

# **MPC-2000 Series Hardware User's Manual**

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[www.moxa.com/product](http://www.moxa.com/product)

**MOXA<sup>®</sup>**

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# MPC-2000 Series Hardware User's Manual

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## Introduction

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The MPC-2000 series of panel computers features advanced Intel processors—3rd generation Ivy Bridge Core or Celeron—matched with 4 GB of system memory, delivering a reliable, high-performance platform of wide versatility for use in industrial marine environments. With its RS-232/422/485 serial, NMEA 0183, and Gigabit Ethernet LAN ports, the MPC-2000 series supports a wide variety of serial and marine-specific interfaces for high-speed network communications, all with native network redundancy.

The MPC-2000 series comes with a range of standard display enhancements useful in industrial environments (including 0 to 100% full range dimming, 178°/178° wide viewing angles, optional optical bonding, and/or a multi-touch touch screen), as well as Moxa's innovative SavvyTouch display controls.

The MPC-2000 series panel computers are compliant with key industrial marine standards, such as IEC 60945-4, IEC 61174, IEC 61162, DNV2.4, and IACS E10, validating their resilient durability in marine operations. An optional IP65-rated unibody housing provides added protection against the harsh conditions found in marine environments. The MPC-2000 series delivers a rugged, type-approved, high performance and user friendly panel computer perfect for ECDIS navigation systems and other marine IBS applications.

The following topics are covered in this chapter:

- ❑ **Overview**
- ❑ **Package Checklist**
- ❑ **Product Features**
- ❑ **Hardware Specifications**
  - Optional Features for the MPC-2000 Series
- ❑ **Hardware Block Diagram**

# Overview

The MPC-2000 series panel computer range is a flexible all-in-one computer and monitor solution, designed for type approved use in industrial marine environments where reliability and durability are key requirements.

The MPC-2000 series features Smart OSD Control, LED backlight technology, full dimming and multi-power. In addition, you can select options such as SSD storage devices, multiple interface configurations, and operating systems.

The models available in the MPC-2000 series are listed below:

- MPC-2260X: 26-inch fanless panel computer with Intel Celeron 1047UE 1.4 GHz processor, NMEA 0183, RS-232/422/485 serial ports, Gigabit Ethernet LAN ports, USB 2.0 ports, dual AC/DC power inputs, and tape bonding
- MPC-2267X: 26-inch fanless panel computer with Intel Core i7 3517UE 1.7 GHz processor, NMEA 0183, RS-232/422/485 serial ports, Gigabit Ethernet LAN ports, USB 2.0 ports, dual AC/DC power inputs, and tape bonding
- MPC-2240X: 24-inch fanless panel computer with Intel Celeron 1047UE 1.4 GHz processor, NMEA 0183, RS-232/422/485 serial ports, Gigabit Ethernet LAN ports, USB 2.0 ports, dual AC/DC power inputs, and tape bonding
- MPC-2240Z: 24-inch fanless panel computer with Intel Celeron 1047UE 1.4 GHz processor, NMEA 0183, RS-232/422/485 serial ports, Gigabit Ethernet LAN ports, USB 2.0 ports, dual AC/DC power inputs, tape bonding, and projected capacitive touchscreen
- MPC-2247X: 24-inch fanless panel computer with Intel Core i7 2610UE 1.5 GHz processor, NMEA 0183, RS-232/422/485 serial ports, Gigabit Ethernet LAN ports, USB 2.0 ports, dual AC/DC power inputs, and tape bonding
- MPC-2190X: 19-inch fanless panel computer with Intel Celeron 1047UE 1.4 GHz processor, NMEA 0183, RS-232/422/485 serial ports, Gigabit Ethernet LAN ports, USB 2.0 ports, dual AC/DC power inputs, and tape bonding
- MPC-2190Z: 19-inch fanless panel computer with Intel Celeron 1047UE 1.4 GHz processor, NMEA 0183, RS-232/422/485 serial ports, Gigabit Ethernet LAN ports, USB 2.0 ports, dual AC/DC power inputs, tape bonding, and projected capacitive touchscreen
- MPC-2197X: 19-inch fanless panel computer with Intel Core i7 3517UE 1.7 GHz processor, NMEA 0183, RS-232/422/485 serial ports, Gigabit Ethernet LAN ports, USB 2.0 ports, dual AC/DC power inputs, and tape bonding

## Package Checklist

The MPC-2000 series package is shipped with the following items:

- 1 MPC-2000 series panel computer
- 2 keys for the removable storage trays
- 1 terminal block for DC power input
- 4 5-pin Euroblock terminals for NMEA 0183 v2 interfaces
- Documentation and driver DVD
- Quick installation guide (printed)
- Warranty card

Optional accessories are also available upon request:

- Desktop mounting kit
- Wall mounting clamps
- VESA mounting kit

**NOTE** Please notify your sales representative if any of the above items are missing or damaged.

## Product Features

- 19-inch, 24-inch, or 26-inch display screen
- Color calibration for ECDIS compliance
- Fanless design
- SavvyTouch display controls
- 3rd Generation Intel® Core™ (Default: Celeron® 1047UE, 1.40 GHz with Intel® HD Graphics)
- Built-in NMEA 0183 and software selectable RS-232/422/485 interfaces
- Dual AC/DC power supply units

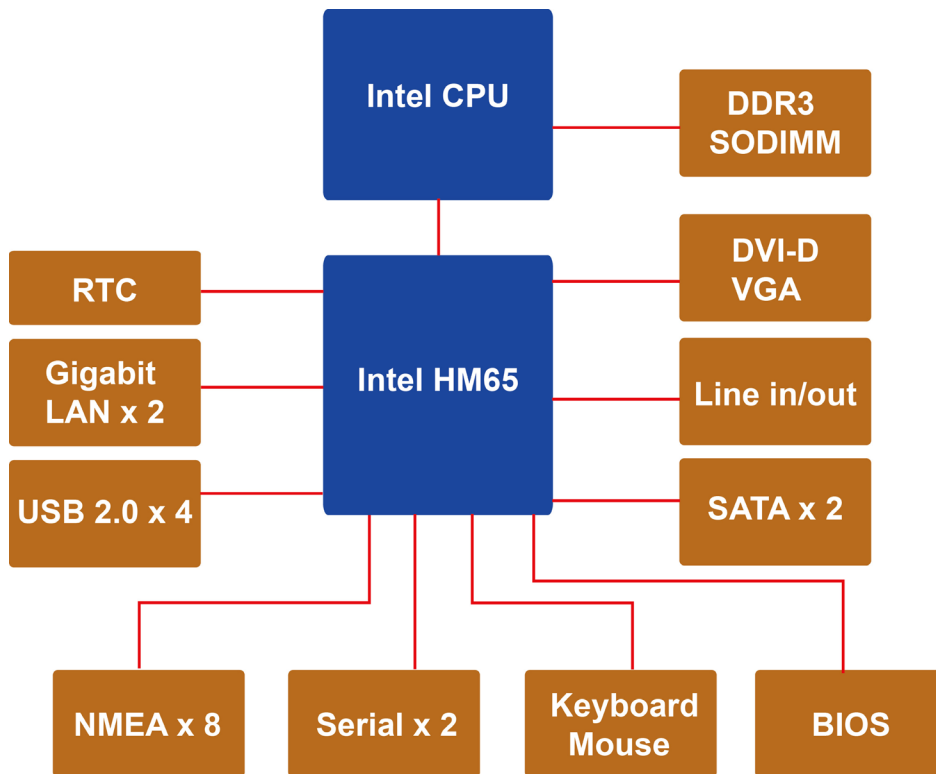
## Hardware Specifications

**NOTE** The latest specifications for Moxa's products can be found at <https://www.moxa.com>.

### Optional Features for the MPC-2000 Series

<b>CPU</b>	Default	Intel Celeron® processor 1047UE (2M Cache, 1.40GHz), TDP 17 watts
	Options	<ul style="list-style-type: none"> <li>• Intel Core™ i3 processor 3217UE (3M Cache, 1.60GHz), TDP 17 watts</li> <li>• Intel Core™ i7 processor 3517UE (4M Cache, 2.80GHz), TDP 17 watts</li> </ul>
<b>RAM</b>	Default	4 GB
	Option	8 GB (max.)
<b>OS</b>	Default	N/A
	Options	<ul style="list-style-type: none"> <li>• Windows 7 Professional</li> <li>• Windows XP Embedded</li> <li>• Windows Embedded Standard 7</li> <li>• Windows XP SP3</li> </ul>
<b>Factory Options</b>	<ul style="list-style-type: none"> <li>• (For MPC-2190 and MPC-2240) Projected capacitive touch screen (multi-touch, USB interface)</li> <li>• Optical bonding</li> <li>• Color calibrated for ECDIS</li> <li>• Customized options for SSD drives</li> </ul>	

# Hardware Block Diagram





## Hardware Overview

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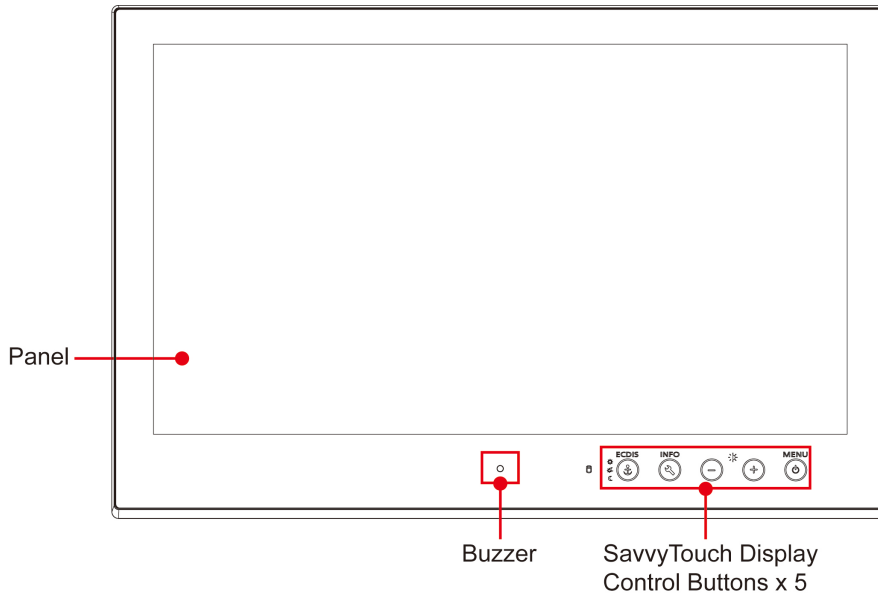
The MPC-2000 series is compact, well-designed, and hardened for industrial marine applications. The intelligent SavvyTouch display control buttons allow you to easily locate and manipulate control buttons in low light environments, or to receive immediate system hardware reports for troubleshooting. The MPC-2000 series features a reliable and stable hardware platform with multiple serial ports, for connecting a wide variety of data devices.

The following topics are covered in this chapter:

- **Appearance**
  - Front View
  - Bottom View
- **Dimensions**
  - MPC-2260
  - MPC-2240
  - MPC-2190
- **SavvyTouch Display Control Buttons**
- **Real Time Clock**

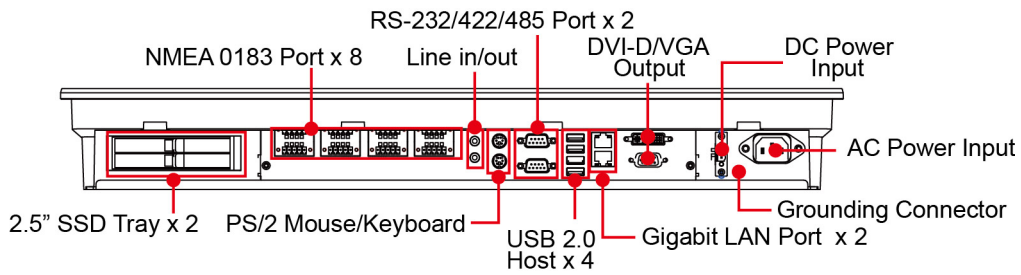
# Appearance

## Front View

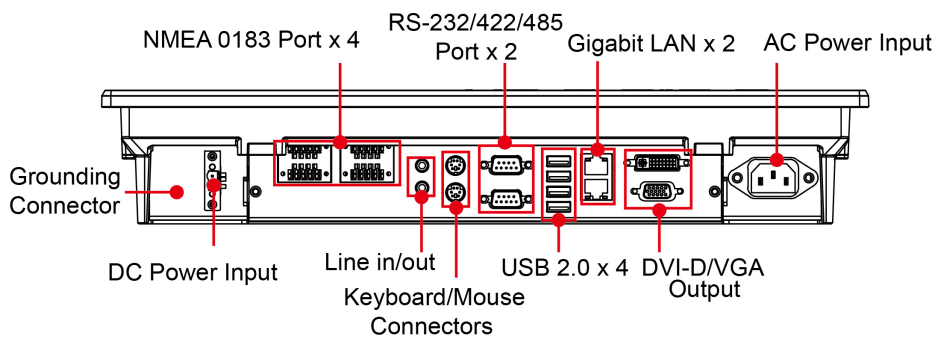


## Bottom View

### MPC-2240/MPC-2260

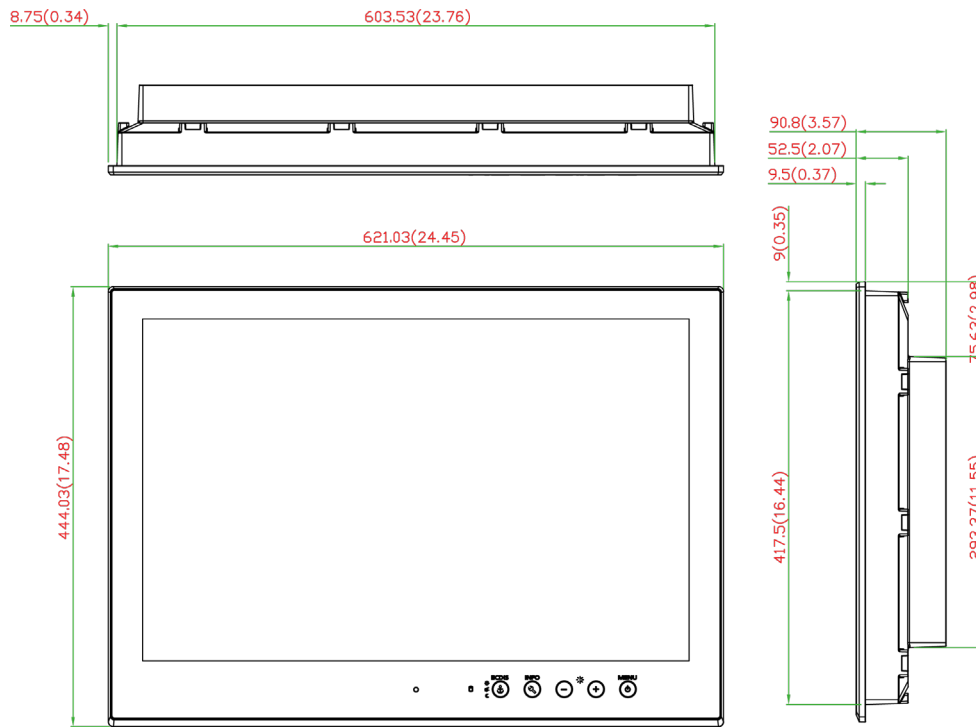


### MPC-2190

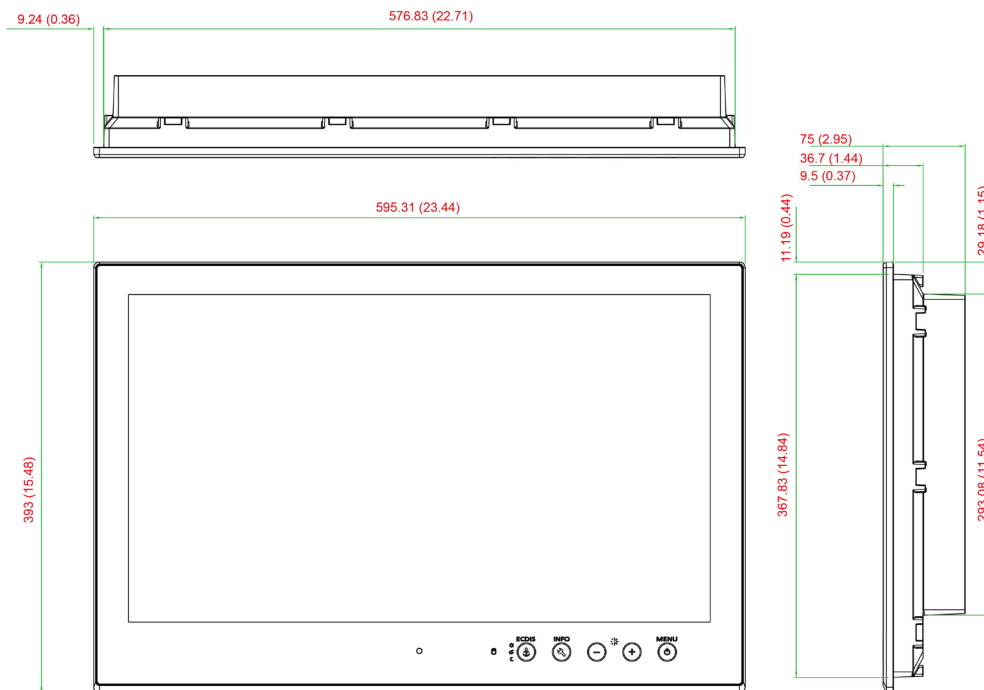


# Dimensions

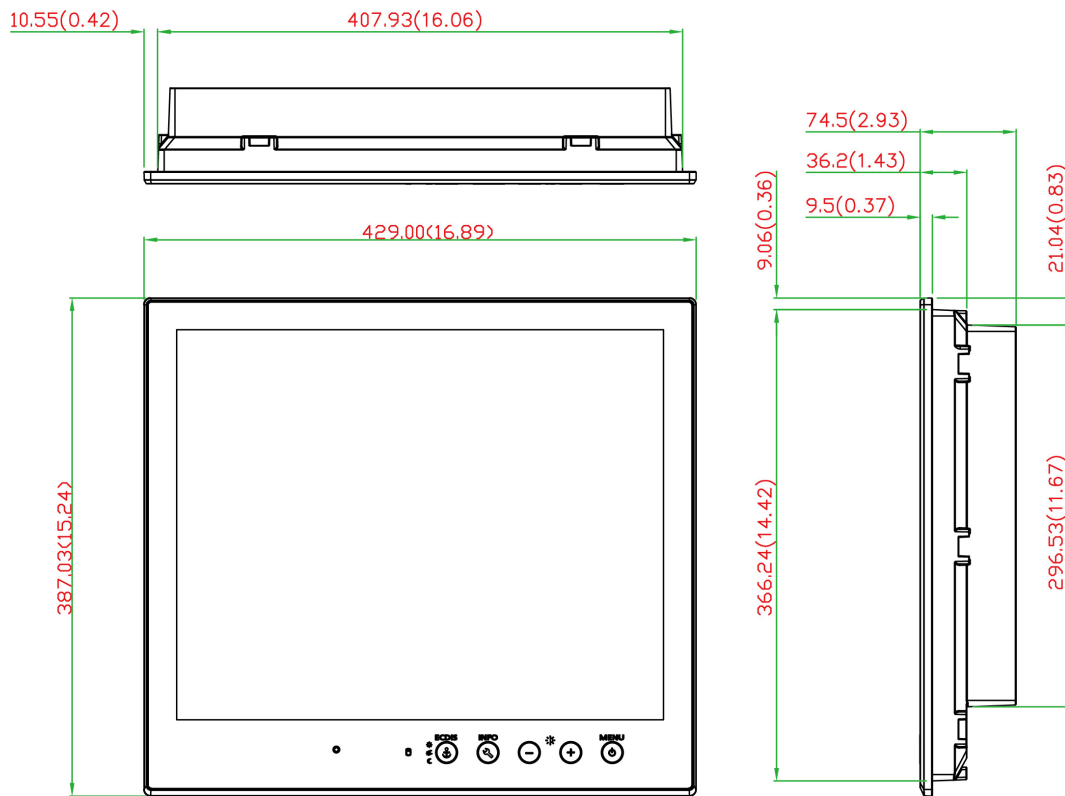
## MPC-2260



## MPC-2240








# MPC-2190



## SavvyTouch Display Control Buttons

The MPC-2000 series comes with SavvyTouch display controls situated in the lower right corner of the screen. These intelligent buttons will light up automatically when your fingers draw near. Refer to the following table for more information on each button.

Name		Color	Control Function / Color Legend
	Power	Green	Computer is powered on and functioning normally.
		Red	Power on standby and system is shut down.
		Off	Power is off.
	Brightness	White	+ : To increase brightness of display panel. - : To decrease brightness of display panel.
			Info
	Display mode (ECDIS models only)	White	Displays the brightness mode.
		Off	Brightness of display panel is out of ECDIS standard range.
	Storage	Red (on)	Storage drive is functioning properly.
		Red (blinking)	Accessing or writing data to storage drive.
		Off	Storage drive is offline.

## Real Time Clock

The real-time clock in the MPC-2000 series is powered by a lithium battery. Do **NOT** replace the lithium battery on your own. If the battery needs to be changed, please contact the Moxa RMA service team.

**ATTENTION**

There is a risk of explosion if the wrong type of battery is used. To avoid this potential danger, always use the correct type of battery. Contact the Moxa RMA service team if you need to replace the battery.

