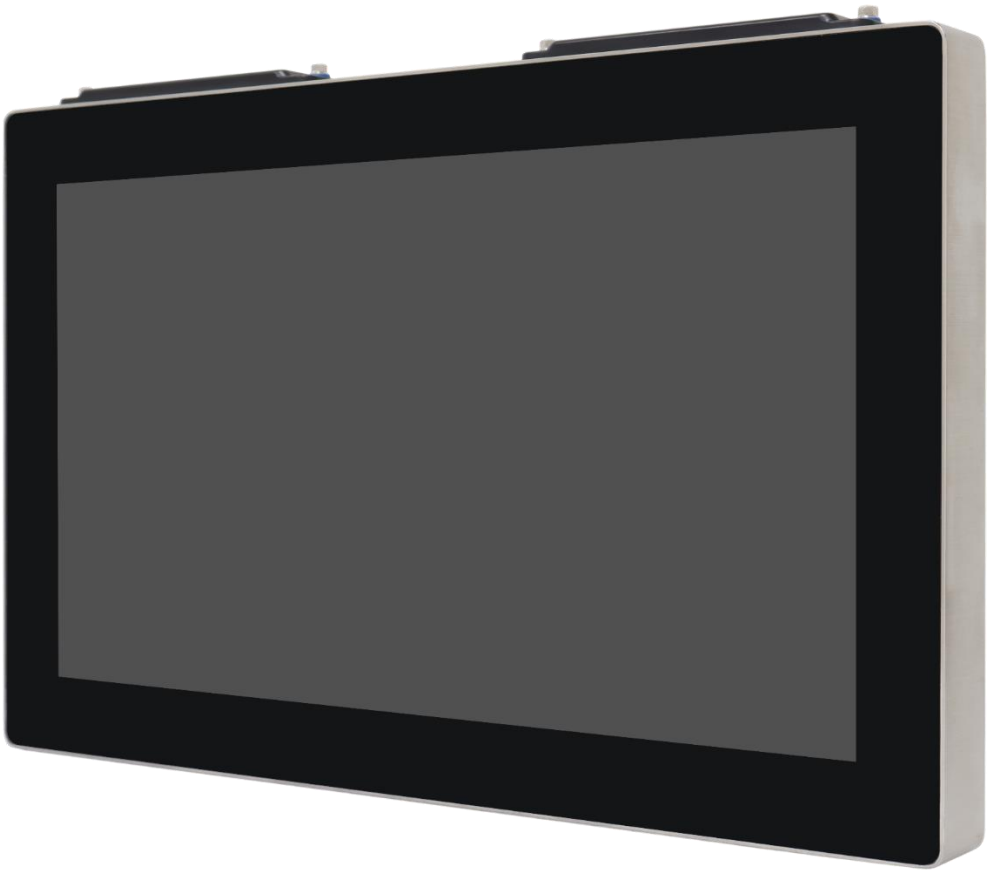

PHANTAM-8XXB Series

15.6”, 18.5” and 21.5” IP66/IP69K

Intel Elkhart Lake

Fanless Stainless Steel Panel PC

User Manual

Release Date	Revision
Nov.2023	V1.0

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Revision History

Reversion	Date	Description
1.0	2023/11/28	Initiation

Warning!_____

This equipment generates uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Electric Shock Hazard – Do not operate the machine with its back cover removed. There are dangerous high voltages inside.

Caution
Risk of explosion if the battery is replaced with an incorrect type.
Batteries should be recycled where possible. Disposal of used batteries must be in accordance with local environmental regulations.

Disclaimer
This information in this document is subject to change without notice. In no event shall Aplex Technology Inc. be liable for damages of any kind, whether incidental or consequential, arising from either the use or misuse of information in this document or in any related materials.

Safety Precautions

Follow the messages below to prevent your systems from damage:

- Avoid your system from static electricity on all occasions.
- Prevent electric shock. Don‘t touch any components of this card when the card is power-on. Always disconnect power when the system is not in use.
- Disconnect power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

Table of Contents

Figures

Chapter 1 System Product

1.1 Features

- 15.6”/18.5”/21.5” Stainless Steel Panel PC
- Intel® Atom® Elkhart Lake x6000 series, and Intel® Pentium® and Celeron® N and J series Processor
- IP66/69K Full-sealed with Anti-Corrosion Enclosure
- Gap-free sealing and Slim Front Frame architecture at front bezel
- Special Hygienic Screws on I/O cover
- Optional Robust Waterproof Wireless Antenna Cover and Air Pressure Balance Screw
- M12 Connectors with Waterproof cover and chain
- DC 9~36V wide-ranging power input
- Support VESA Mount or Swing ARM

1.2 Specifications

	PHANTAM-8XXB
System	
CPU	Intel®Celeron®J6412 (1.8GHz/2.60GHz, 1.5MB L2 cache, 10W TDP) **(default)**
Chipset	Integrated with SoC
Memory	Up to 32GB DDR4-3200 SDRAM (one SO-DIMM slot)
LVDS	1 x 24 bit Dual Channel onboard LVDS interface, up to 1920 x 1200@ 60Hz
IO Port	
USB	1 x M12 8pin for 2 x USB2.0 (TB-536-U2) with waterproof cap and chain
Serial/Parallel	1 x M12 8pin for COM1, RS-232/422/485 (Default RS-232) with waterproof cap and chain
LAN	1 x M12 8pin for LAN with waterproof cap and chain
Power	1 x Power Switch at rear side
Option	NFC module design at front side 2 x M12 Blank for option with waterproof cover and chain(Either two, priority: COM, USB, LAN) ● 2 x USB2.0 • 1 x USB3.2 Gen1 **(Down Drew I/O only)** ● 1 x GbE LAN • 1 x COM
Storage Space	
Storage	1 x M.2 B Key (SATA III), default support 2242(2280 for option, and can’t use TB-528 series at the same time)
Expansion	
Expansion Slot	● 1 x Full-size mini-PCIe slot for 4G/5G (PCIe3.0x1, USB2.0, SMBus) ● 1 x M.2 2230 E-Key socket for optional Wi-Fi/BT Module (PCIex3.0 x 1+USB2.0) ● 1 x Micro SIM slot
Touch Screen – Resistive Touch Window Type	
TS Control	PenMount 6000 on Board

Interface	USB
Light Transmission	Over 80%
Touch Screen – Projected Capacitive Type	
TS Control	Chip on tail
Interface	USB
Light Transmission	90%
Antenna	
Antenna	Option Wi-Fi/BT module and 2 x External antenna at rear side
RFID	
RFID	RFID module design on the front side by supporting Android and Linux driver or BSP module and porting by customer side or use Aplex-recommended module.
Power	
Power Input	DC 9~36V (onboard) 1 x M12-3pin for DC power with waterproof cover and chain 1 x Power Switch at rear side
Mechanical	
Mechanical Construction	304 Stainless Steel chassis (default) 316 Stainless Steel chassis (option)
Mounting	VESA 100 x 100mm Swing ARM for option
IP Rating	Total IP66/IP69K
Operating System Support	
OS Support	Windows 10 IoT Enterprise Windows 11 IoT SAC/PRO
Environmental	
Operating Temperature	0~50°C(-20℃ to 60℃ optional)
Storage Temperature	-30~70°C
Humidity	10 to 90% @ 40°C, non-condensing
Certification	CE / FCC Class A

1.3 Display

Standard LCD

	PHANTAM-816BP/R	PHANTAM-821BP/R
Display Type	15.6” TFT LCD	21.5” TFT LCD
Max. Resolution	1366 x 768 1920 x 1080	1920 x 1080
Max. Color	16.7M/16.7M	16.7M
Luminance(cd/m²)	400 nits 450 nits	250 nits
Contrast Ratio	500:1/800:1	1000:1
Viewing angle(H/V)	170 / 170	178/178
Backlight Lifetime (Hrs)	50,000	50,000
Power Consumption	MAX:39.73W	MAX:32.48W
Mounting(mm)	VESA 100 x 100 Swing ARM (option)	
Dimensions(mm)	404.4x255.4x64.5	540.4x332.4x61.9
Net Weight(Kg)	4.45	7.88

High Brightness LCD

	PHANTAM-816BP/RH	PHANTAM-821BP/RH
Display Type	15.6” TFT LCD	21.5” TFT LCD
Max. Resolution	1366 x 768 1920 x 1080	1920 x 1080
Max. Color	16.7M/16.7M	16.7M
Luminance(cd/m²)	1000 nits	1000 nits
Contrast Ratio	500:1/1000:1	1000:1
Viewing angle(H/V)	160 / 160 170 / 170	178/178
Backlight Lifetime (Hrs)	50,000	50,000
Power Consumption	MAX:39.73W	MAX:32.48W
Mounting	VESA 100 x 100 Swing ARM (option)	
Dimensions(mm)	403.4x254.4x64.9	540.4x332.4x61.9
Net Weight(Kg)	4.45	7.88

1.4 Dimensions

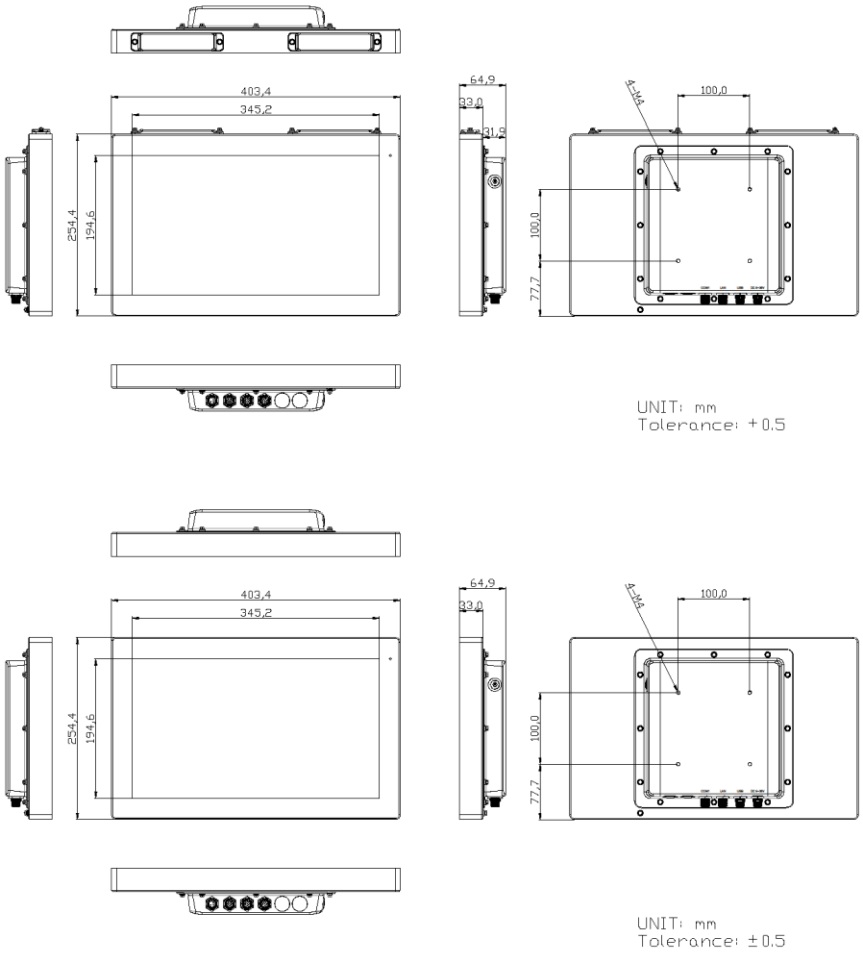


Figure 1 Dimensions of PHANTAM-816BP/BR(H)

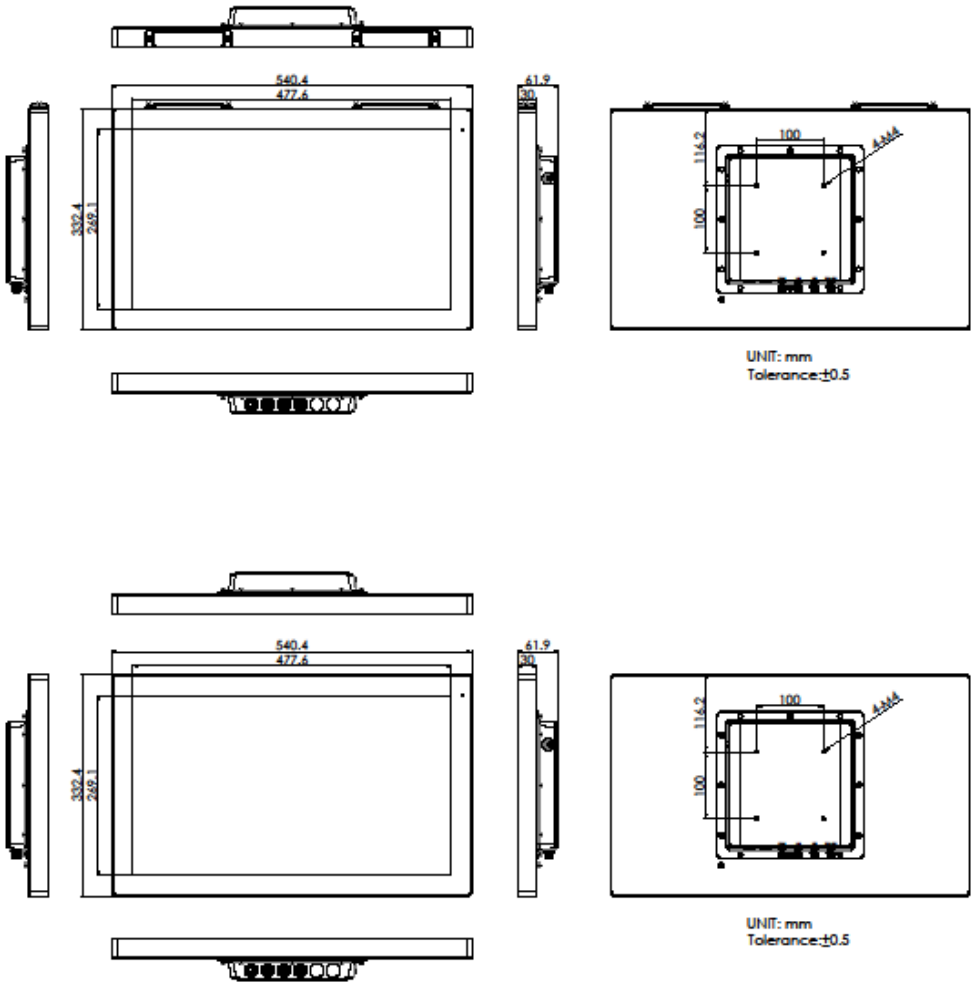


Figure 2 Dimensions of PHANTAM-821BP/BR(H)

1.5 Brief Description of PHANTAM-8XXB Series

There are 15.6” and 21.5” Stainless Steel Panel PC in PHANTAM-8XXB series, which comes with flat front panel design and Stainless Steel 304 Enclosure. It is powered by Intel® Atom® Elkhart Lake x6000 series, and Intel® Pentium® and Celeron® N and J series Processor, with one SO-DIMM DDR4 slot, up to 32GB 3200 MHz. These systems support DC 9~36V wide-ranging power input and IP66/IP69K front panel with M12 connectors. Projected capacitive touch support 7H anti-scratch surface is ideal for use as PC-based controller for Industrial Automation & Factory Automation. Furthermore, PHANTAM-8xxB Series are capable of expanding the function by option expansion, includes Mini-PCIe, CAN bus, POE, USB, and isolation I/O module to improve competitive advantage through providing critical flexibility and expansibility for the variety of application and requirement.

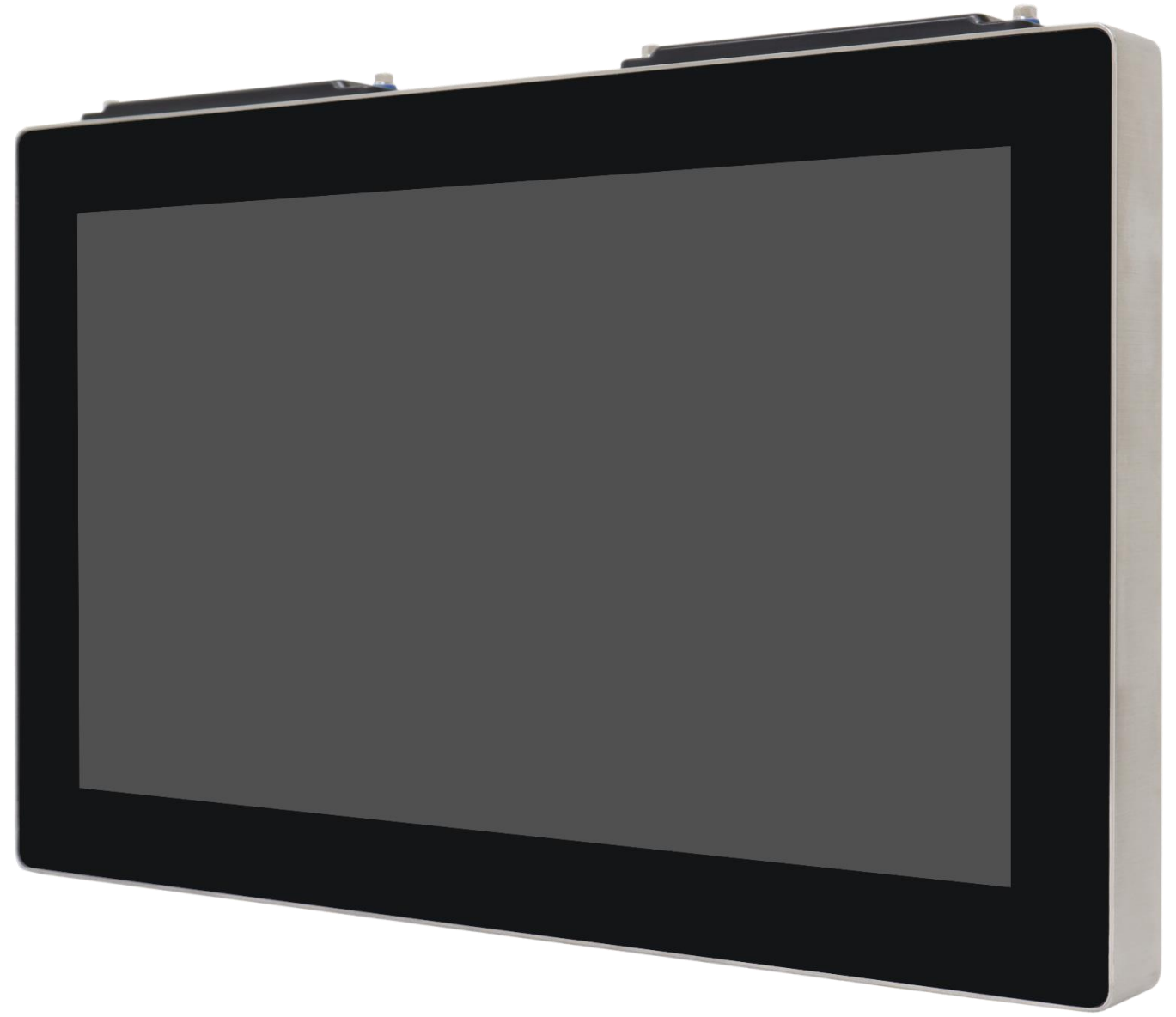


Figure 3 Front View of PHANTAM-816BP/BR(H)

Figure 4 Rear View of PHANTAM-816BP/BR(H)

Figure 5 Front View of PHANTAM-821BP/BR(H)

Figure 6 Rear View of PHANTAM-821BP/BR(H)

1.6 VESA Mount and SWING ARM

The PHANTAM-8xxB series is designed to be VESA mount and SWING ARM as shown in pictures below.

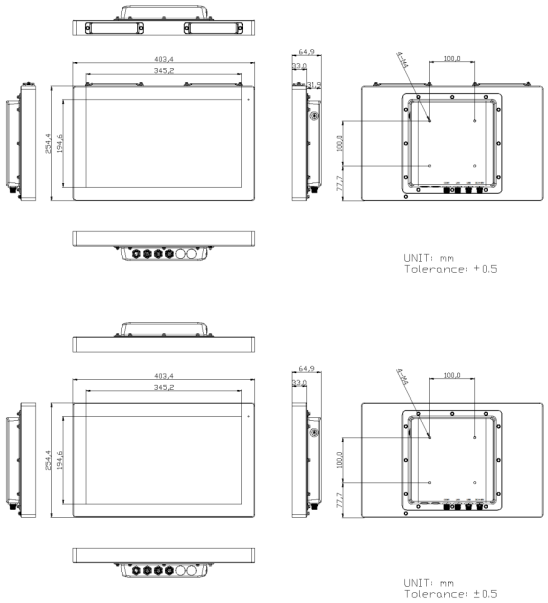


Figure 7 PHANTAM-8XXB VESA MOUNT

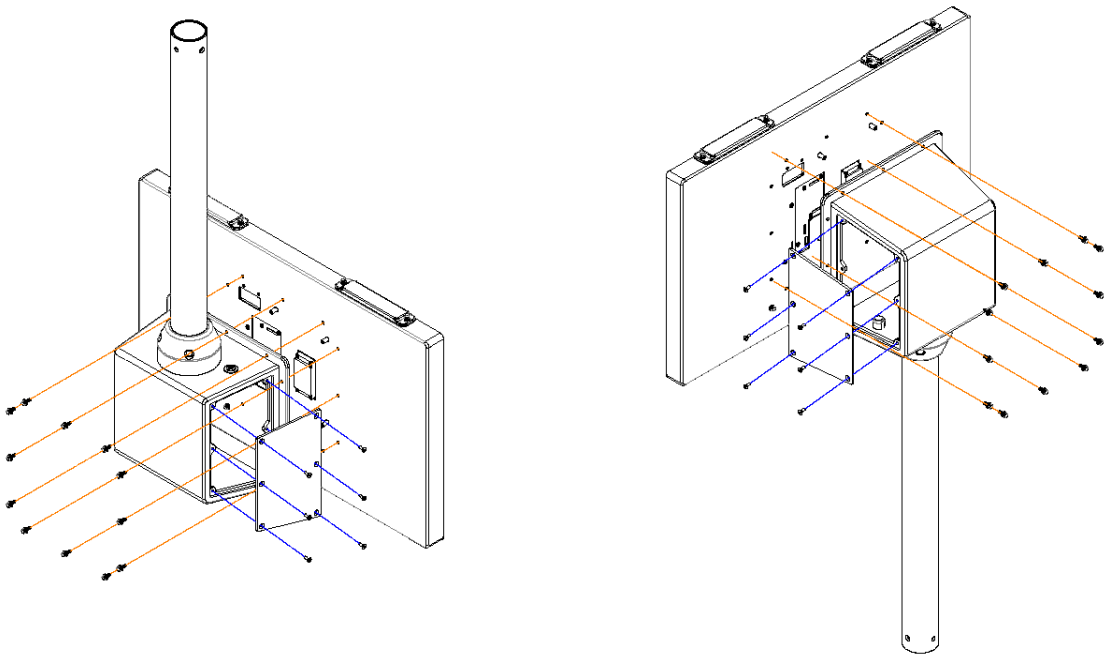


Figure 8 PHANTAM-8XXB SWING ARM

Chapter 2 Hardware

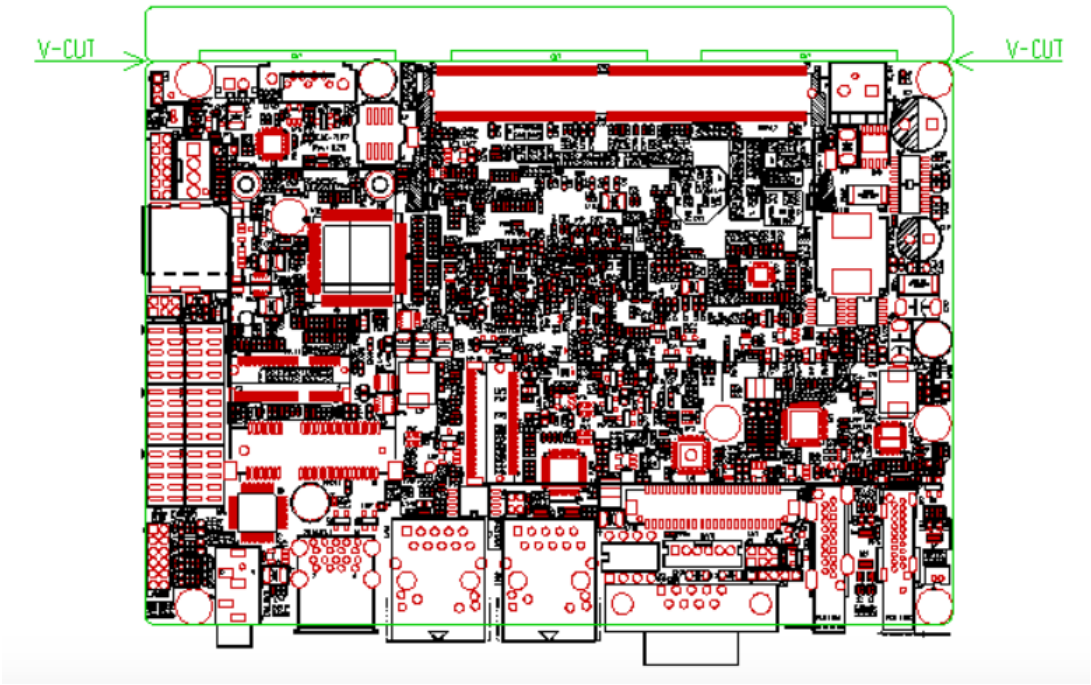
SBC-7127 is a 3.5” industrial motherboard developed on the basis of Intel Elkhart Lake, which provides abundant peripheral interfaces to meet the needs of different customers. Also, it features two GbE ports, 4-COM ports and one Mini PCIE and one M.2 2230 configuration. To satisfy the special needs of high-end customers, due to its compact size, the product is widely used in various sectors of industrial control.

