

# MPC-2121 Panel Computer Hardware User's Manual

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# MPC-2121 Panel Computer Hardware User's Manual

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# 1

## Introduction

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In this chapter, we give a general introduction to the features and specifications of MPC-2121 panel computers.

The following topics are covered in this chapter:

- **Overview**
- **Package Checklist**
- **Product Features**
- **Hardware Specifications**

## Overview

The MPC-2121 Series 12-inch panel computers with E3800 Series processors deliver a reliable and durable platform of wide versatility for use in industrial environments. All interfaces come with IP66-rated M12 connectors to provide anti-vibration and waterproof connections. With a software selectable RS-232/422/485 serial port and two Ethernet ports, the MPC-2121 panel computers support a wide variety of serial interfaces as well as high-speed IT communications, all with native network redundancy.

The MPC-2121 panel computers are designed with a wide, -40 to 70°C temperature range, and come with a fanless, streamlined enclosure designed for highly efficient heat dissipation, making this one of the most reliable industrial platforms available for vibration prone, harsh, hot, outdoor environments. The MPC-2121 also features a 1000-nit LCD panel offering a sunlight-readable, projected-capacitive, multi-touch screen, providing an excellent user experience.

## Package Checklist

The MPC-2121 panel computer is shipped with the following items:

- 1 MPC-2121 panel computer
- 1 2-pin terminal block for DC power input
- 6 panel mounting screws
- 1 M12 phone jack power cable
- 1 M12 Type A USB cable
- Quick installation guide (printed)
- Warranty card

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

## Product Features

The MPC-2121 panel computer has the following features:

- 12-inch panel computer
- Intel® Atom™ Processor: E3845 1.91 GHz
- -40 to 70°C wide-temperature, no fan/no heater design
- 1000-nit sunlight-readable LCD (500-nit is also available)
- Complies with all EN 50155 mandatory test items\*
- Wide range 24 to 110 VDC power input

\*This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed statement, click here: [www.moxa.com/doc/specs/EN\\_50155\\_Compliance.pdf](http://www.moxa.com/doc/specs/EN_50155_Compliance.pdf)

## Hardware Specifications

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

# Hardware Introduction

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The MPC-2121 computer is compact, well-designed, and ruggedized for industrial applications. Multiple serial ports allow you to connect different devices for data operation, and the reliable and stable hardware platform lets you devote your attention to developing your applications.

The following topics are covered in this chapter:

□ **Appearance**

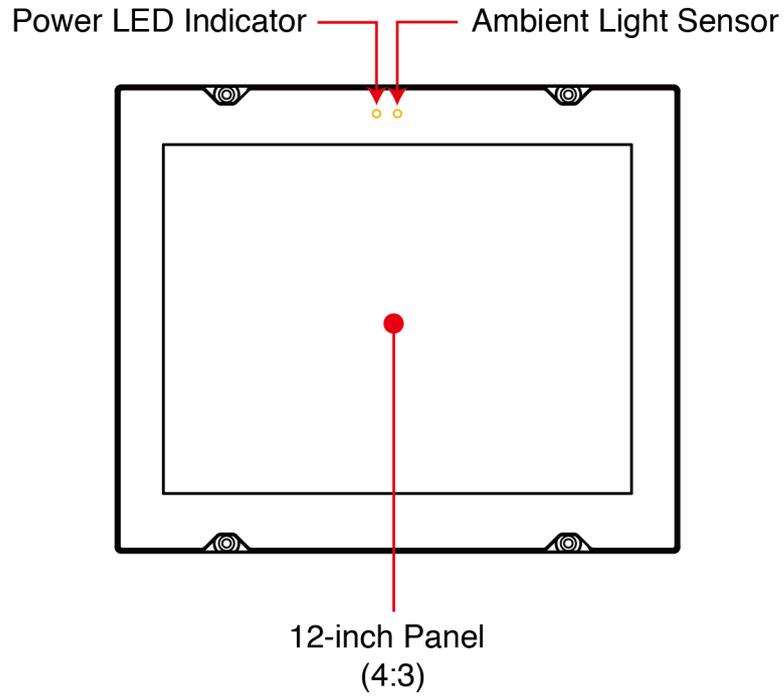
- Front View
- Left-side View
- Rear View
- Right-side View