# Hardware Installation and Connection

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This chapter describes how to connect the MPC-2000 series to the network and to other devices.

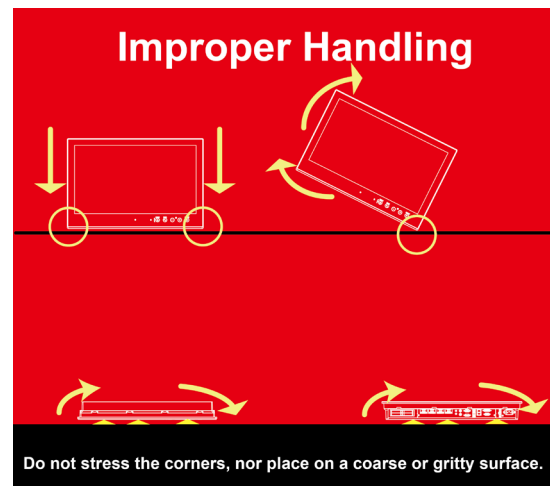
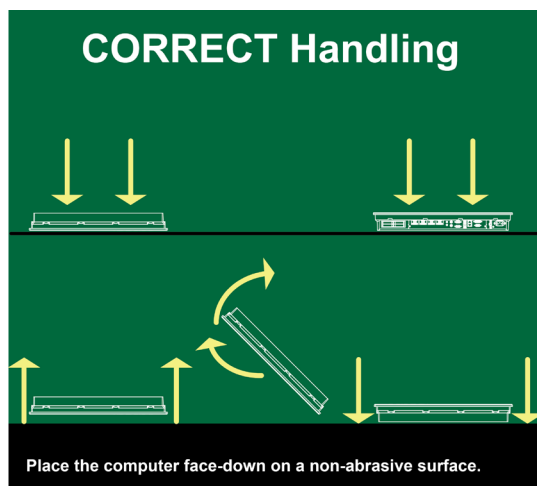
The following topics are covered in this chapter:

- ❑ **Installation and Handling Notes**
  - Desktop Mounting
  - Panel Mounting
  - VESA Mounting
- ❑ **Wiring Requirements**
- ❑ **Grounding the MPC-2000 Series Panel Computer**
- ❑ **Powering On the MPC-2000 Series**
- ❑ **Powering Off the MPC-2000 Series**
  - SavvyTouch Display Controls
- ❑ **Connecting Data Transmission Cables**
  - Connecting to the Network
  - Connecting Serial Devices
  - Connecting NMEA 0183 Devices
- ❑ **Connecting Speakers or Headphones**
- ❑ **Connecting a PS/2 Keyboard and Mouse**
- ❑ **Connecting to USB Devices**
- ❑ **Extending the Displays**
- ❑ **Installing a SATA Storage Drive**
  - On the MPC-2260 or MPC-2240
  - On the MPC-2190

# Installation and Handling Notes

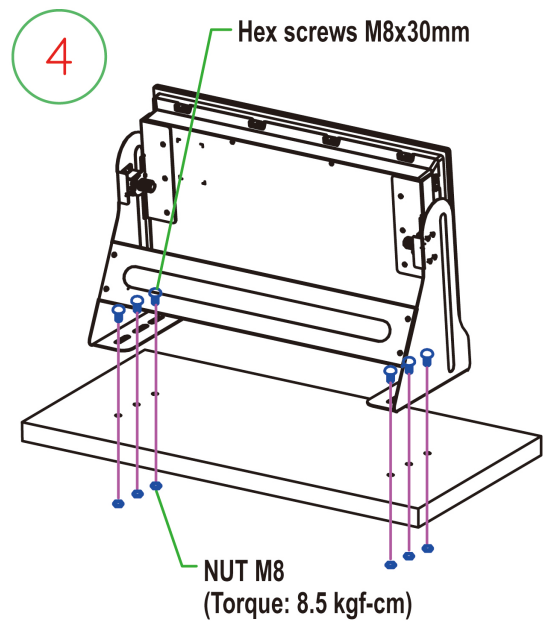
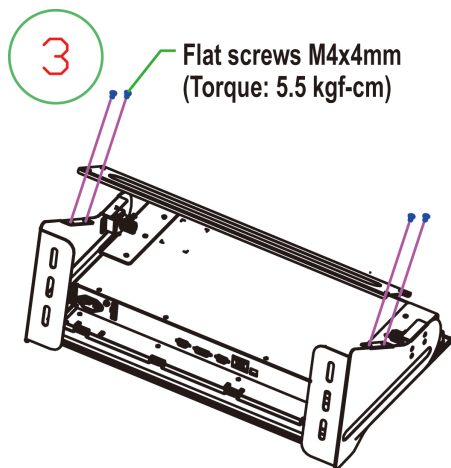
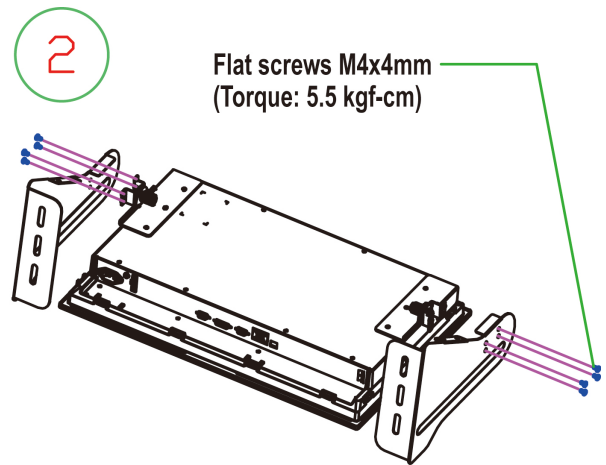
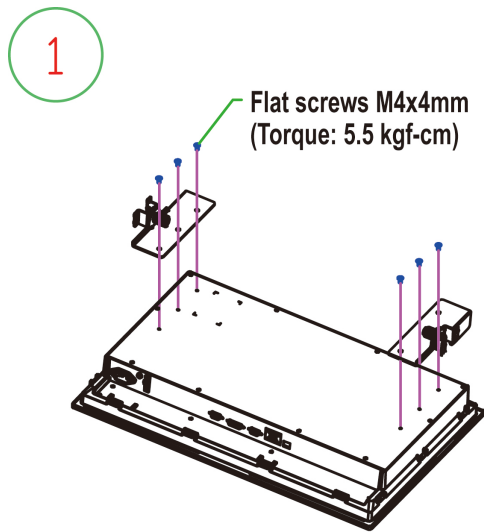
Before installing or mounting the MPC-2000 series panel computer, read the following notes:

1. The MPC-2000 series is designed for mounting on a **desktop, wall**, or an **FDMI/VESA interface**. Refer to the illustrations in the related sections for detailed instructions.
2. To prolong product lifespan, good ventilation must be maintained around the machinery. The chassis' heat-sink area **MUST** be kept clear from other heat generating items; otherwise, damage to the system motherboard may occur. The minimal distance that must be maintained between the heat sink and another heat source is 150 mm.
3. Do **NOT** install the unit horizontally (for example, lying down on its back), as heat cannot be dissipated effectively and may cause damage to the LCD panel. To ensure adequate heat dissipation, install the unit vertically or within a  $\pm 40$  degrees slope off the vertical.
4. Exposure to extreme direct sunlight may cause a considerable increase in the temperature of the unit, and under certain circumstances might lead to overheating. Take this into consideration when bridge equipment is being planned (for example, sun shades, distance from the windows, and ventilation.)
5. Exposure to strong vibration or loud, chronic noise might affect functionality and/or product lifespan. It is advised to take vibration and noise into consideration during system assembly and installation, so that the mount point may be carefully selected to avoid exposure to undue vibration.
6. For maximum safety, at least two persons should work together to lift, place, and fasten the computer at its mount point. Before you lift or move the computer, make sure that the system is turned off and no power is being supplied to the system. In addition, make sure that you have prepared the correct screws for mounting.



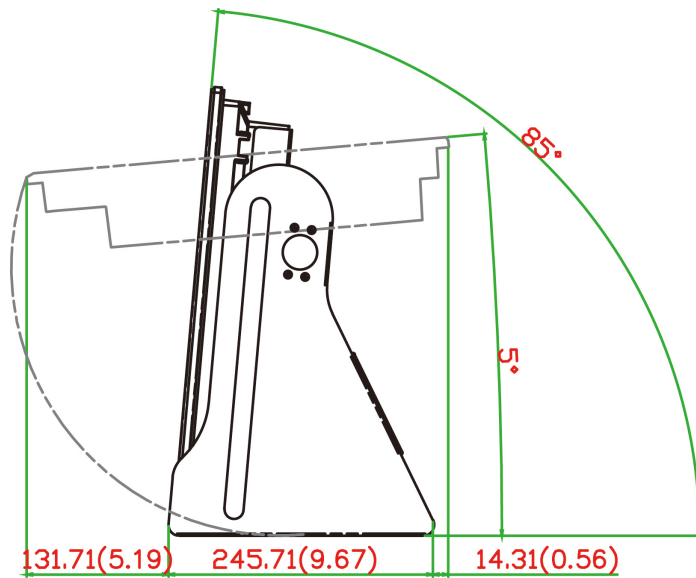
## Desktop Mounting

The MPC-2000 series display comes with optional brackets that allow you to install the unit on a horizontal surface, such as a desktop. Three round screws are required for each bracket. See the following figures for detailed screw specifications and the torque values.

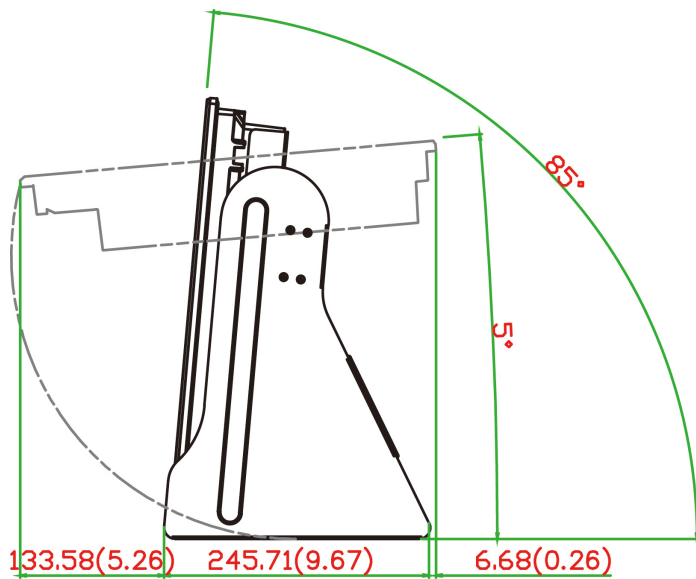




## MPC-2260 and MPC-2240



## MPC-2190



Place your MPC-2000 series display on a clean, flat, well-ventilated desktop. For proper ventilation, leave some space between the MPC-2000 series display and other equipment.

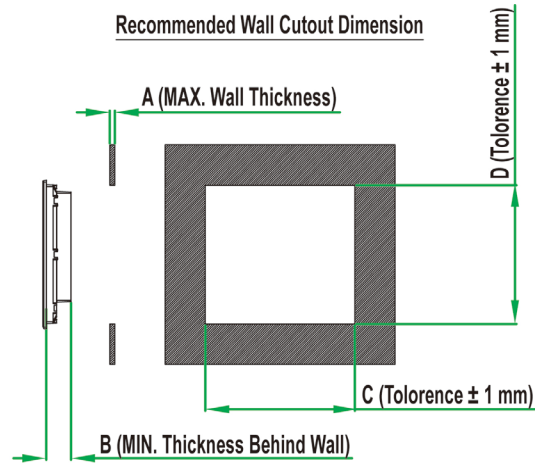
Do NOT place equipment or objects on top of the MPC-2000 series display. Doing so might damage internal components.

## Panel Mounting

The MPC-2000 series display comes with 14 optional clamp mounts that enable you to install the unit onto a wall (where space has been cut out to accommodate the rest of the hardware) or into computing stations where a flush mount is needed.

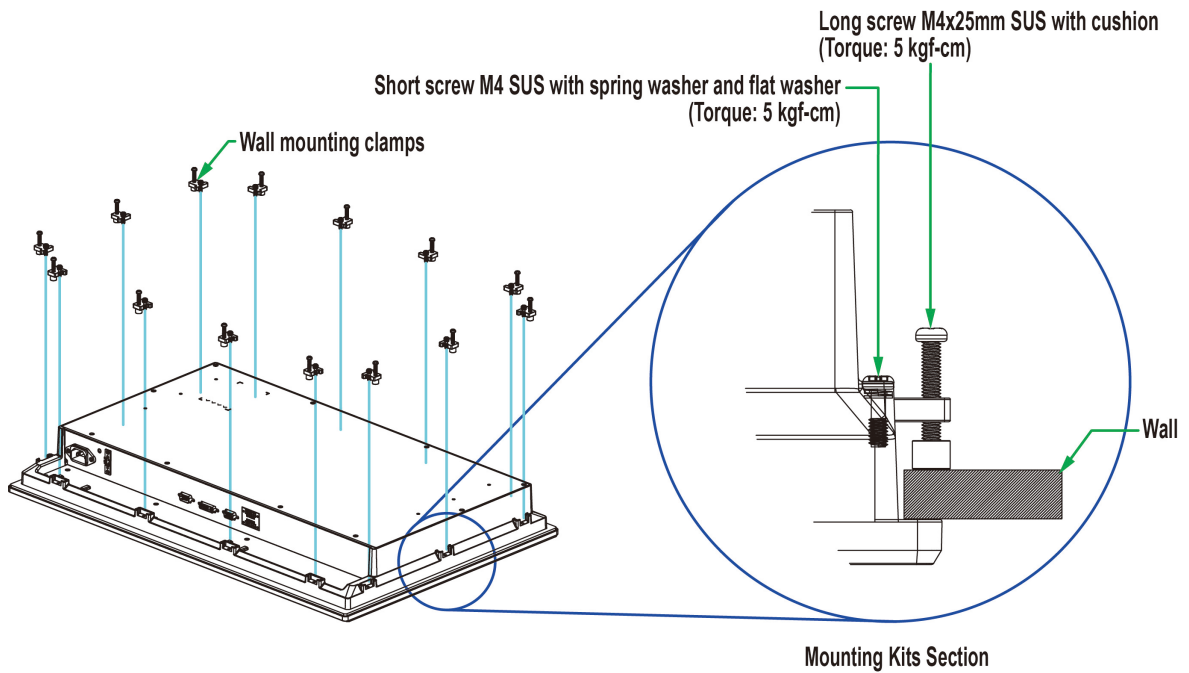
**The maximum thickness of the surface to which the unit can be clamped is 11 mm.**

For a secure mounting, use all 14 clamps (for MPC-2260 and MPC-2240 models) or 10 clamps (for MPC-2190 models). The clamp arms are fastened into slots on all four sides of the MPC-2000 series display.



Model	A	B	C	D	Mounting Kits (pcs)
MPC-2260	14.0 mm	81.3 mm	609.0 mm	423.0 mm	14
MPC-2240	11.0 mm	65.0 mm	581.0 mm	374.0 mm	14
MPC-2190	12.0 mm	65.0 mm	411.0 mm	368.0 mm	10

To fasten the clamp arms to the MPC-2240 mounting slots as shown in the following figure, use the short M4 SUS (stainless) screws. Then, use the clamps to fasten the display to its mounting point. Note the torque values shown in the figure.

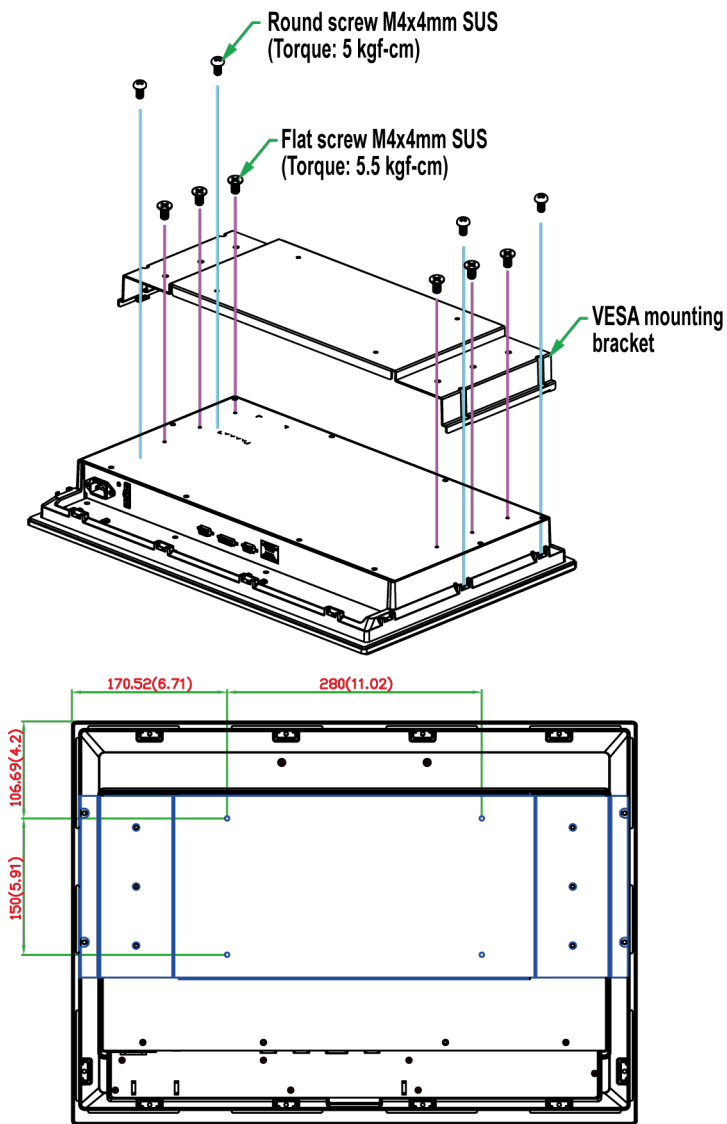


## VESA Mounting

The MPC-2000 series also comes with an optional VESA mounting kit. Six flat-headed screws and four round screws are required to fasten the VESA mounting bracket. See the following figure for detailed screw specifications and torque values.

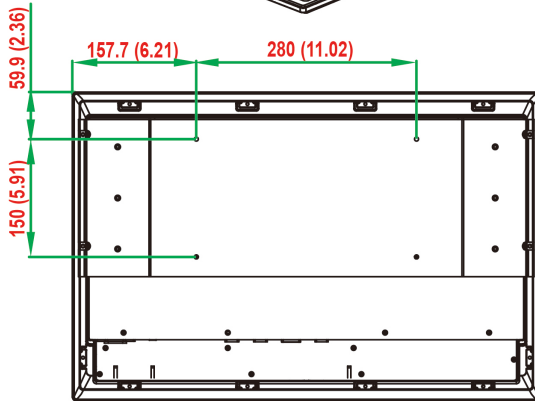
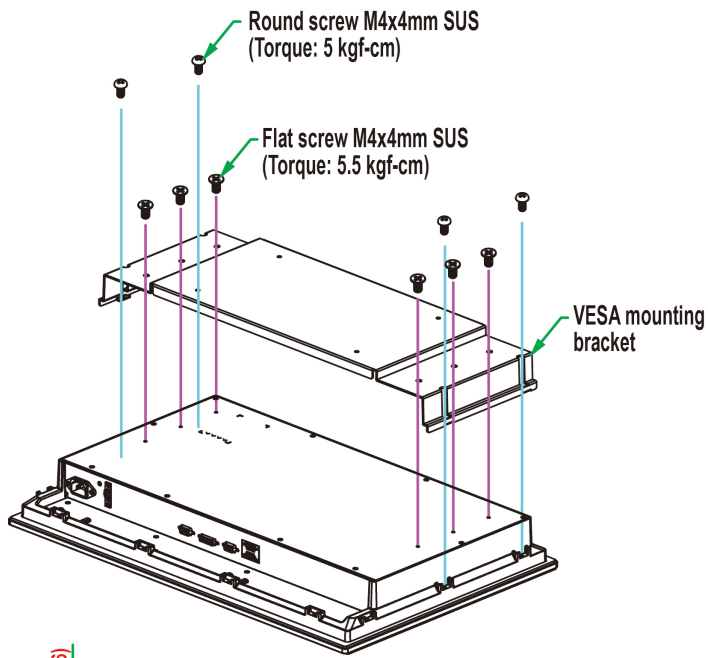
Four additional screws (not included in the kit) are required to mount the unit on a VESA rack. Use M6 screws with a length between 10 and 12 mm.