2.1 Specifications

Specifications	
Board Size	146mm x 101.6mm
CPU Support	Intel Celeron J6412 Processor,2.0GHz up to 2.60GHz,10W Intel Atom x6425E Processor,2.0GHz up to 3.00GHz,12W (option)
Chipset	SoC
Memory Support	1x SO-DIMM (260pins), up to 32GB DDR4 3200MT/s
Graphics	Integrated Intel UHD Graphics 400/800 MHz (J6412) Integrated Intel UHD Graphics 500/750 MHz (x6425E)
Display Mode	1 x DisplayPort1.4, DP++ via DP Port 1 x HDMI1.4b via HDMI Port 1 x LVDS (18/24-bit dual LVDS)
Support Resolution	DP: support up to 4096 x 2160 @60Hz HDMI: support up to 3840x2160@30Hz LVDS: support up to 1920 x 1200
Super I/O	ITE IT8786E-I/HX
BIOS	AMI/UEFI BIOS
Storage	1 x SATAIII via 7pin SATA connector 1 x M.2 B-Key(SATA III/PCIe auto detect),2242/2280 for Storage
Ethernet	1 x 10/100/GbE LAN via intel® I210-AT controller (PXE/WoL) 1 x 10/100/1000/2.5GbE LAN via intel® I225-LM/I226-LM controller (PXE/WoL)
USB	2 x USB3.2 gen2/USB2.0,Type-A stack ports (USB3_1) 2 x USB2.0 via pitch 2.0mm 2x5pin header (USB1) 2 x USB2.0 via pitch 2.0mm 2x5pin header (USB2) 1 x USB2.0 for touch screen (CN3) 1x USB2.0 for MPCIE1 1x USB2.0 for M2_E1

Serial	1 x RS-232(default)/422/485, signals select via BIOS (COM1), pin9 RI(default)/5V/12V, select via JP1. (DB9, COM1) 1 x RS-232 via pitch 2.0mm 2x5pin header, pin9 RI(default)/5V/12V, select via JP2 (COM2) 2 x 2wired RS485 via pitch 2.0mm 2x5pin header (COM3)
GPIO	8-bit digital I/O by Pin header (GPIO2) 4-bit digital Input 4-bit digital Output
Audio	Support Audio via Realtek ALC888S-VD2 HD audio codec 1x Line out via 3.5mm audio jack Support Line-in,Line-out,MIC by 2x6-pin header
Expansion Slots	1 x full-sized mini-PCI-express slot (MPCIE1) with micro SIM slot (SIM1) 1 x M.2 E-Key(PCIex1,USB2.0),2230 for WIFI/BT module
FAN	1x 4pin fan connector
Watchdog Timer	Software programmable 1–255 level
TPM	-Onboard TPM IC Infineon_SLB9670AQ2.0 -Support fTPM, select via BIOS
Switches and LED Indicators	Power button/reset button/power LED/HDD LED/buzzer via pitch 2.0mm 2x5pin header (FP1)
Battery	Support 3V RTC Li-battery via 2pin wafer (BAT1)
Power Management	Wide range DC 9~36V±10% power input via 2pin terminal block
Temperature	Operating: -20℃ to 70℃ Storage: -40℃ to 85℃
Humidity	10% - 90%, non-condensing, operating
Certifications	Meet CE/FCC class A UL RoHS2.0

2.2 Board Dimensions

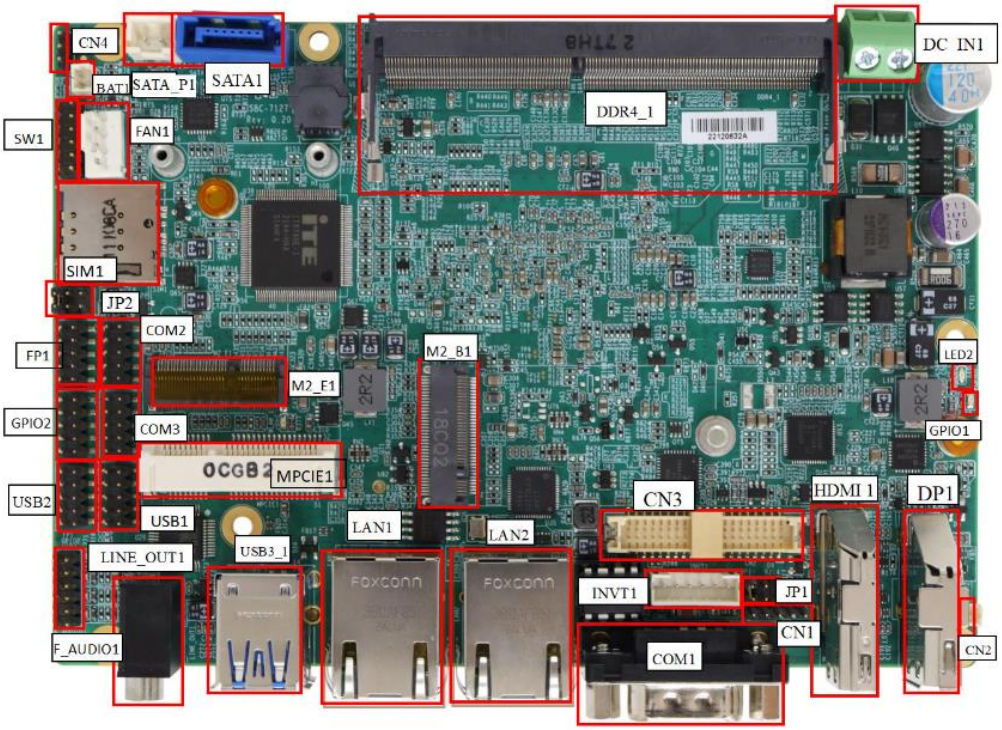


(units :mm)

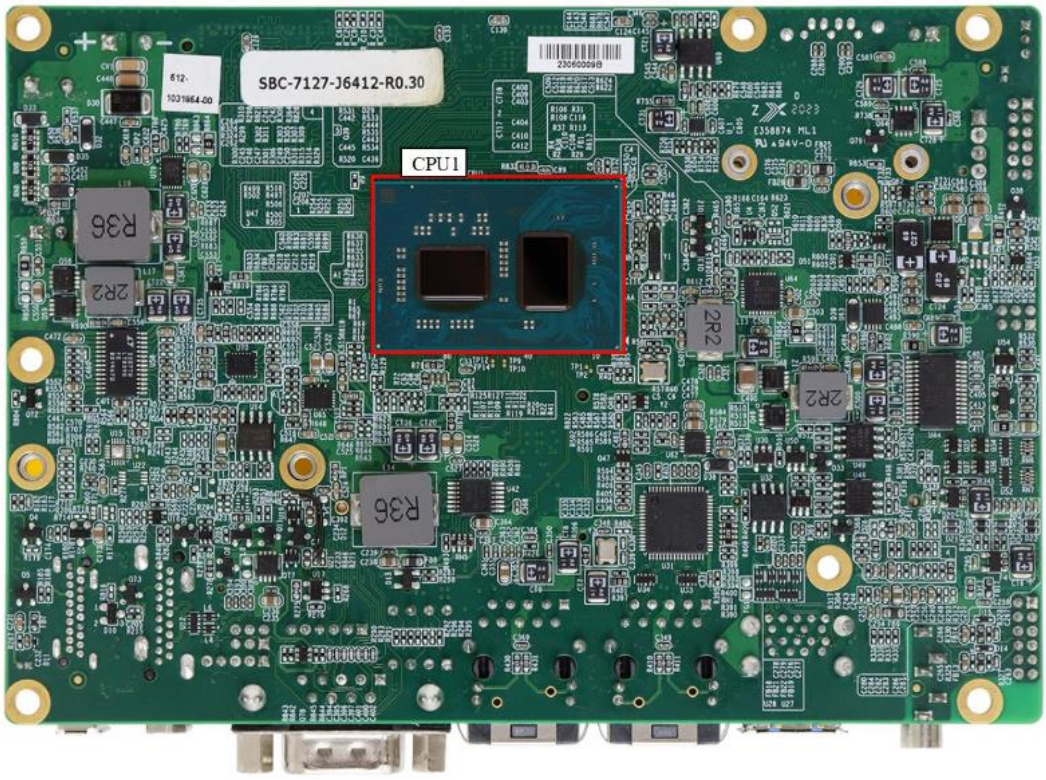
Figure 2.1: Board Dimension of SBC-7127

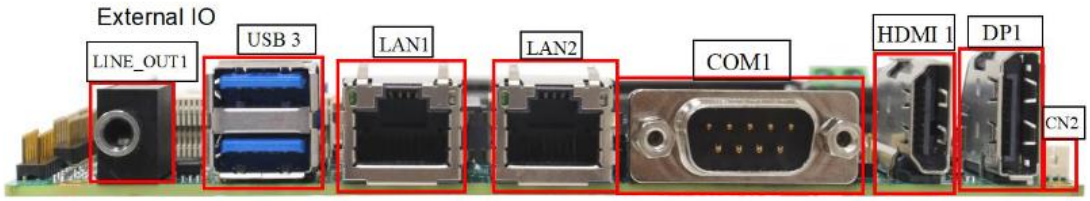
2.3 Jumpers and Connectors Location

Board Top



Board Bottom





2.4 Jumpers Setting and Connectors

1. CPU1:

(FCBGA1493) Onboard Intel Elkhart Lake SoC.

Model	SoC				
	Number	PBF	Cores/ Threads	TDP	Remarks
SBC-7127-J6412	J6412	2.0~2.6GHz	4 / 4	10W	Default
SBC-7127-X6425E	X6425E	2.0~3.0GHz	4 / 4	12W	Option

2. DDR4_1:

(SO-DIMM 260Pin slot) DDR4 memory socket, the socket is located at the top of the board and supports 260Pin 1.2V DDR4 SO-DIMM memory module up to 32GB.

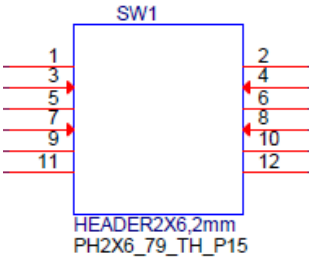
Max Memory Size (dependent on memory type).

3. BAT1:

(1.25mm Pitch 1x2 wafer Pin Header) 3.0V Li battery is embedded to provide power for CMOS.

Pin#	Signal Name
Pin1	VCC_RTC
Pin2	GND

4. SW1:



(2.00mm Pitch 2x6 Pin Header) Power mode and LVDS setting.

Switch	Open	Close
Pin1-2	Default, PWRBTN-ON	Auto-PSON
Pin3-4	ATX Mode	Default, AT Mode
Pin5-6	Default, Normal	Close 1sec to Clear CMOS
Pin7-8	Default, Normal	Write EDID
Pin9-10	Default, LVDS Dual CH.	LVDS Single CH.
Pin11-12	Default, LVDS 6 bit Signal	LVDS 8 bit Signal

CMOS clear switch, CMOS clear operation will permanently reset old BIOS settings to factory defaults.

Procedures of CMOS clear:

a) Turn off the system and unplug the power cord from the power outlet.

b) To clear the CMOS settings, close Pin5-6 for 1 second

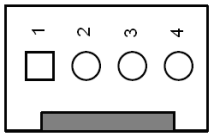
c) Power on the system again.

d) When entering the POST screen, press the <DEL> key to enter CMOS Setup Utility to load optimal defaults.

e) After the above operations, save changes and exit BIOS Setup.

5. FAN1:

(2.54mm Pitch 1x4 Pin Header) Fan connector, cooling fans can be connected directly for use. You may set the rotation condition of cooling fan in menu of BIOS CMOS Setup.



Pin#	Signal Name
1	GND
2	VCC(12V_S0)
3	CPU_FANTACH
4	CPU_FANPWM

Note:

Output power of cooling fan must be limited under 5W.

6. DC_IN1:

(5.08mm Pitch 1x2 Pin Connector) DC9~36V System power input connector.

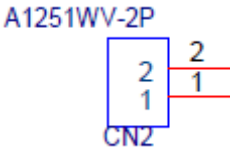
Pin#	Power Input
Pin1	DC_IN+ (DC+9V~36V)
Pin2	DC_IN- (Ground)

7. CN1:

(2.00mm Pitch 1x4 Pin Header) For onboard MCU service.

Pin#	Signals
1	GND
2	nRST
3	TICECLK
4	TICECDAT

8. CN2:



(1.25mm Pitch 2-Pin Wafer) Connect to ambient light sensor to support auto light sensing function.

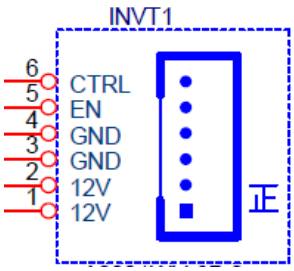
Pin#	Signals
1	ALS
2	MCU_PWR

9. CN3:

(1.25mm Pitch 2x20 Connector, DF13-40P) Support 18/24-bit LVDS interface LCM with USB2.0 signal for touch screen.

Function	Signal Name	Pin#		Signal Name	Function
DC12V	12V_S0	2	1	12V_S0	DC12V
LVDS Signals	BKLT_EN_OUT	4	3	BKLT_CTRL	LVDS Signals
	GND	6	5	GND	
	LVDS_VDD5	8	7	LVDS_VDD5	
	LVDS_VDD3	10	9	LVDS_VDD3	
	GND	12	11	GND	
	LA_D0_P	14	13	LA_D0_N	
	LA_D1_P	16	15	LA_D1_N	
	LA_D2_P	18	17	LA_D2_N	
	LA_D3_P	20	19	LA_D3_N	
	LA_CLKP	22	21	LA_CLKN	
	LB_D0_P	24	23	LB_D0_N	
	LB_D1_P	26	25	LB_D1_N	
	LB_D2_P	28	27	LB_D2_N	
	LB_D3_P	30	29	LB_D3_N	
	LB_CLKP	32	31	LB_CLKN	
USB3	GND	34	33	GND	USB3
	USB3_CN3_P	36	35	USB3_CN3_N	
	5V_S5	38	37	5V_S5	
Power LED+	PWR_LED+	40	39	GND	Power LED-

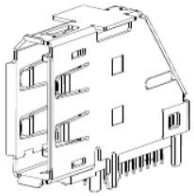
10. INVT1:



(2.0mm Pitch 1x8 wafer Pin Header) Provide backlight power & control for LVDS.

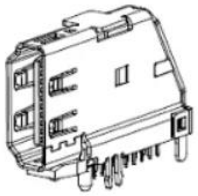
Pin#	Signal Name
1	12V_S0
2	12V_S0
3	GND
4	GND
5	BKLT_EN_OUT
6	BKLT_CTRL

11. DP1:



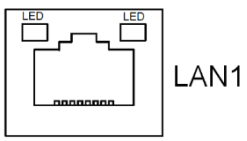
(Vertical DP Connector) DisplayPort Interface connector.
DisplayPort 1.4, DP++ support resolution up to 4096x2160@60Hz.

12. HDMI1:



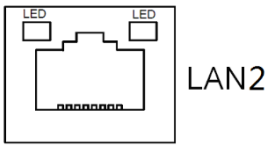
(Vertical HDMI Connector) HDMI Interface connector.
HDMI 1.4, Support resolution up to 3840x2160@30H.

13. LAN1:



(RJ45 Connector) Provide 10/100/GbE LAN via Intel® I210-AT.

14. LAN2：



(RJ45 Connector) Provide 10/100/1000/2.5GbE LAN via Intel® I225-LM/I226-LM.

15. LINE_OUT1:

(Diameter 3.5mm Jack) Provide line-out via onboard Realtek ALC888S codec.

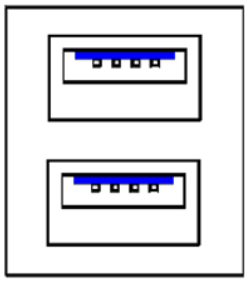
16. F_AUDIO1:

(2.0mm Pitch 2x6 Pin Header) Provide line-in/line-out/mic-in via onboard Realtek ALC888S codec.

Signal Name	Pin#	Pin#	Signal Name
5V_S5	1	2	GND_AUD
LINE-OUT-L	3	4	LINE-OUT-R
FRONT_JD	5	6	LINE_JD
LINE-IN-L	7	8	LINE-IN-R
MIC-IN-L	9	10	MIC-IN-R
GND_AUD	11	12	MIC1_JD

17. USB3_1：

(Double stack USB type A) Rear USB3.2 connector, provides up to 2 USB3.2 gen2/USB2.0 ports, USB3.2 gen2 allows data transfers up to 10.0Gbps.



Each USB Type A Receptacle (2 Ports) Current limited value is 2.0A.
If the external USB device current exceeds 2.0A, please separate connectors into different Receptacle.

18. USB1:

(2.0mm Pitch 2x5 Pin Header) Provide 2xUSB2.0 signals.

Signal Name	Pin#	Pin#	Signal Name
5V_USB56	1	2	5V_USB56
USB5_N	3	4	USB6_N
USB5_P	5	6	USB6_P
GND	7	8	GND
NC	9	10	NC

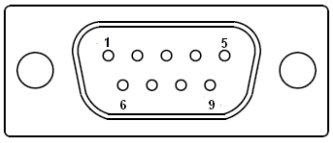
19. USB2:

(2.0mm Pitch 2x5 Pin Header) Provide 2xUSB2.0 signals.

Signal Name	Pin#	Pin#	Signal Name
5V_USB47	1	2	5V_USB47
USB4_N	3	4	USB7_N
USB4_P	5	6	USB7_P
GND	7	8	GND
GND	9	10	NC

20. COM1:

(DB9 connector) Provide serial RS232/422/485 via standard DB9 male connector. Default is set to RS232, RS422/485 can be selected via BIOS. Pin 9 RI/5V/12V select via JP1.



RS232 (Default):	
Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	GND
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	JP1 select Setting (RI/5V/12V)
BIOS Setup：Serial Port 1 Configuration【RS-232】	

RS422 (option):	
Pin#	Signal Name
1	422_TX-
2	422_TX+
3	422_RX+
4	422_RX-
5	GND
6	NC
7	NC
8	NC
9	NC
BIOS Setup：Serial Port 1 Configuration【RS-422】	

RS485 (option):	
Pin#	Signal Name
1	485-
2	485+
3	NC
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC
BIOS Setup：Serial Port 1 Configuration【RS-485】	

21. JP1:

(2.0mm Pitch 2x3 Pin Header) For COM1 pin9 signal setting.

JP1 Pin#	Function
Close 1-2	**COM1 Pin9 RI (Ring Indicator, Default)**
Close 3-4	COM1 Pin9 = +5V
Close 5-6	COM1 Pin9 = +12V

22. COM2:

2.0mm Pitch 2x5 Pin Header) Provide RS232, pin 9 RI/5V/12V select via JP2.

Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR
GND	5	6	DSR

RTS	7	8	CTS
RI/5V/12V via JP2	9	10	NC

23. JP2:

(2.0mm Pitch 2x3 Pin Header) For COM2 pin9 signal setting.

JP1 Pin#	Function
Close 1-2	**COM2 Pin9 RI (Ring Indicator, Default)**
Close 3-4	COM2 Pin9 = +5V
Close 5-6	COM2 Pin9 = +12V

24. COM3:

(2.0mm Pitch 2x5 Pin Header) Provide 2x2wired RS485(COM3/4).

Signal Name	Pin#	Pin#	Signal Name
COM3_485-	1	2	COM4_485-
COM3_485+	3	4	COM4_485+
GND	5	6	GND
NC	7	8	NC
NC	9	10	NC

25. GPIO2:

(2.0mm Pitch 2x5 Pin Header) Provide 8xGPIO(4xDI,4xDO) with 5V VCC.

Signal Name	Pin#	Pin#	Signal Name
5V_GPIO	1	2	GND
GPIO_IN1	3	4	GPIO_IN2
GPIO_IN3	5	6	GPIO_IN4
GPIO_OUT1	7	8	GPIO_OUT2
GPIO_OUT3	9	10	GPIO_OUT4

26. FP1:

(2.0mm Pitch 2x5 Pin Header) Provide power button/reset button/power LED/HDD LED/buzzer.