□ **Ambient Light Sensor**

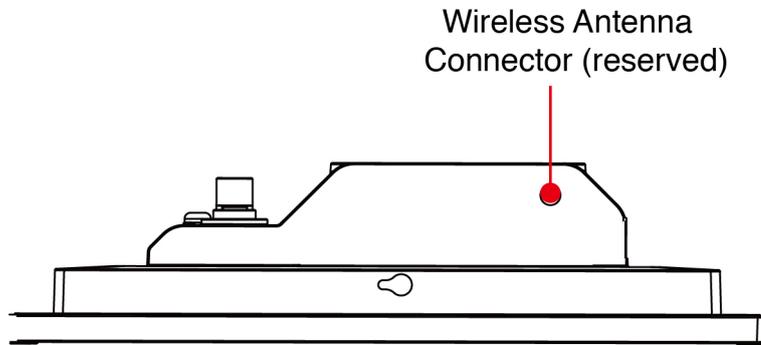
□ **Dimensions**

# Appearance

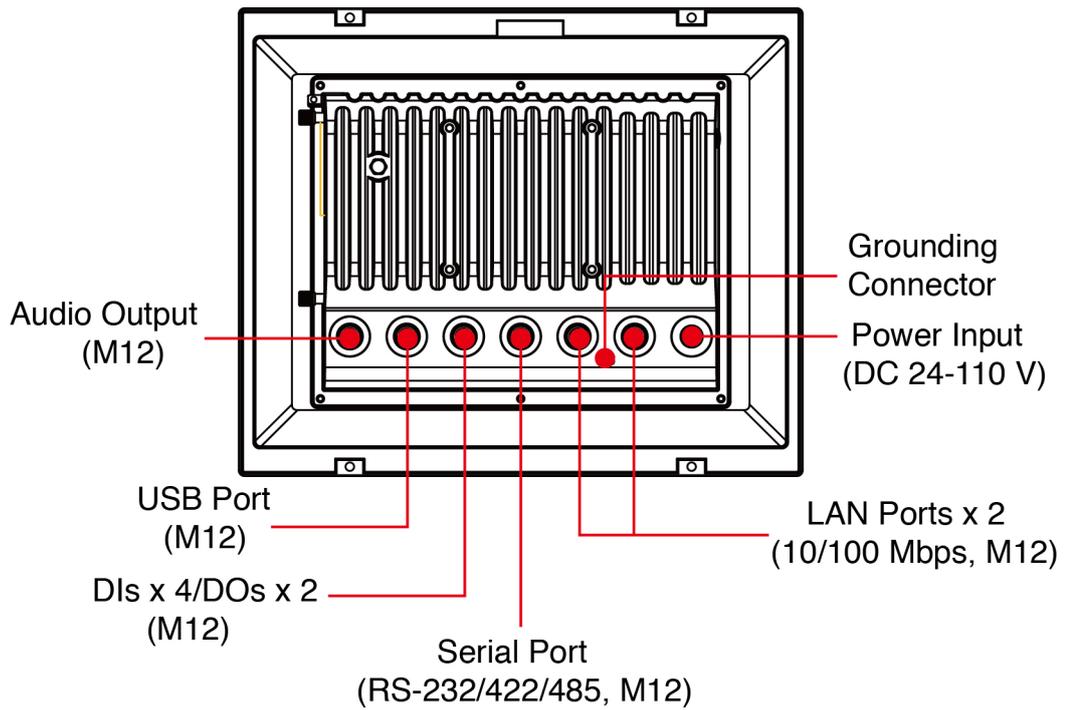
## Front View



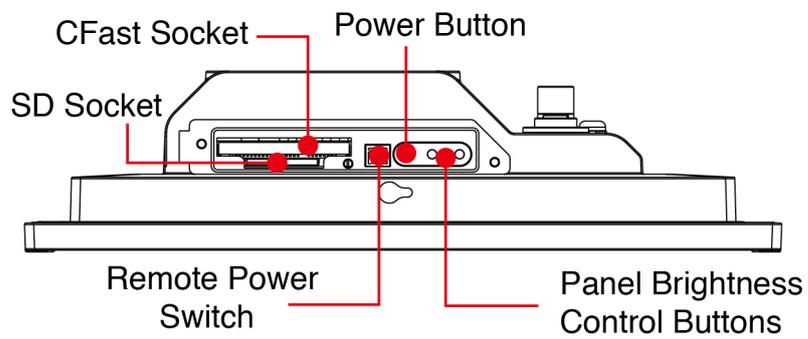
## Left-side View



### Rear View

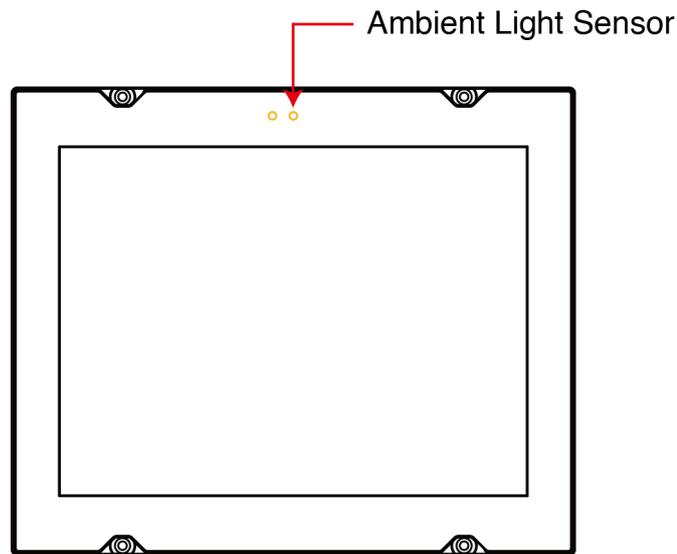


### Right-side View



# Ambient Light Sensor

The MPC-2121 comes with an ambient light sensor located on the upper part of the front panel.



This sensor helps automatically adjust the brightness of the panel with the ambient light conditions.

The light sensor index is divided into 8 levels from L1 to L8; the lower the sensor index, the darker the panel.

The panel brightness index is divided into 10 levels from 1 to 10; the lower is the number, the darker the panel.

Users can configure the light sensor index and the corresponding panel brightness index to get the optimal panel brightness. For example, you can configure the light sensor index L4 in correspondence with the panel brightness index 6.

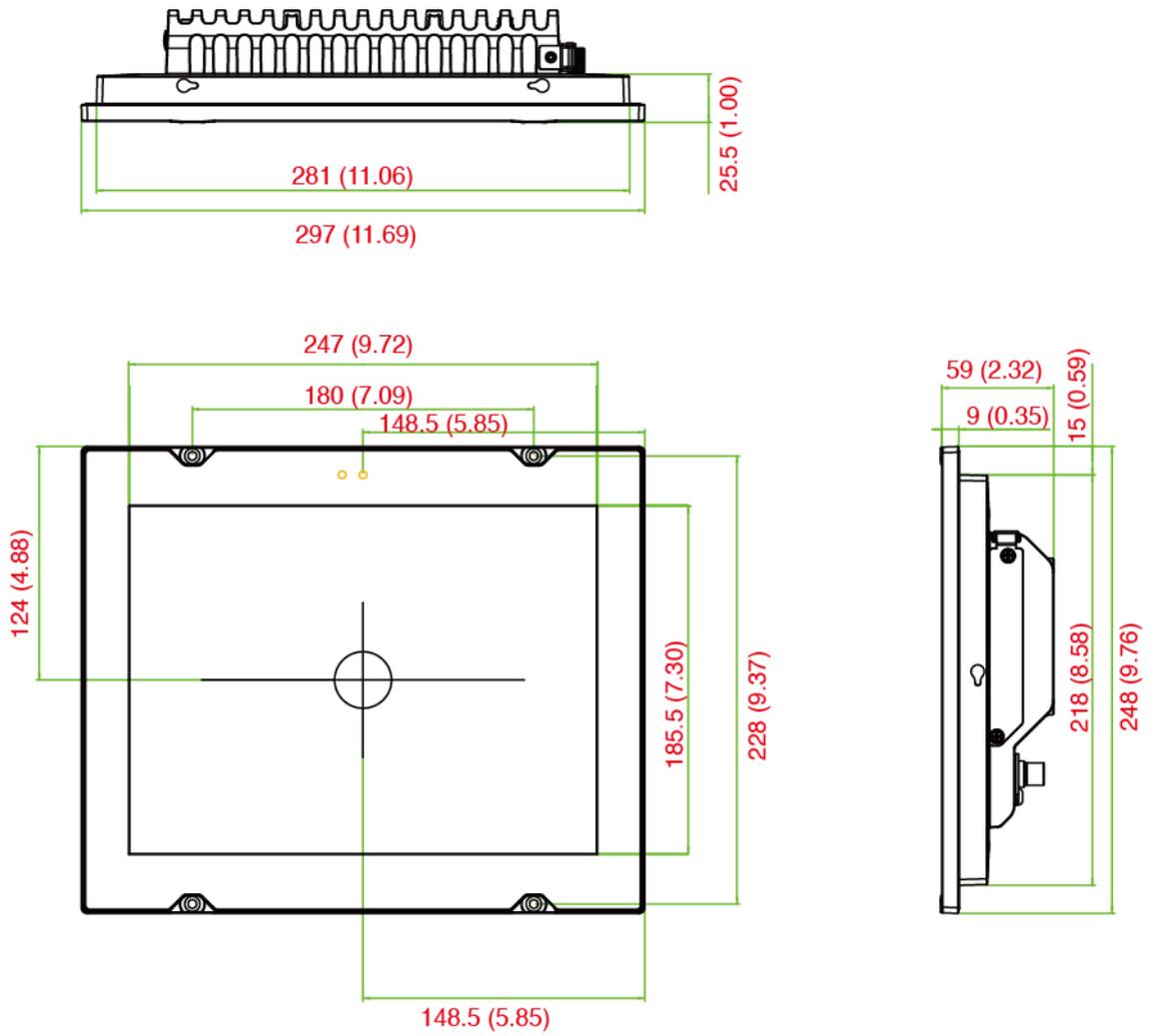
However, to avoid continuous changes to the panel brightness, and to ensure that the ambient light has actually changed, the computer implements a level change hold time to detect if the light sensor has read the new level. If no new level has been detected during the preset hold time, the panel brightness index will be set as the new value. The level change hold time will be from 1 to 30; 0.8 second/unit. The lower the number, the shorter the hold time.

The ambient light sensor is **disabled by default**. When it is manually enabled, the default setting for the light sensor index and the panel brightness index is shown in the following table:

Light Sensor Index (default)	Panel Brightness Index (default)
L1	2
L2	5
L3	5
L4	7
L5	7
L6	9
L7	9
L8	9

For detailed information on configuring the light sensor, refer to MPC-2121 Software User's Manuals.

# Dimensions



# Hardware Connection Description

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In this chapter, we show how to connect the panel computer to the network and to various devices.

The following topics are covered in this chapter:

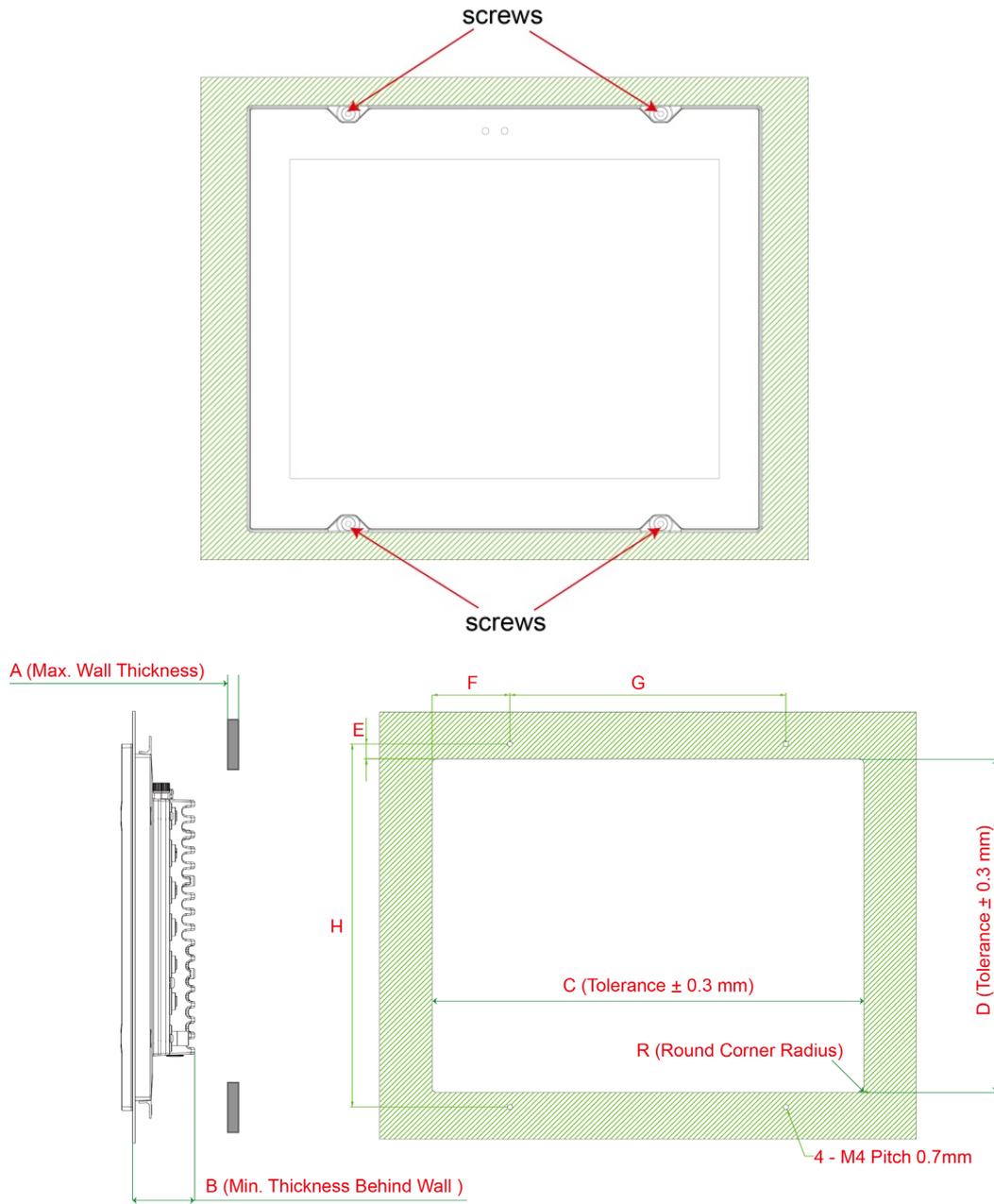
- ❑ **Panel Mounting**
  - Front-panel Mounting
  - Rear-panel Mounting
- ❑ **Wiring Requirements**
- ❑ **Temperature Requirements**
- ❑ **Grounding the MPC-2121**
- ❑ **Powering On/Off the MPC-2121**
- ❑ **Display-control Buttons**
- ❑ **Connector Description**
  - DC Power Input
  - Serial Ports
  - Ethernet Ports
  - USB Ports
  - Audio Port
  - DIO Port
- ❑ **Installing a CFast or SD Card**