### MPC-2260



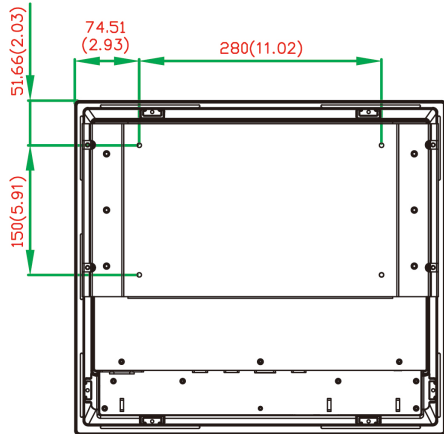
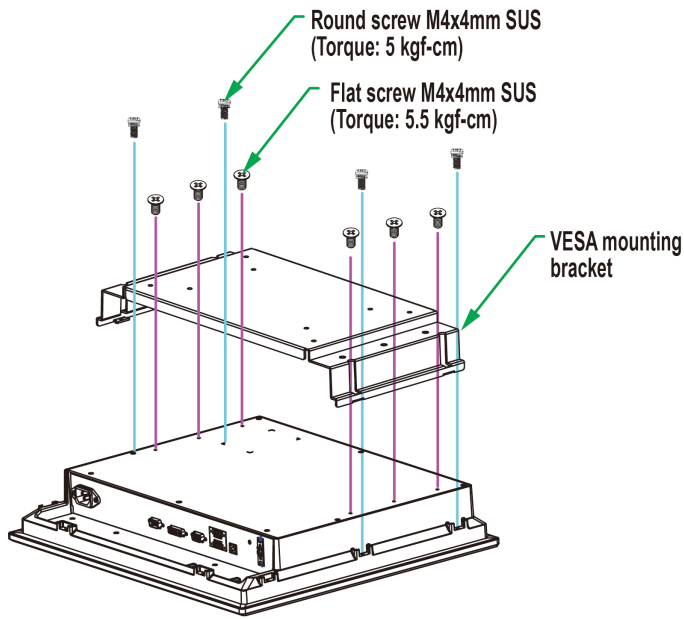
VESA Mounting Kit  
4xM6 max. 10 mm deep mounting holes

### MPC-2240



VESA Mounting Kit  
4xM6 max. 10 mm deep mounting holes

### MPC-2190



VESA Mounting Kit  
4xM6 max. 10 mm deep mounting holes

# Wiring Requirements

This section describes how to connect serial devices to the MPC-2000 series.

Read and follow these safety precautions before proceeding with the installation of any electronic devices:

- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.

**NOTE** Do NOT run signal or communications wires together with power wires in the same conduit. To avoid interference, wires with different signal characteristics should be routed separately.

- Based on the type of signal transmitted through a wire, determine which wires should be kept separate and which bundled together. The rule of thumb is that wiring that shares similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separate.
- It is advisable to label all wires used in the system.



## ATTENTION

### Safety First!

Be sure to disconnect the power cord before installing and/or wiring your MPC-2000 series panel computer.

### Wiring Caution!

Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size.

If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

### Temperature Caution!

Be careful when handling the unit. When the unit is plugged in, the internal components generate heat, and consequently the outer casing may feel hot to the touch.

We recommend taking the following precautions to minimize heat build-up within the display:

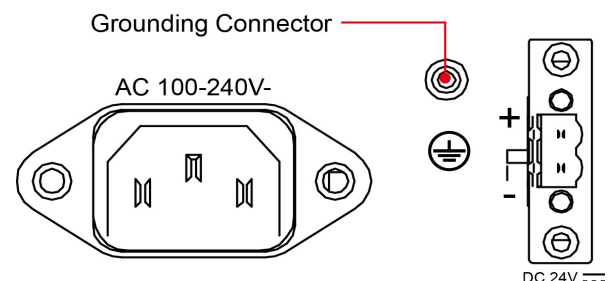
- Position the display within  $\pm 40^\circ$  of the vertical.
- Install an external fan to increase airflow upwards through the display if (a) the display is not positioned within  $\pm 40^\circ$  of the vertical, (b) the ambient temperature exceeds 25°C, or (c) the display is used in a location with minimal ventilation.

### Important Safety Precaution

Even though the display is rated to operate within the IEC 60945 standard of -15 to 55°C for marine applications, it is best to ensure that the ambient temperature does not exceed 25°C. Doing so will increase the life of your display and minimize service costs.

# Grounding the MPC-2000 Series Panel Computer

Before you power on the MPC-2000 series, first ground it. Proper grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting the power.



## ATTENTION

This unit is intended to be mounted to a well-grounded mounting surface, such as a metal panel.

## Powering On the MPC-2000 Series

1. Connect the MPC-2000 series display to a power source, do one of the following:
  - Connect the terminal block to the MPC-2000 Series DC Euroblock terminal (located on the bottom panel).
  - Connect the MPC-2000 series to a power source using the AC power cord provided.
2. Touch the **MENU** button (on the lower right hand corner of the display panel) for about one second to turn on the MPC-2000 series.

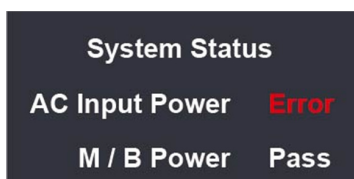
**NOTE** It takes between 10 – 30 seconds for the system to complete the start-up process.

## Powering Off the MPC-2000 Series

To power off the MPC-2000 series panel computer, touch the **MENU** button for about four seconds. Depending on the power management settings you configure in the operating system, the MPC-2000 series may enter the **standby**, **hibernation**, or **system shutdown** mode.

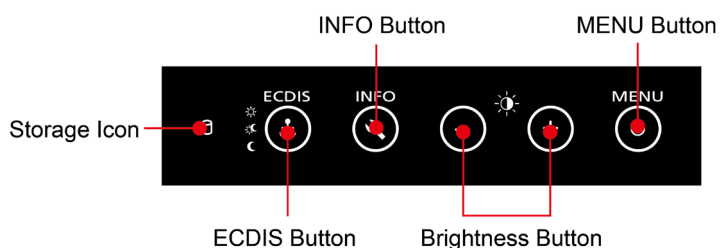
To force the MPC-2000 series to shut down, touch the **MENU** button for about 10 seconds.

**NOTE** If the MPC-2000 series is powered using a DC converter, the INFO dialog displays the **Error** status for AC input power (as shown in the following figure). This does not affect the normal operation of the MPC-2000 series.



## SavvyTouch Display Controls

The MPC-2000 series comes with five SavvyTouch display controls on the front panel. These intelligent controls turn on as your hand draws near the area of the panel where they are located.



## MENU/Power Control

On the MPC-2000 series, the **MENU** button also serves as the power button. To turn on or turn off the MPC-2000 series, press the **Menu** button for about four seconds. After the system is powered up, the MENU button turns green. To power off the MPC-2000 Series, press the MENU button for about four seconds, and then choose to enter **standby**, **hibernation**, or **system shutdown** mode (the available choices may be configured using your operating system's power management settings). If you encounter technical problems, press and hold the MENU button for 10 seconds to force a hard shutdown.

## Brightness

You can use the two brightness buttons to set the brightness of the screen. Press the plus (+) button to increase screen brightness, and the minus (-) button to decrease screen brightness.

## INFO

The **INFO** button displays a status report (shown at right) of the AC power supply, main board, CPU, memory, the motherboard chipset, and VGA subsystems and components.

When the panel computer is working properly, the screen displays **Pass** for each subsystem/component (as shown in the figure). The screen displays Error to indicate that a faulty component.

The CPU, memory, chipset and VGA components are detected only during the boot process. The AC and motherboard power components are being monitored continuously.

System Status	
AC Input Power	Pass
M / B Power	Pass
CPU	Pass
Memory	Pass
Chipset	Pass
VGA	Pass

**NOTE** If the MPC-2000 series is powered using a DC converter, the systems displays Error for the AC power status in the System Status screen. This does not affect the operation of the MPC-2000 series.

System Status	
AC Input Power	Error
M / B Power	Pass

## ECDIS Mode Brightness Adjustment

For ECDIS-approved models, you can use the ECDIS button to select an ECDIS display mode (DAY, DUSK, or NIGHT). The ECDIS mode setting overwrites the custom display settings you specified.

The ECDIS button and ECDIS-related functions are disabled on standard MPC-2000 series models.

ECDIS Mode
DAY
DUSK
NIGHT



 (Storage)

The storage icon blinks red when data is been accessed on the MPC-2000 series.

**NOTE** You can also control the MPC-2000 series using commands over the UART interface. For detailed UART command description, see **Appendix B: UART Commands for Display Control**.

## Connecting Data Transmission Cables

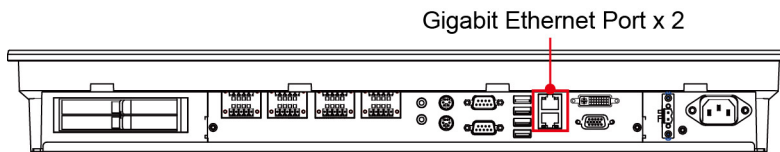
This section describes how to connect the MPC-2000 series to serial devices and the network.

### Connecting to the Network

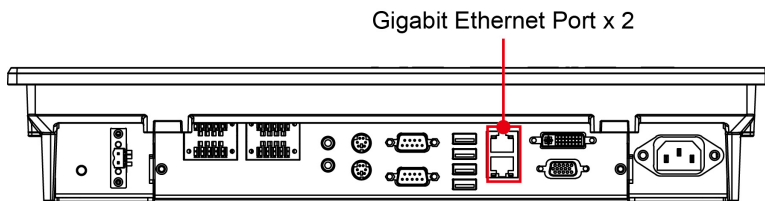
To connect the MPC-2000 series to a network, connect an Ethernet cable to an Ethernet port on the bottom panel of the MPC-2000 series. The LED on the Ethernet port on the MPC-2000 series turns on to indicate that an Ethernet connection has been established.

The following figures indicate the location of the Gigabit Ethernet ports.

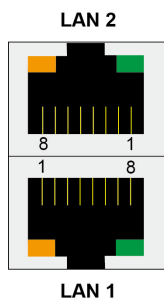
**MPC-2240/MPC-2260**



**MPC-2190**



The 10/100/1000 Mbps Ethernet LAN port uses 8-pin RJ45 connectors. The following diagram shows the pinouts and the descriptions for these ports.



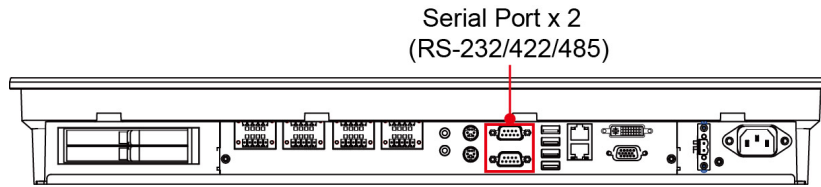
Green	100 Mbps Ethernet mode
Yellow	1000 Mbps (Gigabit) Ethernet mode
Off	No activity or 10 Mbps Ethernet mode

Pin	100 Mbps	1000 Mbps
1	ETx+	TRD(0)+
2	ETx-	TRD(0)-
3	ERx+	TRD(1)+
4	-	TRD(2)+
5	-	TRD(2)-
6	ERx-	TRD(1)-
7	-	TRD(3)+
8	-	TRD(3)-

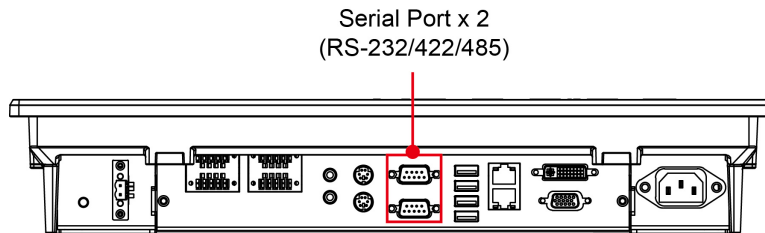
## Connecting Serial Devices

You can configure the serial ports 1 and 2 (male DB9) RS-232, RS-422, or RS-485 communications. See the figure below for the location of the serial ports.

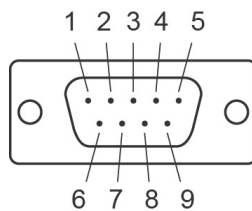
### MPC-2240/MPC-2260



### MPC-2190



The following table shows the pin assignments.



Pin	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DCD	TxDA(-)	TxDA(-)	-
2	RxD	TxDB(+)	TxDB(+)	-
3	TxD	RxDB(+)	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	RxDA(-)	DataA(-)
5	GND	GND	GND	GND
6	DSR	-	-	-
7	RTS	-	-	-
8	CTS	-	-	-

## Configuring the Serial Ports

For instructions on how to set the serial port for RS-232/422/485 communications, refer to the examples in one of the following folders on the software CD.

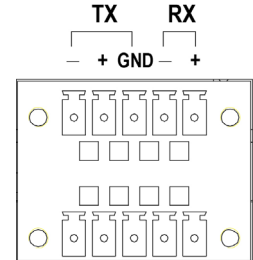
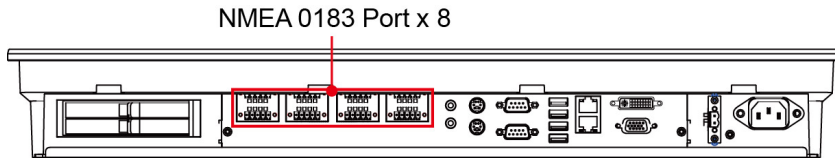
- For Windows 32-bit platforms:  
**<Software DVD>\MPC-2000 Series\Example\X86\Release**
- For Windows 64-bit platforms:  
**<Software DVD>\MPC-2000 Series\Example\x64\Release**

## Connecting NMEA 0183 Devices

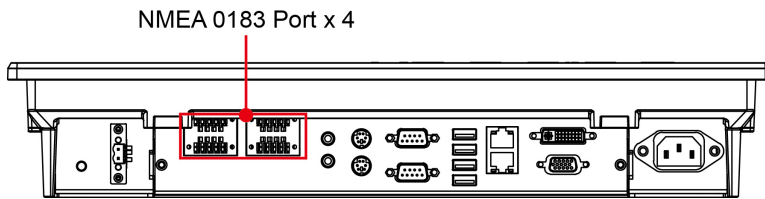
The MPC-2000 series comes with either eight NMEA 0183 ports (MPC-2240 and MPC-2260 models) or eight NMEA 0183 ports (MPC-2190 models) on the bottom panel.

The following figures show the location of the NMEA ports and the pin assignments.

### MPC-2240/MPC-2260



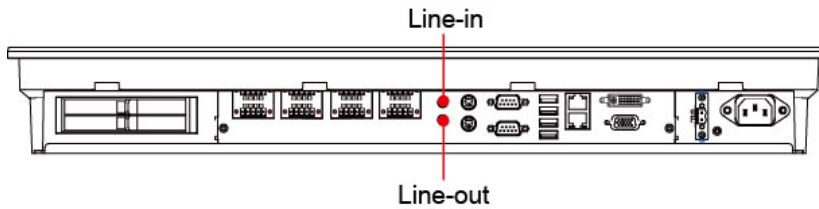
### MPC-2190



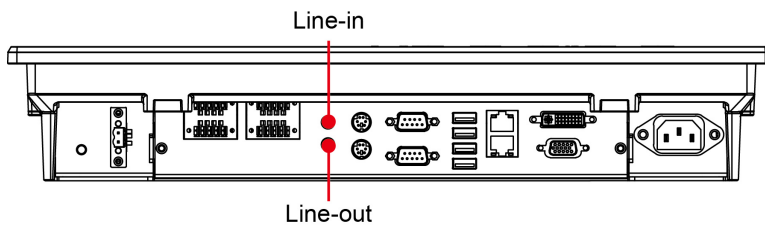
## Connecting Speakers or Headphones

The MPC-2000 series comes with standard 3.5 mm monaural line-in and line-out ports for connecting microphone, speakers, and headphones. See the following figure for detailed location.

### MPC-2240/MPC-2260



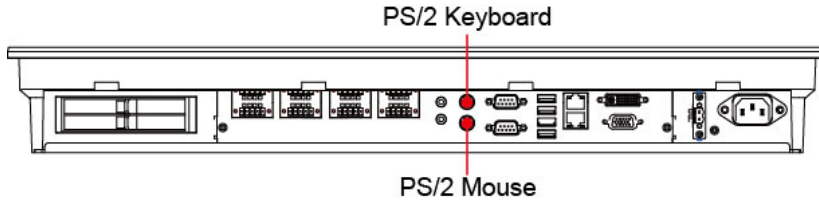
### MPC-2190



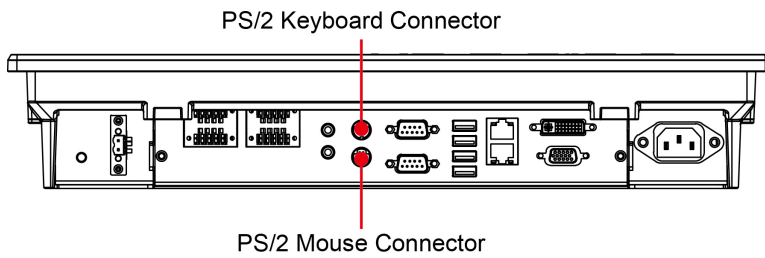
# Connecting a PS/2 Keyboard and Mouse

Your MCP-2240-MP computer comes with two PS/2 connectors to connect to a PS/2 keyboard (upper connector) and PS/2 mouse (lower connector). See the following figure for the detailed location.

## MPC-2240/MPC-2260



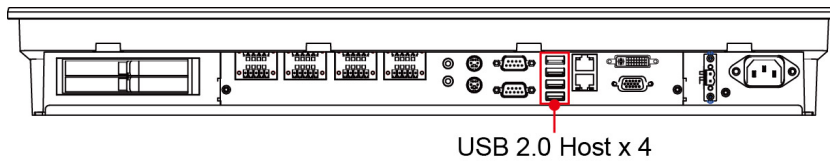
## MPC-2190



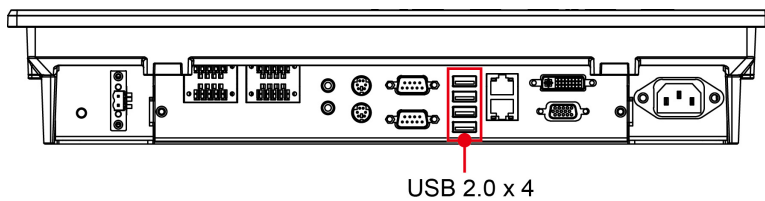
# Connecting to USB Devices

The MPC-2000 Series comes with four USB 2.0 ports on the bottom panel. You can connect USB devices (such as a mouse or keyboard) or an external storage drive to the USB ports.

## MPC-2240/MPC-2260



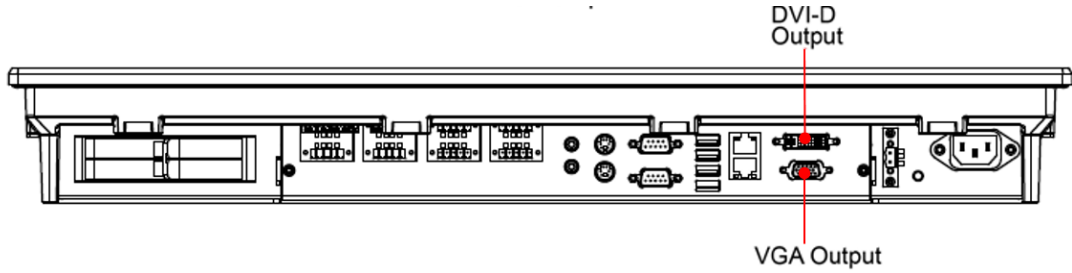
## MPC-2190



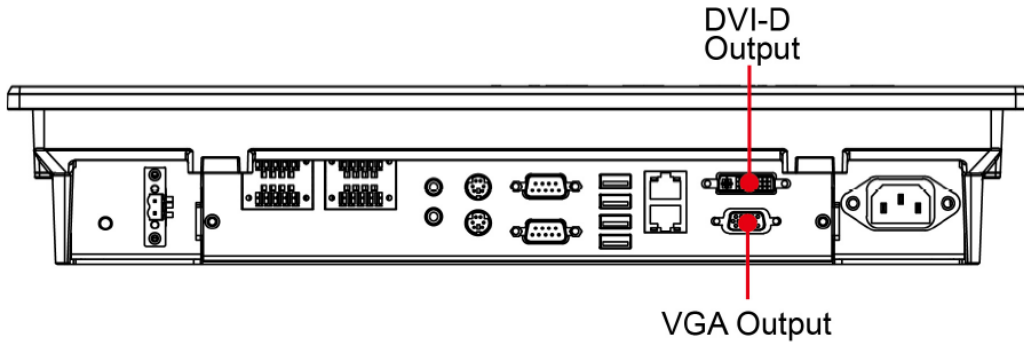
# Extending the Displays

The MPC-2190 comes with both standard VGA (DB15) and DVI-D (DB24) interfaces on the bottom surface. They may be used simultaneously to extend the display across two monitors. See the following figures and tables for the location and pin assignments for the display outputs.

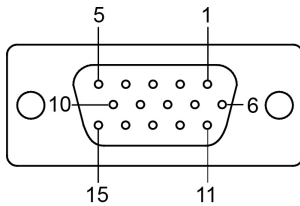
MPC-2240/MPC-2260



MPC-2190



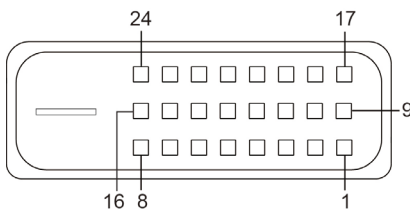
DB15 Female Connector



Pin No.	Signal Definition
1	Red
2	Green
3	Blue
4	NC
5	GND
6	GND
7	GND
8	GND

Pin No.	Signal Definition
9	VCC
10	GND
11	NC
12	DDC2B Data
13	HSYNC
14	VSYSNC
15	DDC2B Clock

DVI-D Connector



Pin	Signal Definition	Pin	Signal Definition
1	T.M.D.S. Data2-	13	N/C
2	T.M.D.S. Data2+	14	+5V Power
3	T.M.D.S. Data2 Shield	15	Ground (return for +5V, HSync, and VSync)
4	N/C	16	Hot Plug Detect
5	N/C	17	T.M.D.S. Data0-
6	DDC Clock	18	T.M.D.S. Data0+
7	DDC Data	19	T.M.D.S. Data0 Shield
8	N/C	20	N/C
9	T.M.D.S. Data1-	21	N/C
10	T.M.D.S. Data1+	22	T.M.D.S. Clock Shield
11	T.M.D.S. Data1 Shield	23	T.M.D.S. Clock+
12	N/C	24	T.M.D.S. Clock-

**NOTE** VGA interface uses analog signals, which may be affected by the quality of the VGA cable; we recommend using the DVI-D interface to extend your display.