Signal Name	Pin#	Pin#	Signal Name
HDD LED+	1	2	Power LED+
HDD LED-	3	4	Power LED-
Reset Button-	5	6	Power Button+
Reset Button+	7	8	Power Button-
Buzzer+	9	10	Buzzer-

27. M-PCIE1:

(Socket 52Pin) Mini-PCI express socket, supports full-sized mini-PCIe cards with 1xSIM slot.

Function	Support	Remarks
PCIex1 (PCIe 5)	●	
SMbus	●	
Micro SIM (SIM1)	●	
USB2.0 (USB8)	●	

28. SIM1:

(Micro-SIM Slot) Support Micro SIM card for M_PCIE1.

Pin#	Signal Name
1	NC
2	GND
3	SIMVCC
4	NC
5	SIM_RST
6	NC
7	SIM_IO
8	SIM_CLK

29. M2_B1:

(M.2 B-Key Socket) Support 2242/2280 SATA III/PCIex1 interface SSD.

30. M2_E1:

(M.2 E-Key Socket) Provide USB2.0/PCIex1, support E-key 2230 WiFi/BT expansion cards. Status LED is supported via WLAN1.

31. SATA1:

(SATA 7Pin) SATA connector provide SATA III signal for storages.

32. SATA_P1:

(2.5mm Pitch 1x2 Wafer Pin Header) 5V power supply for SATA1 port device.

Pin#	Signal Name
1	5V_S0
2	GND

 **Note:**

Output current of the connector must not be above 1A.

33. WLAN_1/LED2/GPIO1:

WLAN_1 : Green LED for M.2 E-key status.

LED2 : Green LED for power status.

GPIO1 : Red LED for MCU status.

Chapter 3 BIOS Setup Description

3.1 Operations after POST Screen

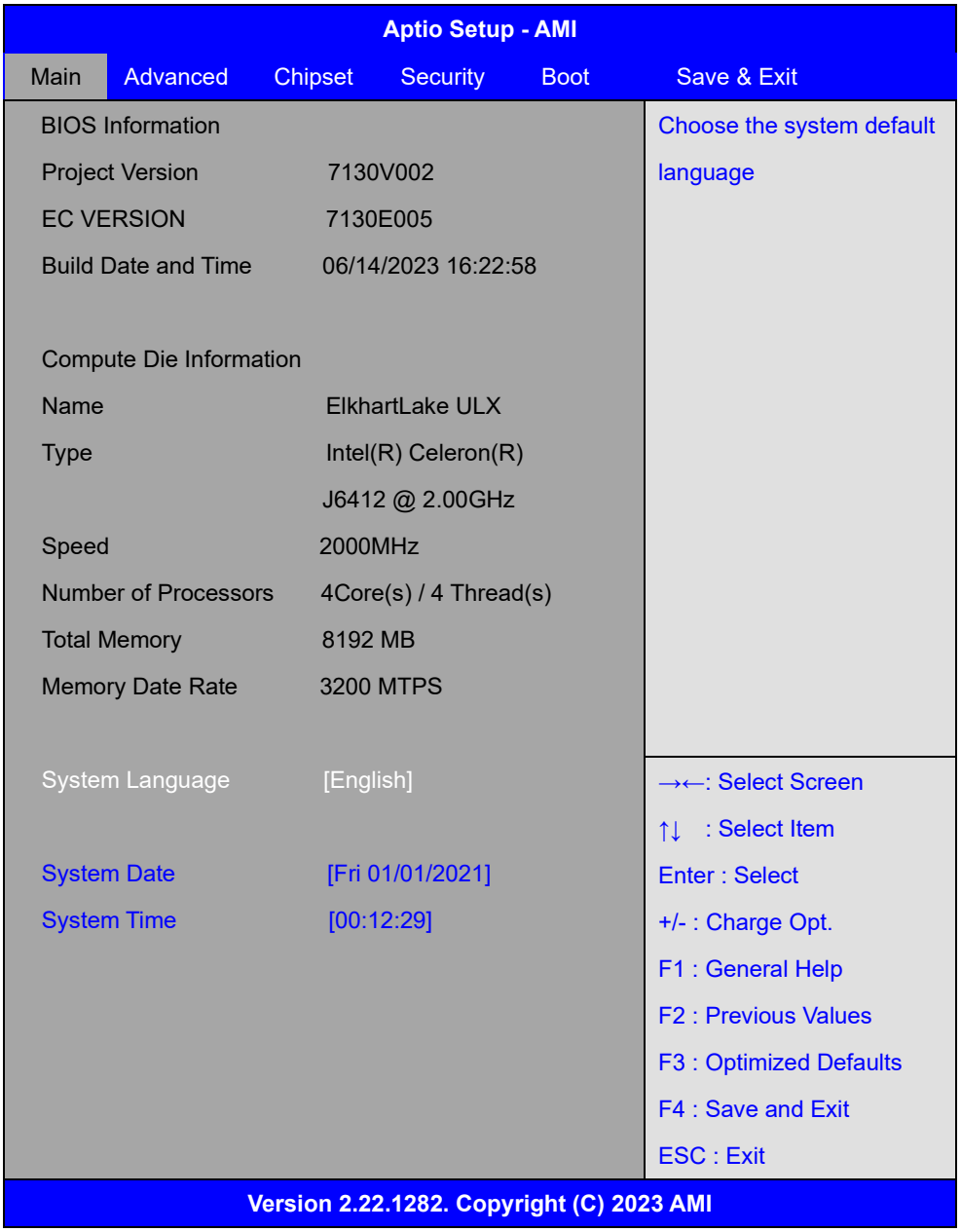
After CMOS discharge or BIOS flashing operation. Press [Delete] key to enter CMOS Setup.

After optimizing and exiting CMOS Setup

3.2 BIOS SETUP UTILITY

Press [Delete] key to enter BIOS Setup utility during POST, and then a main menu containing system summary information will appear.

3.3 Main Settings



System Time:

Set the system time, the time format is:

Hour :	0 to 23
Minute :	0 to 59
Second :	0 to 59

System Date:

Set the system date, the date format is:

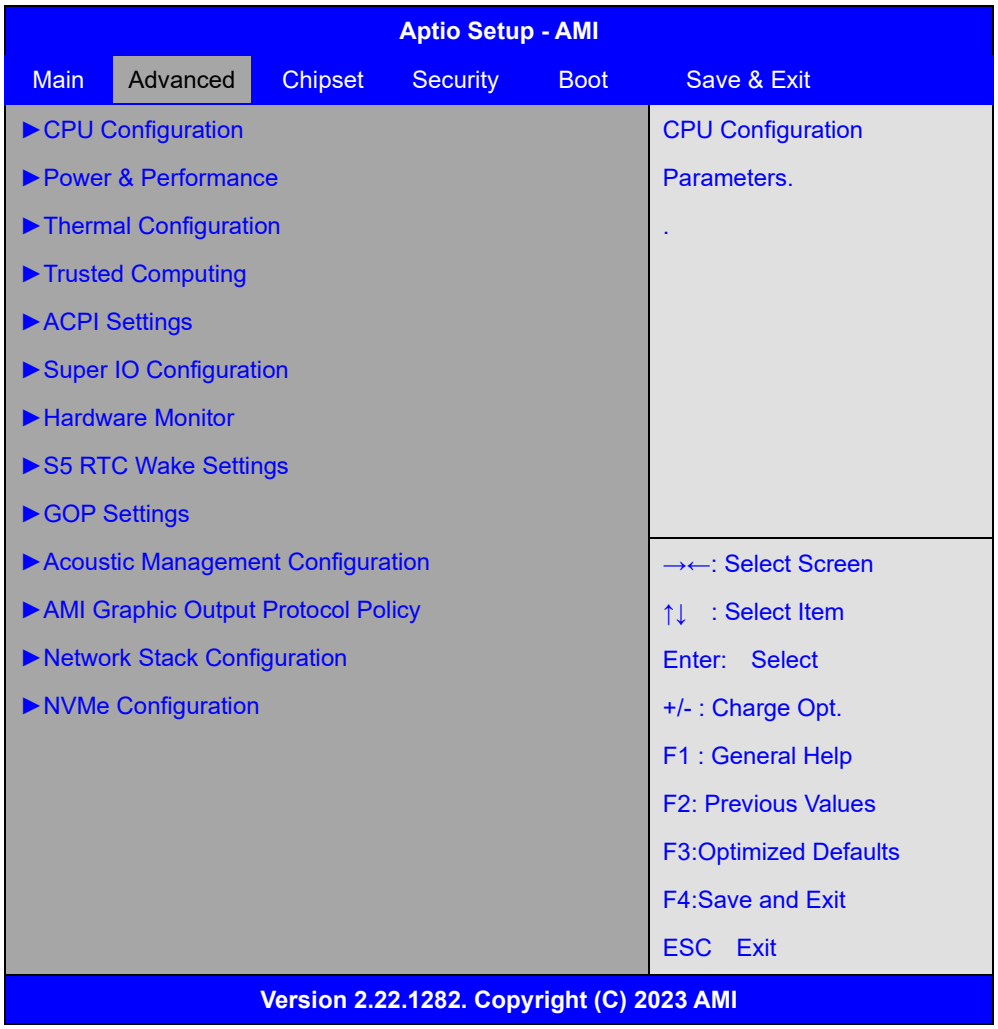
Day: Note that the 'Day' automatically changes when you set the date.

Month: 01 to 12

Date: 01 to 31

Year: 1998 to 2099

3.4 Advanced Settings



3.4.1 CPU Configuration

Type	Intel® Celeron® J6412@ 2.00GHz
ID	0x90661
Speed	2000 MHz
L1 Data Cache	32 KB x 4
L1 Instruction Cache	32 KB x 4
L2 Cache	1536 KB x 4
L3 Cache	4 MB
L4 Cache	N/A
VMX	Supported
SMX/TXT	Not Supported

CPU Flex Ratio Override:

[Disabled]

[Enabled]

CPU Flex Ratio Settings 20

Hardware Prefetcher:

[Disabled]

[Enabled]

Intel (VNX) Virtualization Technology:

[Disabled]

[Enabled]

PECI:

[Disabled]

[Enabled]

Active Processor Cores:

[ALL]

[1]

[2]

[3]

BIST:

[Disabled]

[Enabled]

AP threads Idle Manner:

[HALT Loop]

[MWAIT Loop]

[RUN Loop]

AES:

[Disabled]

[Enabled]

MachineCheck:

[Disabled]

[Enabled]

MonitorMWait:

[Disabled]

[Enabled]

CPU SMM Enhancement

CPU SMM Enhancement

SMM Use Delay Indication:

[Disabled]

[Enabled]

SMM Use Block Indication:

[Disabled]

[Enabled]

SMM Use SMM en-US Indication:

[Disabled]
[Enabled]

#AC Split Lock:

[Enabled]
[Disabled]

3.4.2 Power & Performance

Power & Performance

CPU – Power Management Control

CPU – Power Management Control

P0 Fused Max Core Ratio	N/A
P1 Fused Max Core Ratio	N/A
P2 Fused Max Core Ratio	N/A
P3 Fused Max Core Ratio	N/A

Boot performance mode:

[Max Battery]
[Max Non-Turbo Performance]
[Turbo Performance]

Intel (R) SpeedStep(tm):

[Disabled]
[Enabled]

Race To Halt (RTH):

[Disabled]
[Enabled]

Intel (R) Speed Shift Technology:

[Disabled]
[Enabled]

HwP Autonomous EPP Grouping:

[Disabled]
[Enabled]

EPB override over PECI:

[Disabled]
[Enabled]

HwP Fast MSR Support:

[Disabled]
[Enabled]

HDC Control:

[Disabled]
[Enabled]

Turbo Mode:

[Disabled]
[Enabled]

View/Configure Turbo Options

Current Turbo Settings

Max Turbo Power Limit 4095.875
Min Turbo Power Limit 0.0
Package TDP Limit 10.0
Power Limit 1 10.0
Power Limit 2 20.0
1-core Turbo Ratio 26
2- core Turbo Ratio 26
3- core Turbo Ratio 26
4- core Turbo Ratio 26

Energy Efficient P-state:
[Disabled]
[Enabled]

Package Power Limit MSR Lock:
[Disabled]
[Enabled]

Power Limit 1 Override:
[Disabled]
[Enabled]

Power Limit 2 Override:
[Disabled]
[Enabled]

Power Limit 2 0
1-Core Ratio Limit Override 26
2-Core Ratio Limit Override 26
3-Core Ratio Limit Override 26
4-Core Ratio Limit Override 26

Energy Efficient Turbo:
[Disabled]
[Enabled]

CPU VR Settings

CPU VR Ssttings

PSYS Slope 0
PSYS Offset 0
PSYS Prefix:
[+]

[-]

PSYS PMax Power 0

Acoustic Noise Settings

Acoustic Noise Settings

Acoustic Noise Mitigation:

[Disabled]

[Enabled]

VccIn VR Domain

Disable Fast PKG C State Ramp for VccIn Domain:

[FALSE]

[TRUE]

Slow Slew Rate for VccIn Domain:

[Fast/2]

[Fast/4]

[Fast/8]

[Fast/16]

VccIn VR Settings

VccIn VR Domain

VR Config Enable:

[Disabled]

[Enabled]

AC Loadline 880

DC Loadline 860

PS Current Threshold1 0

PS Current Threshold2 0

PS Current Threshold3 0

PS3 Enable:

[Disabled]

[Enabled]

PS4 Enable:

[Disabled]

[Enabled]

IMON Slope 100

IMON Offset 1

IMON Prefix [+]

VR Current Limit 90

TDC Enable:

[Disabled]

[Enabled]

TDC Current Limit 112

TDC Time Window:

[1 ms]
[2 ms]
[3 ms]
[4 ms]
[5 ms]
[6 ms]
[7 ms]
[8 ms]
[9 ms]
[10 ms]

TDC Lock:

[Disabled]
[Enabled]

RFI Settings

RFI Domain

RFI Current Frequency 139.200MHz
RFI Frequency 0
RFI Spread Spectrum 15

Platform PL1 Enable:

[Disabled]
[Enabled]

Platform PL2 Enable:

[Disabled]
[Enabled]

Power Limit 4 Override:

[Disabled]
[Enabled]

C states:

[Disabled]
[Enabled]

Enhanced C-states:

[Disabled]
[Enabled]

C-state Auto Demotion [C1]
C-state Un-demotion [C1]

Package C-State Demotion:

[Disabled]
[Enabled]

Package C-State Un-demotion:

[Disabled]
[Enabled]
CState Pre-Wake:
[Disabled]
[Enabled]
IO MWAIT Redirection:
[Disabled]
[Enabled]
Package C State Limit [C3]
C6/C7 Short Latency Control(MSR 0x60B)
Time Unit [1024 ns]
Latency 0
C6/C7 Short Latency Control(MSR 0x60C)
Time Unit [1024 ns]
Latency 0
C8 Latency Control(MSR 0x633)
Time Unit [1024 ns]
Latency 0
C9 Latency Control(MSR 0x634)
Time Unit [1024 ns]
Latency 0
C10 Latency Control(MSR 0x635)
Time Unit [1024 ns]
Latency 0

Thermal Monitor:
[Disabled]
[Enabled]
Interrupt Redirection Mode Selection:
[Fixed Priority]
[Round robin]
[Hash Vector]
[No Change]
Timed MWAIT:
[Disabled]
[Enabled]
Custom P-state Table
Custom P-state Table
Number of P states 0
EC Turbo Control Mode:
[Disabled]
[Enabled]

Energy Performance Gain:

[Disabled]

[Enabled]

EPG DIMM Idd3N 26

EFG DIMM Idd3P 11

Power Limit 3 Settings

CPU Lock Configuration

CFG Lock:

[Disabled]

[Enabled]

Overclocking Lock:

[Disabled]

[Enabled]

GT – Power Management Control

GT – Power Management Control

Maximum GT frequency:

[Default Max Frequency]

[100Mhz]

[150Mhz]

[200Mhz]

[250Mhz]]

[300Mhz]

[350Mhz]

[400Mhz]

[450Mhz]

[500Mhz]

[550Mhz]

[600Mhz]

[650Mhz]

[700Mhz]

[750Mhz]

[800Mhz]

[850Mhz]

[900Mhz]

[950Mhz]

[1000Mhz]

[1050Mhz]

[1100Mhz]

[1150Mhz]

[1200Mhz]

Disable Turbo GT frequency:

[Enabled]

[Disabled]

3.4.3 Thermal Configuration

Thermal Configuration

Enable All Thermal Funcations:

[Disabled]

[Enabled]

CPU Thermal Configuration

Cpu Thermal Configuration

DTS SMM:

[Disabled]

[Enabled]

[Critical Temp Reporting(Out of spec)]

Tcc Activation Offset 25

Tcc Offset Time Window:

[Disabled]

[5ms]

[10 ms]

[55 ms]

[156 ms]

[375 ms]

[500 ms]

[750 ms]

[1 sec]

[2 sec]

[3 sec]

[4 sec]

[5 sec]

[6 sec]

[7 sec]

[8 sec]

[10 sec]

[12 sec]

[14 sec]

[16 sec]

[20 sec]

[24 sec]

[28 sec]

[32 sec]

[40 sec]
[48 sec]
[56 sec]
[64 sec]
[80 sec]
[96 sec]
[112 sec]
[128 sec]
[160 sec]
[192 sec]
[224 sec]
[256 sec]
[320 sec]

Tcc Offset Clamp Enable:

[Disabled]
[Enabled]

Tcc Offset Lock Enable:

[Disabled]
[Enabled]

Bi-directional PROCHOT#:

[Disabled]
[Enabled]

Disable PROCHOT# Output:

[Disabled]
[Enabled]

Disable VR Thermal Alert:

[Disabled]
[Enabled]

PROCHOT Response:

[Disabled]
[Enabled]

PROCHOT Lock:

[Disabled]
[Enabled]

ACPI T-States:

[Disabled]
[Enabled]

Platform Thermal Configuration

Platform Thermal Configuration

Critical Trip Point:

[15 C]
[23 C]
[31 C]
[39 C]
[47 C]
[55 C]
[63 C]
[71 C]
[79 C]
[87 C]
[95 C]
[100 C]
[103 C]
[111 C]
[119 C (POR)]
[127 C]
[130 C]

Active Trip Point 0:

[Disabled]
[15 C]
[23 C]
[31 C]
[39 C]
[47 C]
[55 C]
[63 C]
[71 C]
[79 C]
[87 C]
[95 C]
[103 C]
[111C]
[119 C (POR)]

Active Trip Point 0 Fan Speed: 100

Active Trip Point 1:

[Disabled]
[15 C]
[23 C]
[31 C]
[39 C]
[47 C]
[55 C]

[63 C]
[71 C]
[79 C]
[87 C]
[95 C]
[103 C]
[111C]
[119 C (POR)]

Active Trip Point 1 Fan Speed: 75

Passive Trip Point :

[Disabled]
[15 C]
[23 C]
[31 C]
[39 C]
[47 C]
[55 C]
[63 C]
[71 C]
[79 C]
[87 C]
[95 C]
[103 C]
[111C]
[119 C (POR)]

Passive TC1 Value 1

Passive TC2 Value 5

Passive TSP Value 10

Active Trip Points:

[Disabled]
[Enabled]

Passive Trip Points:

[Disabled]
[Enabled]

CriticalTrip Points:

[Disabled]
[Enabled]

PCH Temp Read:

[Disabled]
[Enabled]

CPU Energy Read:

[Disabled]

[Enabled]

CPU Temp Read:

[Disabled]

[Enabled]

Alert Enable Lock:

[Disabled]

[Enabled]

CPU Temp 72

CPU Fan Speed 65

DPTF Configuration

DPTF Configuration

Hardware Health Monitor

Hardware Health Monitor

Thermal Sensor 1 Temp 0.0 C

Thermal Sensor 2 Temp 0.0 C

Thermal Sensor 3 Temp 0.0 C

Thermal Sensor 4 Temp 0.0 C

CPU Fan Speed 0 rpm

3.4.4 Trusted Computing

Configuration

Security Device Support:

[Disabled]

[Enabled]

NO Security Device Found

3.4.5 ACPI Settings

ACPI Settings

Enable Hibernation:

[Disabled]

[Enabled]

ACPI Sleep State:

[Suspend]

[S3 (Suspend to RAM)]

3.4.6 Super IO Configuration

Super IO Configuration

Super IO Chip IT8786

Serial Port 1 Configuration

Serial Port 1 Configuration

Serial Port:

[Disabled]

[Enabled]

Device Settings IO=3F8h; IRQ=4;

Change Settings:

[Auto]

[IO=3F8h; IRQ=4]

[IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12;]

[IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12;]

[IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12;]

[IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;]

COM1 Config:

[RS232 mode]

[RS485 mode]

[RS422 mode]

Serial Port 2 Configuration

Serial Port 2 Configuration

Serial Port:

[Disabled]

[Enabled]

Device Settings IO=2F8h; IRQ=4;

Change Settings:

[Auto]

[IO=2F8h; IRQ=4]

[IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12;]

[IO=2F8h; IRQ=3,4,5,6,7,10,11,12;]

[IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12;]

[IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;]

Serial Port 3 Configuration

Serial Port 3 Configuration

Serial Port:

[Disabled]

[Enabled]

Device Settings IO=3E8h; IRQ=4;

Change Settings:

[Auto]

Serial Port 4 Configuration

Serial Port 4 Configuration

Serial Port:

[Disabled]

[Enabled]

Device Settings IO=2E8h; IRQ=4;

Change Settings:

[Auto]

Serial Port 5 Configuration

Serial Port 5 Configuration

Serial Port:

[Disabled]

[Enabled]

Device Settings IO=2F0h; IRQ=4;

Change Settings:

[Auto]

COM5 Config:

[RS485 mode]

[RS422 mode]

Serial Port 6 Configuration

Serial Port 6 Configuration

Serial Port:

[Disabled]

[Enabled]

Device Settings IO=2F0h; IRQ=4;

Change Settings:

[Auto]

COM6 Config:

[RS485 mode]

[RS422 mode]

3.4.7 Hardware Monitor

Pc Health Status

System temperature1 : +39 C

Fan1 Speed : 6887 RPM

CPU_CORE_VIN : +1.653 V
+1.2V : +1.236 V
+12V : +13.120 V
+5V : +5.123 V
Smart Fan Function
Fan 1 Setting
Fan 1 Setting
Smart Fan 1 Mode:
[Software Mode]
[Automatic Mode]
Fan 1 Type:
[PWM]
[RPM]
Tempurature select:
[TMPIN1]
[TMPIN2]
[TMPIN3]
Fan off temperature limit: 0
Fan start temperature limit: 30
Fan full speed temperature limit: 90
Fan start PWM: 75
PWM SLOPE SETTING: 3
Temperature: 4

3.4.8 S5 RTC Wake Settings

Wake system from S5:
[Disabled]
[Fixed Time]
[Dynamic Time]