# Panel Mounting

The MPC-2121 can be panel mounted in two ways as explained in the following sections.

## Front-panel Mounting

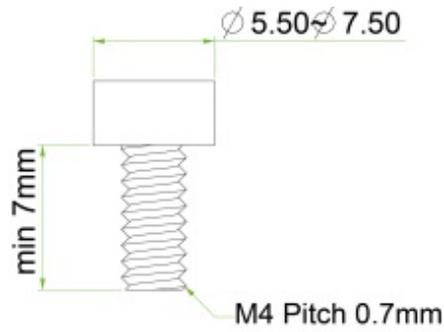
The MPC-2121 can also be mounted using the front panel. Use the four screws on the front panel to attach the front panel of the computer to a wall. Refer to the following figures for the location of the screws.



Unit: mm

A	B	C	D	R	E	F	G	H
5	50	281.59	218.59	3	9.71	50.79	180	238

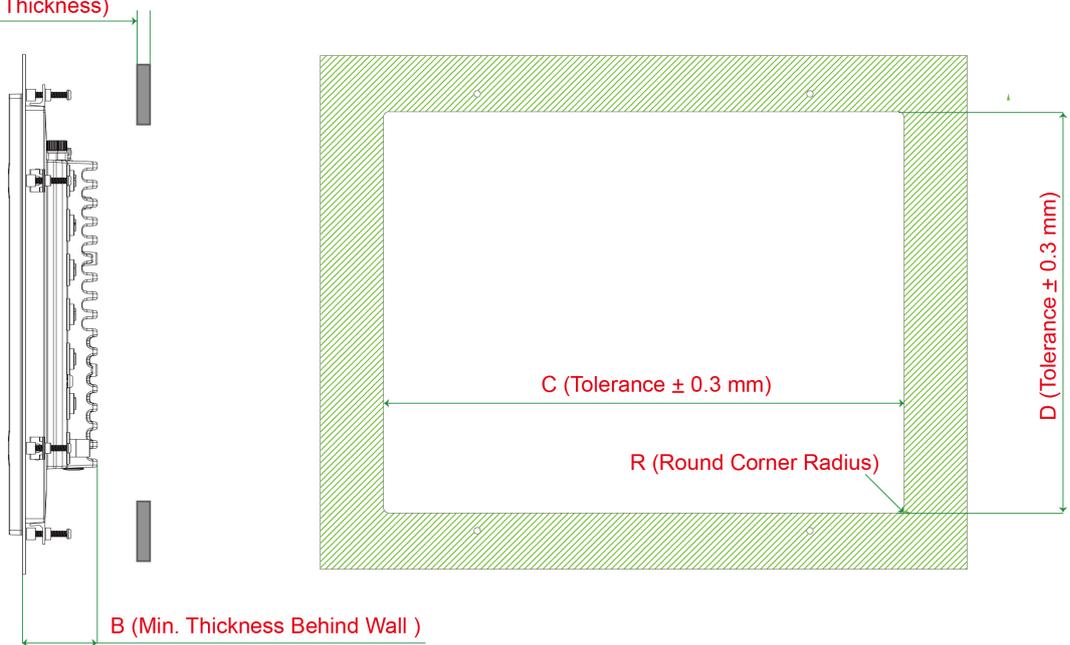
Refer to the figure below for specifications of the mounting screws.



## Rear-panel Mounting

A panel-mounting kit consisting of 6 mounting units is provided in the MPC-2121 package. Refer to the following illustrations for the dimensions and the cabinet space required to panel mount the MPC-2121.

A (Max. Wall Thickness)

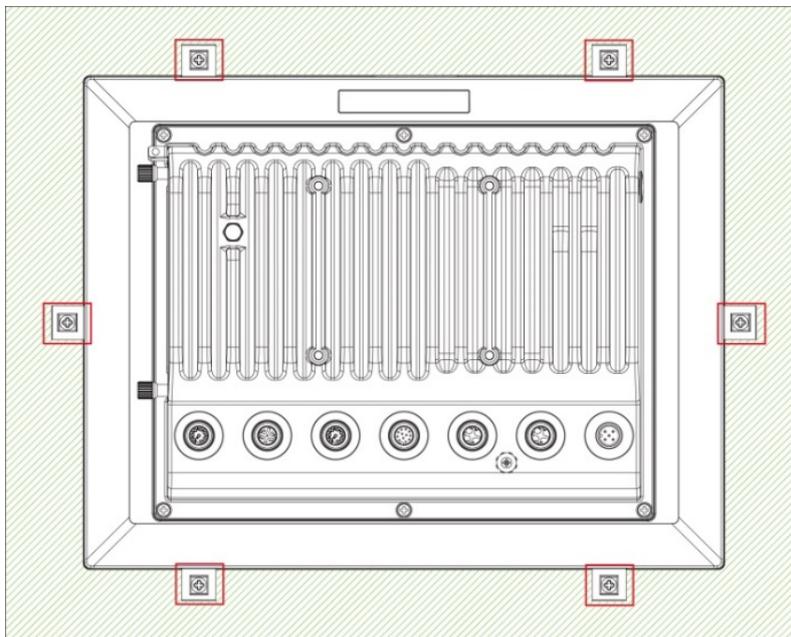
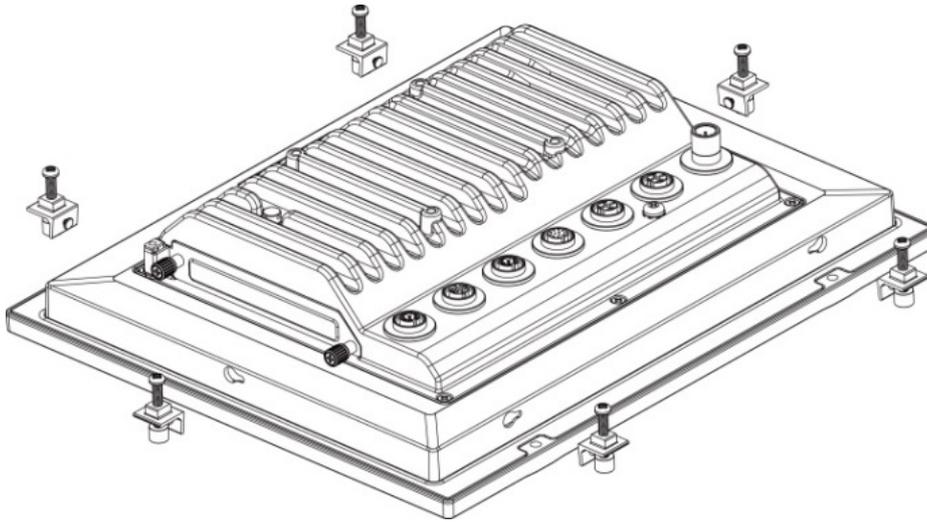


Unit: mm

A	B	C	D	R	Mounting Kit (pcs)
5	50	281.59	218.59	3	6

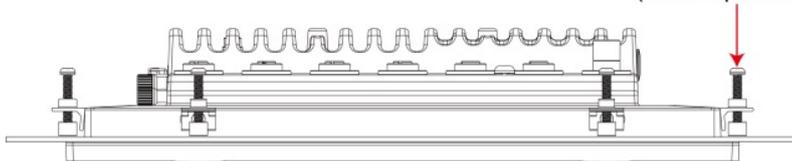
To install the panel-mounting kit on the MPC-2121, follow these steps:

1. Place the mounting units in the holes provided on the rear panel and push the units to the left as shown in the illustration below:



2. Use a torque of 4Kgf-cm to fasten the mounting screws and secure the panel-mounting kit onto a wall.

Screw M4x25mm SUS with Cushion  
(Fix Torque Needed: 4kgf-cm)



# Wiring Requirements

This section describes how to connect peripheral devices to the panel computer.