# Installing a SATA Storage Drive

You can install a SATA hard disk drive (HDD) or solid state drive (SSD) in the MPC-2000 series. For added reliability, we recommend that you install an SSD in the MPC-2000 series.

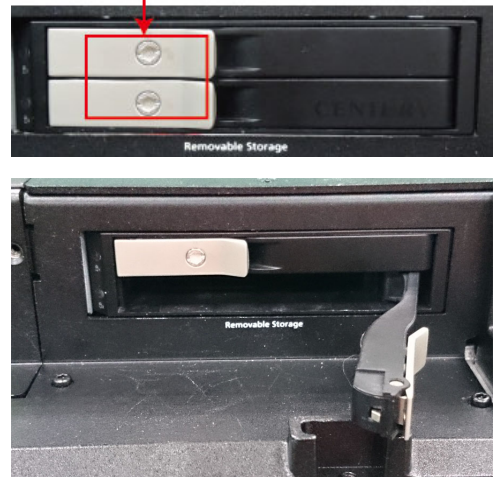
The procedure to install a SATA storage drive varies depending on your MPC-2000 series model.

## On the MPC-2260 or MPC-2240

To install a SATA storage drive in an MPC-2260 or MPC-2240 panel computer, complete the following steps:

1. Locate the storage trays on the bottom panel of the computer. For ease of installation, we recommend that you place the MPC-2260 or MPC-2240 on a non-abrasive surface with its display panel facing down.
2. Use the protection key to unlock the storage tray cover.
3. Lift the lever to open the storage tray cover.
4. Orient the SATA storage (face up) drive and insert it into the slot.
5. Push the lever to close the storage tray cover.

Protection Lock



**NOTE** If you are unable to properly secure the SATA storage drive in the storage tray, check that you have inserted the SATA storage drive correctly.

6. Use the protection key to lock the storage tray cover and secure the SATA storage drive in place.
7. To install the second SATA storage drive, repeat steps 1 to 6. Make sure that you have securely fastened the door lever.

If you are installing only one SATA storage drive in the MPC-2000 series, install the storage drive in the slot nearer to the display panel. If you are installing two SATA storage drives, install the first storage drive in the slot nearer to the display panel and the second storage drive in the other slot.

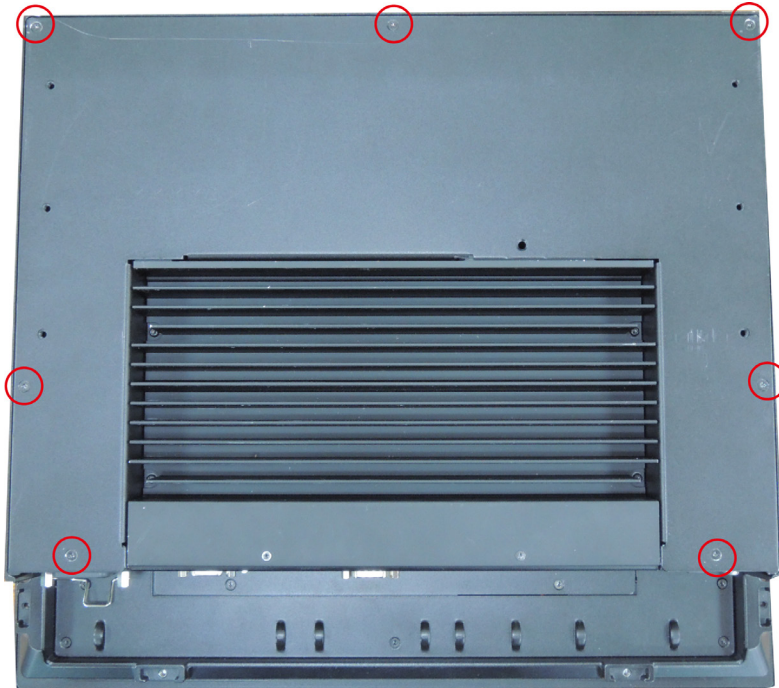
8. To remove a storage drive, pull out the lever and push the tray door to the side to eject the SATA storage drive from the slot; then, remove the SATA storage drive from the computer.



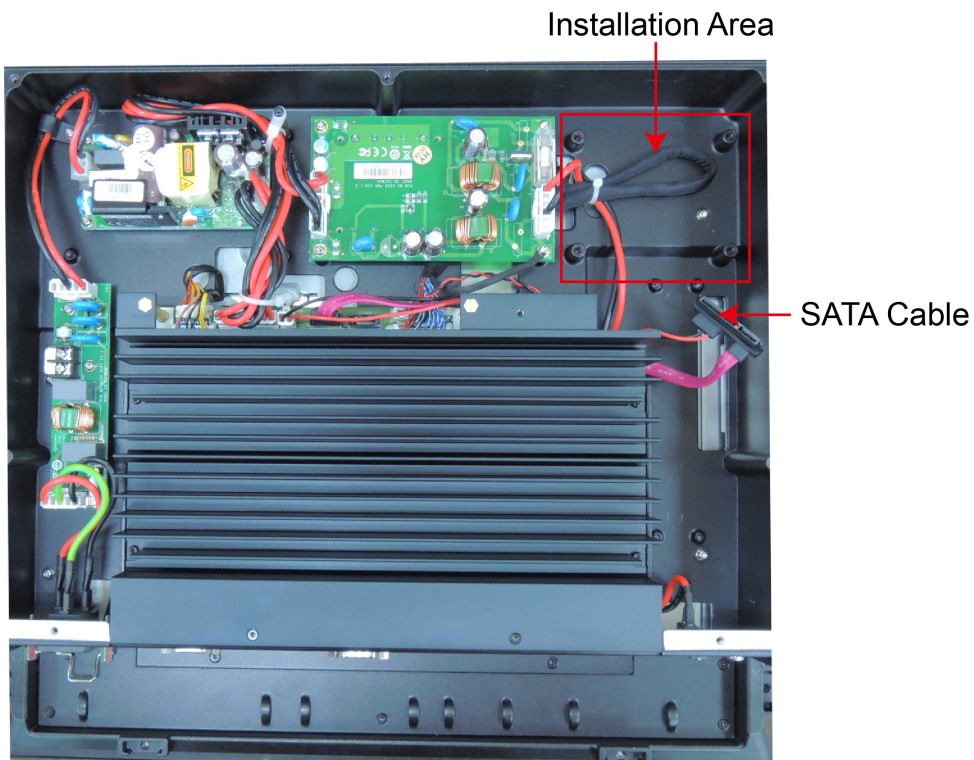
## On the MPC-2190

To install a SATA storage drive in an MPC-2190 panel computer, complete the following steps:

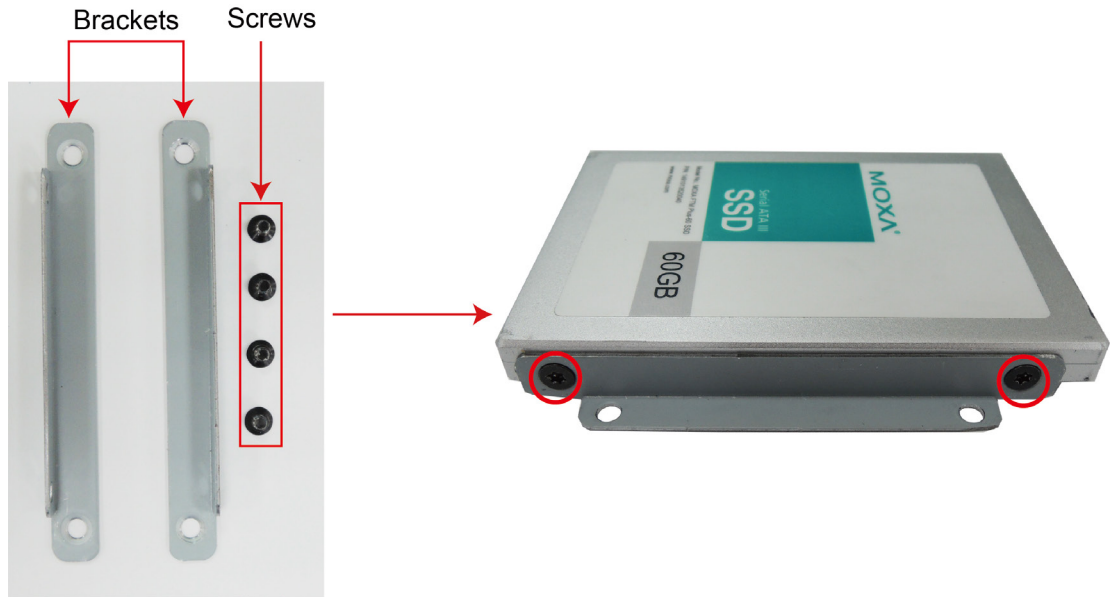
1. Remove the seven screws on the back of the MPC-2190.



2. Remove the back cover of the MPC-2190 and locate the four screw holes (as indicated in the following figure) for the storage drive.



- Use the screws to attach the brackets to the sides of the storage drive (HDD or SSD).



- Align the screw holes on the brackets with the screw holes in the installation area; then, install the screws to secure the storage drive in place as shown in the following figure.
- Connect the SATA cable to the storage drive.



- Re-install the cover of the MPC-2000 series and fasten the screws to secure the cover in place.

**NOTE** To fasten the screws on the cover of the MPC-2000 series, we recommend that you use a T10 Trox (Star) screwdriver with a torque of 4.5 kgf-cm.



# Driver Installation and Configure

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This chapter describes how to install the VGA driver and the touch screen driver for touch screen models. After installing the drivers, you can use the software tools to adjust display resolution and touch screen features on the MPC-2000 series.

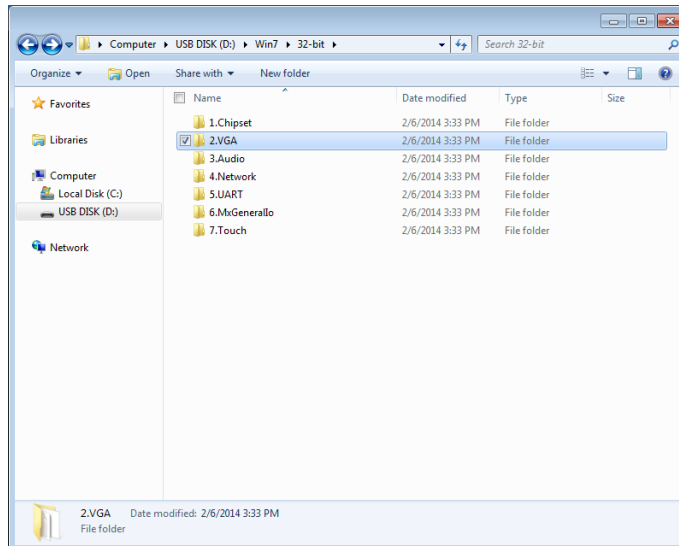
The following topics are covered in this chapter:

- ❑ **Installing the VGA Driver**
- ❑ **Setting Display Resolution**
- ❑ **Installing the Touch Screen Driver**
- ❑ **Performing Screen Calibration**
- ❑ **MPC-2260 MxGeneralIo Driver Installation**
  - Installing the MxGeneralIo Driver
- ❑ **MPC-2260 UART Driver Installation**
  - Installing the UART Driver

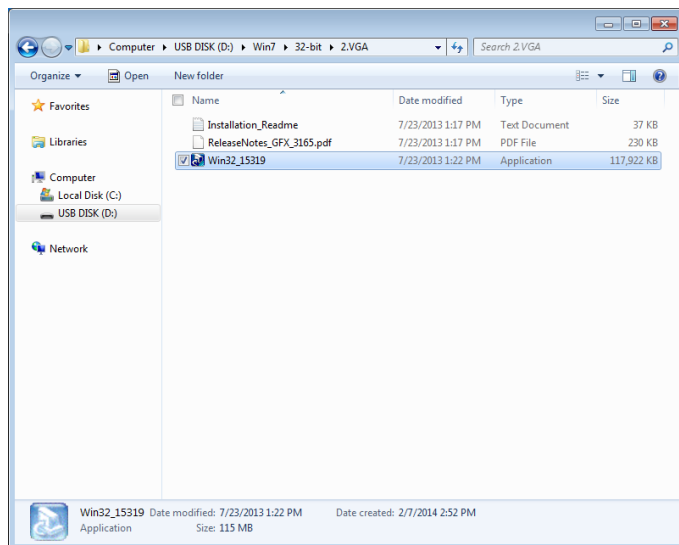
# Installing the VGA Driver

The steps below describe how to install the MPC-2000 series VGA driver for Windows Embedded Standard 7. After you install the VGA driver, you can configure the display resolution settings using the utility provided by Intel.

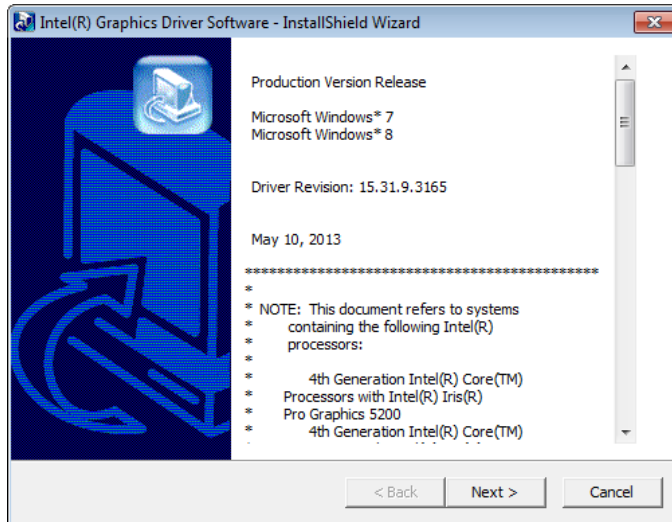
1. On the software CD that came with your MPC-2000 series, go to the [CD drive]\Driver\Win7\[32-bit or 64-bit]\2.VGA folder.



2. Double-click **Win32\_15319**.



- 3. The installation wizard screen appears. Click **Next** to continue.



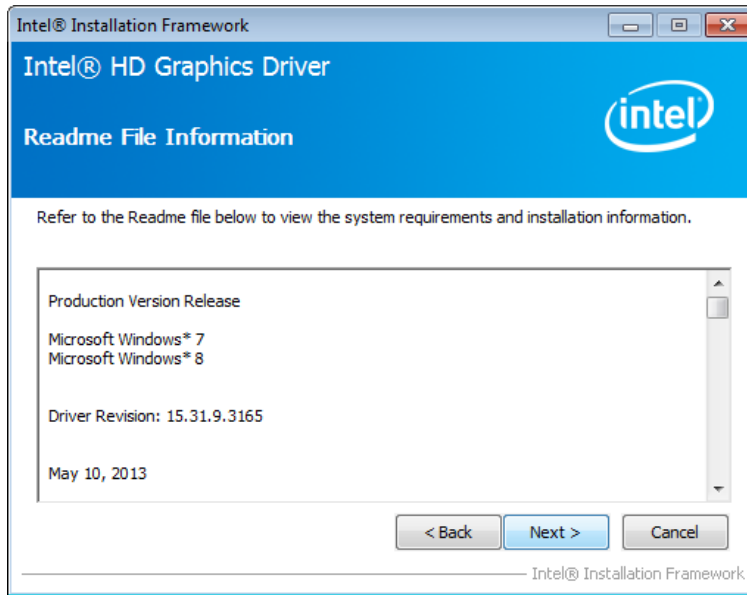
- 4. Click **Next** to start the installation.



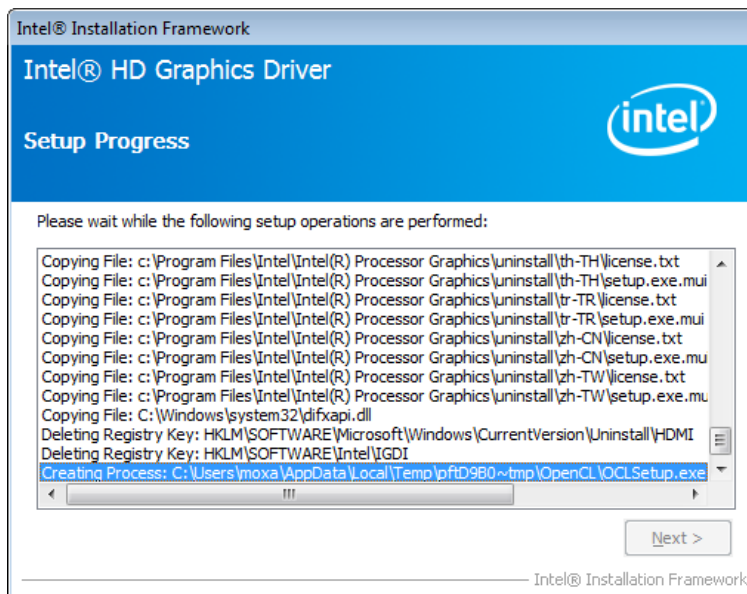
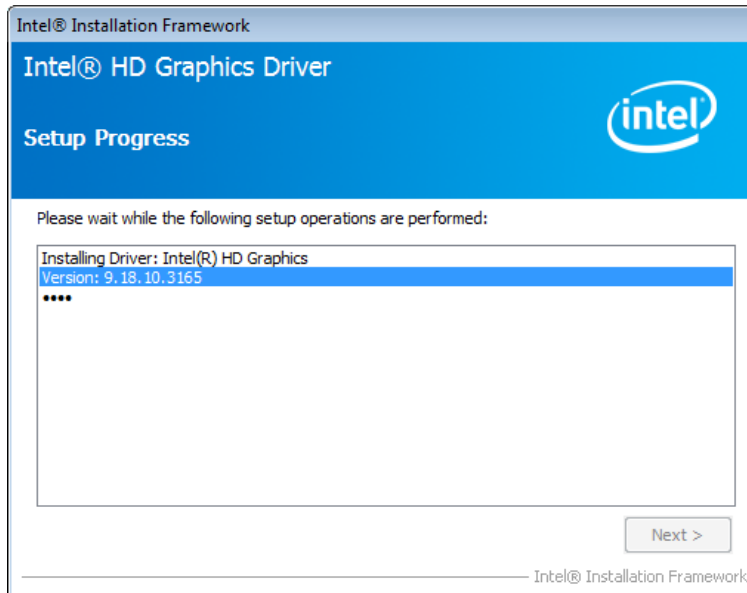
- 5. Click **Yes** for the license agreement.



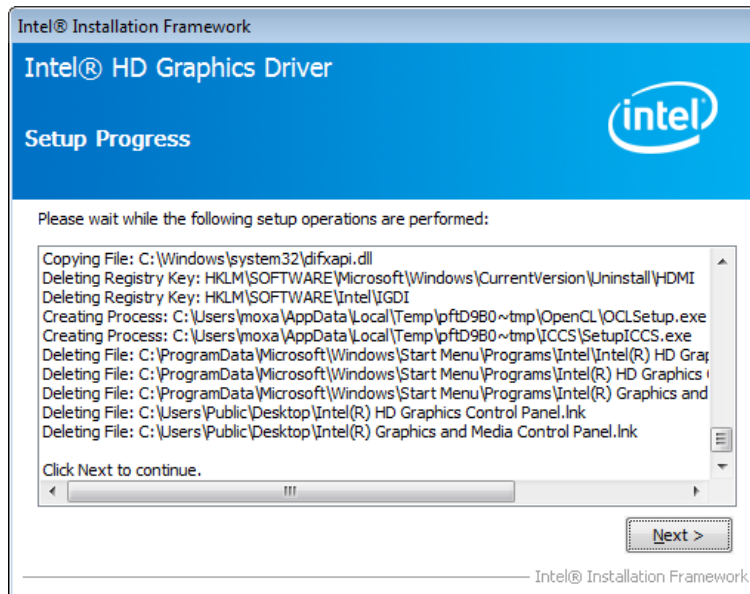
- Click **Next** to continue.



- Wait until the installation process is complete.



8. Click **Next** to continue.



9. Select **Yes** to restart the computer and click **Finish** to complete the VGA driver installation.

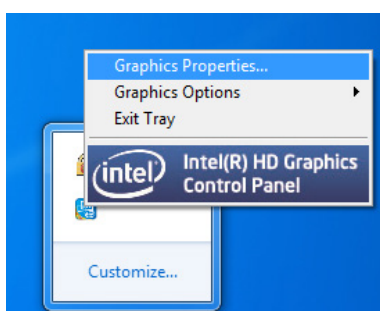


10. The MPC-2000 series will automatically restart.

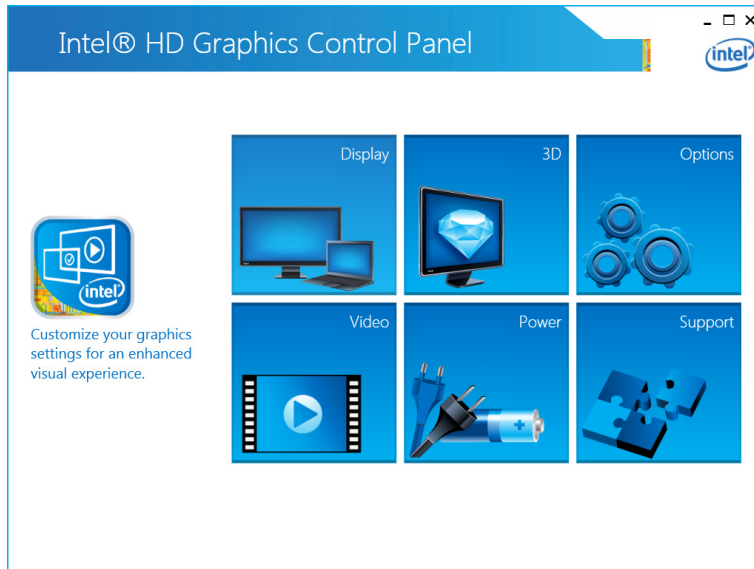
## Setting Display Resolution

Follow these steps to adjust the display resolution.