3.4.9 GOP Settings

LCD Panel Type [Auto]

3.4.10 Acoustic Management Configuration

Acoustic Management Configuration
HDD not found
HDD not found

3.4.11 AMI Graphic Output Protocol Configuration

Intel® Graphics Controller
Intel® GOP Driver [18.0.1034]
Output Select:

[EDP1]

[DP1]

Brightness Setting 255

BIST Enable:

[Disabled]

[Enabled]

3.4.12 Network Stack Configuration

Network Stack:

[Disabled]

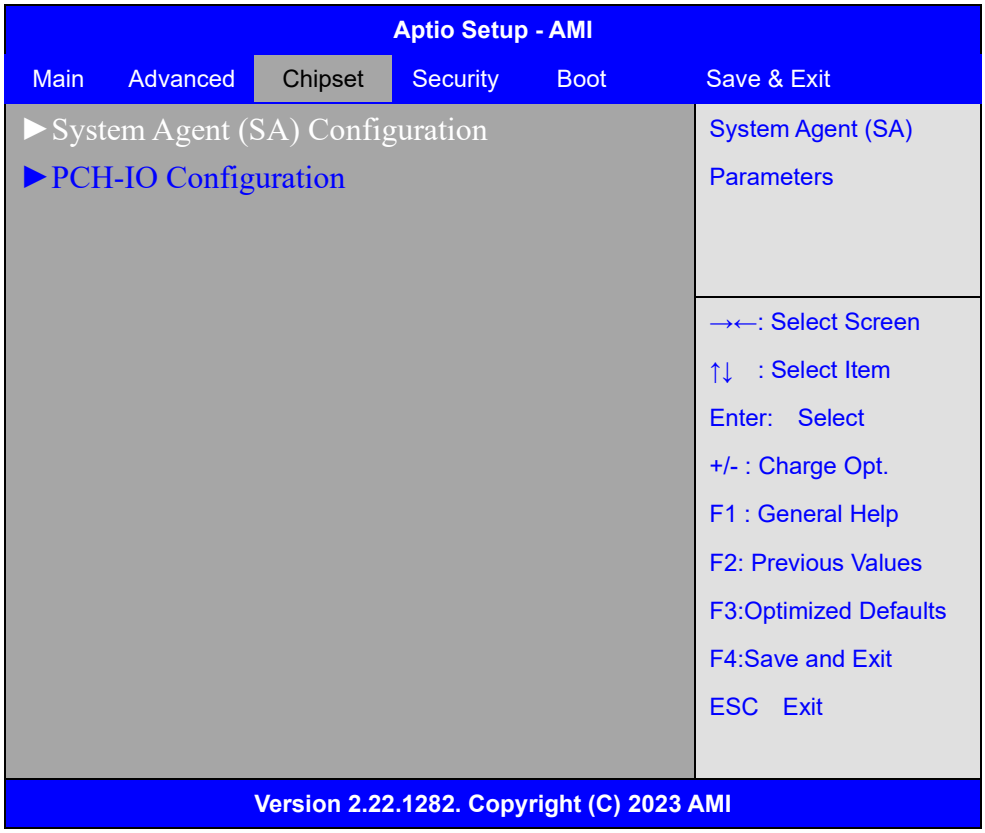
[Enabled]

3.4.13 NVME Configuration

NVMe Configuration

No NVME Device Found

3.5 Chipset Settings



3.5.1 System Agent （SA） Configuration

System Agent (SA) Configuration

Memory Configuration

Memory Thermal Configuration

Memory Thermal Configuration

Memory Power and Thermal Throttling

Memory Power and Thermal Throttling

DDR PowerDown and idle counter:

[PCODE]

[BIOS]

FOR LPDDR Only: DDR PowerDown and Idle counter

[PCODE]

[BIOS]

REFRESH_2X_MODE:

[Disabled]

[1- Enabled for WARM or HOT]

[2- Enabled HOT only]

LPDDR Thermal Sensor:

[Disabled]

[Enabled]

SelfRefresh Enable:

[Disabled]

[Enabled]

SelfRefresh IdleTimer: 512

Throttler CKEMin Defeature:

[Enabled]

[Disabled]

Throttler CKKEMin Timer: 48

For LPDDR Only: Throttler CKEMin Defeature:

[Enabled]

[Disabled]

For LPDDR Only: Throttler CKEMin Timer: 64

Dram Power Meter

Dram Power Meter

Use user provided power weights,
Sacle factor, and channel power
Floor values: [Disabled]

[Enabled]

Energy Scale Factor 4

Idle Energy Ch0Dimm0 10
PowerDown Energy Ch0Dimm0 6
Activate Energy Ch0Dimm0 172
Read Energy Ch0Dimm0 212
Write Energy Ch0Dimm0 221

Idle Energy Ch0Dimm1 10
PowerDown Energy Ch0Dimm1 6
Activate Energy Ch0Dimm1 172
Read Energy Ch0Dimm1 212
Write Energy Ch0Dimm1 221

Idle Energy Ch1Dimm0 10
PowerDown Energy Ch1Dimm0 6
Activate Energy Ch1Dimm0 172
Read Energy Ch1Dimm0 212

Write Energy Ch1Dimm0 221

Idle Energy Ch1Dimm1 10
PowerDown Energy Ch1Dimm1 6
Activate Energy Ch1Dimm1 172
Read Energy Ch1Dimm1 212
Write Energy Ch1Dimm1 221

Memory Thermal Reporting

Lock Thermal Management Registers:

[Disabled]
[Enabled]

Memory Thermal Reporting

Extern Therm Status:

[Disabled]
[Enabled]

Closed Loop Therm Manage:

[Disabled]
[Enabled]

Open Loop Therm Manage:

[Disabled]
[Enabled]

Thermal Threshold Settings

Warm Threshold Ch0 Dimm0 255
Warm Threshold Ch0 Dimm1 255
Hot Threshold Ch0 Dimm0 255
Hot Threshold Ch0 Dimm1 255
Warm Threshold Ch1 Dimm0 255
Warm Threshold Ch1 Dimm1 255
Hot Threshold Ch1 Dimm0 255
Hot Threshold Ch1 Dimm1 255

Thermal Throttle Budget Settings

Warm Budget Ch0 Dimm0 255
Warm Budget Ch0 Dimm1 255
Hot Budget Ch0 Dimm0 255
Hot Budget Ch0 Dimm1 255
Warm Budget Ch1 Dimm0 255
Warm Budget Ch1 Dimm1 255

Hot Budget Ch1 Dimm0 255
Hot Budget Ch1 Dimm1 255

Memory RAPL
Memory RAPL

Rap1 Power Floor Ch0 0
Rap1 Power Floor Ch1 0

RAPL PL Lock:
[Disabled]
[Enabled]
RAPL PL 1 enable:
[Disabled]
[Enabled]
RAPL PL 1 Power 0
RAPL PL 1 WindowX 0
RAPL PL 1 WindowY 0

RAPL PL 2 enable:
[Disabled]
[Enabled]
RAPL PL 2 Power 222
RAPL PL 2 WindowX 1
RAPL PL 2 WindowY 10
Memory Thermal Management:
[Disabled]
[Enabled]
Memory Training Algorithms:
Early Command Training:
[Disabled]
[Enabled]
SenseAmp Offset Training:
[Disabled]
[Enabled]
Early ReadMPR Timing Centering 2D:
[Disabled]
[Enabled]
Read MPR Training:
[Disabled]
[Enabled]
Receive Enable Training:

[Disabled]
[Enabled]

Jedec Write Leveling:

[Disabled]
[Enabled]

LPDDR4 Write DQ DQS Retraining:

[Disabled]
[Enabled]

Early Write Time Centering 2D:

[Disabled]
[Enabled]

Early Read Time Centering 2D:

[Disabled]
[Enabled]

Write Timing Centering 1D:

[Disabled]
[Enabled]

Write Voltage Centering 1D:

[Disabled]
[Enabled]

Read Timing Centering 1D:

[Disabled]
[Enabled]

Dimm ODT Trainning* :

[Disabled]
[Enabled]

Max RTT_WR:

[ODT Off]
[120 0hms]

DIMM RON Training*:

[Disabled]
[Enabled]

Write Drive Strength/Equalization 2D*:

[Disabled]
[Enabled]

Write Slew Rate Training*:

[Disabled]
[Enabled]

Read ODT Training*:

[Disabled]
[Enabled]

Read Equalization Training*:

[Disabled]
[Enabled]

Read Amplifier Training*:

[Disabled]
[Enabled]

Write Timing Centering 2D:

[Disabled]
[Enabled]

Read Timing Centering 2D:

[Disabled]
[Enabled]

Command Voltage Centering:

[Disabled]
[Enabled]

Write Voltage Centering 2D:

[Disabled]
[Enabled]

Read Voltage Centering 2D:

[Disabled]
[Enabled]

Late Command Training:

[Disabled]
[Enabled]

Round Trip Latency:

[Disabled]
[Enabled]

Turn Around Timing Training:

[Disabled]
[Enabled]

Rank Margin Tool:

[Disabled]
[Enabled]

Rank Margin Tool Per Bit:

[Disabled]
[Enabled]

Margin Check Limit:

[Disabled]
[L1]
[L2]
[Both]

Margin Limit Check L2: 100

Memory Test:

[Disabled]
[Enabled]

DIMM SPD Alias Test:

[Disabled]
[Enabled]

Receive Enable Centering 1D:

[Disabled]
[Enabled]

Retrain Margin Check:

[Disabled]
[Enabled]

Write Drive Strength Up/
Dnindependently:

[Disabled]
[Enabled]

Command Slew Rate Training:

[Disabled]
[Enabled]

Command Drive Strength and
Equalization:

[Disabled]
[Enabled]

Command Normalization:

[Disabled]
[Enabled]

Early DQ Write Drive Strength and
Equalization Training:

[Disabled]
[Enabled]

Read Voltage Centering 1D:

[Disabled]
[Enabled]

Write TC0 Comp Training:

[Disabled]
[Enabled]

Clock TC0 Comp Training:

[Disabled]
[Enabled]

Dimm ODT CA Training:

[Disabled]
[Enabled]

Write TC0 DqsTraining:

[Disabled]
[Enabled]
Duty Cycle Correction:
[Disabled]
[Enabled]
DQ DFE Training:
[Disabled]
[Enabled]
Sense Amplifier Correction Training:
[Disabled]
[Enabled]

Memory Configuration

Memory RC Version	0.0.4.104
Memory Data Rate	3200 MTPS
Memory Timings (tCL-tRCD-tRP-tRAS)	22-22-22-52
Channel 0 Slot 0	Not Populated / Disabled
Channel 0 Slot 1	Not Populated / Disabled
Channel 1 Slot 0	Populated & Enabled
Size	8192 MB (DDR4)
Number of Ranks	1
Manufacturer	Samsung
Channel 1 Slot 1	Not Populated / Disabled

Memory ratio/reference clock
Options moved to
Overclock->Memory->Custom Profile
Menu
MRC ULT Safe Config:
[Disabled]
[Enabled]
Safe Mode Support:
[Disabled]
[Enabled]
Maximum Memory Frequency:
[Auto]
[1067]
[1200]
[1333]
[1400]
[1600]

[1800]
[1867]
[2000]
[2133]
[2200]
[2400]
[2600]
[2667]
[2800]
[2933]
[3000]
[3200]
[3467]
[3600]
[3733]
[4000]
[4200]
[4267]

HOB Buffer Size:

[Auto]
[1B]
[1KB]
[Max (assuming 63KB total HOB size)]

Max TOLUD:

[Dynamic]
[1 GB]
[1.25 GB]
[1.5 GB]
[1.75 GB]
[2 GB]
[2.25 GB]
[2.5 GB]

SA GV:

[Disabled]
[Fixed Low]
[Fixed Mid]
[Fixed High]
[Enabled]

DDR Speed Control:

[Auto]
[Manual]

Retrain on Fast Fail:

[Disabled]
[Enabled]

DDR4_1DPC:

[Disabled]
[Enabled on DIMM0 only]
[Enabled on DIMM1 only]
[Enabled]

Enable RH Prevention:

[Disabled]
[Enabled]

REFRESH_PANIC_WM: 9

REFRESH_HP_WM: 8

Exit On Failure (MRC):

[Disabled]
[Enabled]

Enable/Disable IED
(Intel Enhanced Debug):

[Enabled]
[Disabled]

Ch Hash Support:

[Disabled]
[Enabled]

Ch Hash Mask: 12492

Ch Hash Interleaved Bit:

[BIT6]
[BIT7]
[BIT8]
[BIT9]
[BIT10]
[BIT11]
[BIT12]
[BIT13]

Extended Bank Hashing:

[Disabled]
[Enabled]

Per Bank Refresh:

[Disabled]
[Enabled]

Power Down Mode:

[Auto]
[No Power Down]
[APD]

[PPD-DLLoff]

Page Close Idle Timeout:

[Enabled]

[Disabled]

Memory Scrambler:

[Enabled]

[Disabled]

Force ColdReset:

[Enabled]

[Disabled]

Channel 0 DIMM Control:

[Enable both DIMMs]

[Disable DIMM0]

[Disable DIMM1]

[Disable both DIMMs]

Channel 1 DIMM Control:

[Enable both DIMMs]

[Disable DIMM0]

[Disable DIMM1]

[Disable both DIMMs]

Force Single Rank:

[Disabled]

[Enabled]

Force Single Sub Channel:

[Disabled]

[Enabled]

MRC TASK Debug Print Enable: 0

Memory Remap:

[Enabled]

[Disabled]

Time Measure:

[Disabled]

[Enabled]

DLL Weak Lock Support:

[Disabled]

[Enabled]

Fast Boot:

[Disabled]

[Enabled]

Train On Warm boot:

[Disabled]

[Enabled]

Rank Margin Tool Per Task:

[Disabled]

[Enabled]

Training Tracing:

[Disabled]

[Enabled]

Lpddr Mem WL Set:

[Set A]

[Set B]

BDAT Memory Test Type [Rank Margin Tool Rank]

Rank Margin Tool Loop Count: 0

Low Supply for LPDDR4 Data:

[Disabled]

[Enabled]

Low Supply for LPDDR4 Clock/Command/Control:

[Disabled]

[Enabled]

Memory Test on Warm Boot:

[Disabled]

[Enabled]

Graphics Configuration

Graphics Configuration

Primary Display:

[Auto]

[IGFX]

[PEG]

[PCI]

External Gfx Card Primary Display Configuration

External Gfx Card Primary Display Configuration

Primary PCIE:

[Auto]

[PCIE 1]

[PCIE 2]

[PCIE 3]

[PCIE 4]

[PCIE 5]

[PCIE 6]

[PCIE 7]

[PCIE 8]
[PCIE 9]
[PCIE 10]
[PCIE 11]
[PCIE 12]
[PCIE 13]
[PCIE 14]
[PCIE 15]
[PCIE 16]
[PCIE 17]
[PCIE 18]
[PCIE 19]

Internal Graphics:

[Auto]
[Disabled]
[Enabled]

GTT Size:

[2 MB]
[4 MB]
[8 MB]

Aperture Size:

[128 MB]
[256 MB]
[512 MB]
[1024 MB]
[2048 MB]

PSMI SUPPORT:

[Disabled]
[Enabled]

DVMT- Pre-Allocated:

[0M]
[32M]
[64M]
[96M]
[128M]
[160M]
[4M]
[8M]
[12M
[16M]
[20M]
[24M]

[28M]
[32M/F7]
[36M]
[40M]
[44M]
[48M]
[52M]
[56M]
[60M]

DVMT Total Gfx Mem:

[128M]
[256M]
[MAX]

DISM Size:

[0GB]
[1GB]
[2GB]
[3GB]
[4GB]
[5GB]
[6GB]
[7GB]

Intel Graphics Pei Display Peim:

[Enabled]
[Disabled]

VDD Enable:

[Disabled]
[Enabled]

Configure GT for use:

[Enabled]
[Disabled]

PAVP Enable:

[Enabled]
[Disabled]

Cdynmax Clamping Enable:

[Enabled]
[Disabled]

Cd Clock Frequency:

[172.8 Mhz]
[307.2 Mhz]
[556.8 Mhz]
[652.8 Mhz]

[Max CdClock freq based on Reference C1k]

Skip Full CD Clock Init:

[Enabled]

[Disabled]

VBT Select:

[eDP]

[MIPI]

IUER Button Enable:

[Disabled]

[Enabled]

Intel(R) Ultrabook Event Support:

Intel(R) Ultrabook Event Support

IUER Slate Enable:

[Disabled]

[Enabled]

IUER Dock Enable:

[Disabled]

[Enabled]

VT-d:

[Disabled]

[Enabled]

3.5.2 PCH-IO Configuration

PCH-IO Configuration

PCI Express Configuration

PCI Express Configuration

DMI Link ASPM Control:

[Disabled]
[L0s]
[L1]
[L0sL1]
[Auto]

PCIE Port assigned to LAN Disabled

Port8xh Decode:

[Disabled]
[Enabled]

Peer Memory write Enable:

[Disabled]
[Enabled]

Compliance Test Mode:

[Disabled]
[Enabled]

PCH PCI Express Clock Gating:

[Platform-POR]
[Enabled]
[Disabled]

PCIe function swap:

[Disabled]
[Enabled]

PCIe EQ settings

PCIe EQ override:

[Disabled]
[Enabled]

PCIe Express Root Port 1

PCIe Express Root Port 1:

[Disabled]
[Enabled]

Connection Type:

[Built - in]
[Slot]

ASPM:

[Disabled]
[L0s]
[L1]
[L0sL1]
[Auto]

L1 Substates:

[Disabled]
[L1.1]
[L1.1 & L1.2]

ACS:

[Disabled]
[Enabled]

PTM:

[Disabled]
[Enabled]

DPC:

[Disabled]
[Enabled]

EDPC:

[Disabled]
[Enabled]

URR:

[Disabled]
[Enabled]

FER:

[Disabled]
[Enabled]

NFER:

[Disabled]
[Enabled]

CER:

[Disabled]
[Enabled]

SEFE:

[Disabled]
[Enabled]

SENFE:

[Disabled]
[Enabled]

SECE:

[Disabled]
[Enabled]

PME SCI:

[Disabled]

[Enabled]

Hot Plug:

[Disabled]

[Enabled]

Advanced Error Reporting:

[Disabled]

[Enabled]

PCIe Speed:

[Auto]

[Gen1]

[Gen2]

[Gen3]

Transmitter Half Swing:

[Disabled]

[Enabled]

Detect Timeout: 0

Extra Bus Reserved: 0

Reserved Memory: 10

Reserved I/O: 4

PCH PCIe LTR Configuration

LTR:

[Disabled]

[Enabled]

Snoop Latency Override:

[Disabled]

[Manual]

[Auto]

Non Snoop Latency Override:

[Disabled]

[Manual]

[Auto]

Force LTR Override:

[Disabled]

[Enabled]

LTR Lock:

[Disabled]

[Enabled]

Extra options

Detect Non-Compliance Device:

[Disabled]
[Enabled]
Prefetchable Memory: 10
Reserved Memory
Alignment: 1
Prefetchable Memory
Alignment: 1
PCIe Express Root Port 2
PCIe Express Root Port 2:
[Disabled]
[Enabled]
Connection Type:
[Built - in]
[Slot]
ASPM:
[Disabled]
[L0s]
[L1]
[L0sL1]
[Auto]
L1 Substates:
[Disabled]
[L1.1]
[L1.1 & L1.2]
ACS:
[Disabled]
[Enabled]
PTM:
[Disabled]
[Enabled]
DPC:
[Disabled]
[Enabled]
EDPC:
[Disabled]
[Enabled]
URR:
[Disabled]
[Enabled]
FER:
[Disabled]
[Enabled]

NFER:

[Disabled]

[Enabled]

CER:

[Disabled]

[Enabled]

SEFE:

[Disabled]

[Enabled]

SENFE:

[Disabled]

[Enabled]

SECE:

[Disabled]

[Enabled]

PME SCI:

[Disabled]

[Enabled]

Hot Plug:

[Disabled]

[Enabled]

Advanced Error Reporting:

[Disabled]

[Enabled]

PCIe Speed:

[Auto]

[Gen1]

[Gen2]

[Gen3]

Transmitter Half Swing:

[Disabled]

[Enabled]

Detect Timeout: 0

Extra Bus Reserved: 0

Reserved Memory: 10

Reserved I/O: 4

PCH PCIe LTR Configuration

LTR:

[Disabled]

[Enabled]

Snoop Latency Override:

[Disabled]
[Manual]
[Auto]
Non Snoop Latency Override:
[Disabled]
[Manual]
[Auto]
Force LTR Override:
[Disabled]
[Enabled]
LTR Lock:
[Disabled]
[Enabled]
Extra options
Detect Non-Compliance Device:
[Disabled]
[Enabled]
Prefetchable Memory: 10
Reserved Memory
Alignment: 1
Prefetchable Memory
Alignment: 1
PCIe Express Root Port 3
PCIe Express Root Port 3:
[Disabled]
[Enabled]
Connection Type:
[Built - in]
[Slot]
ASPM:
[Disabled]
[L0s]
[L1]
[L0sL1]
[Auto]
L1 Substates:
[Disabled]
[L1.1]
[L1.1 & L1.2]
ACS:
[Disabled]
[Enabled]

PTM:

[Disabled]

[Enabled]

DPC:

[Disabled]

[Enabled]

EDPC:

[Disabled]

[Enabled]

URR:

[Disabled]

[Enabled]

FER:

[Disabled]

[Enabled]

NFER:

[Disabled]

[Enabled]

CER:

[Disabled]

[Enabled]

SEFE:

[Disabled]

[Enabled]

SENFE:

[Disabled]

[Enabled]

SECE:

[Disabled]

[Enabled]

PME SCI:

[Disabled]

[Enabled]

Hot Plug:

[Disabled]

[Enabled]

Advanced Error Reporting:

[Disabled]

[Enabled]

PCIe Speed:

[Auto]

[Gen1]

[Gen2]
[Gen3]
Transmitter Half Swing:
[Disabled]
[Enabled]
Detect Timeout: 0
Extra Bus Reserved: 0
Reserved Memory: 10
Reserved I/O: 4

PCH PCIe LTR Configuration
LTR:
[Disabled]
[Enabled]
Snoop Latency Override:
[Disabled]
[Manual]
[Auto]
Non Snoop Latency Override:
[Disabled]
[Manual]
[Auto]
Force LTR Override:
[Disabled]
[Enabled]
LTR Lock:
[Disabled]
[Enabled]
Extra options
Detect Non-Compliance Device:
[Disabled]
[Enabled]
Prefetchable Memory: 10
Reserved Memory
Alignment: 1
Prefetchable Memory
Alignment: 1

PCIe Express Root Port 4
PCIe Express Root Port 4:
[Disabled]
[Enabled]

Connection Type:

[Built - in]

[Slot]

ASPM:

[Disabled]

[L0s]

[L1]

[L0sL1]

[Auto]

L1 Substates:

[Disabled]

[L1.1]

[L1.1 & L1.2]

ACS:

[Disabled]

[Enabled]

PTM:

[Disabled]

[Enabled]

DPC:

[Disabled]

[Enabled]

EDPC:

[Disabled]

[Enabled]

URR:

[Disabled]

[Enabled]

FER:

[Disabled]

[Enabled]

NFER:

[Disabled]

[Enabled]

CER:

[Disabled]

[Enabled]

SEFE:

[Disabled]

[Enabled]

SENFE:

[Disabled]

[Enabled]

SECE:

[Disabled]

[Enabled]

PME SCI:

[Disabled]

[Enabled]

Hot Plug:

[Disabled]

[Enabled]

Advanced Error Reporting:

[Disabled]

[Enabled]

PCIe Speed:

[Auto]

[Gen1]

[Gen2]

[Gen3]

Transmitter Half Swing:

[Disabled]

[Enabled]

Detect Timeout: 0

Extra Bus Reserved: 0

Reserved Memory: 10

Reserved I/O: 4

PCH PCIe LTR Configuration

LTR:

[Disabled]

[Enabled]

Snoop Latency Override:

[Disabled]

[Manual]

[Auto]

Non Snoop Latency Override:

[Disabled]

[Manual]

[Auto]

Force LTR Override:

[Disabled]

[Enabled]

LTR Lock:

[Disabled]

[Enabled]

Extra options

Detect Non-Compliance Device:

[Disabled]

[Enabled]

Prefetchable Memory: 10

Reserved Memory

Alignment: 1

Prefetchable Memory

Alignment: 1

USB/SATA/UFS

PCI Express Root Port 5

PCI Express Root Port 5:

[Disabled]

[Enabled]

Connection Type:

[Built-in]

[Slot]

ASPM:

[Disabled]

[L0s]

[L1]

[L0sL1]

[Auto]

L1 Substates:

[Disabled]

[L1.1]

[L1.1 & L1.2]

ACS:

[Disabled]

[Enabled]

Multi-VC:

[Disabled]

[Enabled]

VC to TC Mapping

TC0: VC0

TC1:

[VC0]

[VC1]

TC2:

[VC0]

[VC1]

TC3:

[VC0]

[VC1]

TC4:

[VC0]

[VC1]

TC5:

[VC0]

[VC1]

TC6:

[VC0]

[VC1]

TC7:

[VC0]

[VC1]

PTM:

[Disabled]

[Enabled]

DPC:

[Disabled]

[Enabled]

EDPC:

[Disabled]

[Enabled]

URR:

[Disabled]

[Enabled]

FER:

[Disabled]

[Enabled]

NFER:

[Disabled]

[Enabled]

CER:

[Disabled]

[Enabled]

SEFE:

[Disabled]

[Enabled]

SENFE:

[Disabled]

[Enabled]

SECE:
[Disabled]
[Enabled]
PME SCI:
[Disabled]
[Enabled]
Hot Plug:
[Disabled]
[Enabled]
Advanced Error Reporting:
[Disabled]
[Enabled]
PCIe Speed:
[Auto]
[Gen1]
[Gen2]
[Gen3]
Transmitter Half Swing:
[Disabled]
[Enabled]
Detect Timeout: 0
Extra Bus Reserved: 0
Reserved Memory: 10
Reserved I/O: 4

PCH PCIe LTR Configuration
LTR:
[Disabled]
[Enabled]
Snoop Latency Override:
[Disabled]
[Manual]
[Auto]
Non Snoop Latency Override:
[Disabled]
[Manual]
[Auto]
Force LTR Override:
[Disabled]
[Enabled]
LTR Lock:
[Disabled]

[Enabled]

Extra options

Detect Non-Compliance Device:

[Disabled]

[Enabled]

Prefetchable Memory: 10

Reserved Memory

Alignment: 1

Prefetchable Memory

Alignment: 1

PCI Express Root Port 6 Lane configured as USB/SATA/UFS

PCI Express Root Port 7

PCI Express Root Port 7:

[Disabled]

[Enabled]

Connection Type:

[Built-in]

[Slot]

ASPM:

[Disabled]

[L0s]

[L1]

[L0sL1]

[Auto]

L1 Substates:

[Disabled]

[L1.1]

[L1.1 & L1.2]

ACS:

[Disabled]

[Enabled]

Multi-VC:

[Disabled]

[Enabled]

VC to TC Mapping

TC0: VC0

TC1:

[VC0]

[VC1]

TC2:

[VC0]

[VC1]

TC3:

[VC0]

[VC1]

TC4:

[VC0]

[VC1]

TC5:

[VC0]

[VC1]

TC6:

[VC0]

[VC1]

TC7:

[VC0]

[VC1]

PTM:

[Disabled]

[Enabled]

DPC:

[Disabled]

[Enabled]

EDPC:

[Disabled]

[Enabled]

URR:

[Disabled]

[Enabled]

FER:

[Disabled]

[Enabled]

NFER:

[Disabled]

[Enabled]

CER:

[Disabled]

[Enabled]

SEFE:

[Disabled]

[Enabled]

SENFE:

[Disabled]

[Enabled]

SECE:

[Disabled]

[Enabled]

PME SCI:

[Disabled]

[Enabled]

Hot Plug:

[Disabled]

[Enabled]

Advanced Error Reporting:

[Disabled]

[Enabled]

PCIe Speed:

[Auto]

[Gen1]

[Gen2]

[Gen3]

Transmitter Half Swing:

[Disabled]

[Enabled]

Detect Timeout: 0

Extra Bus Reserved: 0

Reserved Memory: 10

Reserved I/O: 4

PCH PCIe LTR Configuration

LTR:

[Disabled]

[Enabled]

Snoop Latency Override:

[Disabled]

[Manual]

[Auto]

Non Snoop Latency Override:

[Disabled]

[Manual]

[Auto]

Force LTR Override:

[Disabled]

[Enabled]

LTR Lock:

[Disabled]

[Enabled]

Extra options

Detect Non-Compliance Device:
[Disabled]
[Enabled]

Prefetchable Memory: 10

Reserved Memory
Alignment: 1

Prefetchable Memory
Alignment: 1

PCIE clocks

Clock0 assignment:
[Platform-POR]
[Enabled]
[Disabled]

ClkReq for Clock0:
[Platform-POR]
[Disabled]

Clock1 assignment:
[Platform-POR]
[Enabled]
[Disabled]

ClkReq for Clock1:
[Platform-POR]
[Disabled]

Clock2 assignment:
[Platform-POR]
[Enabled]
[Disabled]

ClkReq for Clock2:
[Platform-POR]
[Disabled]

Clock3 assignment:
[Platform-POR]
[Enabled]
[Disabled]

ClkReq for Clock3:
[Platform-POR]
[Disabled]

Clock4 assignment:
[Platform-POR]
[Enabled]

[Disabled]

ClkReq for Clock4:

[Platform-POR]

[Disabled]

Clock5 assignment:

[Platform-POR]

[Enabled]

[Disabled]

ClkReq for Clock5:

[Platform-POR]

[Disabled]

SATA Configuration

SATA Configuration

SATA Controller(s):

[Enabled]

[Disabled]

SATA Mode Selection: AHCI

SATA Ports Multiplier:

[Enabled]

[Disabled]

SATA Test Mode:

[Enabled]

[Disabled]

Software Feature Mask Configuration

Software Feature Mask Configuration

HDD Unlock:

[Disabled]

[Enabled]

LED Locate:

[Disabled]

[Enabled]

Aggressive LPM Support:

[Disabled]

[Enabled]

Serial ATA Port 0 Empty

Software Preserve unknown

Port 0:

[Disabled]

[Enabled]

Hot Plug:

[Disabled]

[Enabled]

Configured as eSATA External: Hot Plug supported

[Disabled]

[Enabled]

Spin Up Device:

[Disabled]

[Enabled]

SATA Device Type:

[Hard Disk Drive]

[Solid State Drive]

Topology:

[Unknown]

[ISATA]

[Direct Connect]

[Flex]

[M2]

SATA Port 0 DevSlp:

[Disabled]

[Enabled]

SATA Port 0 RxPolarity:

[Disabled]

[Enabled]

DITO Configuration:

[Disabled]

[Enabled]

DITO Value 625

DM Value 15

Serial ATA Port 1 Empty

Software Preserve unknown

Port 1:

[Disabled]

[Enabled]

Hot Plug:

[Disabled]

[Enabled]

Configured as eSATA External: Hot Plug supported

[Disabled]

[Enabled]

Spin Up Device:

[Disabled]

[Enabled]

SATA Device Type:

[Hard Disk Drive]

[Solid State Drive]

Topology:

[Unknown]

[ISATA]

[Direct Connect]

[Flex]

[M2]

SATA Port 1 DevSlp:

[Disabled]

[Enabled]

SATA Port 1 RxPolarity:

[Disabled]

[Enabled]

DITO Configuration:

[Disabled]

[Enabled]

DITO Value 625

DM Value 15

Serial ATA Port 2 Empty

Software Preserve unknown

Port 2:

[Disabled]

[Enabled]

Hot Plug:

[Disabled]

[Enabled]

Configured as eSATA Hot Plug supported

External:

[Disabled]

[Enabled]

Spin Up Device:

[Disabled]

[Enabled]

SATA Device Type:

[Hard Disk Drive]

[Solid State Drive]

Topology:

[Unknown]

[ISATA]

[Direct Connect]

[Flex]

[M2]

SATA Port 2 DevSlp:

[Disabled]

[Enabled]

SATA Port 2 RxPolarity:

[Disabled]

[Enabled]

DITO Configuration:

[Disabled]

[Enabled]

DITO Value 625

DM Value 15

USB Configuration

USB Configuration

XHCI Compliance Mode:

[Disabled]

[Enabled]

xDCI Support:

[Disabled]

[Enabled]

USB2 PHY Sus Well Power Gating:

[Disabled]

[Enabled]

USB3 Link Speed Selection:

[GEN1]

[GEN2]

USB PDO Programming:

[Disabled]

[Enabled]

USB Overcurrent:

[Disabled]

[Enabled]

USB Internal Pullup resistor:

[Disabled]

[Enabled]

USB Overcurrent Lock:

[Disabled]

[Enabled]

USB Port Disable Override:

[Disabled]

[Select Per-Pin]

USB Device/HOST Mode Override:

[Disabled]

[Select Per-Pin]

USB UCSI ACPI device:

[Disabled]

[Enabled]

SCS Configuration

eMMC 5.1 Controller:

[Disabled]

[Enabled]

eMMC 5.1 HS400 Mode:

[Disabled]

[Enabled]

Enable HS400 software tuning:

[Disabled]

[Enabled]

Enable HS400 software tuning:

[33 0hm]

[40 0hm]

[50 0hm]

SDCard 3.0 Controller:

[Disabled]

[Enabled]

State After G3:

[S0 State]

[S5 State]

3.6 Security Settings

3.6.1 Administrator Password

3.6.2 User Password

3.7 Boot Settings

Setup Prompt Timeout [1]

Bootup Numlock State:

[On]

[off]

Quiet Boot:

[Disabled]

[Enabled]

Fast Boot:

[Disabled]

[Enabled]

3.8 Save & Exit Settings

Save Changes and Exit

Save & Exit Setup save Configuration and exit ?

[Yes]

[No]

Discard Changes and Exit

Exit Without Saving Quit without saving?

[Yes]

[No]

Save Changes and Reset

Reset the system after Saving The changes?

[Yes]

[No]

Discard Changes and Reset

Reset system setup without Saving any changes?

[Yes]

[No]

Save Changes

Save Setup done so far to any of the setup options?

[Yes]

[No]

Discard Changes

Discard Changes done so far to any of the setup options?

[Yes]

[No]

Restore Defaults

Restore /Load Defaults values for all the setup options?

[Yes]

[No]

Save as user Defaults

Save the changes done so far as User Defaults?

[Yes]

[No]

Restore user Defaults

Restore the User Defaults to all the setup options?

[Yes]

[No]

Chapter 4 Installation of Drivers

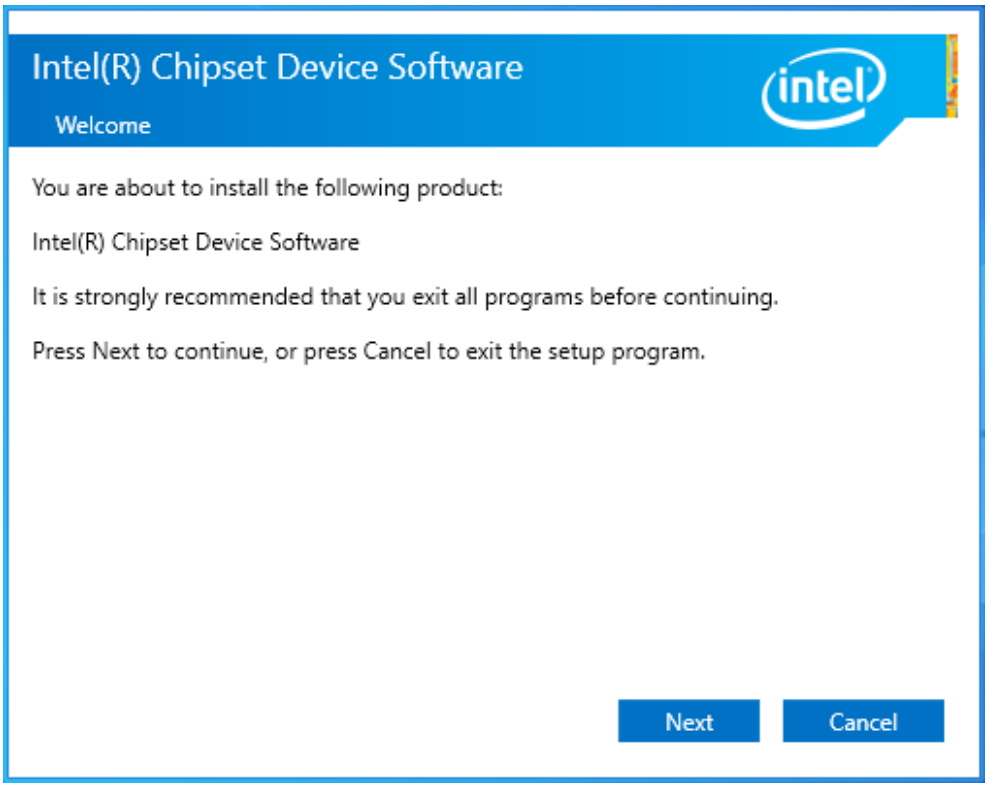
This chapter describes the installation procedures for software and drivers under the windows 10. The software and drivers are included with the motherboard. The contents include **Intel Chipset, Graphics chipset driver, Audio driver, LAN driver and Intel® management engine interface.** The instructions are as below.

Important Note:
After installing your Windows operating system, you must install first the Intel Chipset Software Installation Utility before proceeding with the installation of drivers.

4.1 Intel Chipset

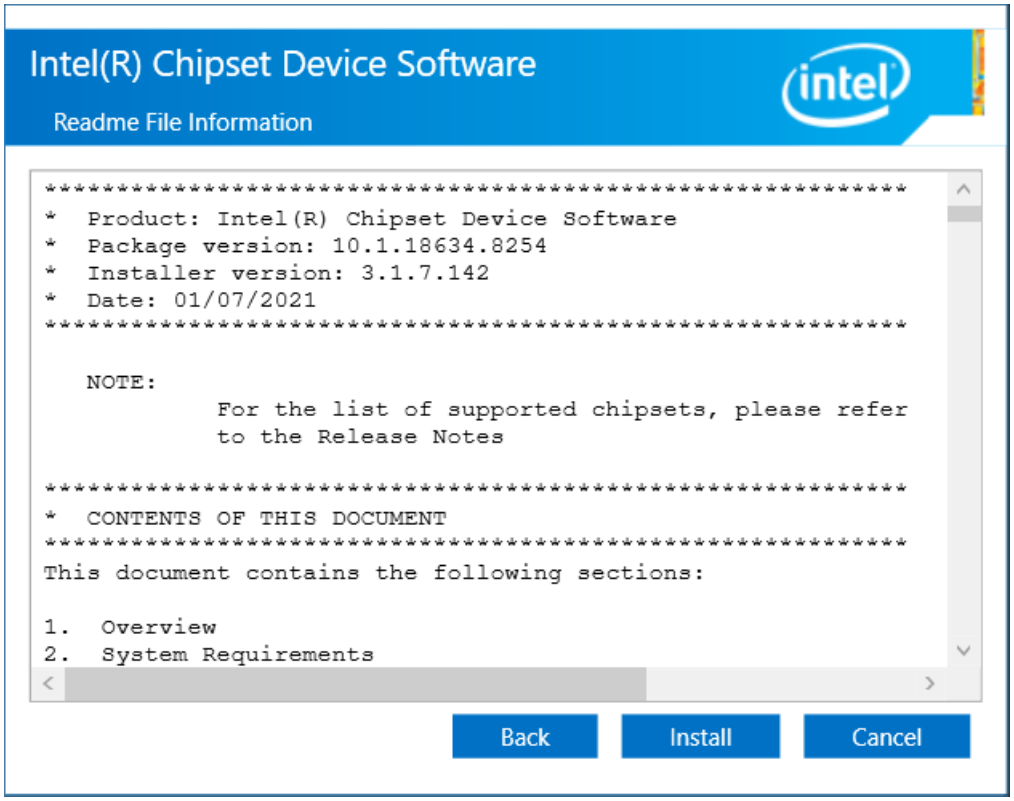
To install the Intel chipset driver, please follow the steps below.

Step 1. Here is welcome page. Please make sure you save and exit all programs before install. Click **Next**.

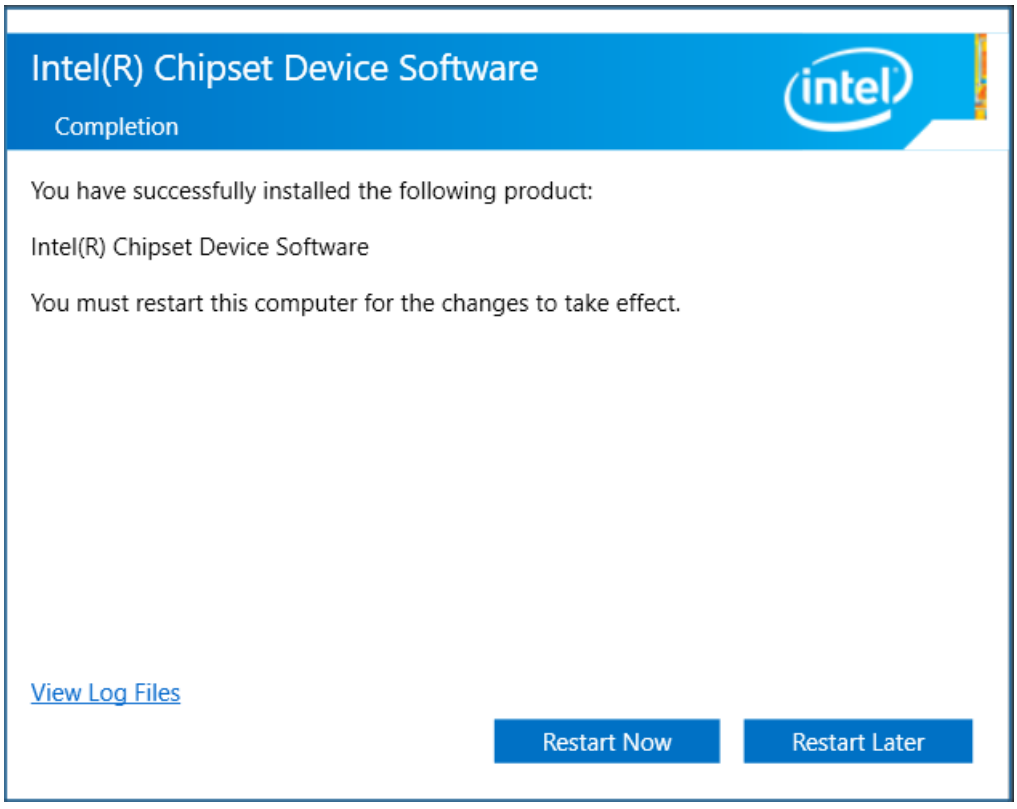


Step 2. Read the license agreement. Click **Accept** to accept all of the terms of the license agreement.

Step 3. Click **Install** to begin the installation.



Step 4. Select **Restart Now** to reboot your computer for the changes to take effect.