You should read and follow these common safety precautions before proceeding with the installation of any electronic device:

- 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 communication wiring together with power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.

- Use the type of signal transmitted through a wire to determine which wires should be kept separate. 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 the wiring to all devices in the system.



## ATTENTION

### Safety First!

Be sure to disconnect the power cord before installing and/or wiring your MPC-2121 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 Requirements

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  $25^\circ\text{C}$ , or (c) the display is used in a location with minimal ventilation.

# Grounding the MPC-2121

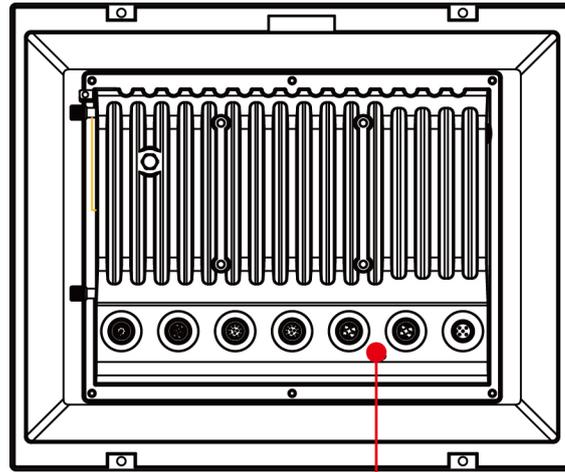
Before you power on the MPC-2121, connect it to a well-grounding metal surface. Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting the power.



## ATTENTION

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

**Grounding:** See the figure shown below for the location of the grounding connector. Connect the grounding wire to an appropriate grounded metal surface.



Grounding Connector

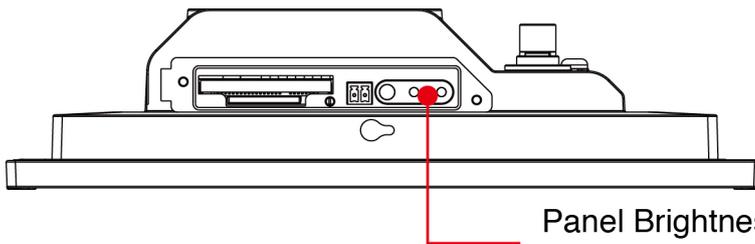
## Powering On/Off the MPC-2121

Connect an **M12 Connector to Power Jack Converter** to the MPC-2121 M12 connector and connect at least a 40 W power adapter to the converter. Supply power through the power adapter. After you have connected a power source, press the **Power** button to turn the computer on. It takes about 10 to 30 seconds for the system to boot up.

To power off the MPC-2121, we recommend using the "shut down" function provided by the OS installed on the MPC. If you use the **Power** button, you may enter one of the following states depending on the power management settings in the OS: standby, hibernation, or system shutdown mode. If you encounter problems, you can press and hold the **Power** button for 4 seconds to force a hard shutdown of the system.

## Display-control Buttons

The MPC-2121 is provided with two display-control buttons on the right panel.



Panel Brightness Control Buttons

The display-control buttons can be used as described in the following table:

Symbol and Name	Usage	Function
 Power	Press	-Power on from S4/S5 -S0 to S3/S4/S5 -Wake up on S3
	Press and hold for 4 seconds	Power off
+  -	Brightness + Press	Manually increase the brightness of the panel
	Brightness - Press	Manually decrease the brightness of the panel

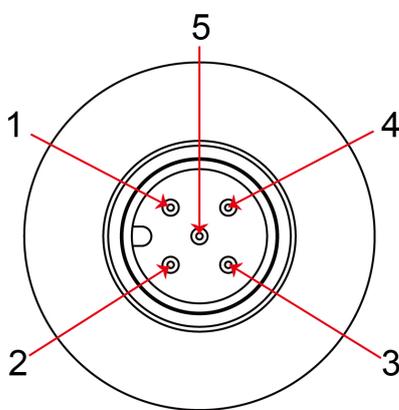
**ATTENTION**

The MPC-2121 comes with a 1000-nit display, the brightness level of which is adjustable up to level 10. The display is optimized for use in the -40 to 70°C temperature range. However, if you are operating the MPC-2121 at an ambient temperature of 60°C or higher, we recommend setting the brightness level of the display to 8 or less to extend the lifetime of the display.

## Connector Description

### DC Power Input

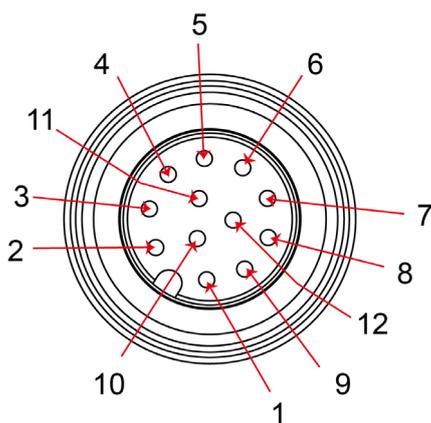
The MPC-2121 can be supplied power through a DC power input using an M12 connector. The DC pin assignments are as shown in the following figure:



Pin	Definition
1	V+
2	--
3	V-
4	--
5	--

### Serial Ports

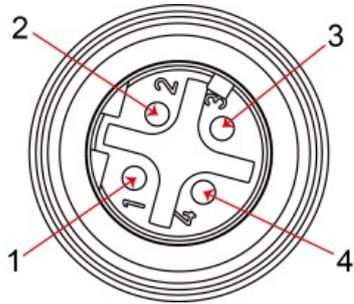
The MPC-2121 offers one software-selectable RS-232/422/485 serial port with an M12 connector. The pin assignments for the ports are shown in the table below:



Pin	RS-232	RS-422	RS-485
1	RI	--	--
2	RXD	TX+	--
3	DTR	RX-	D-
4	DSR	--	--
5	CTS	--	--
6	DCD	TX-	--
7	TXD	RX+	D+
8	RTS	--	--
9	GND	GND	GND
10	GND	GND	GND
11	GND	GND	GND
12	--	--	--

## Ethernet Ports

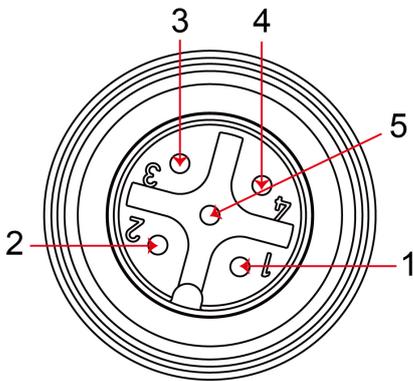
The pin assignments for the two Ethernet 10/100 Mbps ports with M12 connectors are shown in the following table:



Pin	Definition
1	TD+
2	RD+
3	TD-
4	RD-

## USB Ports

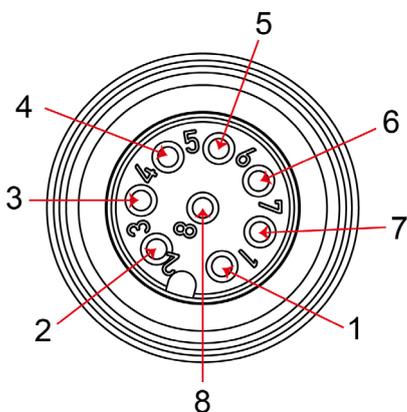
A USB 2.0 port with an M12 connector is available on the rear panel. Use this port to connect a mass-storage drive or other peripheral.