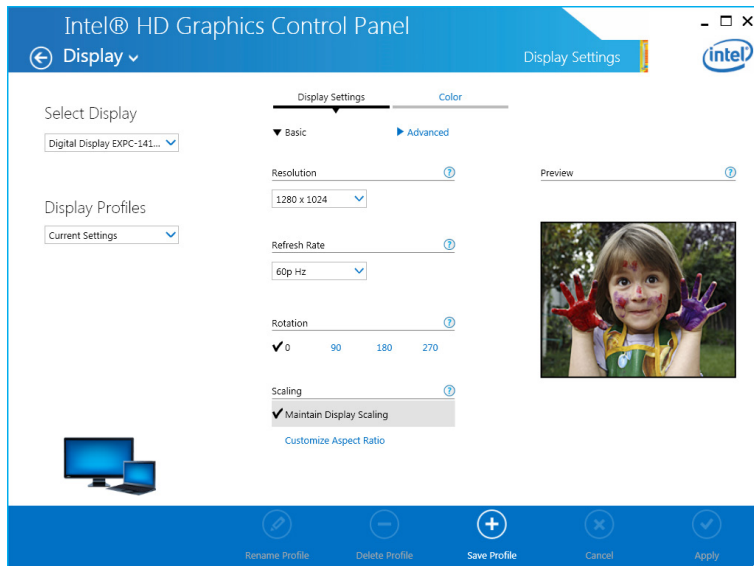
1. Right-click the **Intel HD Graphics Control Panel** icon on the taskbar and select **Graphics Properties**.



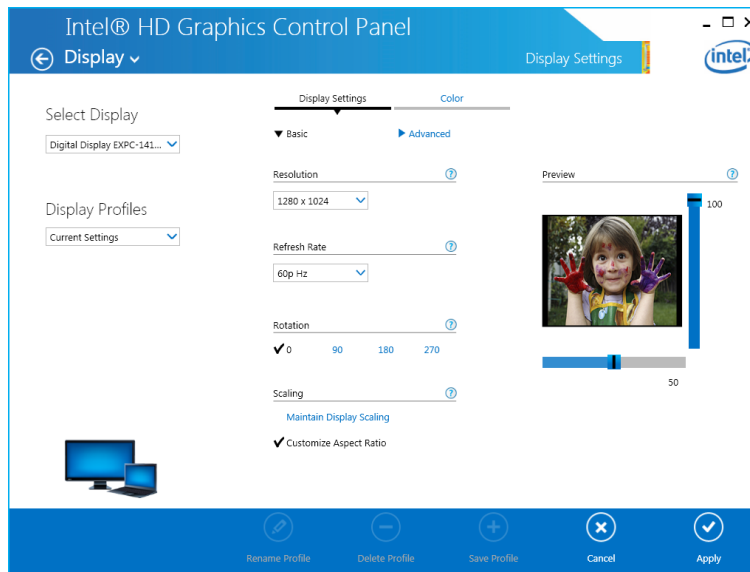
2. Select **Display**.



3. You can make changes to the screen resolution, refresh rate, and image rotation. Make sure that you select **Maintain Display Scaling** to maximize the display to fit the screen. Click **Apply** to save the changes.



- Click **Customize Aspect Ratio** to set the aspect ratio. To configure, adjust the image by moving the scrolling bars.

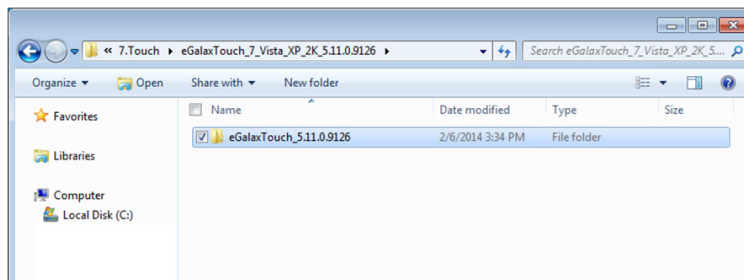


- Click **Apply** to save the changes.

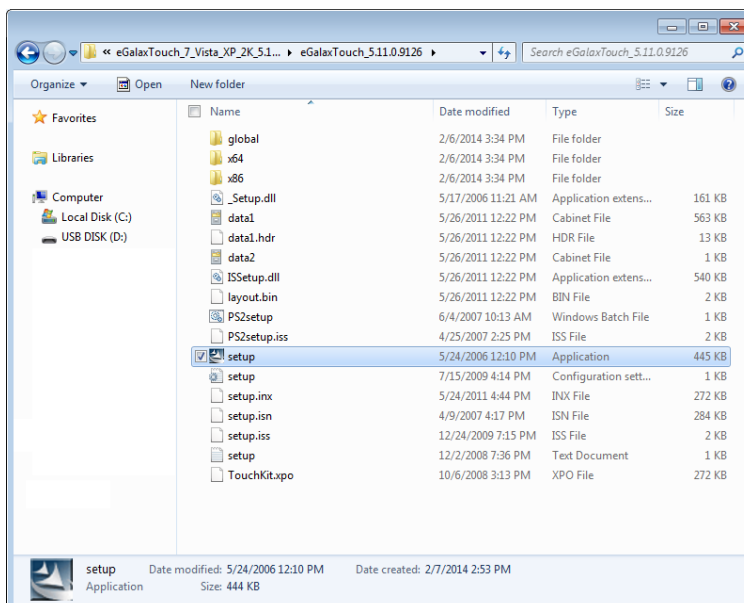
## Installing the Touch Screen Driver

For touch screen models, you must install the driver for the touch function.

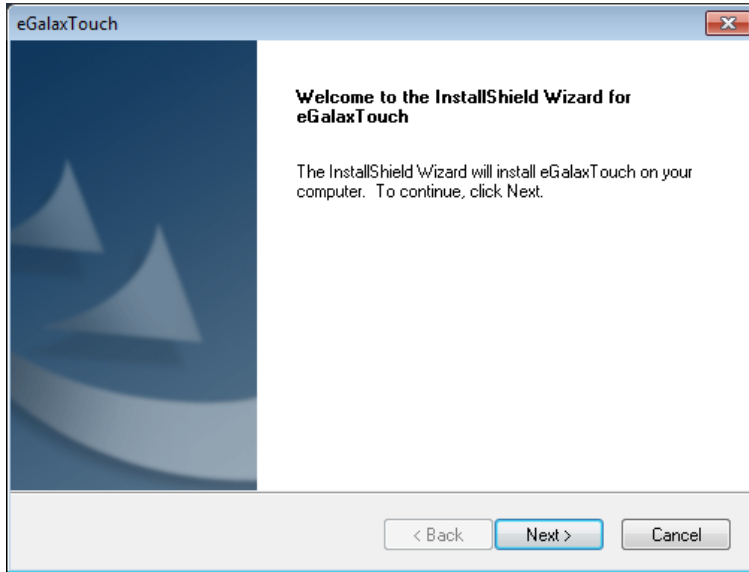
- On the software CD, go to the [CD drive]\**Driver\7.Touch\ eGalaTouch\_7\_Vista\_XP\_2K\_5.11.0.9126\ eGalaxTouch\_5.11.0.9126** folder.



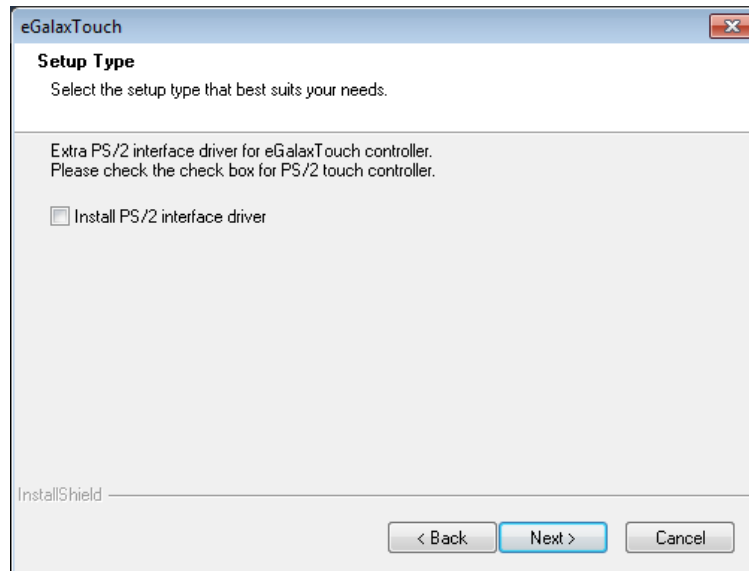
- Double-click **setup** to start the installation.



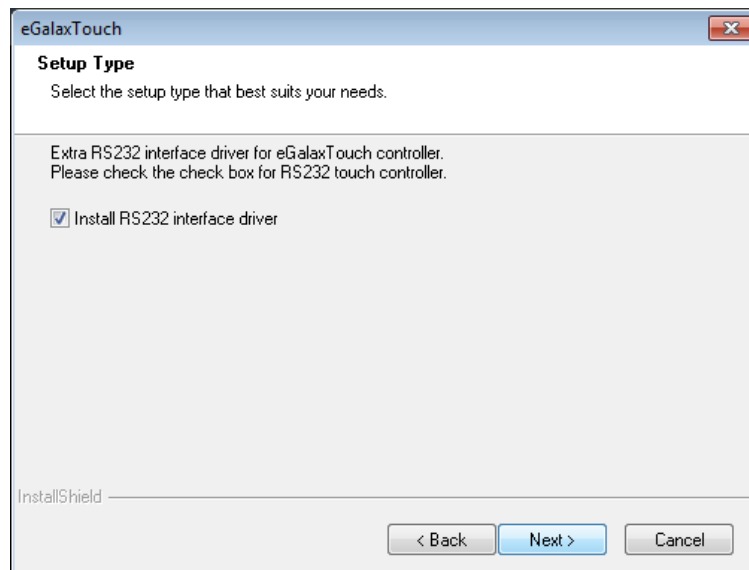
3. Click **Next** to continue.



4. Clear the **Install PS/2 interface driver** check box and click **Next**.

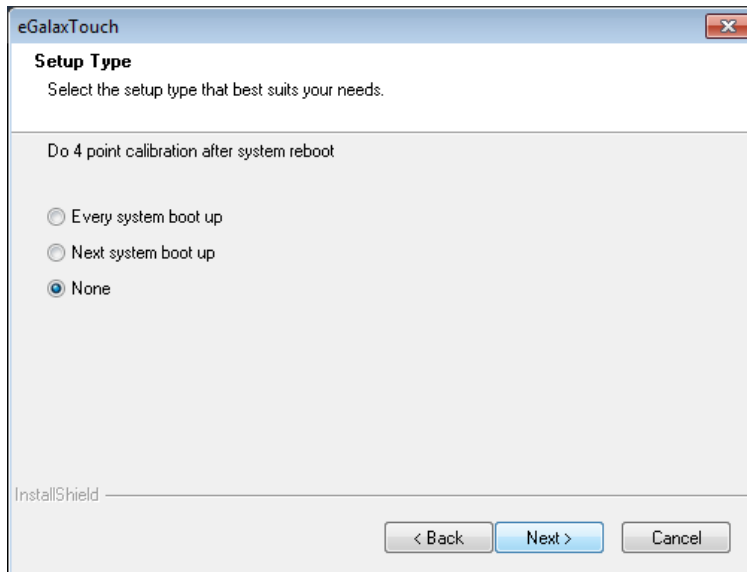


5. Select **Install RS232 interface drive** and click **Next**.

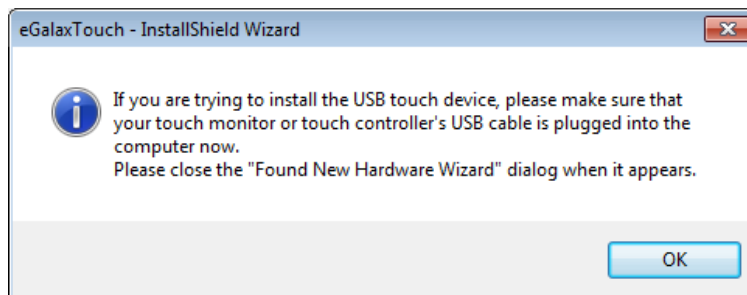




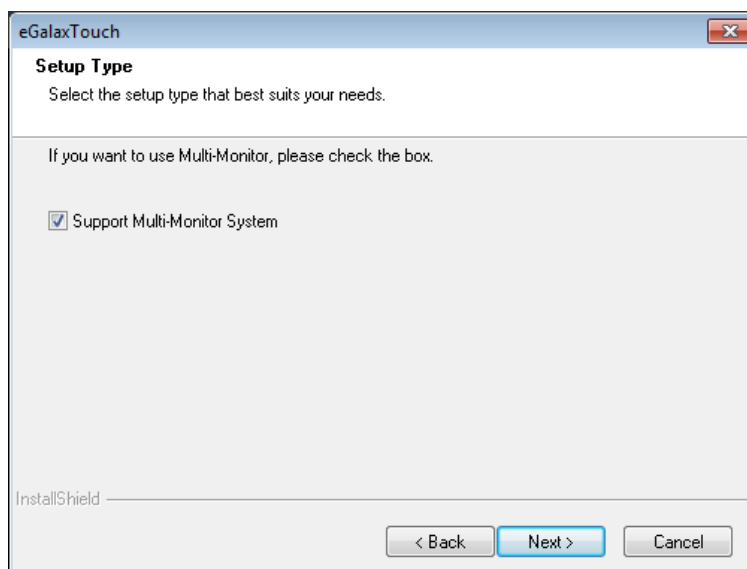
6. Select a calibration option and click **Next**.



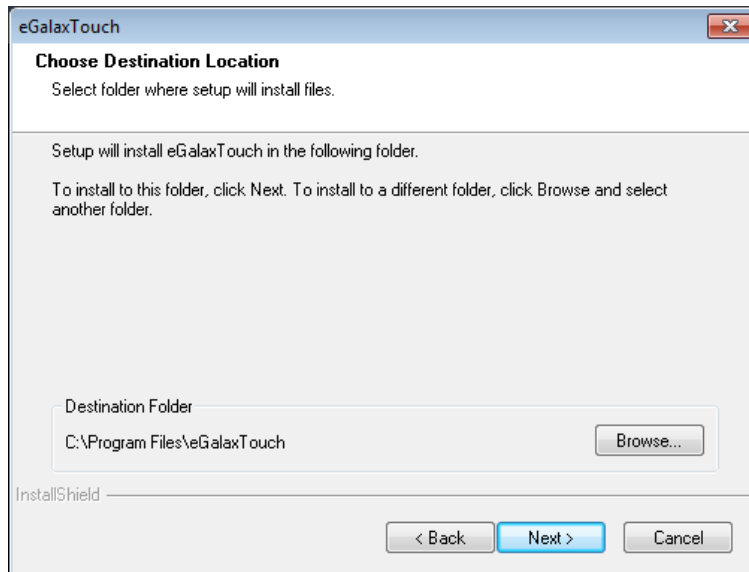
7. To enable the touch screen function, make sure that your touch controller's USB cable is connected to the MPC-2000 series. Click **OK** to continue.



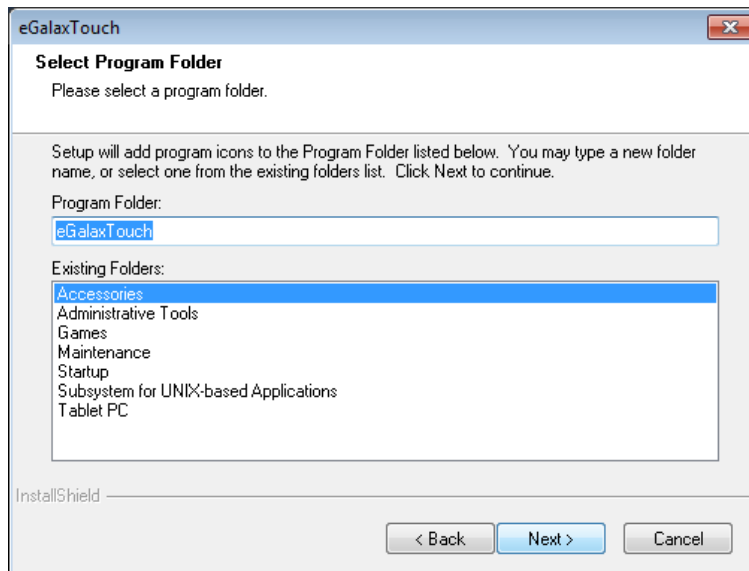
8. If required, select **Support Multit-Monitor System**. Click **Next** to continue.



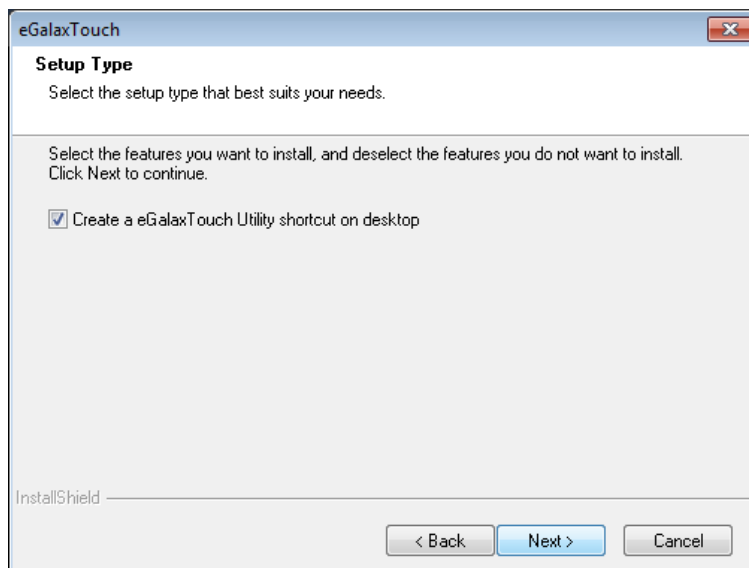
9. Accept the default destination folder or click **Browse** to choose one; then, click **Next**.



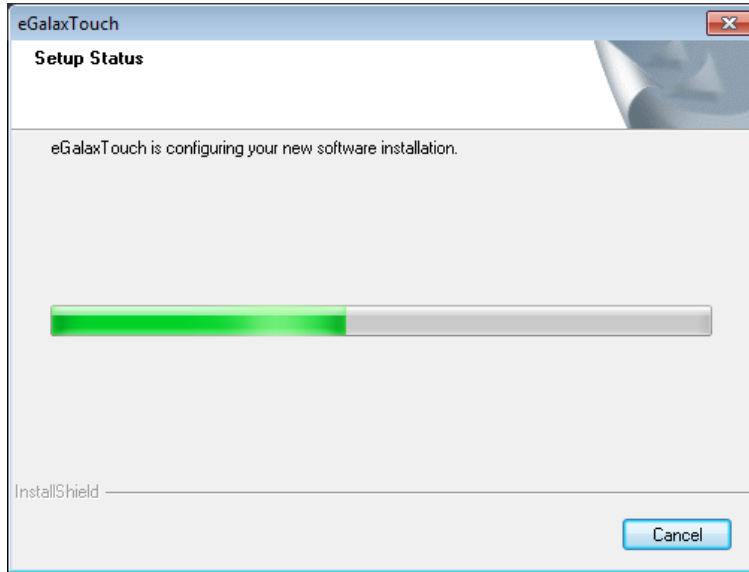
10. Click **Next** to continue.



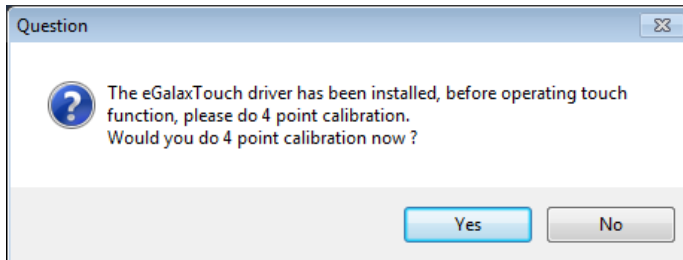
11. If you want, select **Create a eGalaxTouch Utility shortcut on desktop**. Click **Next** to continue.