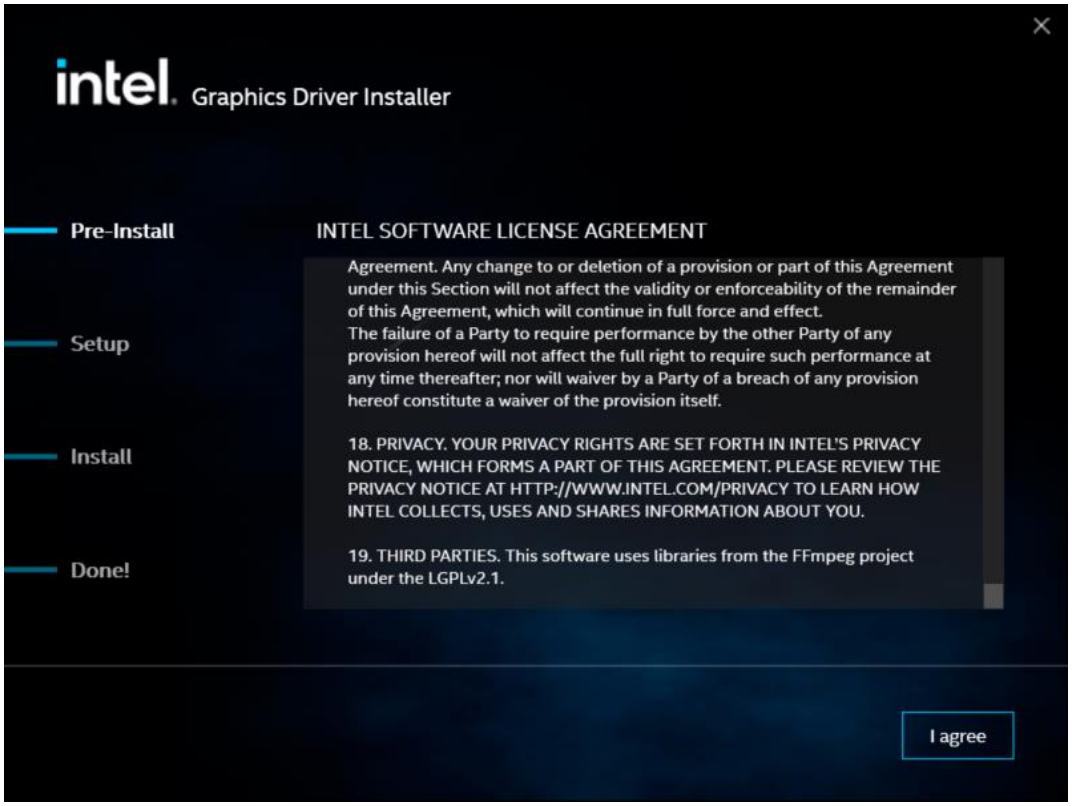


4.2 Intel® HD Graphics Chipset

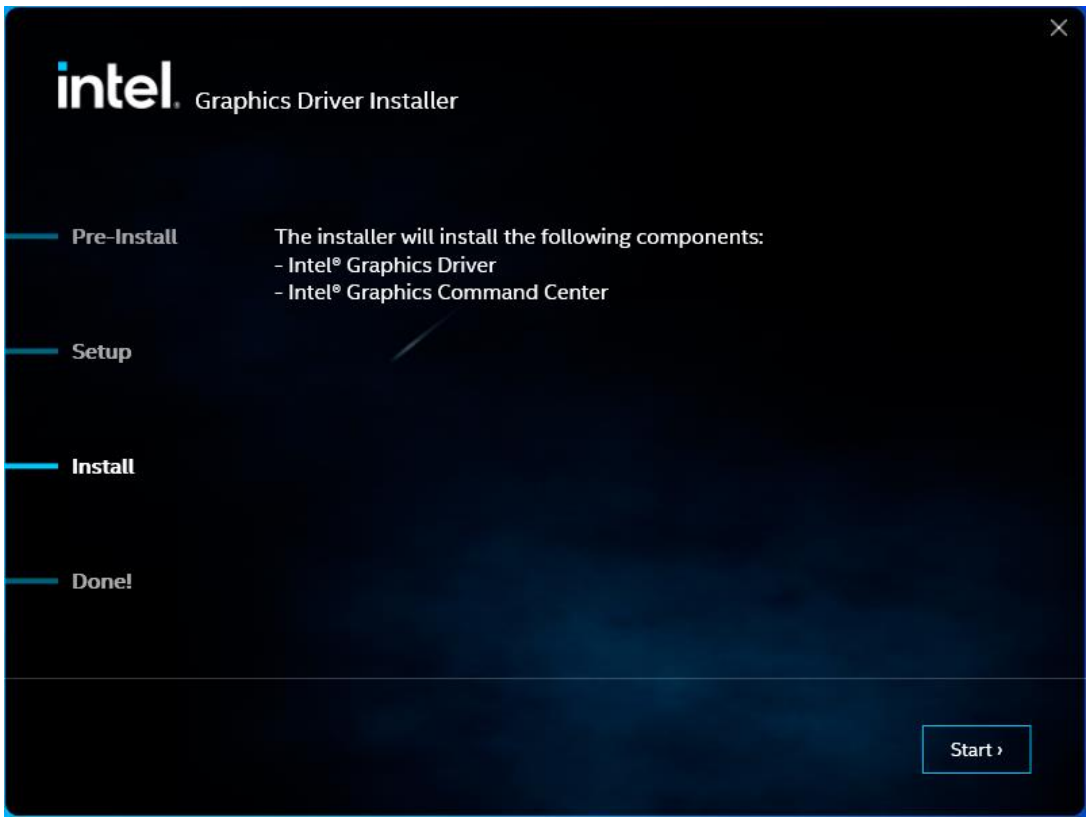
To install the Intel® HD Graphics Chipset, please follow the steps below.

Step 1. Click **Begin installation.**

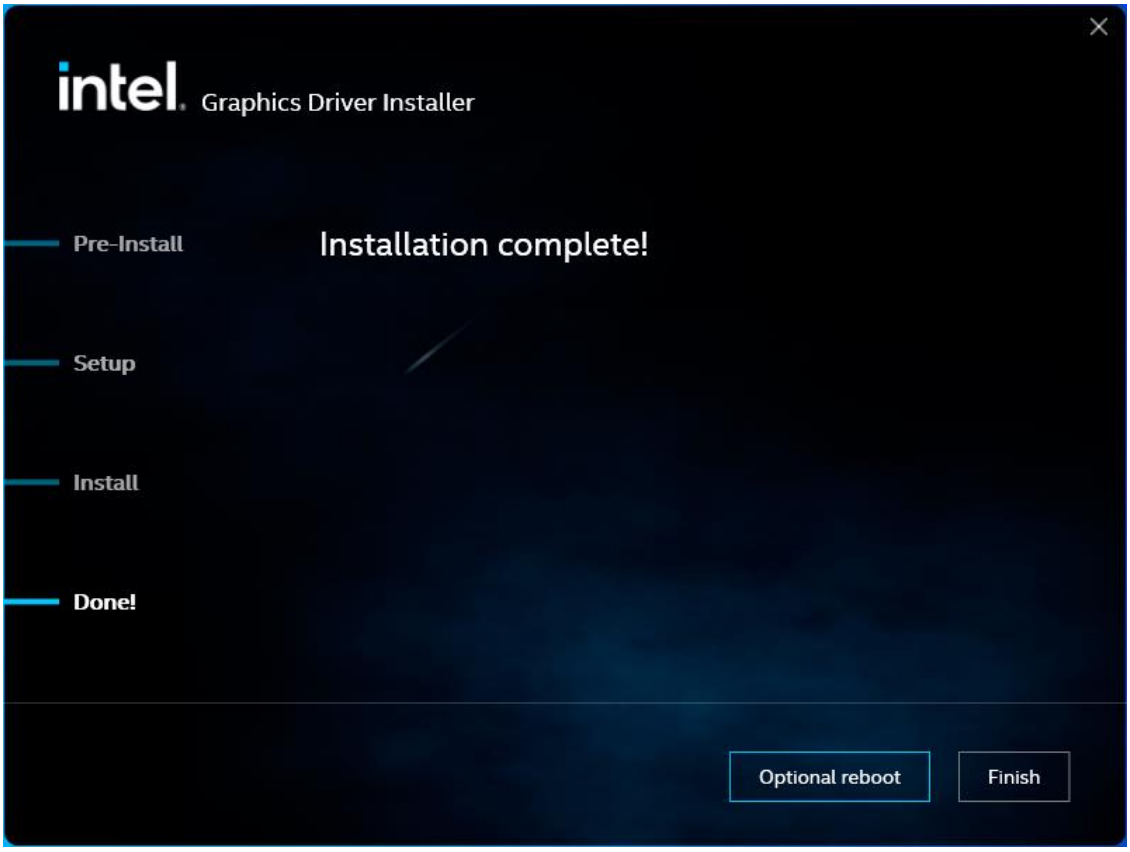
Step 2. Read the license agreement. Click **I agree** to accept all the terms of the license agreement.



Step 3. Choose **Install** function and Click **Start** to setup program.



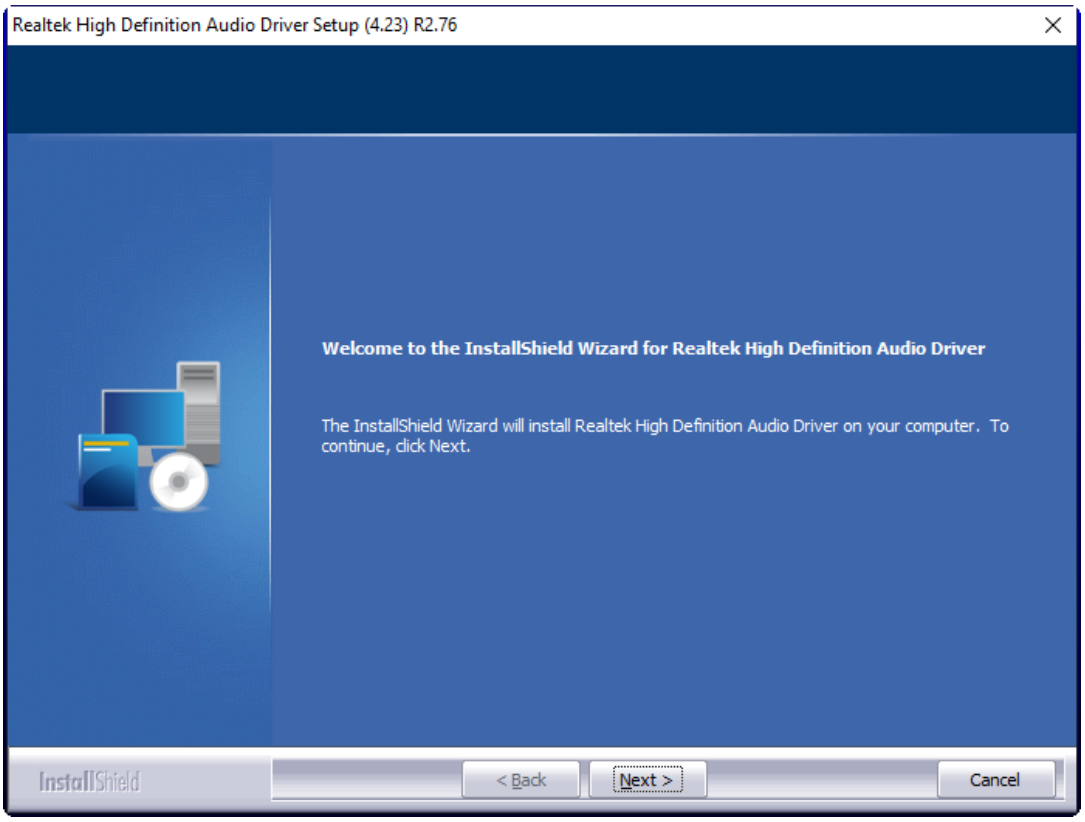
Step 5. Click **Finish** to complete installation.



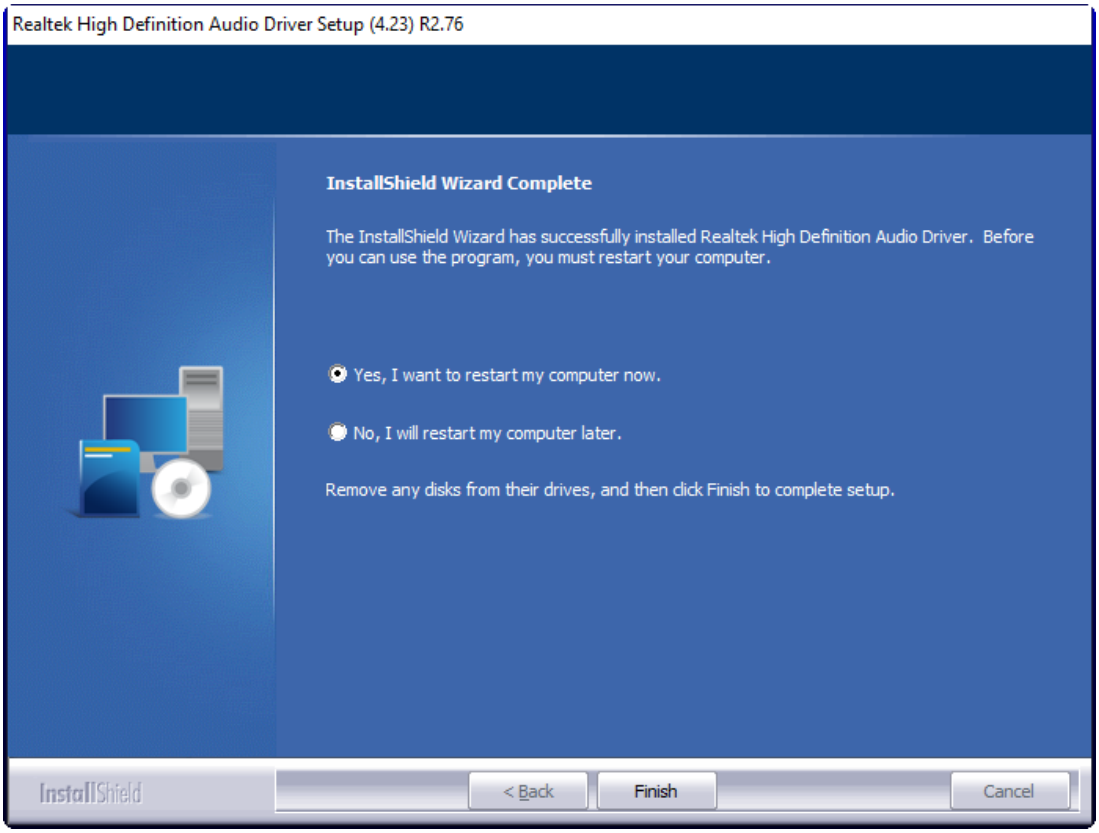
4.3 Realtek HD Audio Driver Installation

To install the Realtek HD Audio Driver, please follow the steps below.

Step 1. Click **Next** to continue.



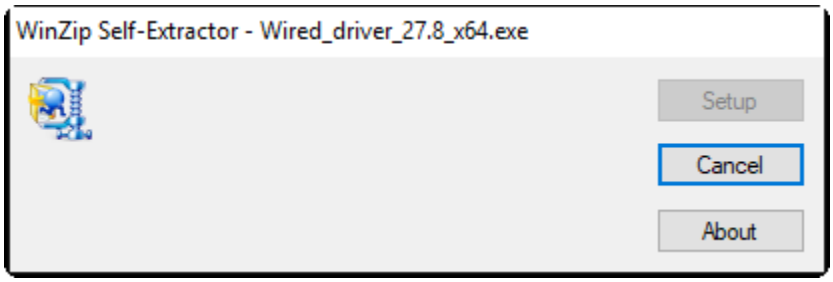
Step 2. Click **Yes, I want to restart my computer now**. Click **Finish** to complete the installation.



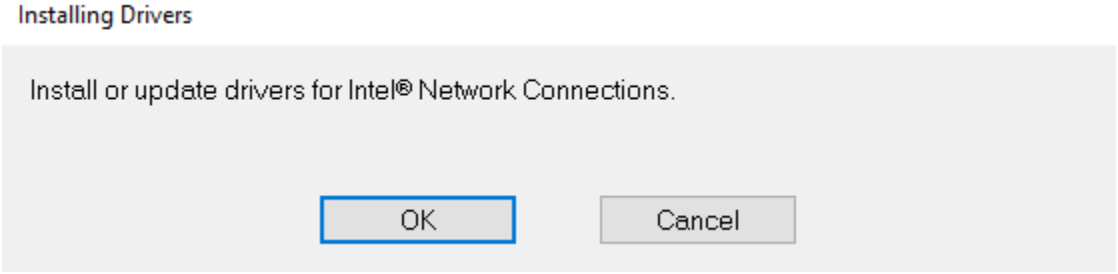
4.4 LAN Driver

To install the LAN driver, please follow the steps below.

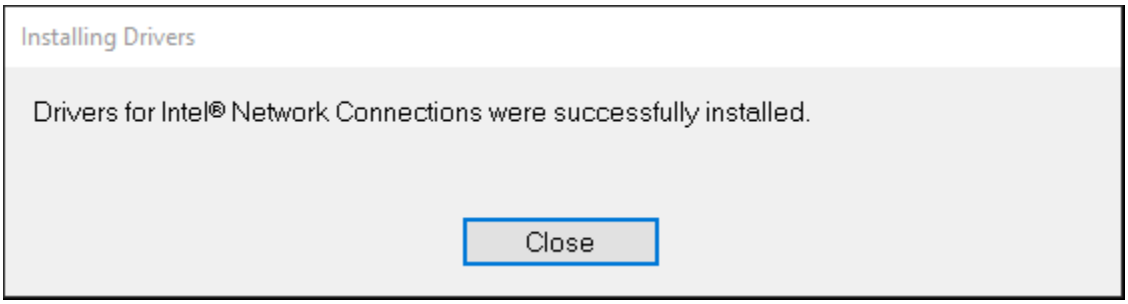
Step 1. Click **Zip File** to continue.



Step 3. Click **OK** to begin the installation.



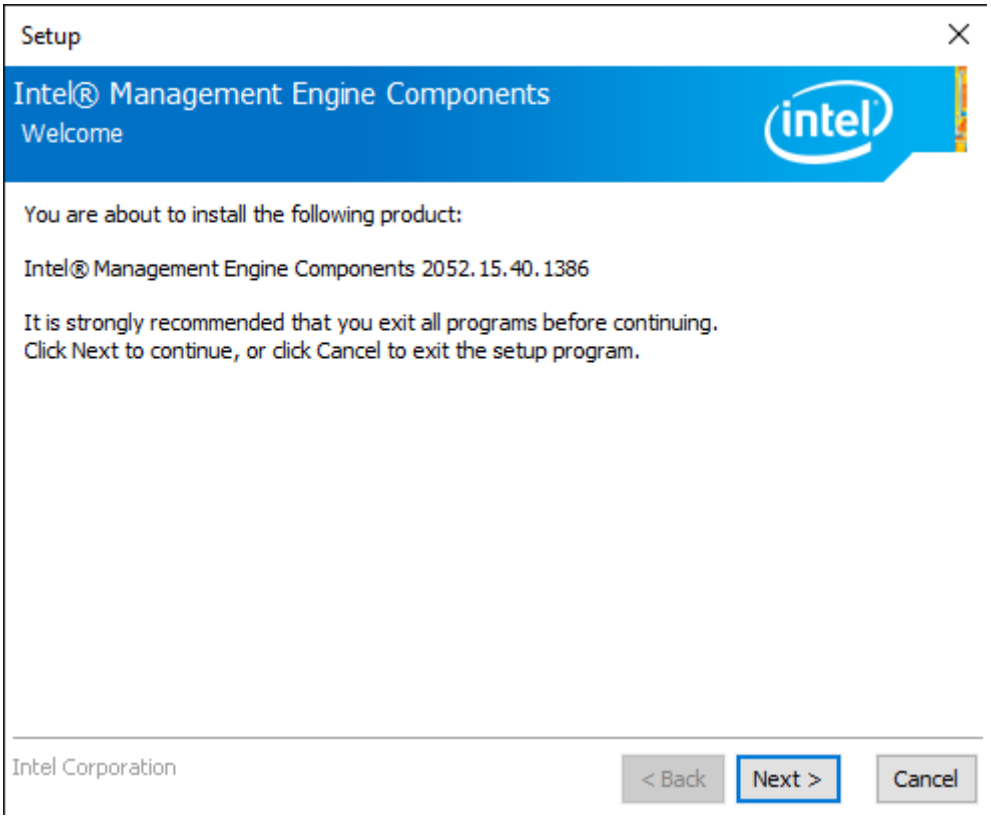
Step 4. Click **Close** to finish installation.



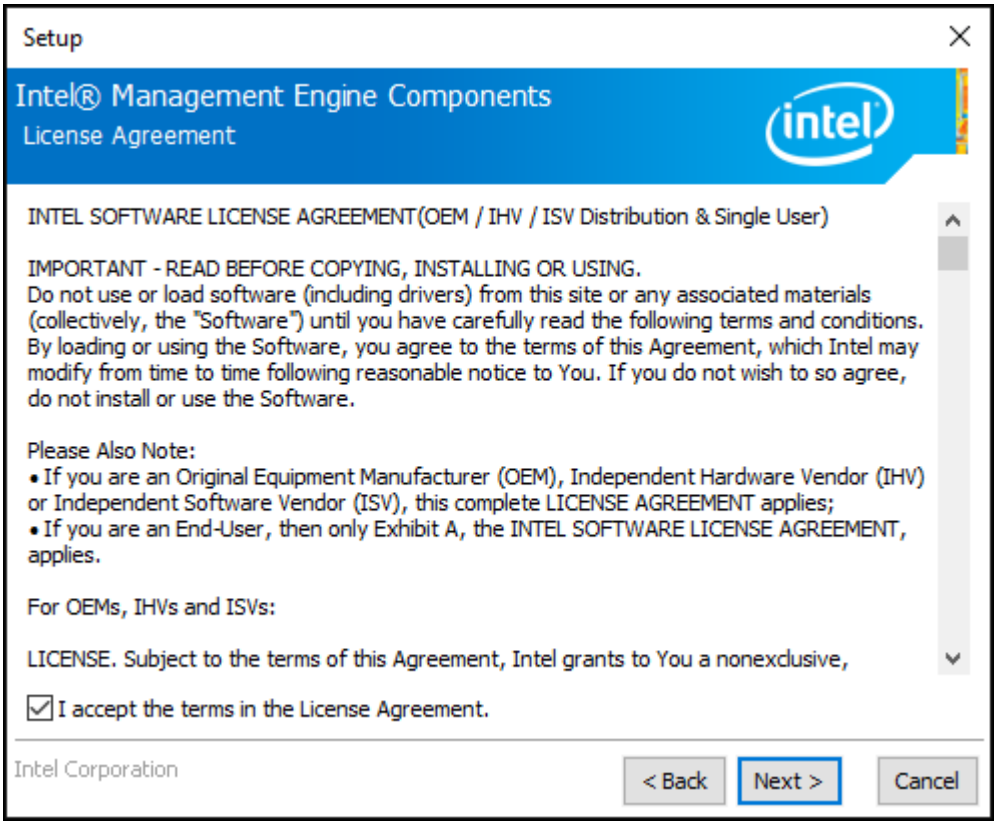
4.5 Intel® Management Engine Interface

To install the Intel® Management Engine Interface, please follow the steps below.

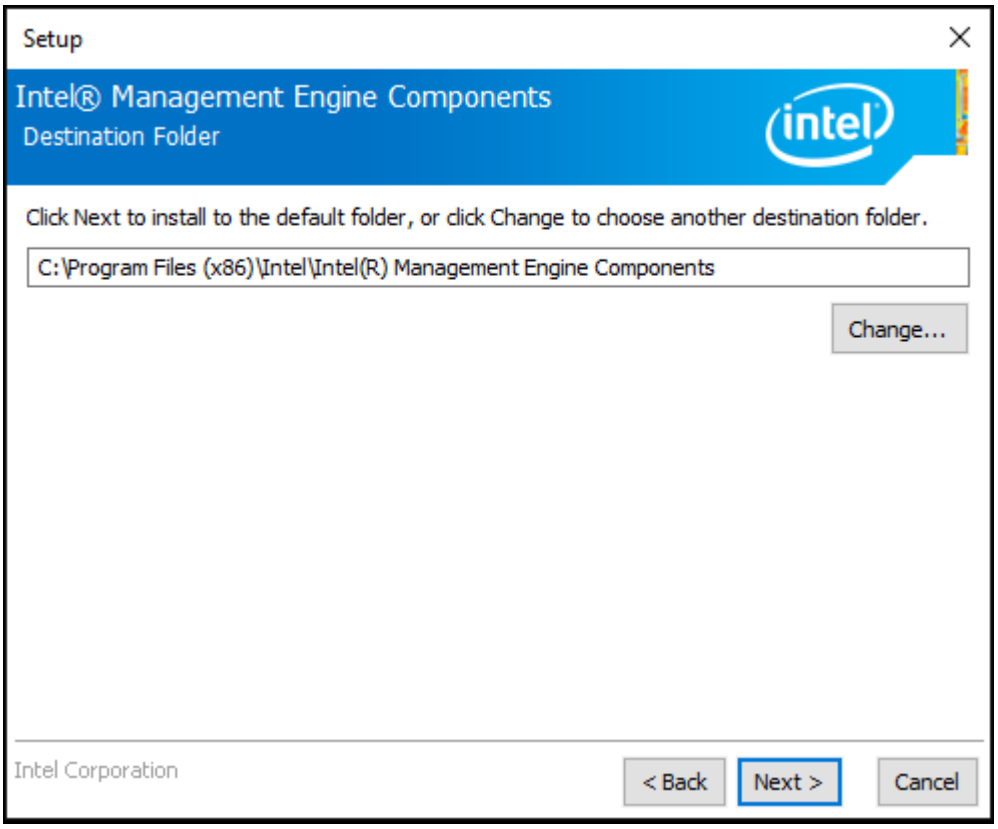
Step 1. Select setup language you need. Click **Next** to continue.