Pin	Definition
1	USB-
2	Power
3	--
4	USB+
5	GND

## Audio Port

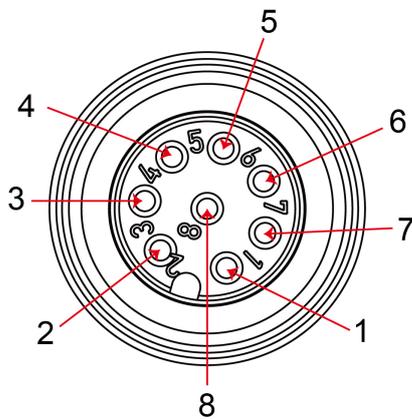
The MPC-2121 comes with an audio output port with an M12 connector. Refer to the following figure for the pin definitions.



Pin	Definition
1	Detect
2	Line out _L
3	Line out _R
4	GND
5	Speaker out-
6	Speaker out+
7	GND
8	GND

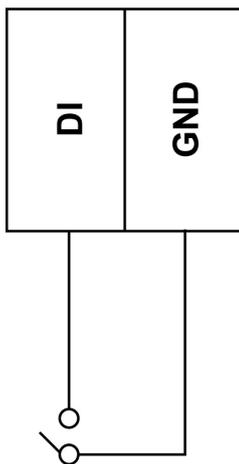
## DIO Port

The MPC-2121 is provided with a DIO port, which is an 8-pin M12 connector that includes 4 DIs and 2 DOs. For the DI and DO wiring instructions, refer to the following diagrams and pin assignment table.

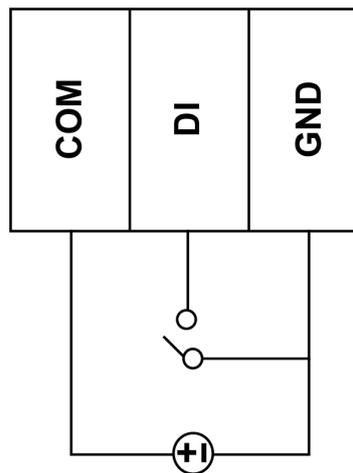


Pin	Definition
1	GPI_VCC
2	GPI_1
3	GPI_2
4	GPI_3
5	GPI_4
6	GPO_1
7	GPI_GND
8	GPO_2

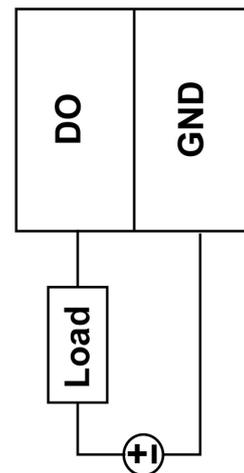
**DI Dry Contact**



**DI Wet Contact**



**DO Contact Sink**

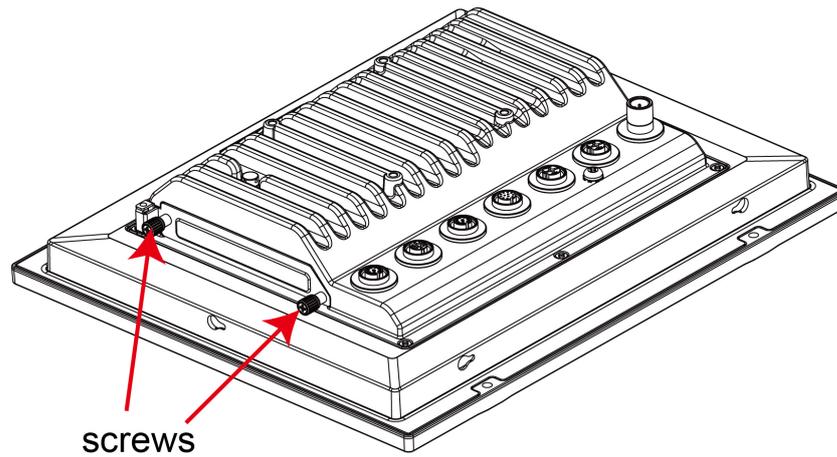


## Installing a CFast or SD Card

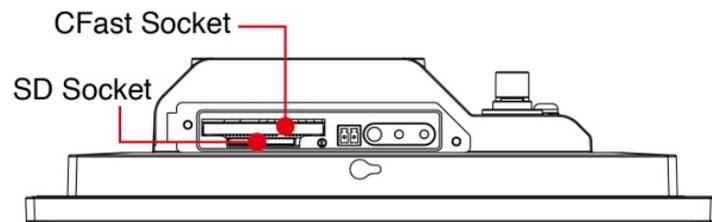
MPC-2121 provides two storage options—CFast card and SD card. The storage slots are located on the left panel. You can install the OS in the CFast card and save your data in the SD card. For a list of compatible CFast models, check the MPC-2121 component compatibility report available on Moxa's website.

To install the storage devices, do the following:

1. Remove the two screws on the storage-socket cover.

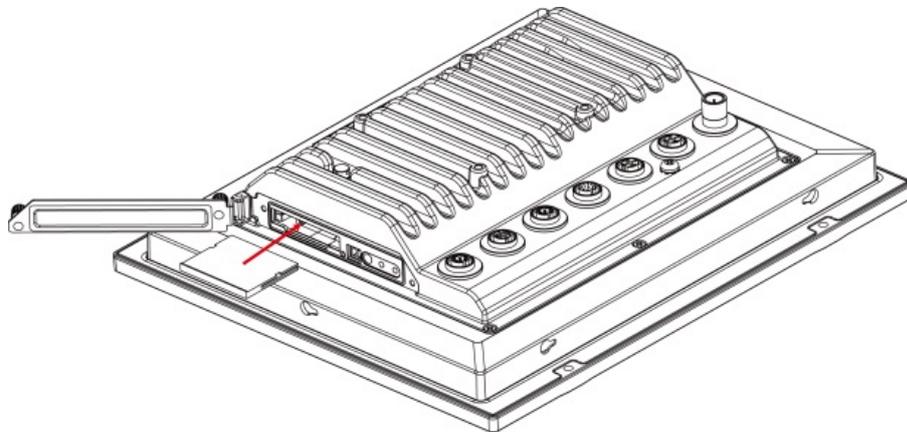


The top slot is for the CFast card while the lower slot is for the SD card, as indicated by the following illustration:

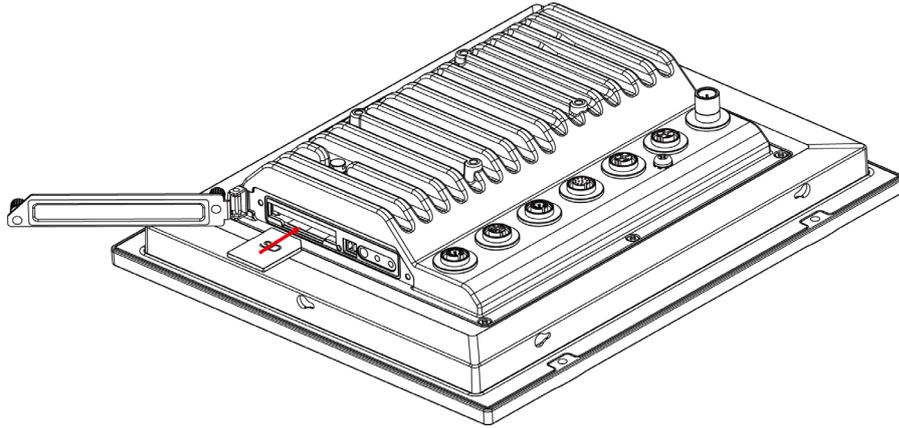


2. Insert a CFast or SD card into the slot using the push-push mechanism.

**CFast Card**



SD Card



3. Reattach the cover and secure it with screws.

# BIOS Settings

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In this chapter, we describe the BIOS settings for the MPC-2121 embedded computer. The BIOS is a set of input/output control routines for peripherals. The BIOS is used to initialize basic peripherals and helps boot the operating system before the operating system is loaded. The BIOS setup allows the user to modify the system configurations of these basic input/output peripherals. All of the configurations are stored in the CMOS RAM, which has a backup battery power in case the computer is not connected to a power source. Consequently, the data stored in the CMOS RAM is retained when the system is rebooted or the power is disconnected.