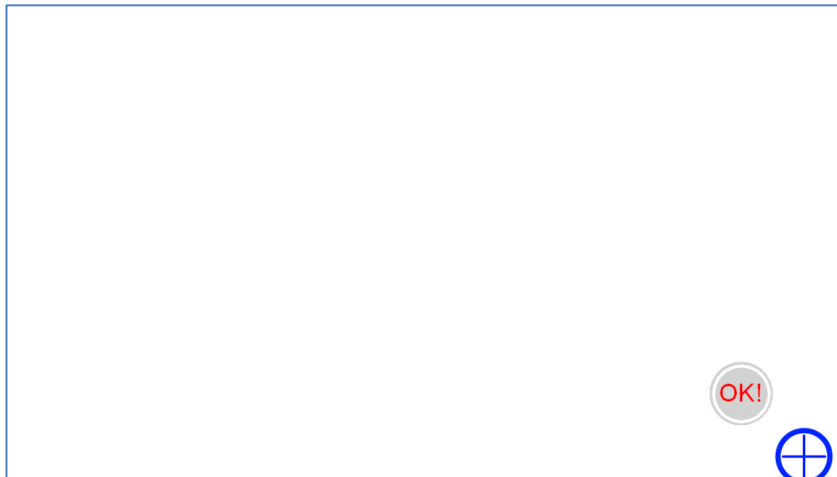
- 12. Wait until the installation is complete.



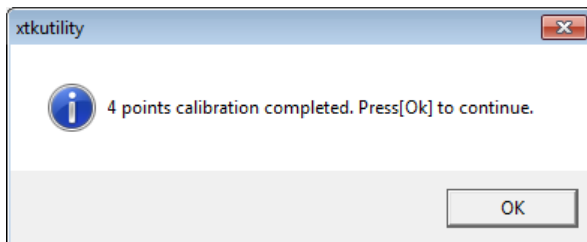
- 13. Click **Yes** to perform 4 points calibration.



- 14. The system displays a circle at each corner of the screen. Touch the center of the circle until the screen displays **OK**. Repeat this step until you have touched a circle in each corner.



- 15. Click **OK**.



# Performing Screen Calibration

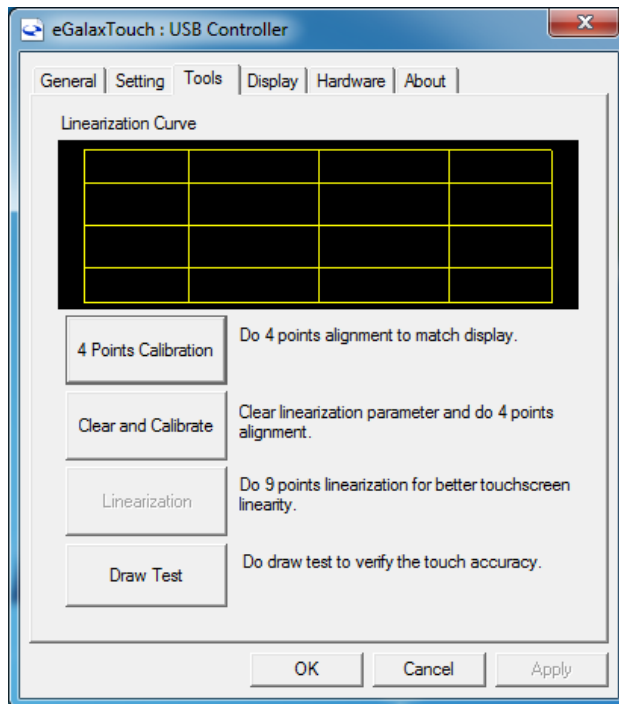
Note that you have to do 4 points calibration each time you change the display resolution. This enables the touch function to work properly.

To perform 4 points calibration, complete the following steps:

1. Double-click the **eGalaxTouch** icon on the desktop.



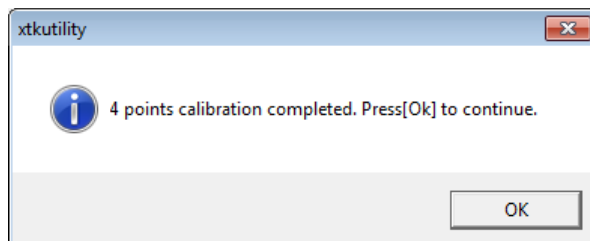
2. The **eGalaxTouch** screen appears. Select the **Tools** tab and click **4 Points Calibration**.



3. The system displays a circle at each corner of the screen. Touch the center of the circle until the screen displays **OK**. Repeat this step until you have touched a circle in each corner.



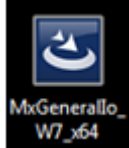
4. Click **OK** to complete the calibration.



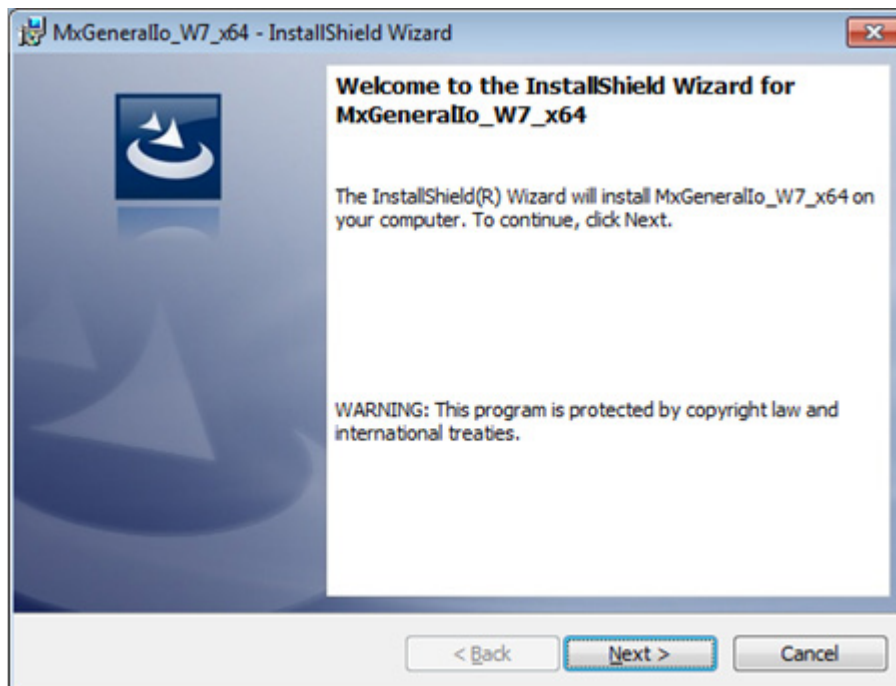
# MPC-2260 MxGeneralIo Driver Installation

## Installing the MxGeneralIo Driver

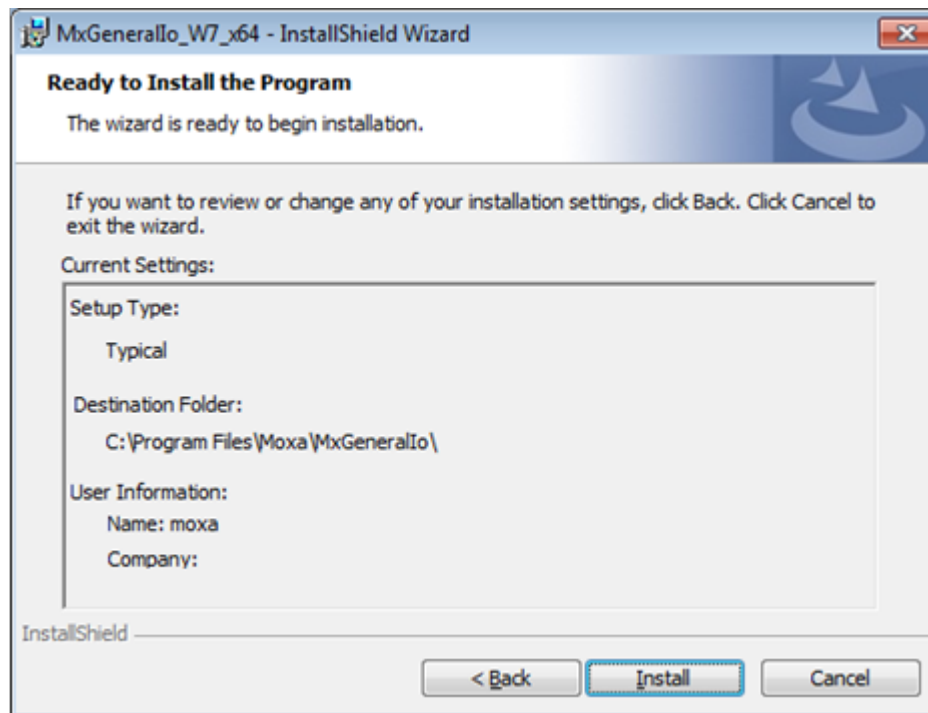
1. Run the executable program **MxGeneralIo\_W7\_x64.exe**.



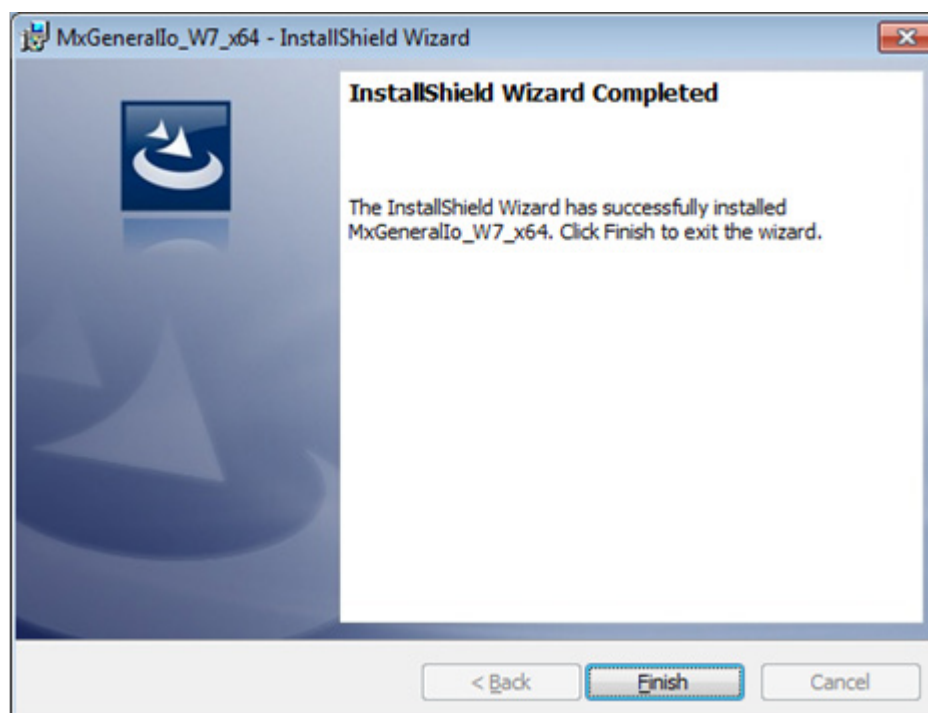
2. Click **Next**.



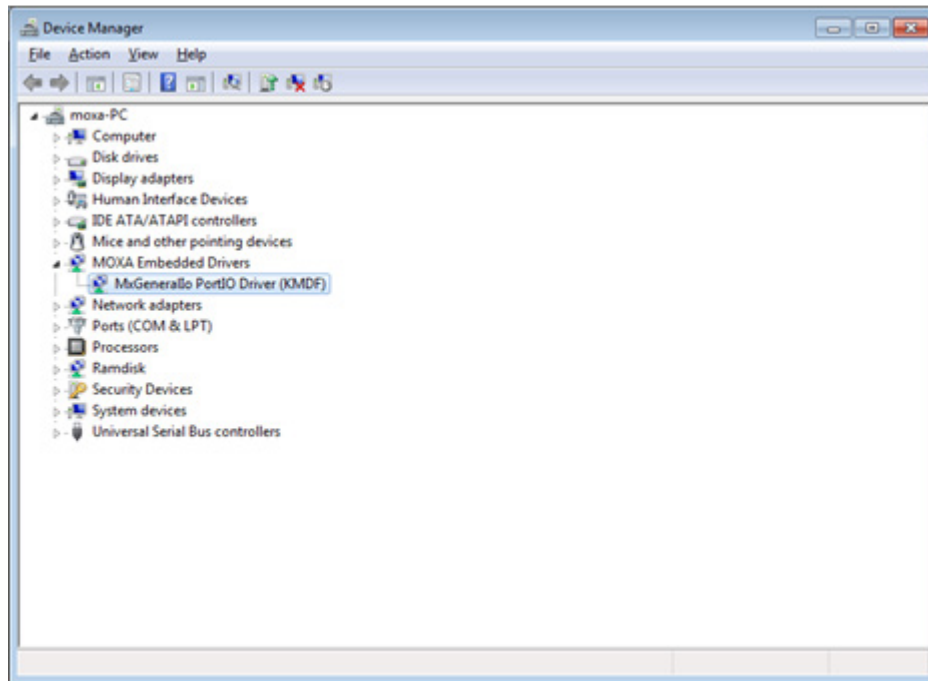
3. Click **Install**.



4. Click **Finish**.



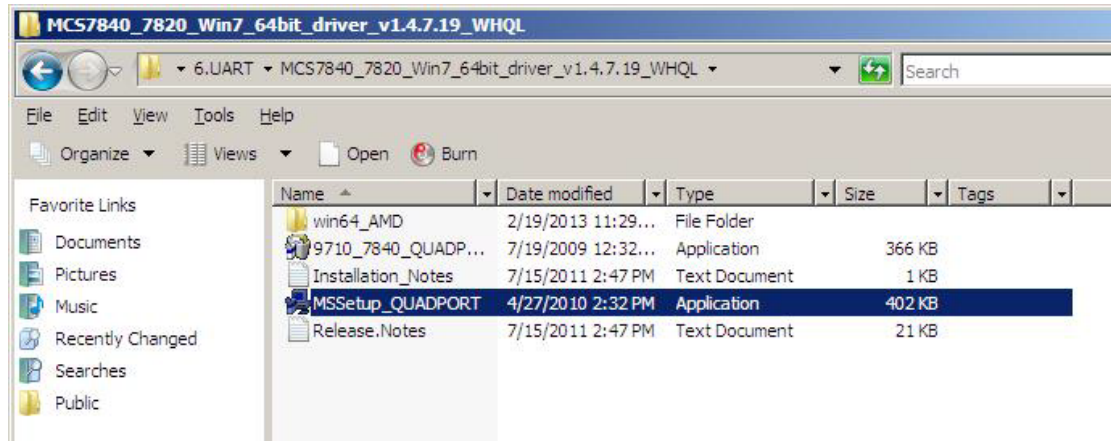
5. Check your computer's Device Manager to verify that **MxGeneralIo PortIO Driver (KMDF)** was installed correctly.



## MPC-2260 UART Driver Installation

### Installing the UART Driver

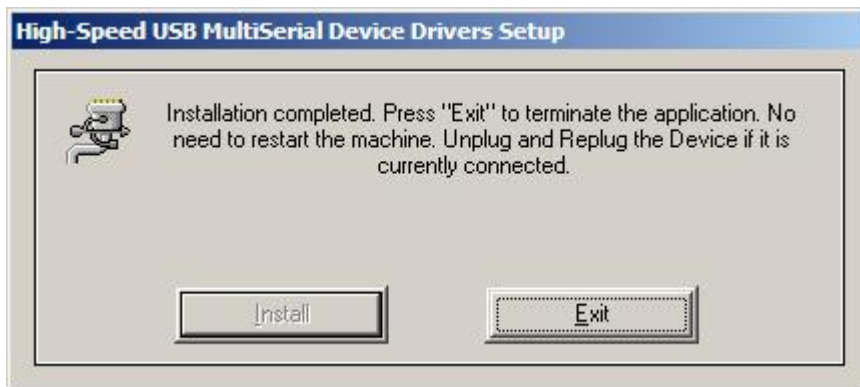
1. Run the executable file **MSSetup\_QUADPORT.exe**, located in the **MCS7840\_7820\_Win7\_64bit\_driver\_v1.4.7.19\_WHQL** folder.



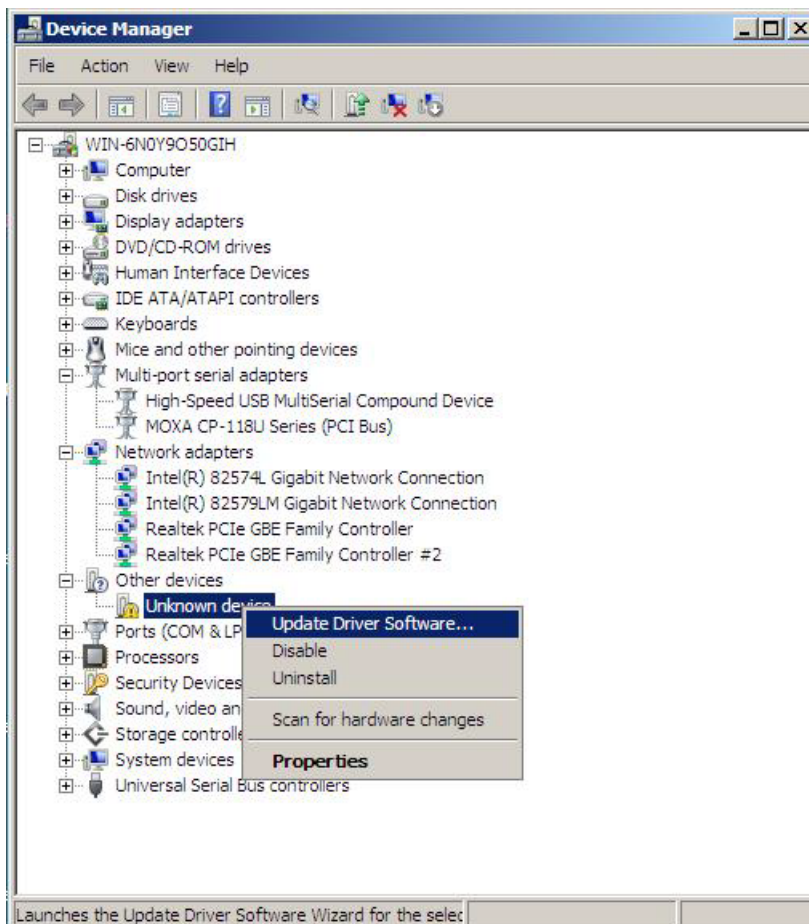
2. Click **Install**.



3. Click **Exit**.

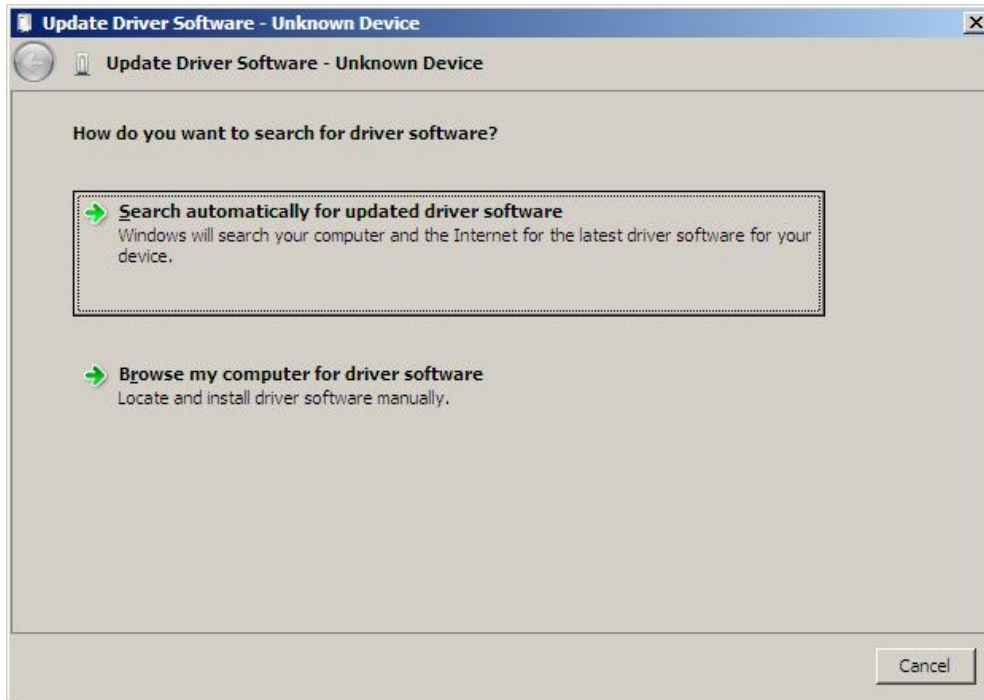


4. Right-click **Unknown device** and select **Update Driver Software....**

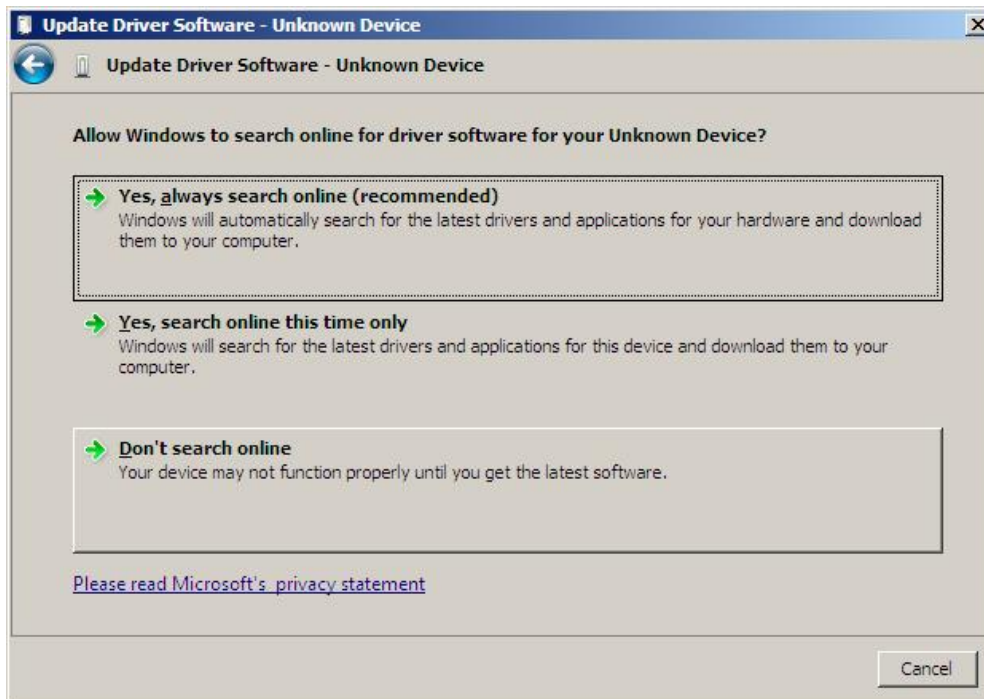




5. Select **Search automatically for updated driver software**.



6. Select **Don't Search online**.



7. Click **Close**.



This chapter describes the BIOS settings of the MPC-2000 series marine panel computer. The BIOS is used to initialize basic peripherals and helps boot the operating system before the operating system is loaded. You can access the BIOS setup screens to change the configurations of these basic input/output peripherals. The configuration information is stored in the battery-backed up CMOS RAM, which retains the system information after the system reboots or when the power is disconnected.

