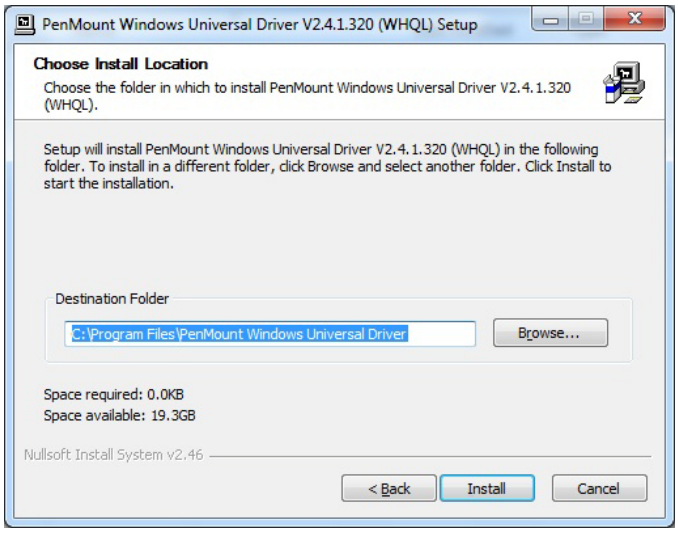
3. Click **Next**



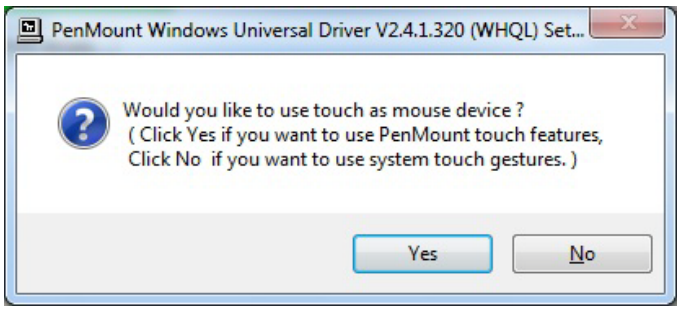
4. Click **I Agree**



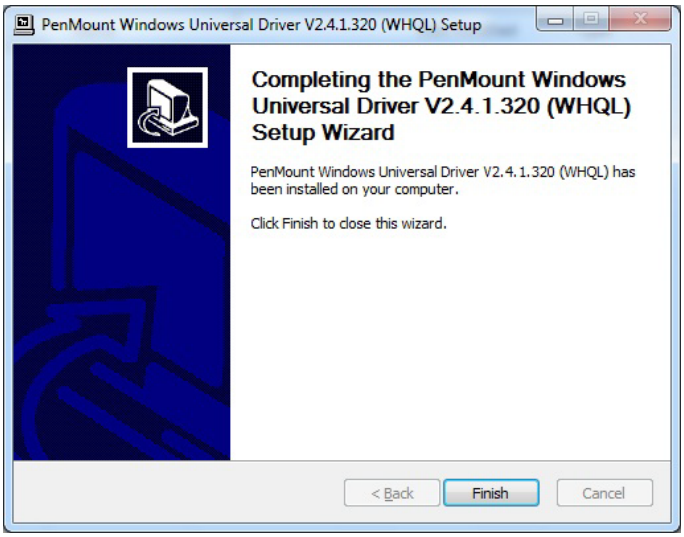
5. Click **Install**



6. Click **Finish**



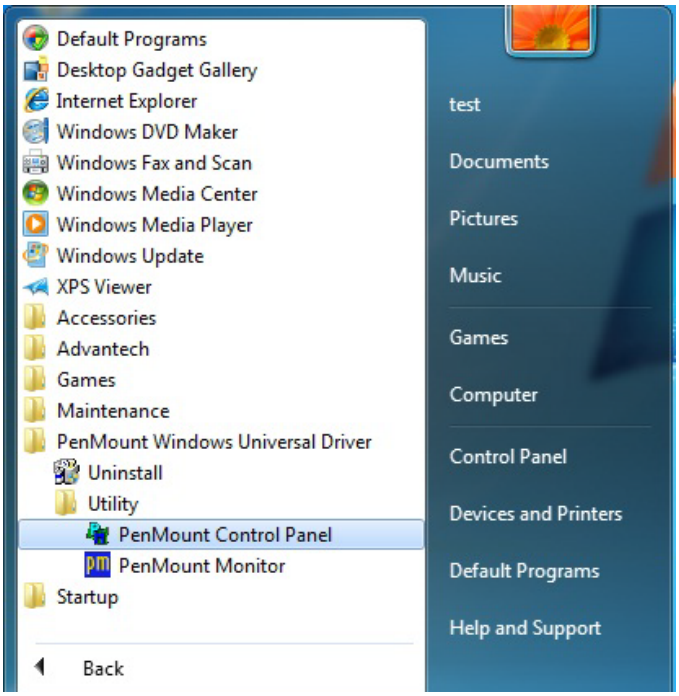
7. Click **Finish**



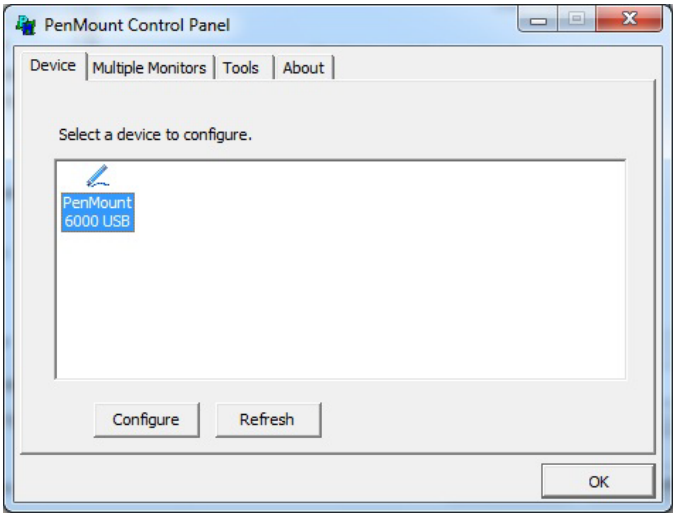
B.10 Touchscreen Calibration

Follow the steps below to install the touchscreen driver:

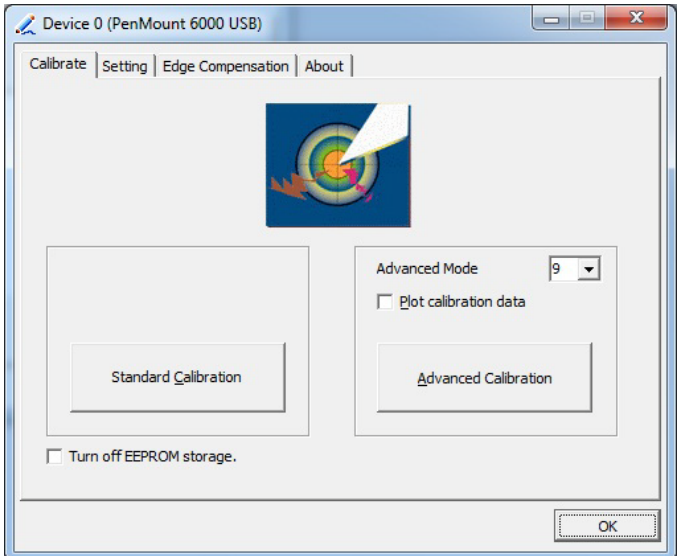
1. Launch PenMount Control Panel tool



2. Double click **PenMount 6000 USB**



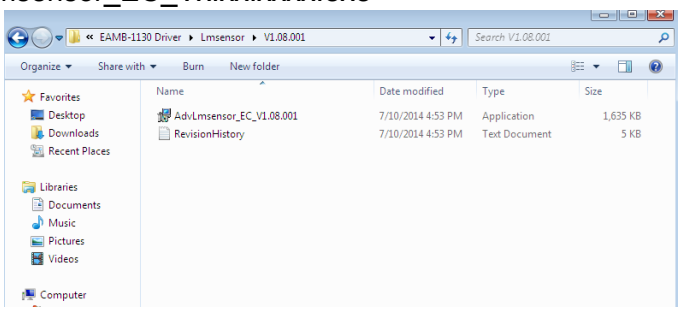
3. Follow the process to calibration touch screen
4. Click **OK** to finish calibration



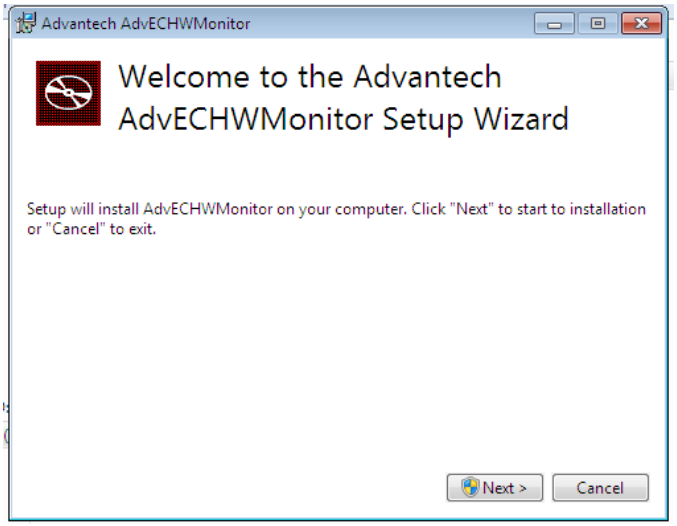
B.11 LMsensor Driver Installation

Follow the steps below to install the LMsensor driver:

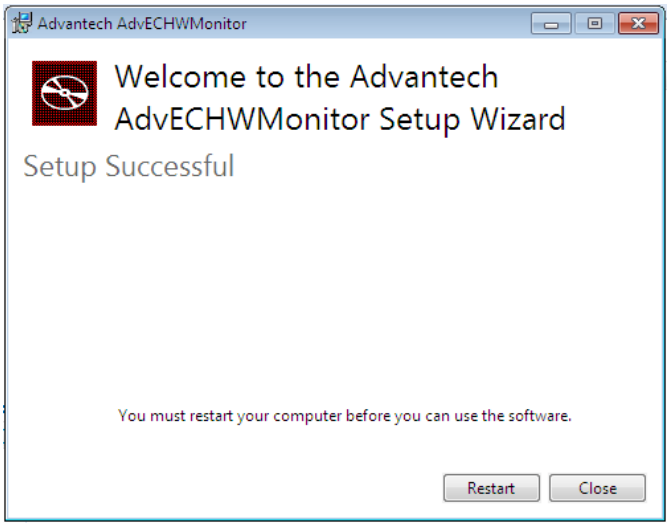
1. 1. Launch folder \Lmsensor\Vx.xx.xxxx
2. 2. Install Lmsensor_EC_Vx.xx.xxxx.exe



3. 3. Next



4. 4. Restart

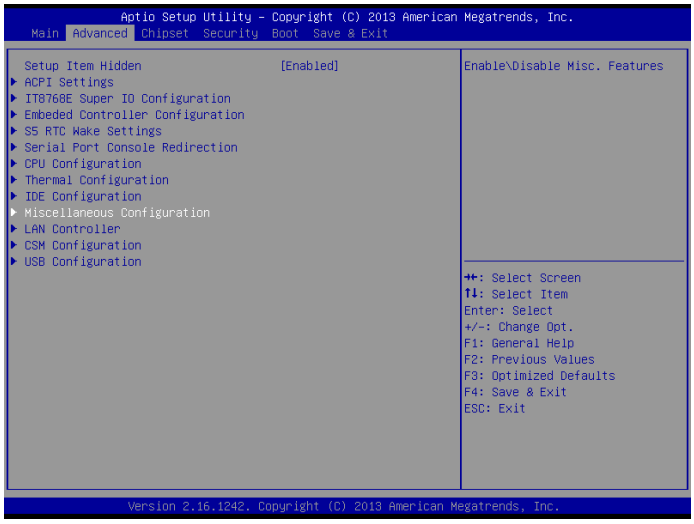


Appendix C

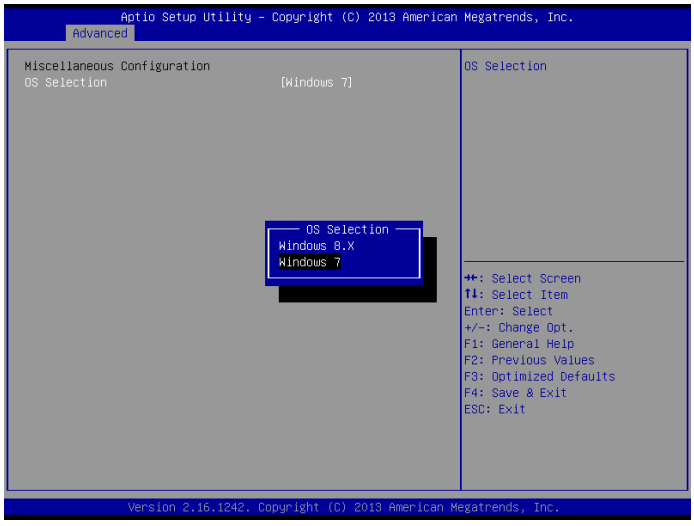
Windows 8.X BIOS Setup

C.1 Windows 8.X BIOS Setup

1. Entre BIOS setting menu then go to Advanced page for Miscellaneous Configuration



2. Select OS Selection to Widows 8.X



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