The following topics are covered in this chapter:

## ❑ Entering the BIOS Setup

### ❑ Basic System Information

#### ❑ Advanced Settings

- Boot Configuration
- PCI Express Configuration
- USB Configuration
- SD Configuration
- Miscellaneous Configuration
- SATA Configuration
- Console Redirection
- Hardware Monitor
- Smart Recovery Info

#### ❑ Security Settings

- Set Supervisor Password

#### ❑ Power Settings

- ACPI S3 S4
- Wake on LAN
- Auto Wake on S5

#### ❑ Boot Settings

- Boot Type
- PXE Boot to LAN
- PXE Boot capability
- Add Boot Options
- USB Boot
- Boot Delay Time
- Automatic Failover
- Boot Order Priority
- Legacy
- EFI

## ❑ Exit Settings

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

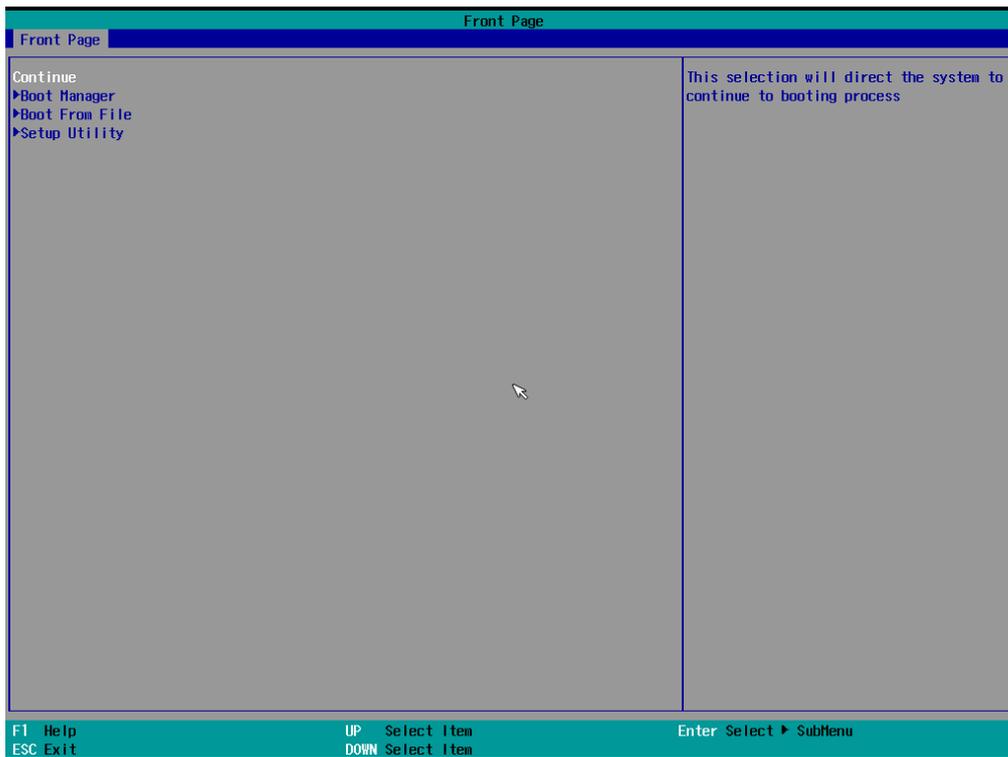
## ❑ Upgrading the BIOS

# Entering the BIOS Setup

To enter the BIOS setup utility, press the **F2** key while the system is booting up. The main **BIOS Setup** screen appears with the following options:

- **Continue:** Continue to boot up
- **Boot Manager:** Select the device to boot up
- **Boot From File:** Select the UEFI boot up file
- **Setup Utility**

Click **Setup Utility** to enter the **BIOS configuration**.



When you click **Setup Utility**, a basic description of each function key is listed at the bottom of the screen. Refer to these descriptions to learn how to use them.

**F1: Help**

**F5/F6: Change Values**

**F9: Setup Defaults**

**F10: Save and Exit**

↑ ↓ : **Select Item**

← → : **Select Menu**

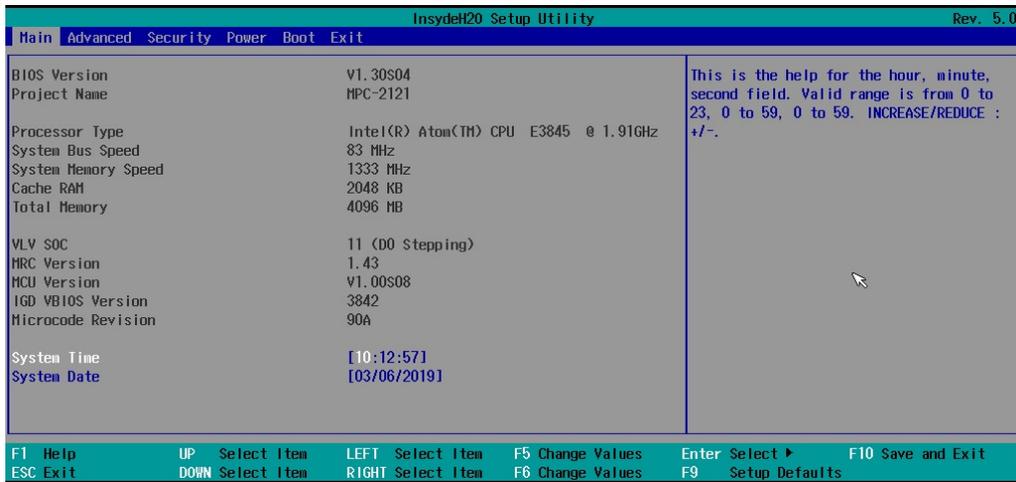
**ESC: Exit**

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

# Basic System Information

The main page shows basic system information, such as the model name, BIOS version, and CPU type.

**NOTE** The "Processor Type" varies depending on the product model.



# Advanced Settings

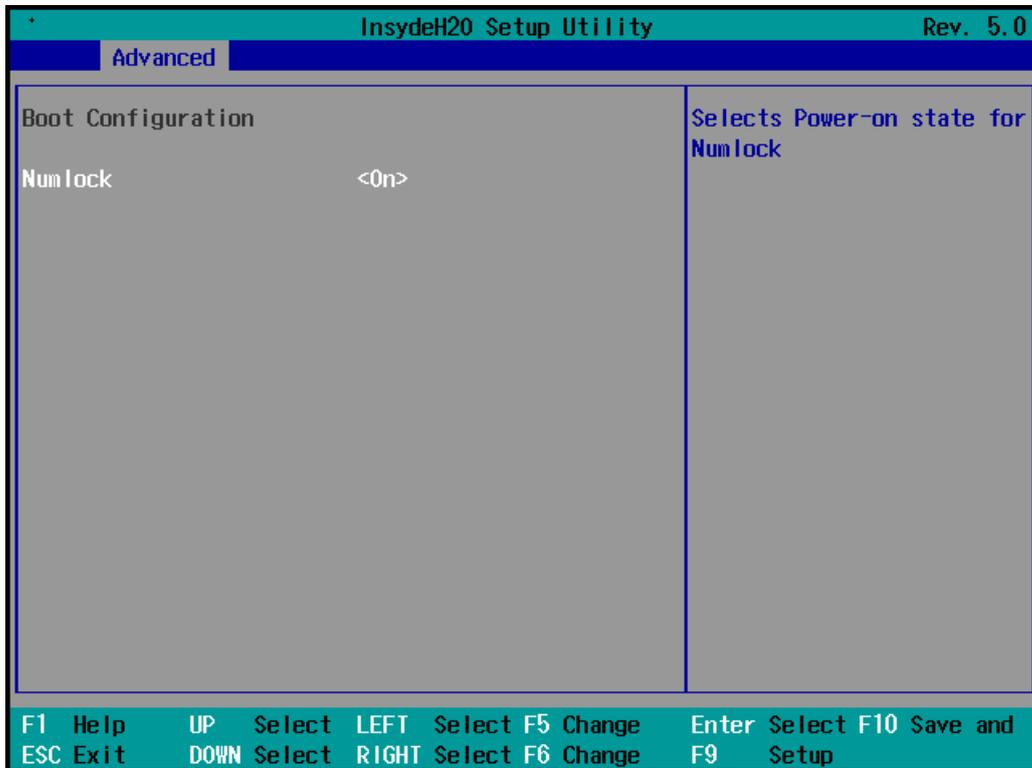
The **Advanced** screen appears when you select "Advanced" from the main menu.



## Boot Configuration

This screen allows you to configure the initial status of the Numlock key when the computer boots up.

Options: On (default), Off



## PCI Express Configuration

### PCIe PORT 1 Speed

Configures the speed of the PCIe Port 1.

Options: Auto, Gen1, and Gen2

### PCIe PORT 2 Speed

Configures the speed of the PCIe Port 2.