The following topics are covered in this chapter:

- ❑ **Entering the BIOS Setup Utility**

- ❑ **Main Information**

- ❑ **Advanced Settings**

- Boot Configuration
- Peripheral Configuration
- HDC Configuration
- Video Configuration
- Chipset Configuration
- Hardware Monitor

- ❑ **Security Settings**

- Set Supervisor Password

- ❑ **Power Settings**

- ❑ **Boot Settings**

- Boot Type
- EFI Device First
- Boot Delay Time
- Legacy

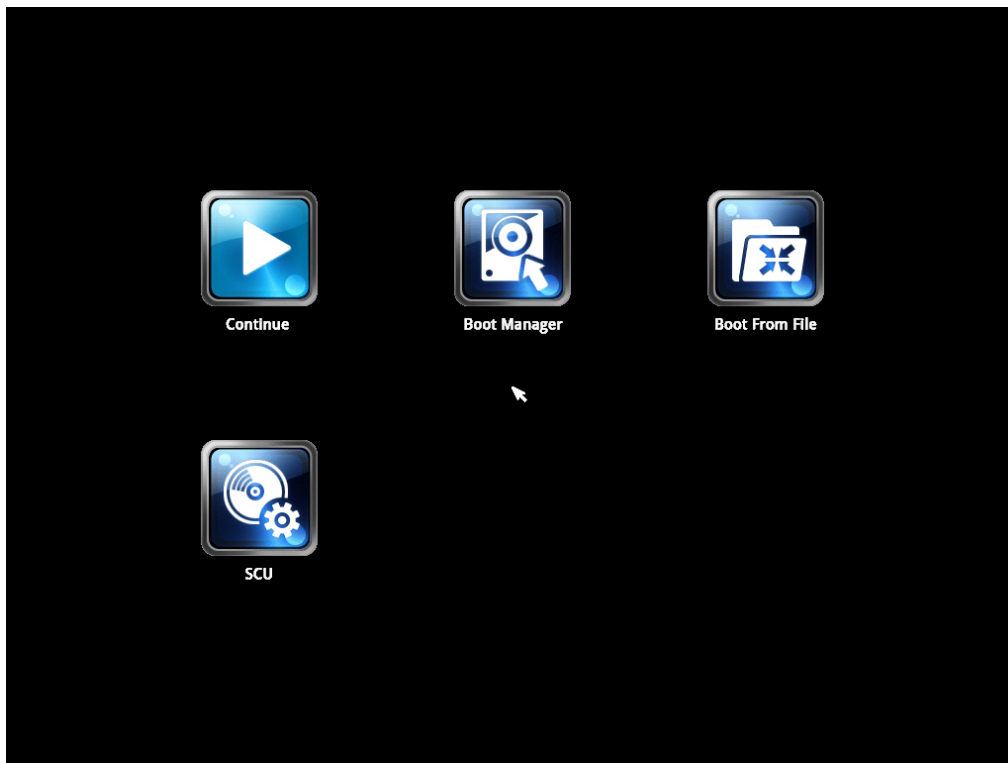
- ❑ **Exit Settings**

- Exit Saving Changes
- Save Change Without Exit
- Exit Discarding Changes
- Load Optimal Defaults
- Load Custom Defaults
- Save Custom Defaults
- Discard Changes

- ❑ **Upgrading the BIOS**

## Starting the BIOS Setup Utility

To start the BIOS setup utility, press the **F2** key while the system is booting up. The main **BIOS Setup** screen appears. Select **SCU** to access the **BIOS Configuration** screen.



**NOTE** The BIOS does not support the touch screen function. You must connect a keyboard to the MPC-2000 series to configure the BIOS.

A short description of each function key is displayed at the bottom of the screen.

**F1: General Help**

**F5/F6: Change Values**

**F9: Setup Defaults**

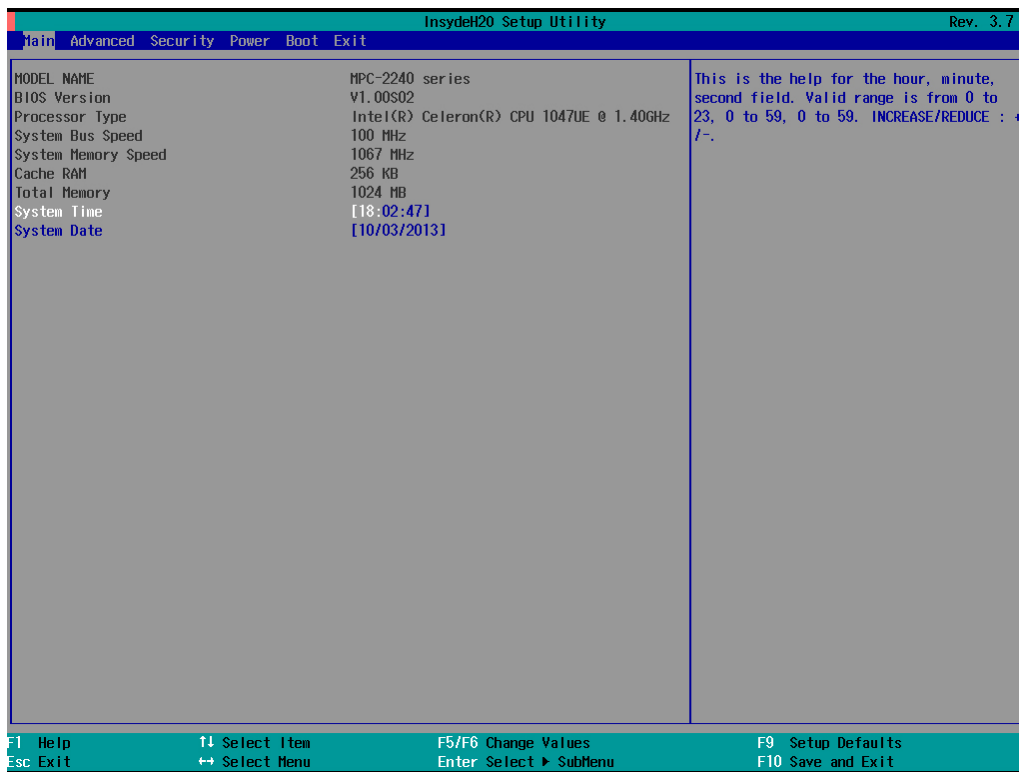
**F10: Save and Exit**

**↑ ↓: Select Item**

**← →: Select Menu**

**ESC: Exit**

**ENTER: Select or go to Submenu.**

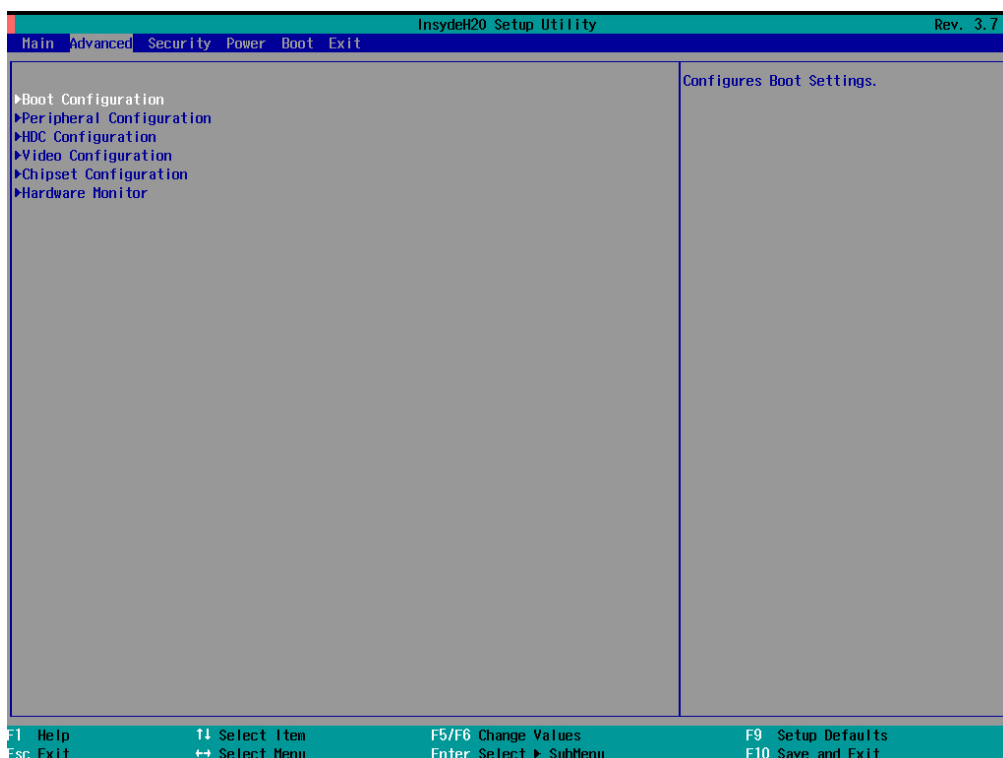


## Main Information

The main page displays the system hardware information (such as the model name, BIOS version, and CPU type)

## Advanced Settings

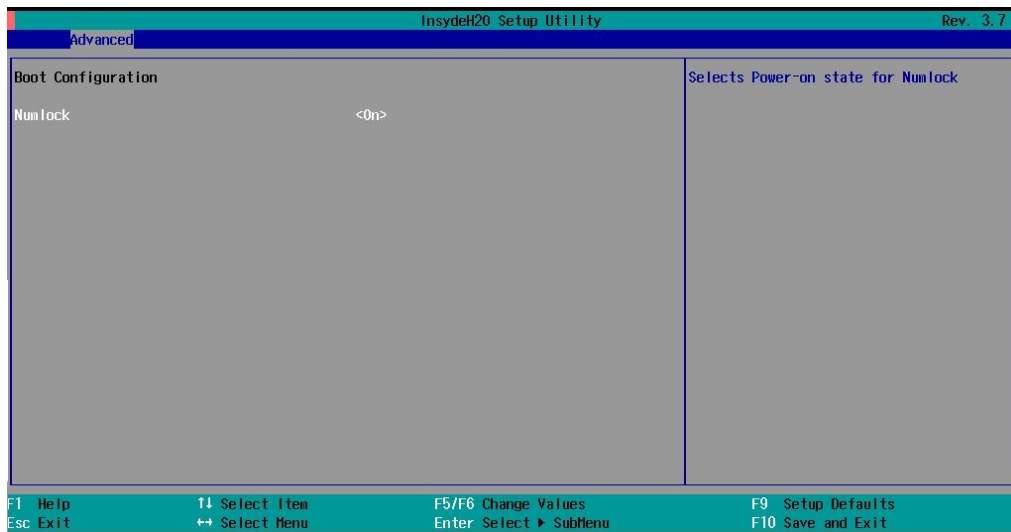
Select the **Advanced** tab to display the advanced screen as shown in the following figure.



## Boot Configuration

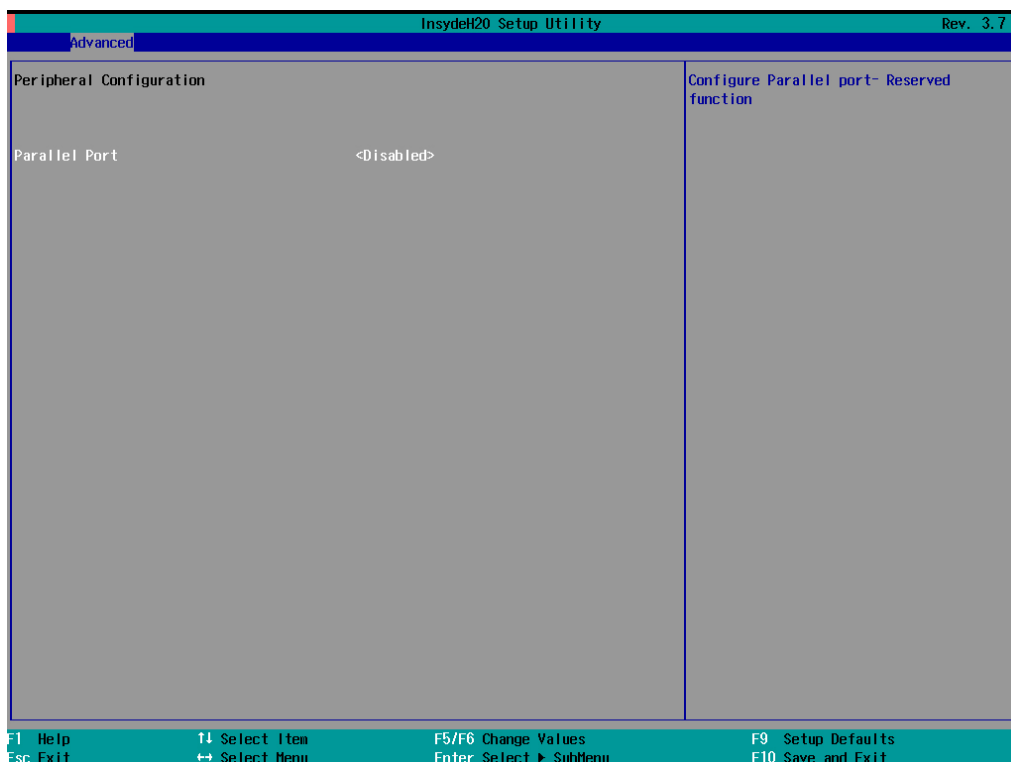
You can configure the numlock values in the Boot Configuration screen.

Option: On (default), Off.



## Peripheral Configuration

Use this screen to configure the parallel port.



### Parallel Port

This item allows you to configure the parallel port.

Options: Disabled (default), 378/IRQ7.

## Mode

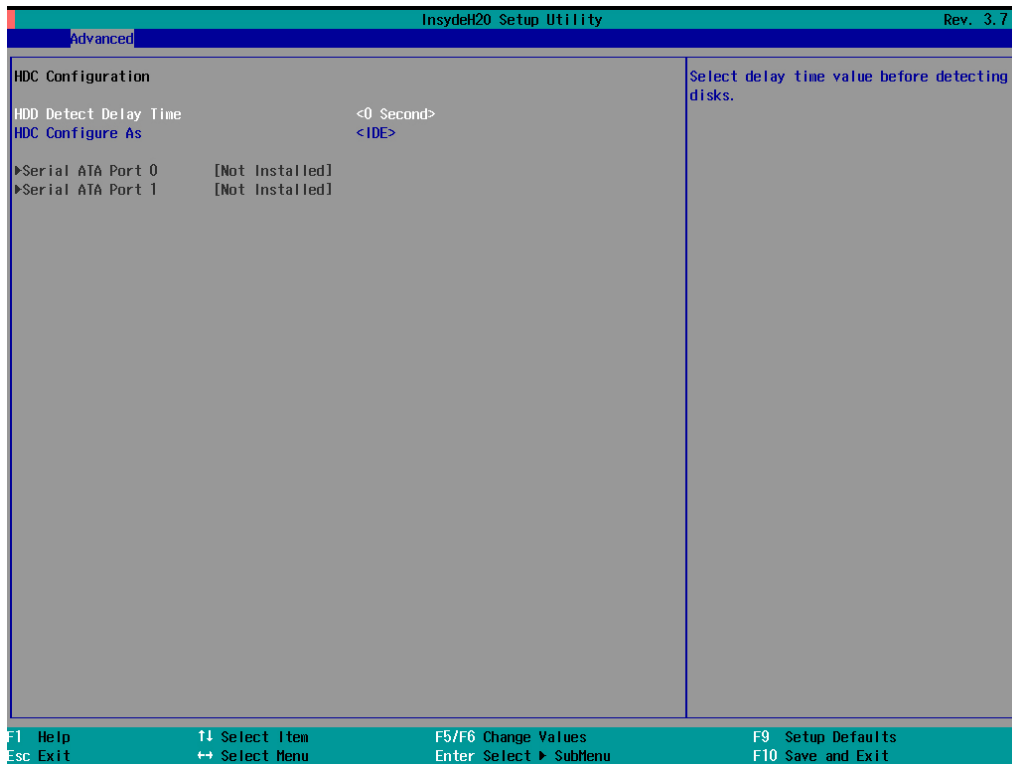
This setting allows you to configure the mode for the parallel port.

Options: SPP (default), EPP, ECP, EPP+ECP.

## HDC Configuration

You can set the host drive controller in IDE (legacy default) or AHCI mode.

The following screen appears when you select the legacy IDE mode.



## HDD Detect Delay Time

This setting allows you to set the time delay when detecting hard disks.

Option: 0 (default), 1, 2, 3 seconds.

## Serial ATA Port 0 to 1

This setting allows you to display information about the installed drives.

## AHCI SALP

Note that AHCI SALP only appears when you select the AHCI mode. This setting allows you to enable **Aggressive Link Power Management** (SALP) in AHCI for the host bus adapter to conserve power by detecting when a SATA drive is no longer processing information and then immediately setting it to suspended or sleep mode without waiting for the software to initiate power-down processes.

Host Capability Register bit 26.

Options: Enabled (default), Disabled.

## SATA Port 0 to 1 - HotPlug

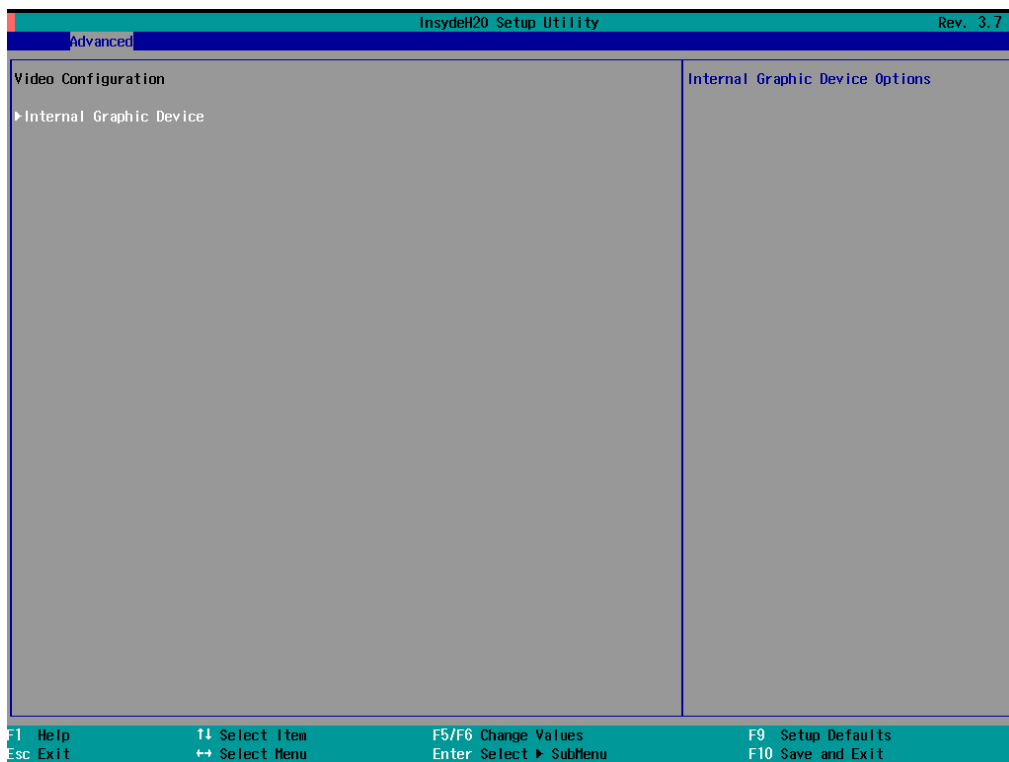
This item allows you to enable/disable hotplug capabilities (the ability to remove the drive while the computer is running) for installed storage drives.

Options: Disable (default), Enabled.

## Video Configuration

This item allows you to configure the internal graphics device (IGD) for things like memory allocation (**DVMT**) and monitor types (**Boot Type**).