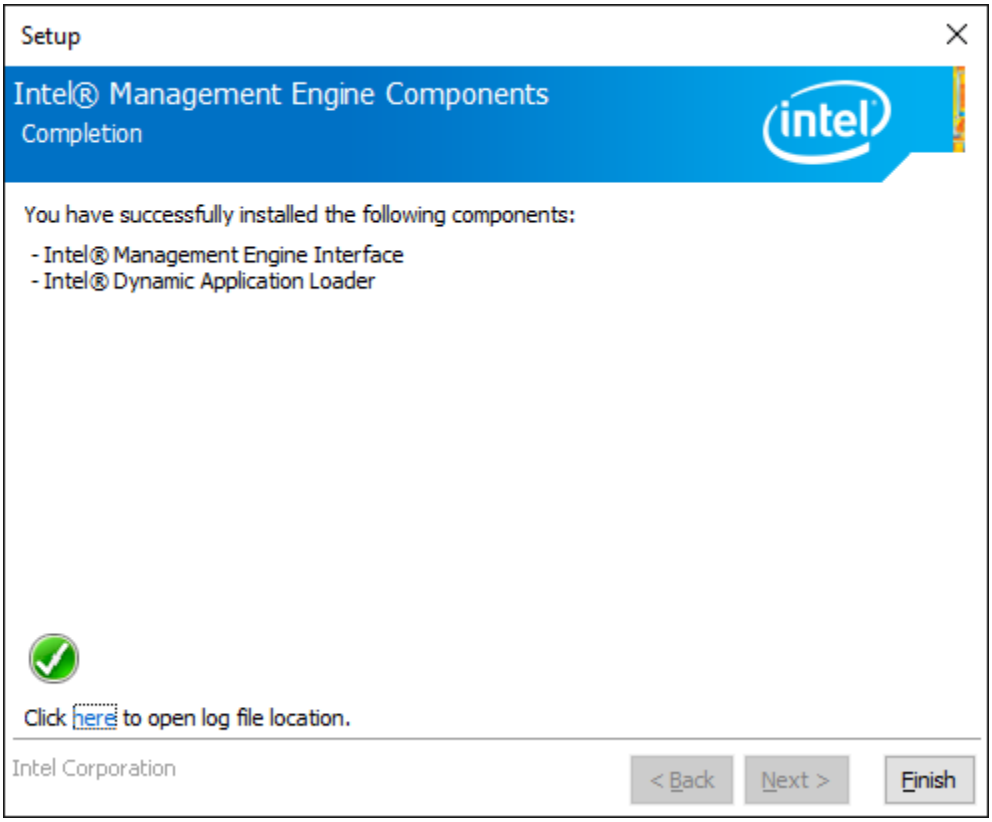
Step 2. Choose **I accept the terms in the License Agreement** and click **Next** to begin the installation.



Step 3. Click **Next** to continue.



Step 4. Click **Finish** to complete the installation.



4.6 Touch Screen Installation

This chapter describes how to install drivers and other software that will allow your touch screen work with different operating systems.

4.6.1 Windows 10 Universal Driver Installation for PenMount 6000 Series

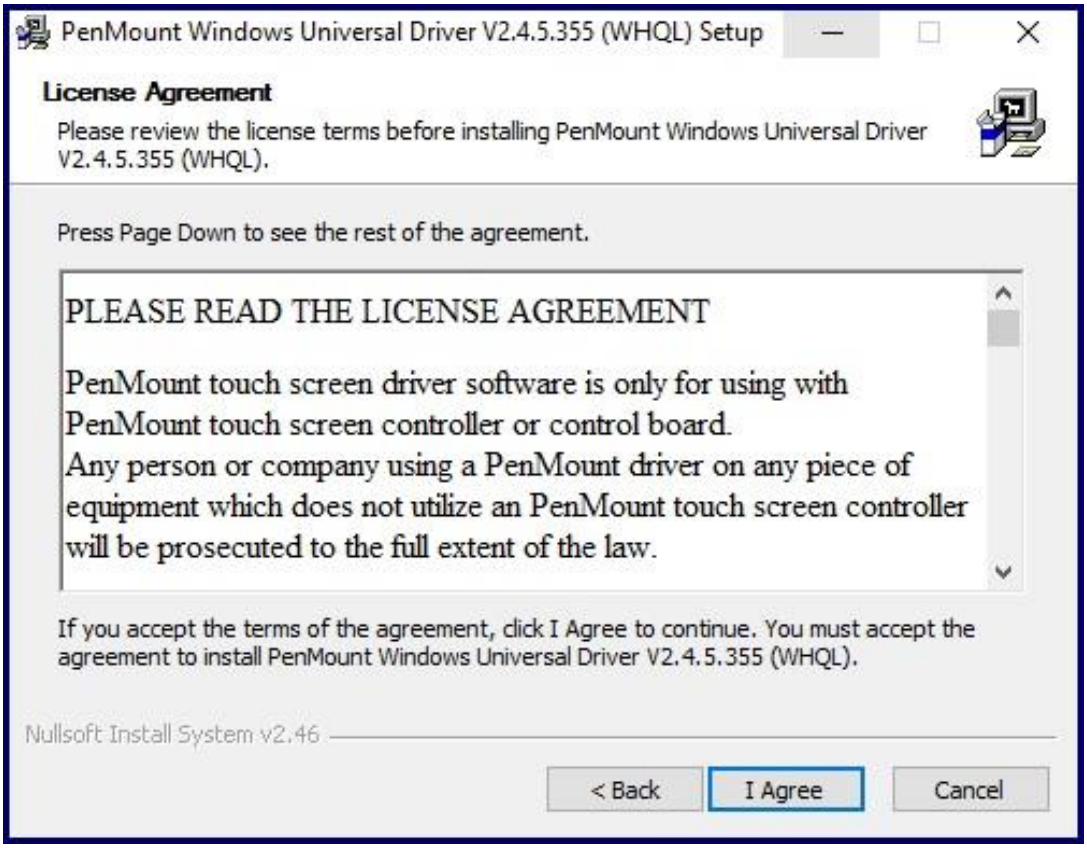
Before installing the Windows 10 driver software, you must have the Windows 10 system installed and running on your computer. You must also have one of the following PenMount 6000 series controller or control boards installed: PM6500, PM6300.

Resistive Touch

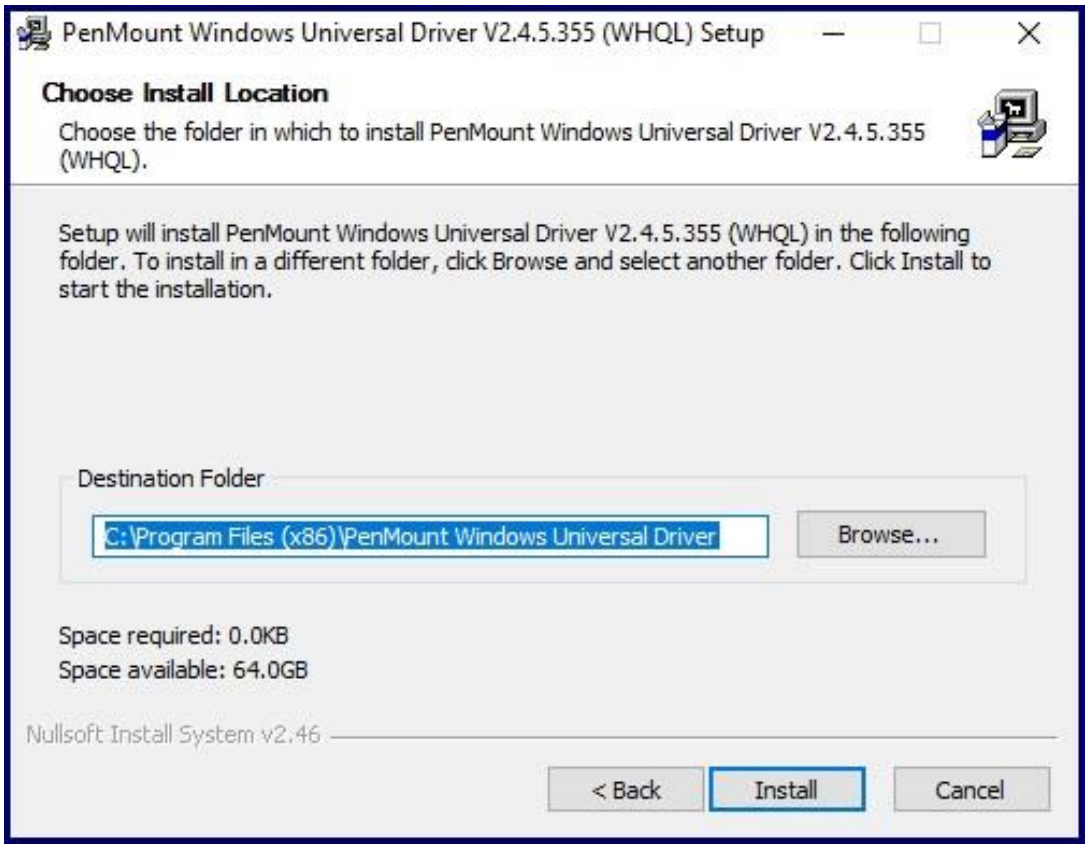
If you have an older version of the PenMount Windows 7 driver installed in your system, please remove it first. Follow the steps below to install the PenMount DMC6000 driver.

Step 1. Click **Next** to continue.

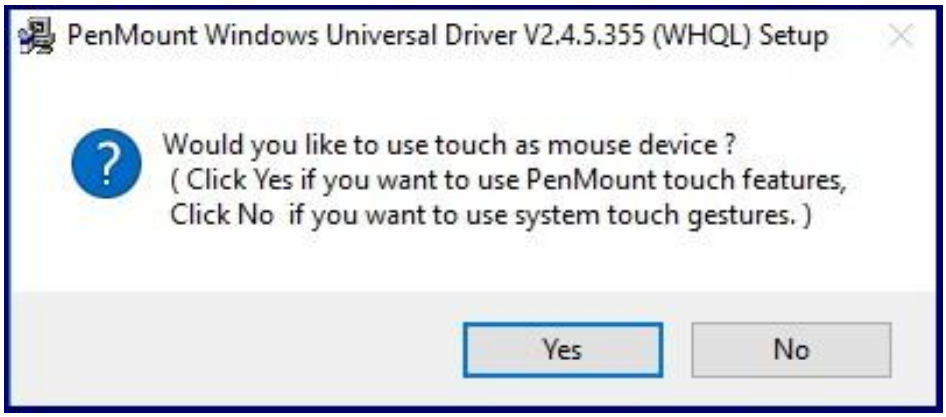
Step 2. Read the license agreement. Click **I Agree** to agree the license agreement.



Step 3. Choose the folder in which to install PenMount Windows Universal Driver. Click **Install** to start the installation.



Step 4. Click **Yes** to continue.



Step 5. Click **Finish** to complete installation.

4.6.2 Software Functions

Resistive Touch

Upon rebooting, the computer automatically finds the new 6000 controller board. The touch screen is connected but not calibrated. Follow the procedures below to carry out calibration.

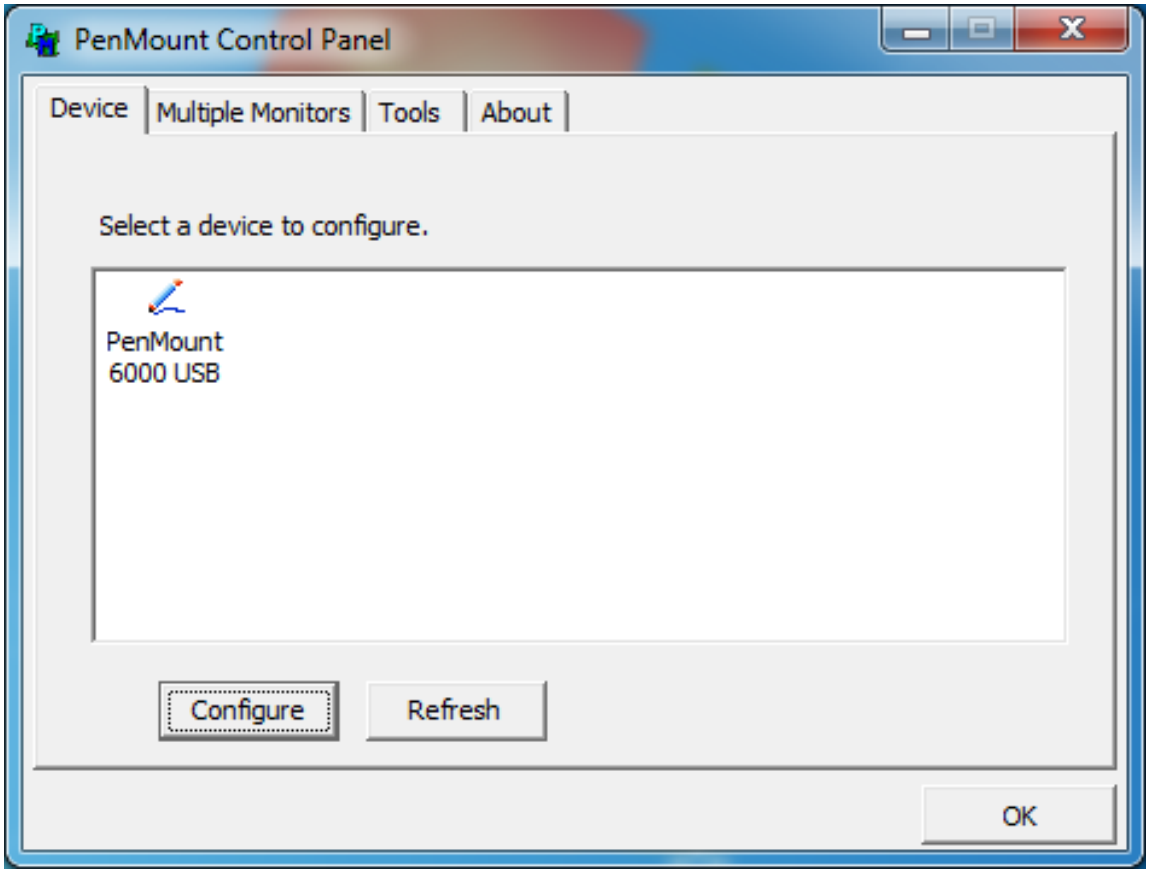
1. After installation, click the PenMount Monitor icon “PM” in the menu bar.
2. When the PenMount Control Panel appears, select a device to “Calibrate.”

PenMount Control Panel (Resistive Touch)

The functions of the PenMount Control Panel are **Device, Multiple Monitors** ,**Tools** and **About**, which are explained in the following sections.

Device

In this window, you can find out that how many devices be detected on your system.



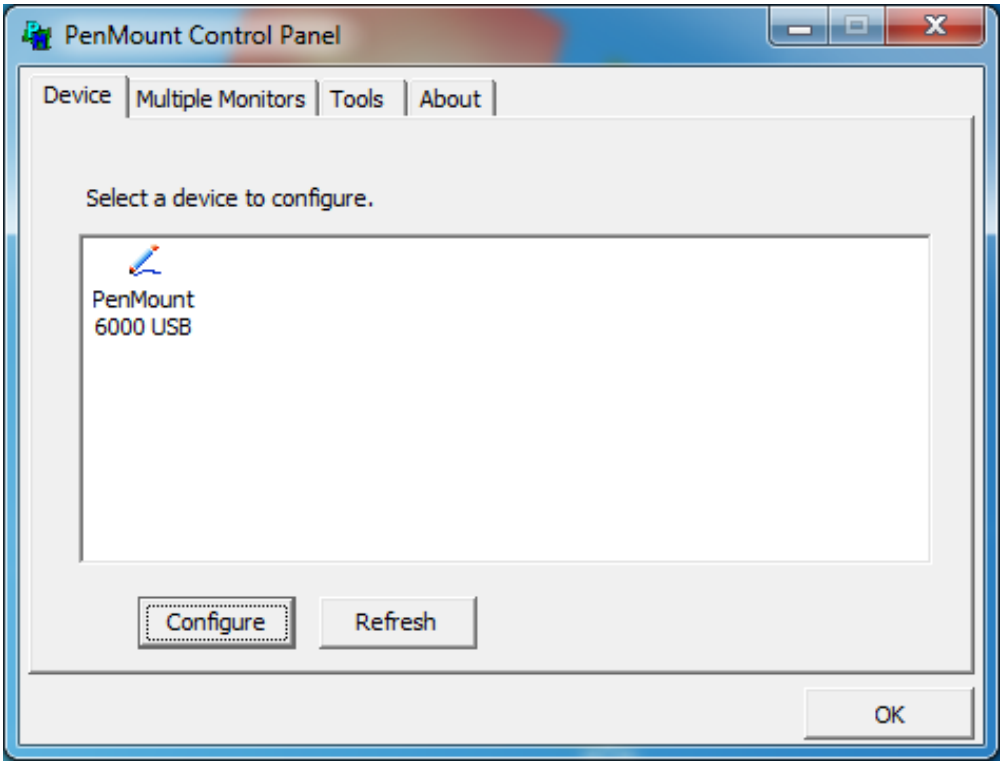
Calibrate

This function offers two ways to calibrate your touch screen. ‘Standard Calibration’ adjusts most touch screens. ‘Advanced Calibration’ adjusts aging touch screens.

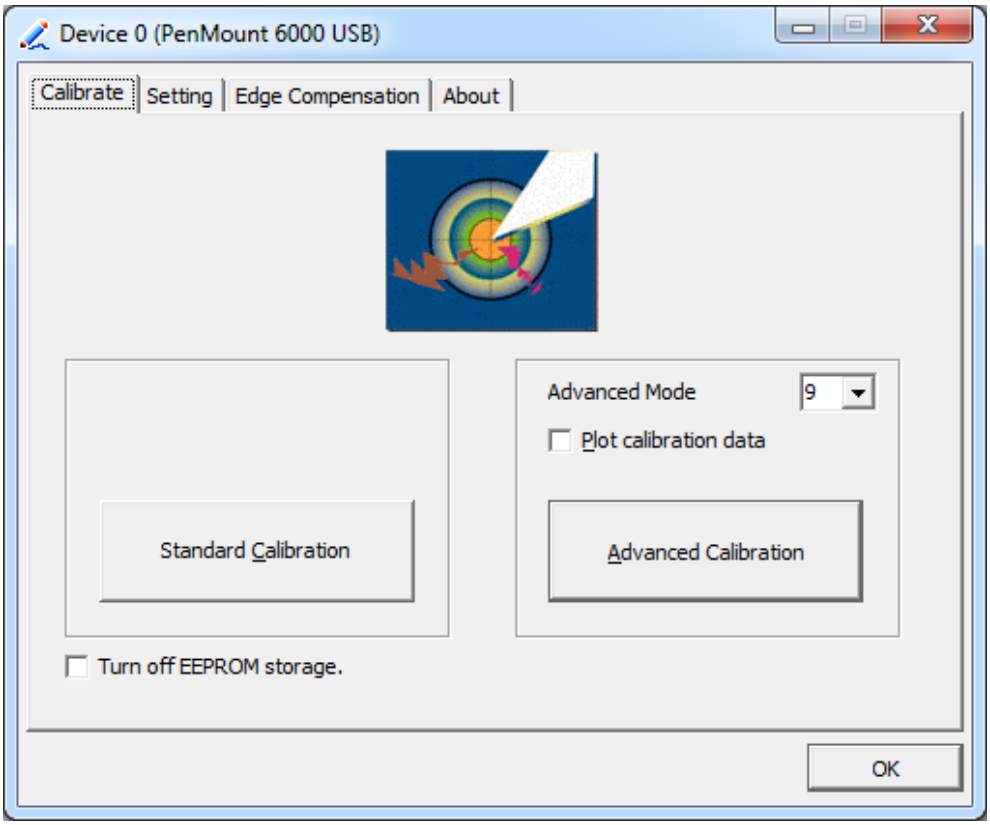
Standard Calibration	**Click this button and arrows appear pointing to red squares. Use your finger or stylus to touch the red squares in sequence. After the fifth red point calibration is complete. To skip, press ‘ESC’.**

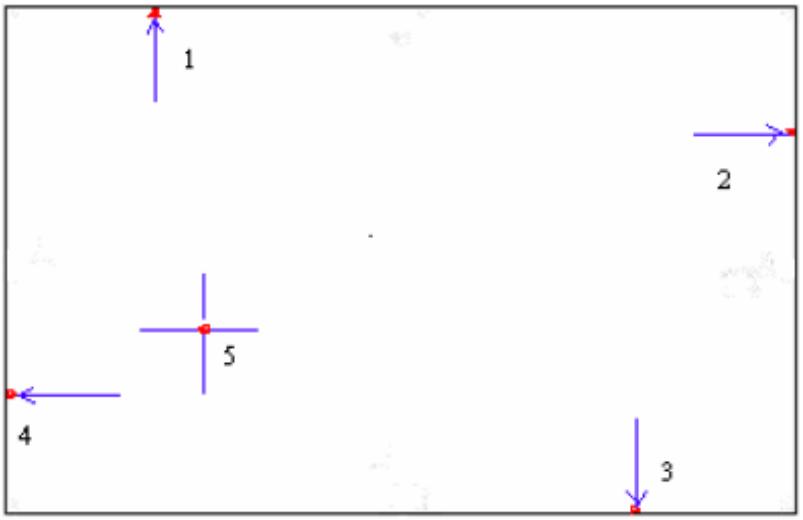
Advanced Calibration	**Advanced Calibration uses 4, 9, 16 or 25 points to effectively calibrate touch panel linearity of aged touch screens. Click this button and touch the red squares in sequence with a stylus. To skip, press ESC'.**

Step 1. Please select a device then click "Configure". You can also double click the device too.