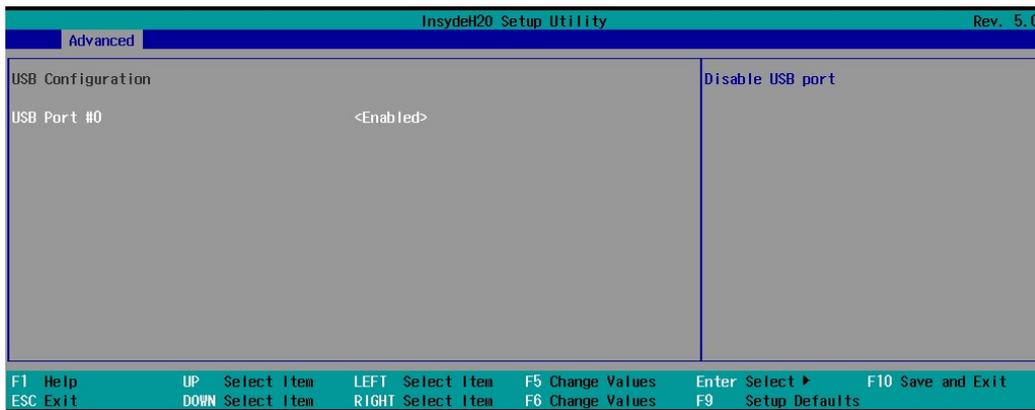
Options: Auto, Gen1, and Gen2

### PCIe PORT 3 Speed

Configures the speed of the PCIe Port 3.

Options: Auto, Gen1, and Gen2

## USB Configuration

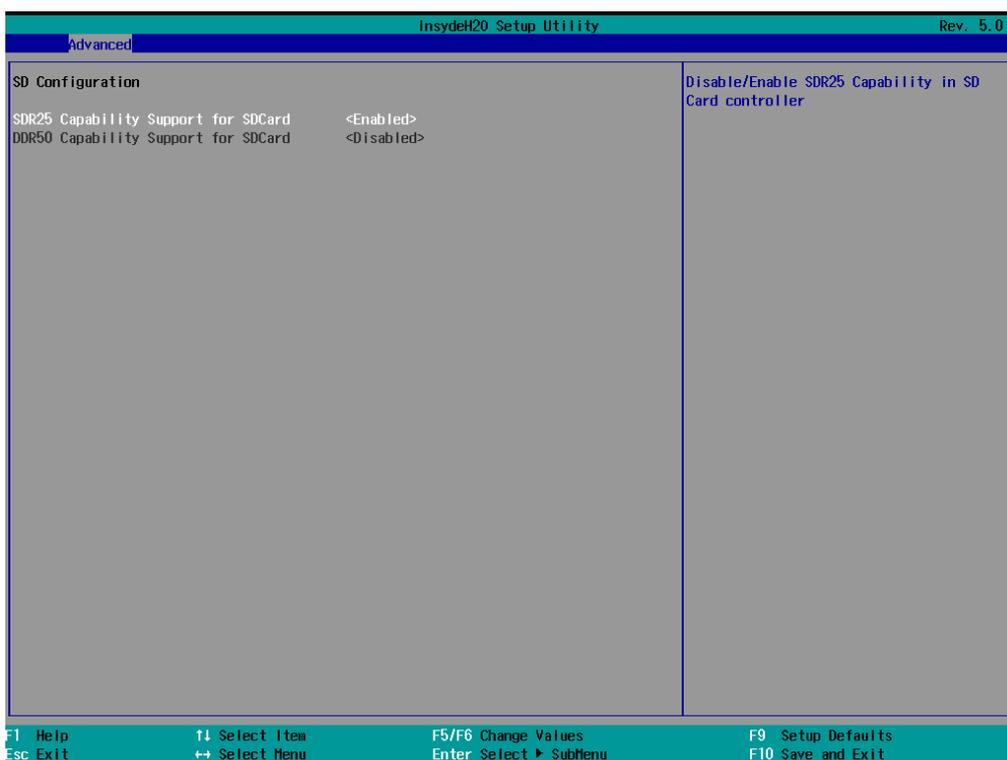


### USB Port #0

Enable or disable the USB port 0; if disabled, the system won't detect a USB device that is plugged in.

Options: Enabled (default), Disabled

## SD Configuration



### SDR25 Capability Support for SD Card

Set the input/output timing for the SDR25 mode.

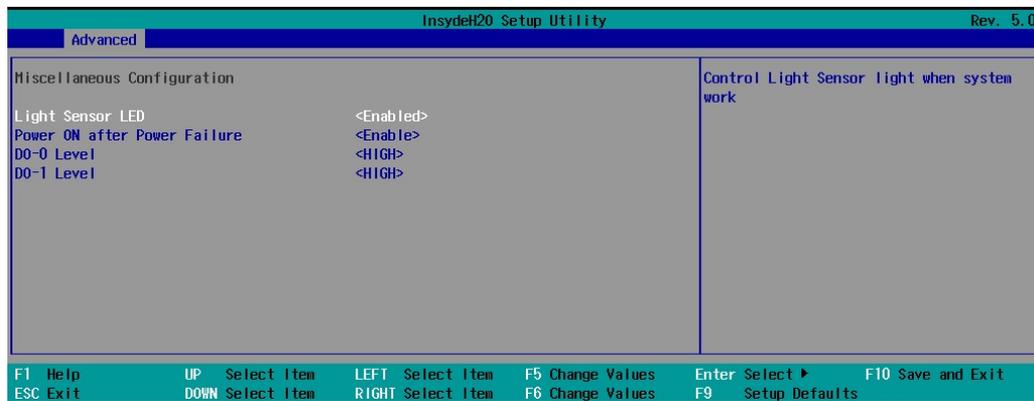
Options: Enabled (default), Disabled

## DDR50 Capability Support for SD Card

Set the input/output timing for the DDR50 mode.

Options: Disabled (default), Enabled

## Miscellaneous Configuration



### Light Sensor LED

Use this setting to control the light sensor when the system is running.

Options: Enable (default), Disable.

### Power ON after Power Failure

This setting allows you to configure whether or not the computer should automatically boot up when the power is re-applied after a power failure. When this setting is ON, the computer will automatically boot up when the power is available after a power failure.

Options: ON (default), OFF

### DO-0 Level

This item allows you set the DO 0.

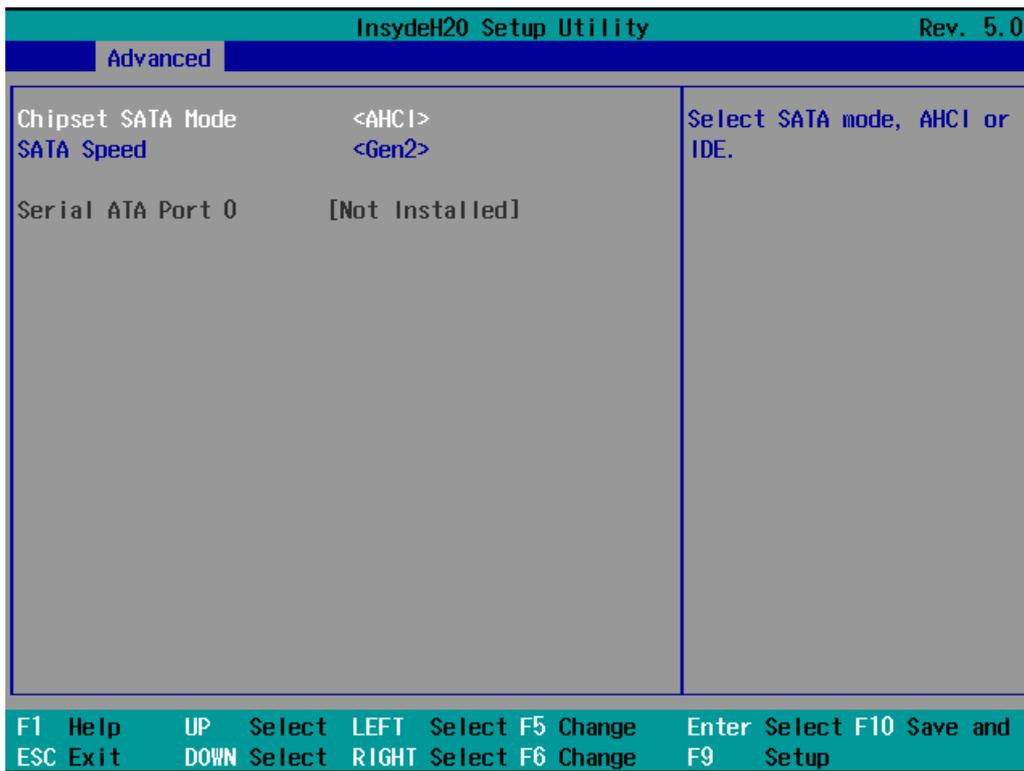
Options: High (default), Low

### DO-1 Level

This item allows you set the DO 1.