## Internal Graphics Device



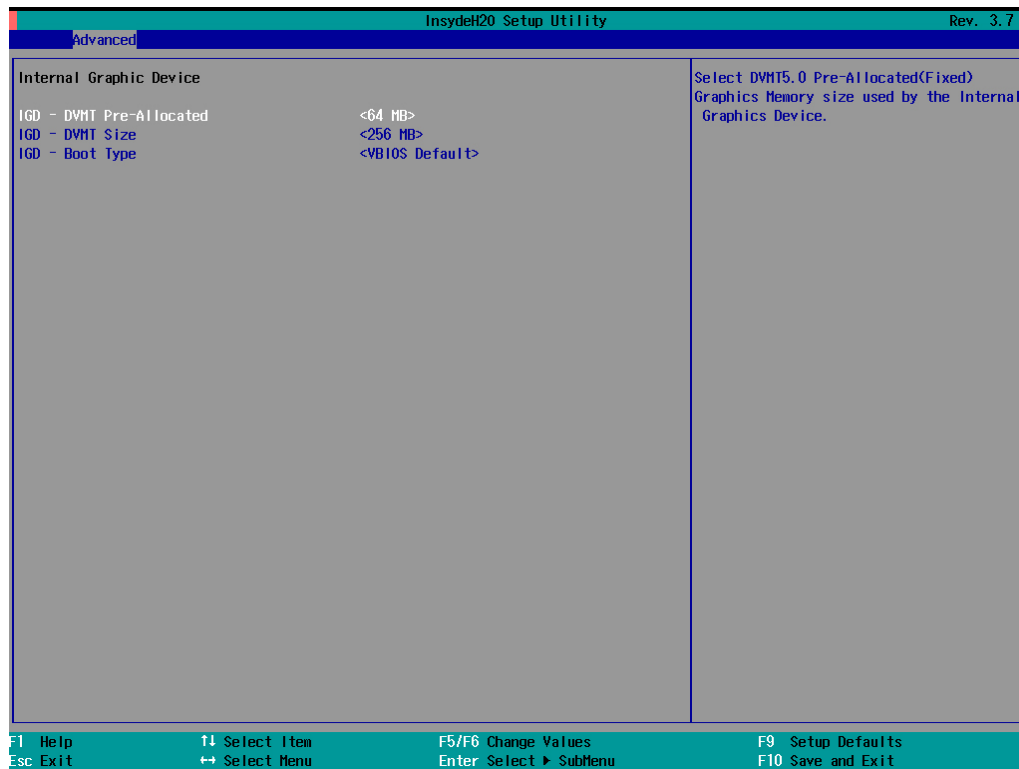


## IGD—DVMT Pre-Allocated

This item allows you to configure pre-allocated memory capacity for the IGD. Pre-allocated graphics memory is invisible to the operating system.

Options: 64 MB (default), 32 MB, 96 MB, 128 MB, 256 MB, and 512 MB.

**DVMT** is a BIOS solution where the optimum amount of memory is dynamically allocated and de-allocated as needed for balanced graphics and system performance, through Intel® Direct AGP and a highly efficient memory utilization scheme. DVMT ensures the most efficient use of available system memory resources for maximum 2D/3D graphics performance.



## IGD—DVMT Size

This item allows you to configure the maximum amount of memory DVMT will use when allocating additional memory for the internal graphics device.

Options: 256 MB (default), 128 MB, Max.

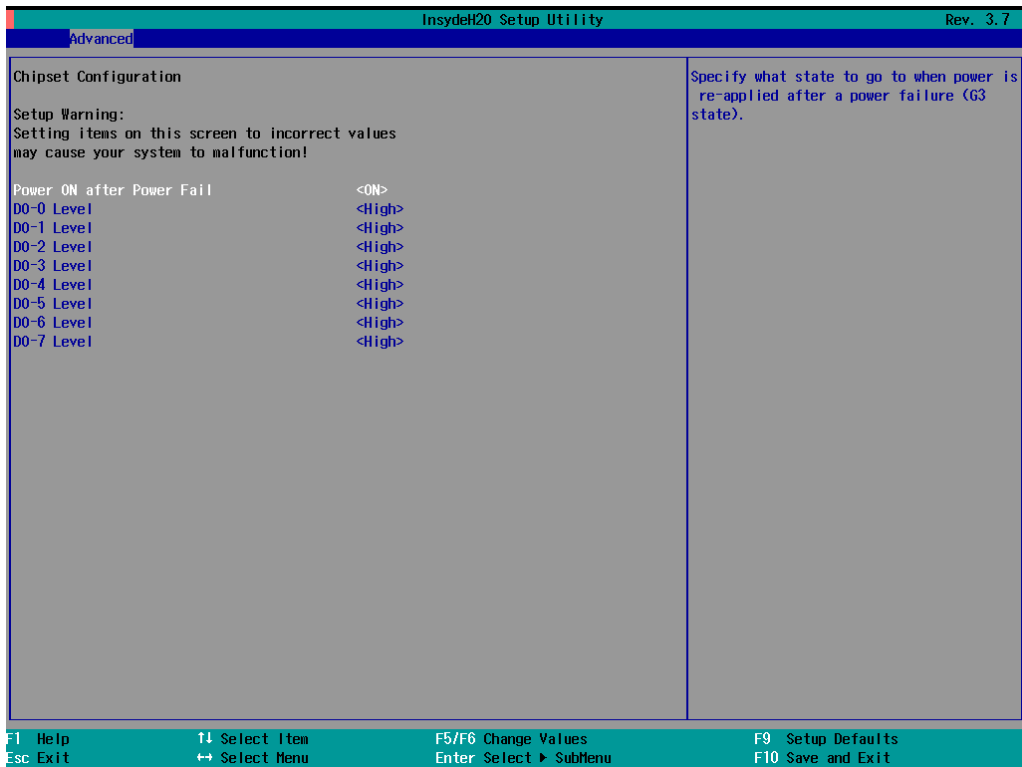
## IGD – Boot Type

This item allows you to select the video device which will be activated during POST.

Options: VBIOS Default (default), VGA, DVI, Integrated Panel.

## Chipset Configuration

This item allows you to configure the chipset settings.



### Power ON after Power Fail

This item allows you to enable/disable the computer from automatically powering up after a system crash.

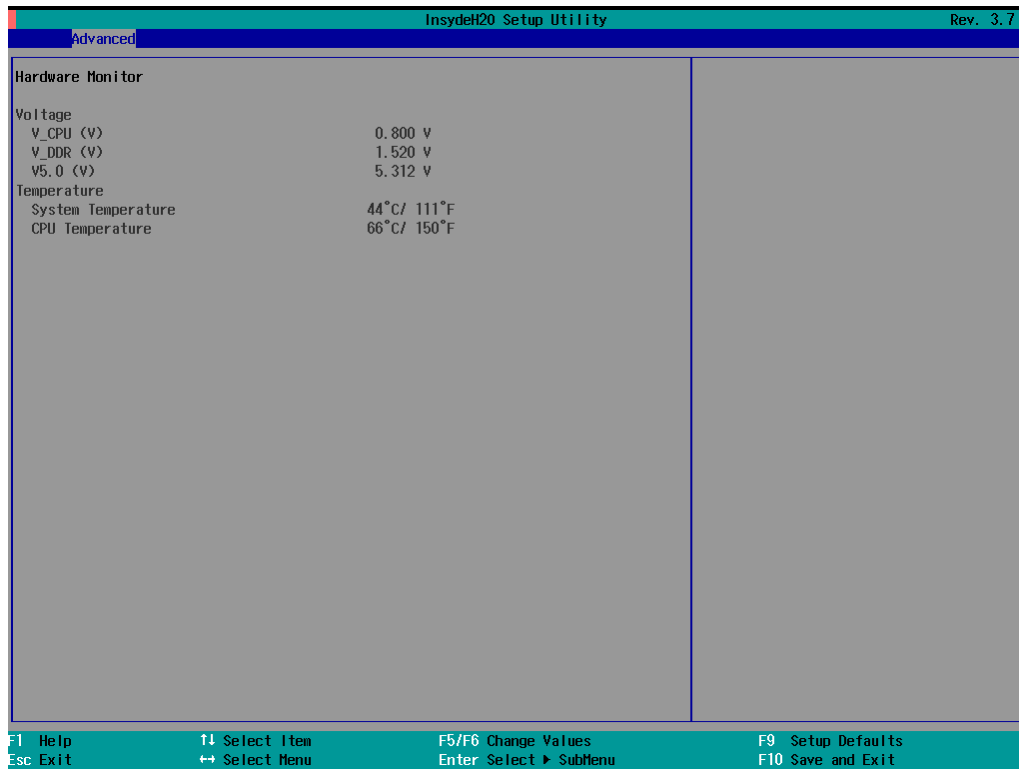
Options: ON (default), OFF, Last State.

### DO Level

This item allows you to set the DO default level.

## Hardware Monitor

This item allows you to view stats like CPU and system temperature, voltage levels, and other chipset information.



## Security Settings

This section allows users to configure security settings with a supervisor password.



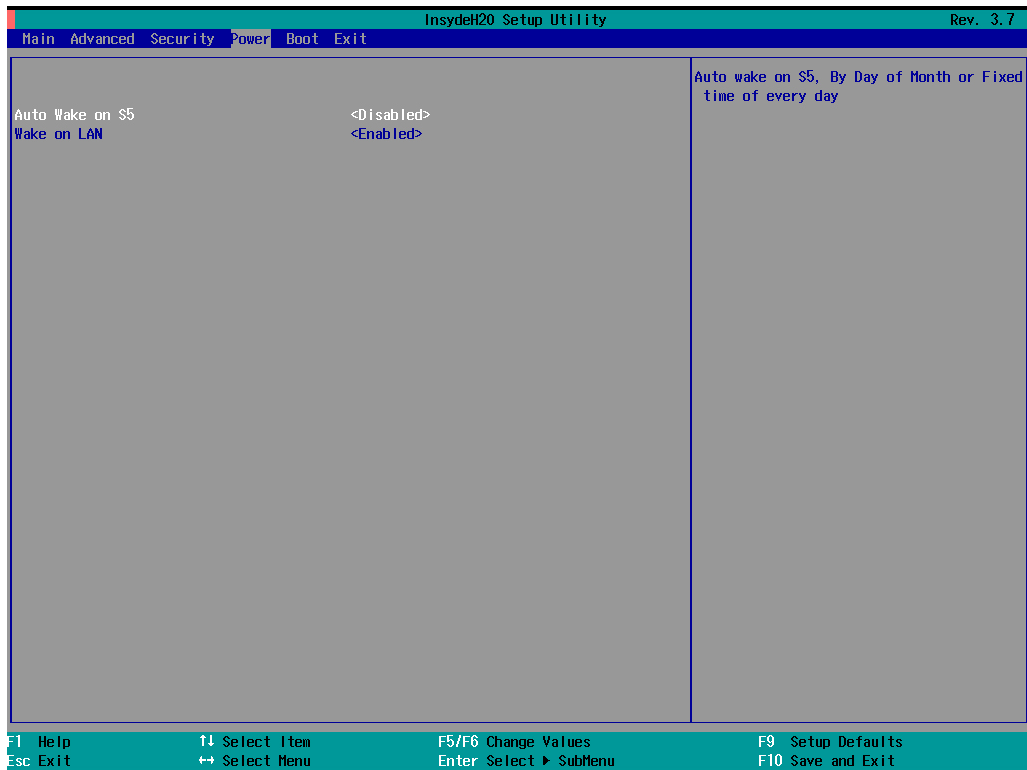
## Set Supervisor Password

This item allows you set the supervisor password. Select and then enter the password, and then confirm the password again.

To delete the password, enter **Set Supervisor Password** and then enter the old password; then, leave the new password fields blank, and press enter.

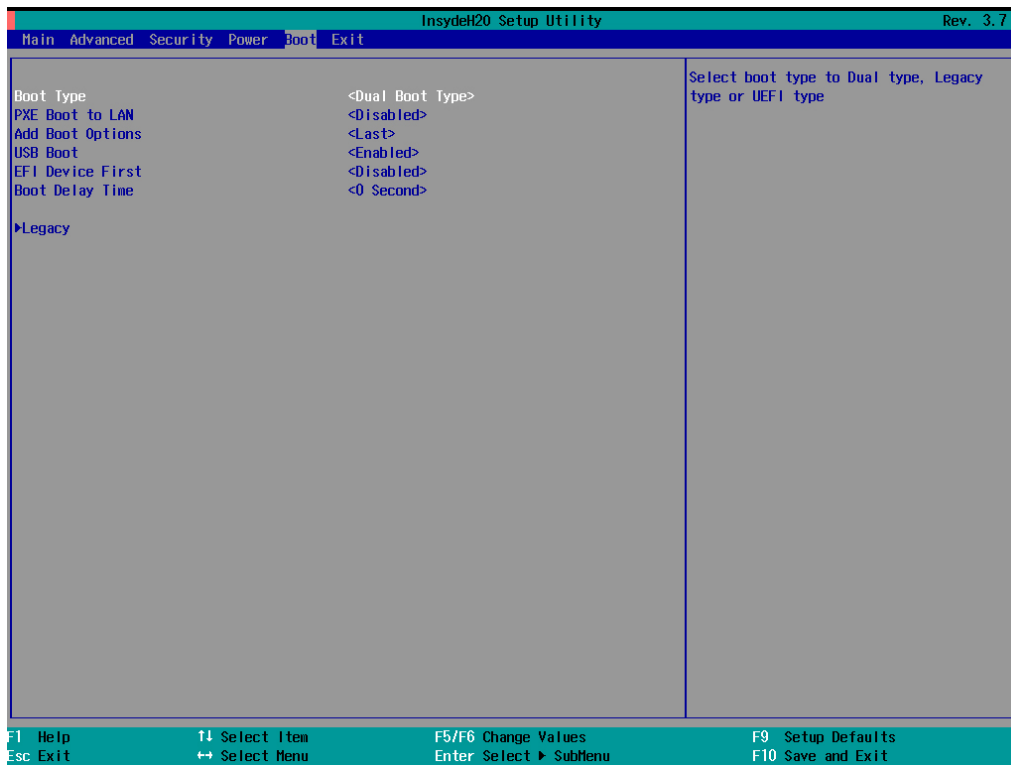
## Power Settings

The section allows users to configure power settings.



# Boot Settings

This item allows you to select the BIOS support boot device type.



## Boot Type

This item allows you to enable/disable quick boot function.

Options: Dual Boot Type (default), Legacy Boot Type, UEFI Boot Type.

## PXE Boot to LAN

This item allows you to enable/disable PXE boot to LAN function.

Options: Disabled (default), Enabled.

## Add Boot Options

This item allows you to add the boot order options for shell, network and Removables.

Options: Last (default), First.

## USB Boot

This item allows you to enable/disable USB boot function.

Options: Enabled (default), Disabled.

## EFI Device First

This item allows you to determine EFI device first or legacy device first. If enabled, EFI device will be the first; if disabled, legacy device will be the first.

Options: Disabled (default), Enabled.

## Boot Delay Time

This item allows you to configure the delay time value for users to input hot key during POST time.

Options: 0 Second (default), 3 Seconds, 5 Seconds, and 10 Seconds.

## Legacy

### Normal Boot Menu

This item allows you to configure the boot menu.

Options: Normal (default), Advance.

### Boot Type Order

This item allows you to select the boot order. Use F5/F6 to change values.

Options: Hard Disk Drive (default), CD/DVD-ROM Drive, USB, Others.

### Hard Disk Drive/USB Drive

This item allows you to view installed devices such as hard disk drives, USB drives, or CD-ROMs. For example, if you have inserted a USB drive into the computer, it will appear here.

# Exit Settings

The section allows users to exit the BIOS environment.



## Exit Saving Changes

This item allows you to exit the BIOS environment and save the values you have just configured.

Options: Yes (default), No.

## Save Change without Exit

This item allows you to save changes without exiting the BIOS environment.

Options: Yes (default), No.

## Exit Discarding Changes

This item allows you to exit without saving any changes that might have been made to the BIOS.

Options: Yes (default), No.

## Load Optimal Defaults

This item allows you to revert to the factory default BIOS values.

Options: Yes (default), No.

## Load Custom Defaults

This item allows you to load custom default values for the BIOS settings.

Options: Yes (default), No.

## Save Custom Defaults

This item allows you to save the current BIOS values as a “custom default” that may be reverted to at any time by the “load custom defaults” selection just above.

Options: Yes (default), No.

## Discard Changes

This item allows you to discard all settings you have just configured.

Options: Yes (default), No.

## Upgrading the BIOS

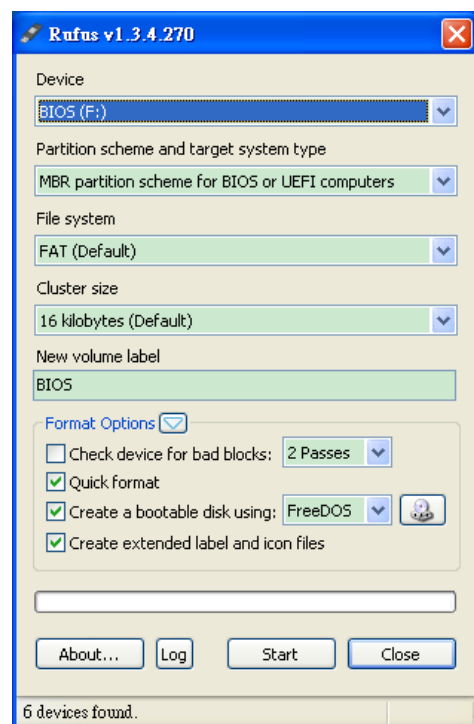
This section describes how to upgrade the BIOS. However, note that an improper BIOS update may damage the mainboard, leaving the computer unable to boot. We strongly recommend that you contact Moxa’s technical support staff to obtain the necessary tools and the most current advice before attempting to upgrade the BIOS on any Moxa devices.

### Step 1: Create a Bootable USB Storage Drive

Before upgrading the BIOS, you must first create a bootable USB storage drive for system upgrade.

You may use any software that to create a bootable USB drive. We use Rufus as an example in this section.

1. Start Rufus and select the USB device from the **Device** drop-down list.
2. Select **MBR partition scheme for BIOS or UEFI computers** to boot from legacy BIOS or UEFI.
3. Select **FAT (Default)** from the **File system** drop-down list.
4. Select **16 kilobytes (Default)** from the **Cluster size** drop-down list.
5. Enter a drive name in the **New volume label** field.
6. Check **Quick format, Create a bootable disk using FreeDOS, and Create extended label and icon files**.
7. Click **Start** to format and create the bootable USB drive.



### ATTENTION

We recommend that you use a USB drive with less than 2 GB of storage capacity. A USB drive with bigger storage capacity may not support FAT file format and, consequently, may fail to boot.



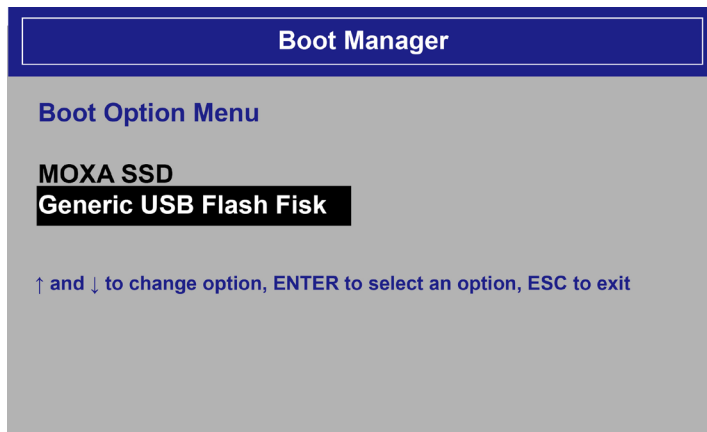
## Step 2: Prepare the Upgrade File

You must use the BIOS upgrade installation file to upgrade the BIOS. Contact Moxa's technical department for assistance.

1. Get the BIOS upgrade installation file. The file name should have following format: **2000xxSx.exe** (xx refers to version numbers).
2. Copy the file to the bootable USB drive.

## Step 3: Run the upgrade program on the MPC-2000 Series

1. Reboot the computer, press F2 while during the boot process to access the Boot Manager.
2. Select Generic USB Flash Disk as the first boot source. Press [Enter] to continue.



3. When the boot process is complete, a command screen appears. Go to the directory where the upgrade file is located. For example, if the upgrade file is stored in the MPC2240 folder, type **cd MPC2240**.

```
C:\>cd MPC2240
```

4. Run the upgrade program by typing **22410S02.exe**. Note that the upgrade filename may vary depending on the versions.

```
C:\MPC2240>22410S02.exe
```

5. The system automatically executes the upgrade program. Wait until the upgrade process is complete.

```
C:\>22410S02.exe
Reading file...
flash package mode.
Option: -BIOS -C -Desc -ME
```

**Please do not remove the AC power!**

```
Insyde Flash Utility for InsydeH20
Version 1.5t
```

```
Initializing
```

```
Current BIOS Model name: MPC-2240
New BIOS Model name: MPC-2240
```

```
Current BIOS version: V1.00S02
New BIOS version: V1.00S02
```

```
Updating Block at FFDE8000
```

6. After the upgrade process is complete, the computer automatically restarts. Access the BIOS Setup screen to verify the BIOS version on Main page. The following figure shows an example.

MODEL NAME	MPC-2240
BIOS Version	V1.00S02
Processor Type	Intel (R) Celeron (R) CPU 1047UE @ 1.40GHz

**ATTENTION**

Do NOT turn off the power supply during the BIOS upgrade process. Doing so may interrupt the upgrade process and cause damage to the mainboard.

# A

## Regulatory Approval Statement

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This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**Class A:** FCC Warning! 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/her own expense.



**European Community**

**Warning:**

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.