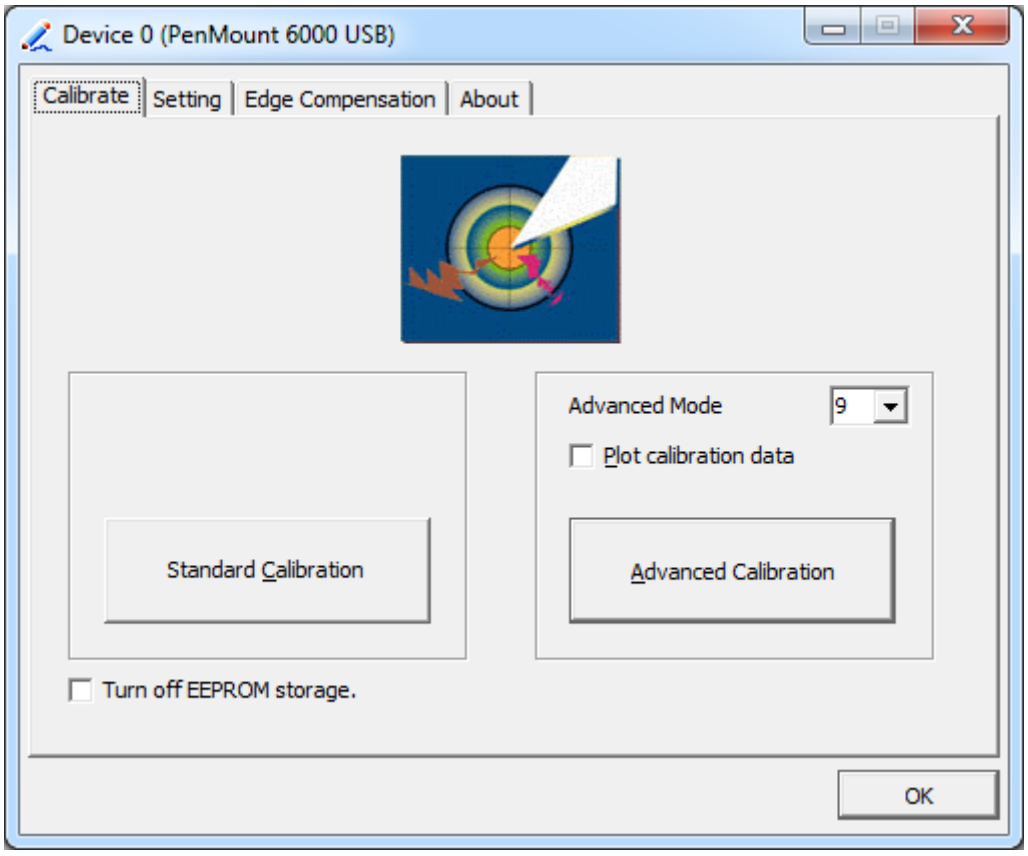
Step 2. Click "**Standard Calibration**" to start calibration procedure



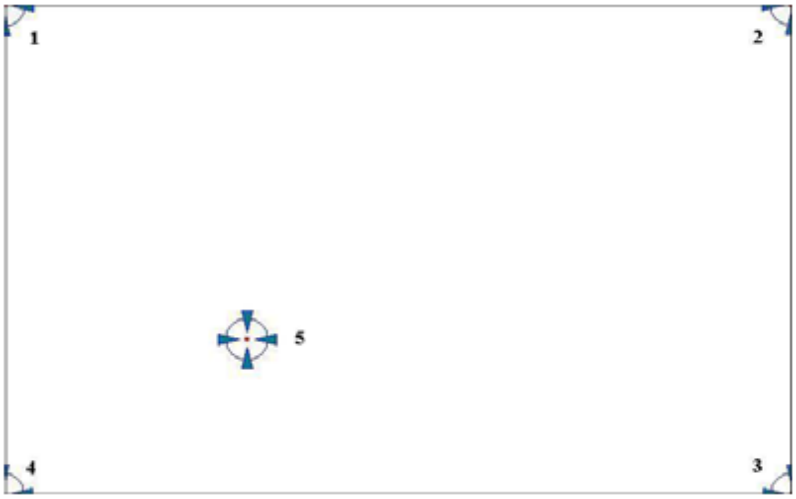


NOTE: The older the touch screen, the more Advanced Mode calibration points you need for an accurate calibration. Use a stylus during Advanced Calibration for greater accuracy. Please follow the step as below:

Step 3. Select **Device** to calibrate, then you can start to do **Advanced Calibration**.

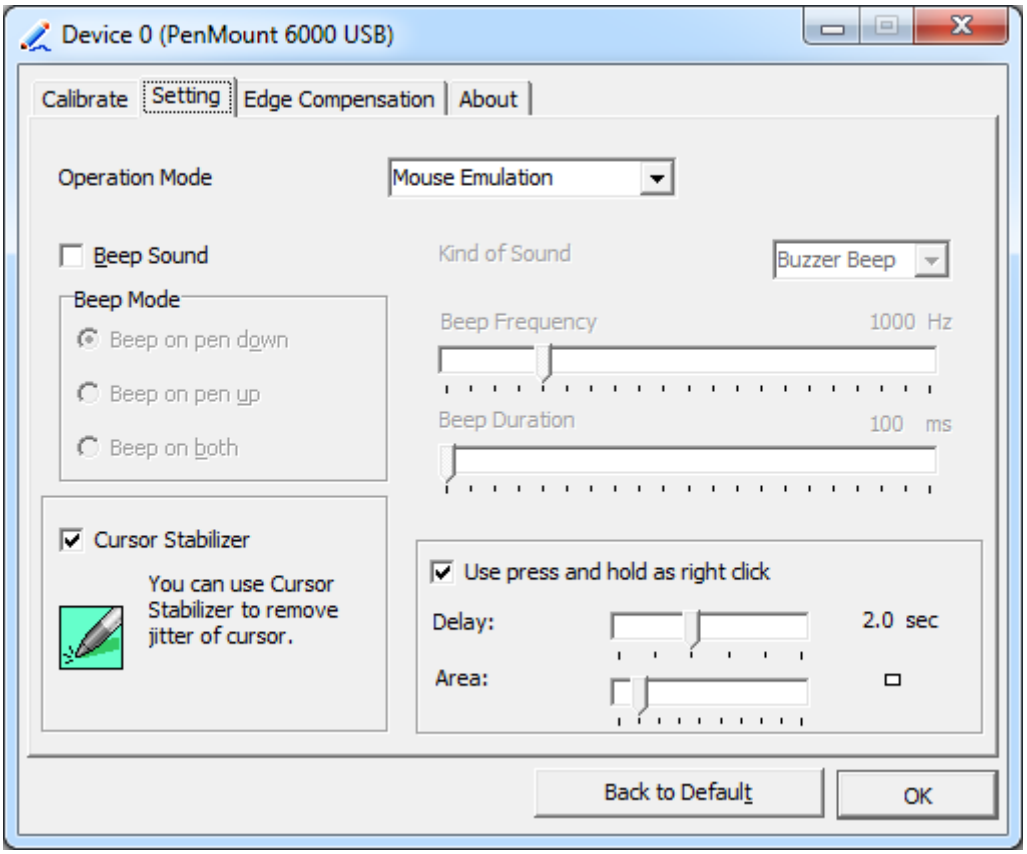


NOTE: Recommend to use a stylus during Advanced Calibration for greater accuracy.



Plot Calibration Data	**Check this function and a touch panel linearity comparison graph appears when you have finished Advanced Calibration. The blue lines show linearity before calibration and black lines show linearity after calibration.**
Turn off EEPROM storage	**The function disable for calibration data to write in Controller. The default setting is Enable.**

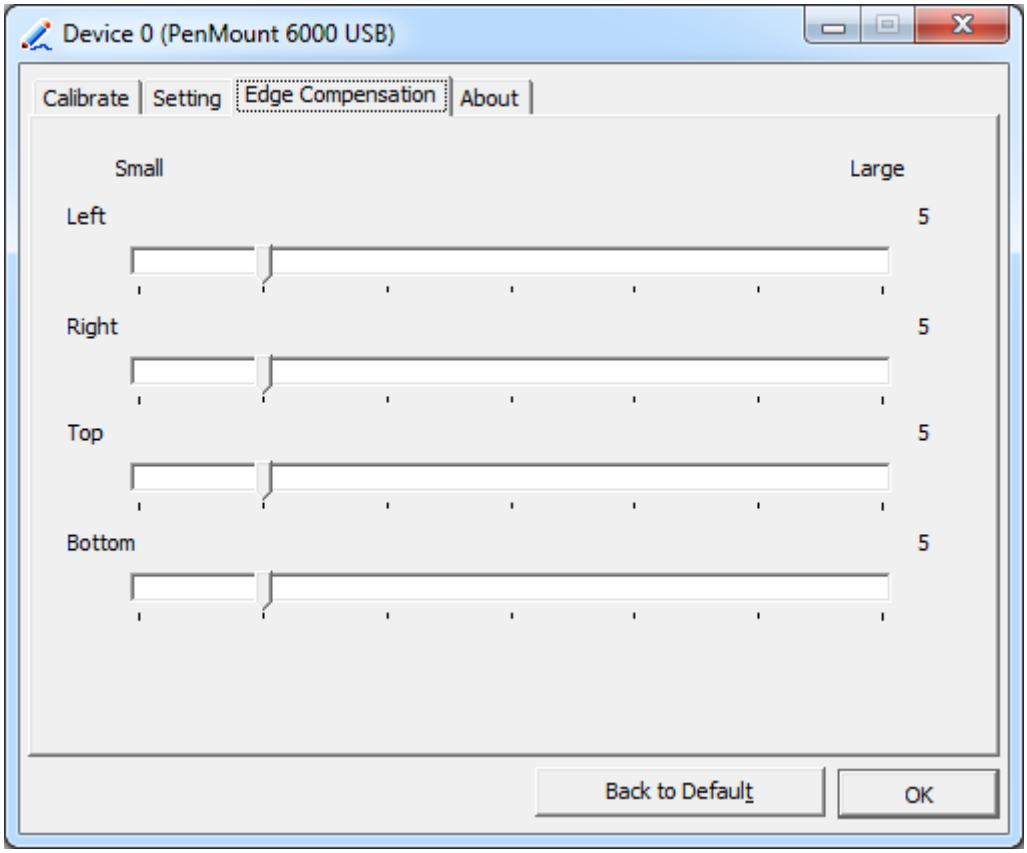
Setting



Touch Mode	**This mode enables and disables the mouse's ability to drag on-screen icons – useful for configuring POS terminals.** **Mouse Emulation – Select this mode and the mouse functions as normal and allows dragging of icons.** **Click on Touch – Select this mode and mouse only provides a click function, and dragging is disables.**
Beep Sound	**Enable Beep Sound – turns beep function on and off** **Beep on Pen Down – beep occurs when pen comes down** **Beep on Pen Up – beep occurs when pen is lifted up** **Beep on both – beep occurs when comes down and lifted up** **Beep Frequency – modifies sound frequency** **Beep Duration – modifies sound duration**
Cursor Stabilizer	**Enable the function support to prevent cursor shake.**
Use press and hold as right click	**You can set the time out and area for you need.**

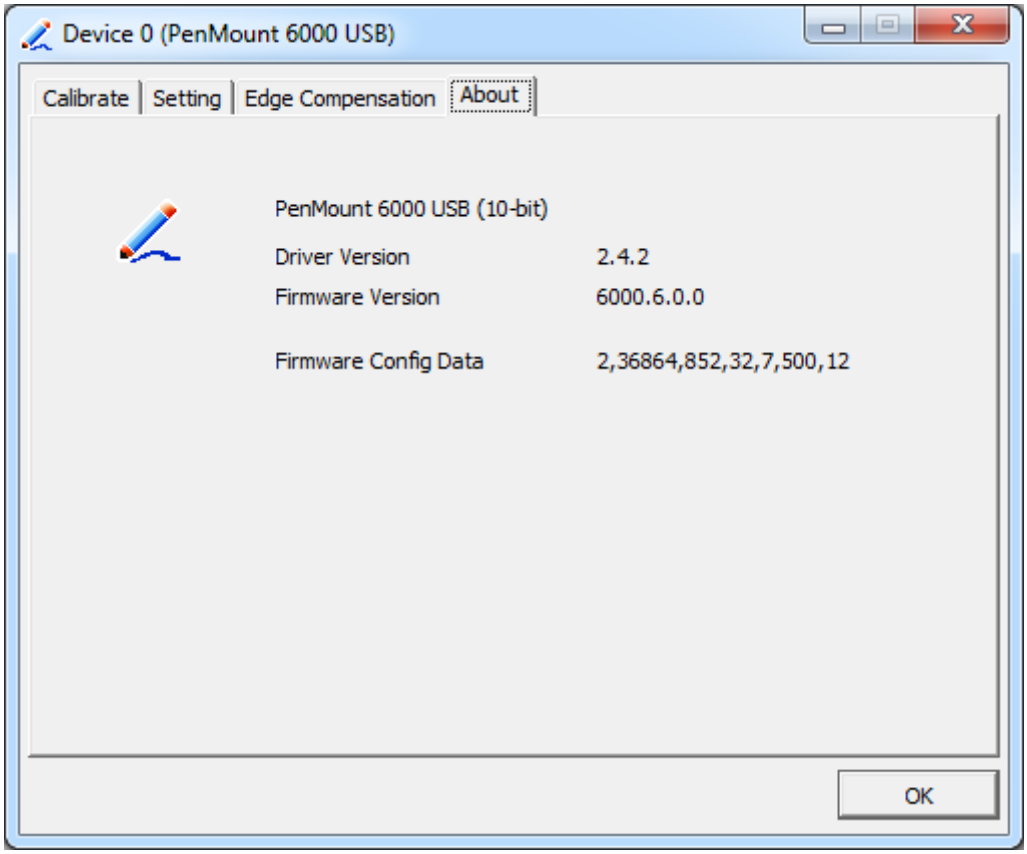
Edge Compensation

You can use Edge Compensation to calibrate more subtly.



About

This panel displays information about the PenMount controller and driver version.



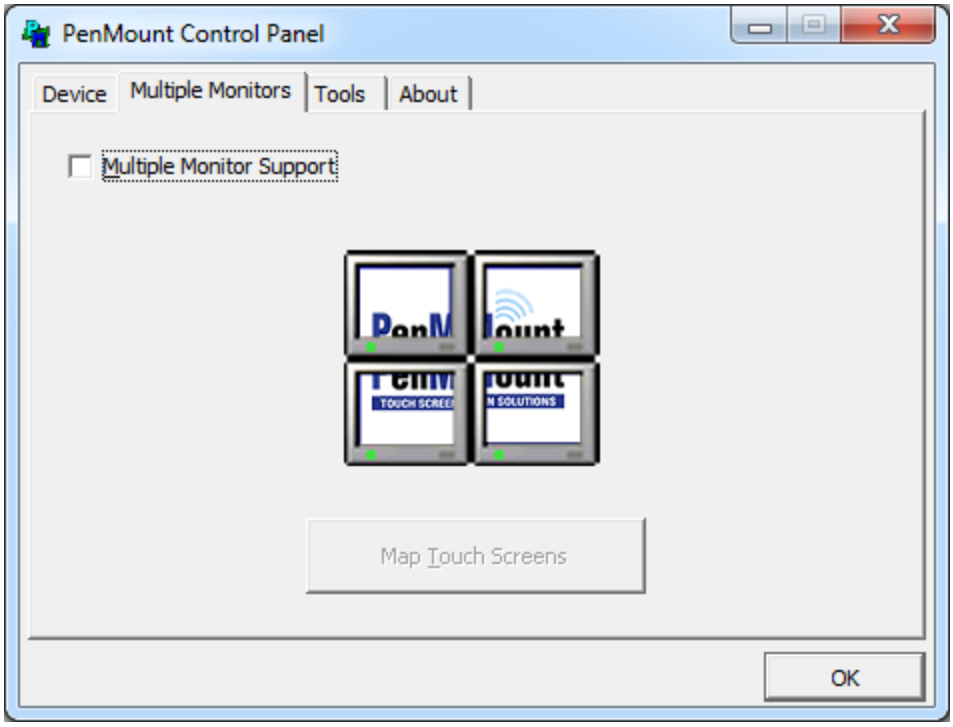
Multiple Monitors

Multiple Monitors support from two to six touch screen displays for one system. The PenMount drivers for Windows 7/8/8.1 support Multiple Monitors. This function supports from two to six touch screen displays for one system. Each monitor requires its own PenMount touch screen control board, either installed inside the display or in a central unit. The PenMount control boards must be connected to the computer COM ports via the USB interface. Driver installation procedures are the same as for a single monitor. Multiple Monitors support the following modes:
Windows Extends Monitor Function
Matrox DualHead Multi-Screen Function
nVidia nView Function

NOTE: The Multiple Monitor function is for use with multiple displays only. Do not use this function if you have only one touch screen display. Please note once you turn on this function the rotating function is disabled.

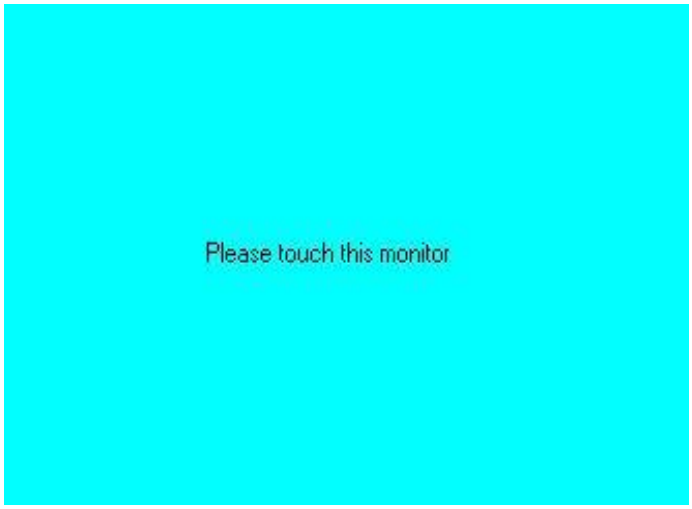
Enable the multiple display function as follows:

1. Check the **Enable Multiple Monitor Support** box; then click **Map Touch Screens** to assign touch controllers to displays.



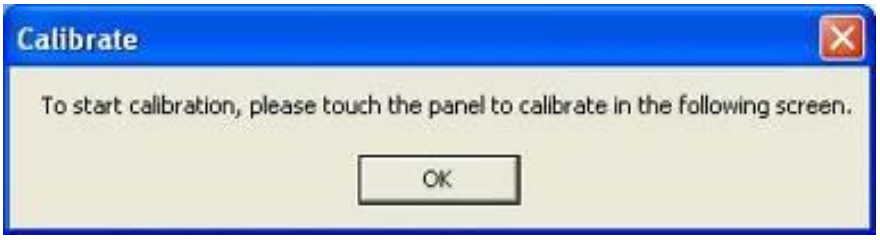
2. When the mapping screen message appears, click **OK.**

3. Touch each screen as it displays “Please touch this monitor”. Following this sequence and touching each screen is called **mapping the touch screens.**



4. Touching all screens completes the mapping and the desktop reappears on the monitors.

5. Select a display and execute the “Calibration” function. A message to start calibration appears. Click **OK.**



6. “Touch this screen to start its calibration” appears on one of the screens. Touch the screen.

7. “Touch the red square” messages appear. Touch the red squares in sequence.

8. Continue calibration for each monitor by clicking **Standard Calibration** and touching the red squares.

NOTES:

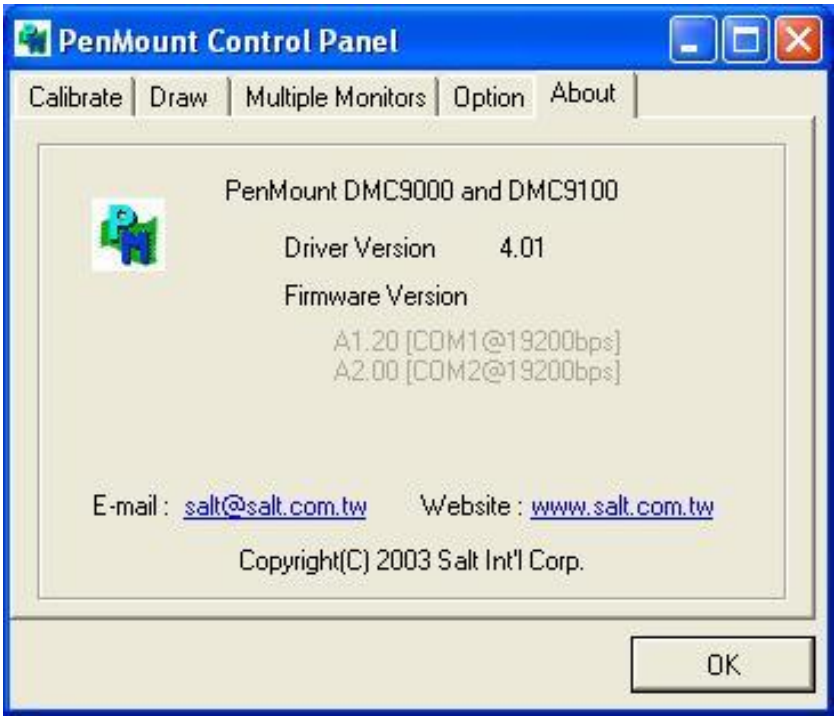
1. If you use a single VGA output for multiple monitors, please do not use the **Multiple Monitor** function. Just follow the regular procedure for calibration on each of your desktop monitors.

2. The Rotating function is disabled if you use the Multiple Monitor function.

3. If you change the resolution of display or screen address, you have to redo **Map Touch Screens,** so the system understands where the displays are.

About

This panel displays information about the PenMount controller and this driver version.



PenMount Monitor Menu Icon

The PenMount monitor icon (PM) appears in the menu bar of Windows 7/8/8.1 system when you turn on PenMount Monitor in PenMount Utilities.

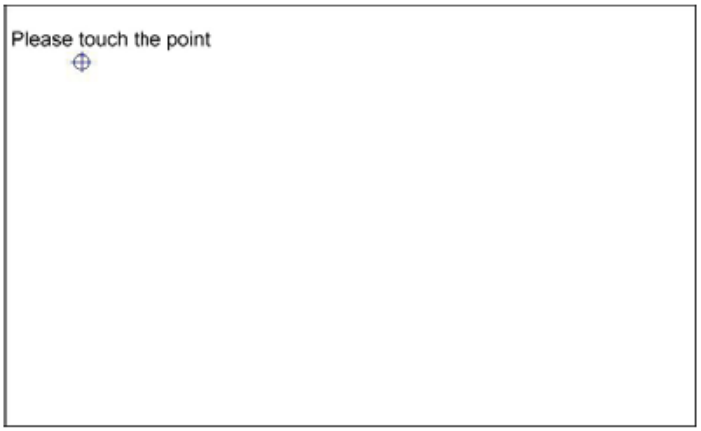
PenMount Monitor has the following function

Control Panel	**Open Control Panel Windows**

Beep	**Setting Beep function for each device**
Right Button	**When you select this function, a mouse icon appears in the right-bottom of the screen.**  **Click this icon to switch between Right and Left Button functions.**
Exit	**Exits the PenMount Monitor function.**

Configuring the Rotate Function

1. Install the rotation software package.
2. Choose the rotate function (0°, 90°, 180°, 270°) in the 3rd party software. The calibration screen appears automatically. Touch this point and rotation is mapped.



NOTE: The Rotate function is disabled if you use Monitor Mapping