Options: High (default), Low

## SATA Configuration



### Chipset SATA Mode

Select the SATA mode

Options: AHCI (default), IDE

### SATA Speed

Select the speed of the SATA drive.

Options: Gen1 (default), Gen2

## Console Redirection



### Console Serial Redirect

When the Console Redirection function is enabled, the console information will be output both to the HDMI monitor and through the serial port.

Options: Disabled (default), Enabled

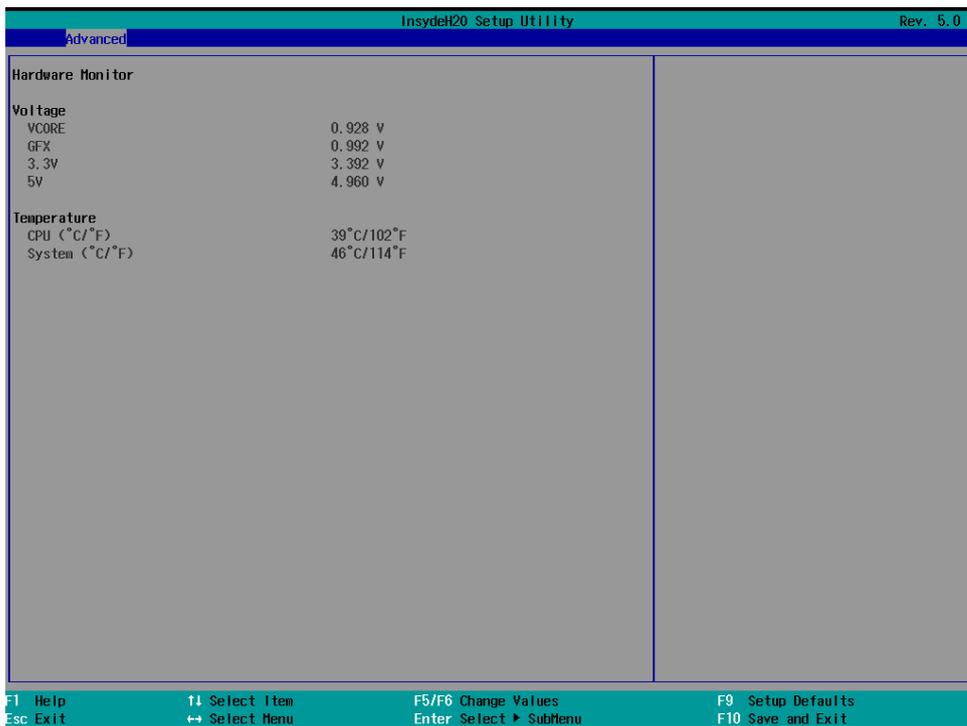
### ACPI SPCR Table

This table is used to indicate whether a serial port or a non-legacy UART (Universal Asynchronous Receiver/Transmitter) interface is available for use with Microsoft Windows Emergency Management Services (EMS).

Options: Disabled (default), Enabled

## Hardware Monitor

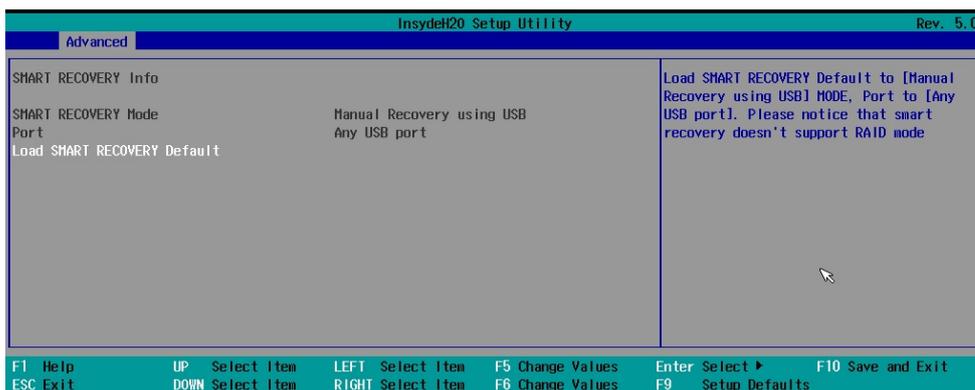
This screen allows you to view voltage levels, system temperature, and CPU temperature.



Note that the voltage values vary depending on the model. The temperature readings shown on the screen are within  $\pm 5\%$  of the actual readings. However, the temperature readings are only valid when the ambient temperature is above 0°C.

## Smart Recovery Info

This screen shows the Smart Recovery information.

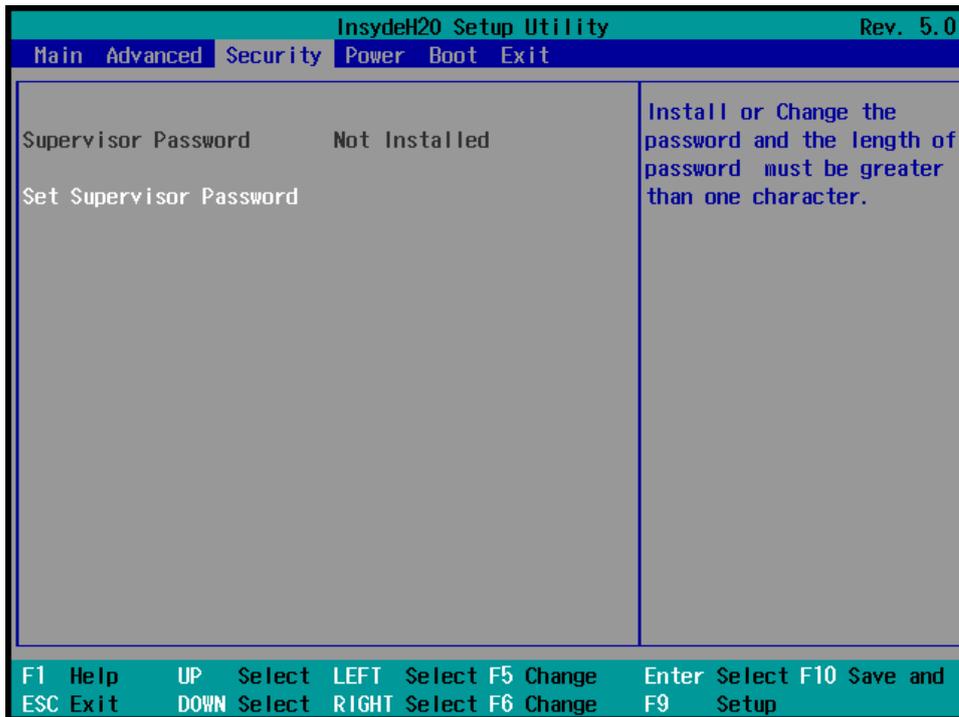


## Load Smart Recovery Default

This function allows you to load the default Smart Recovery value to the MPC-2121 panel computer.

# Security Settings

This screen allows you to configure a supervisor password.



## Set Supervisor Password

This setting allows you to set the supervisor password.

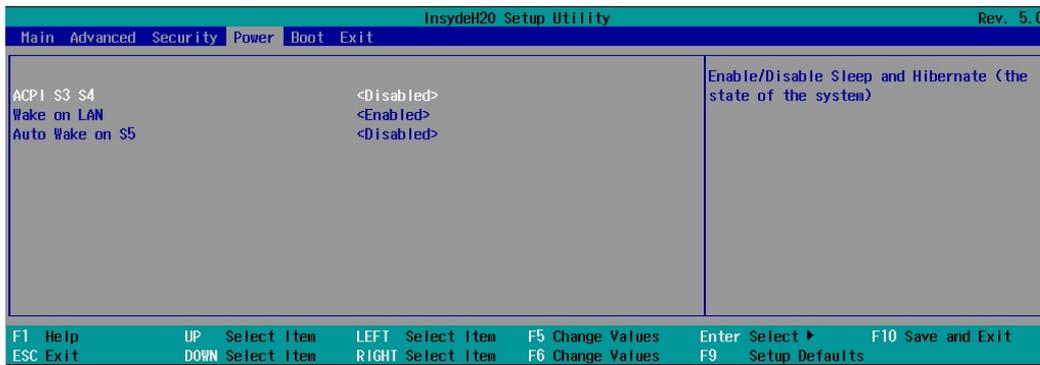
To set a new password, type in the password and then retype the password again to confirm.

To delete the password, enter the existing password in the **Set Supervisor Password** field and leave the new password field blank; then, press [Enter].



# Power Settings

This screen allows you to configure the power settings.



## ACPI S3 S4

This setting allows you to select both Sleep Mode and Hibernate Mode in the Windows system.

Options: Disabled (default), Enabled.

## Wake on LAN

This setting allows you to wake the system up over the LAN from a remote host.

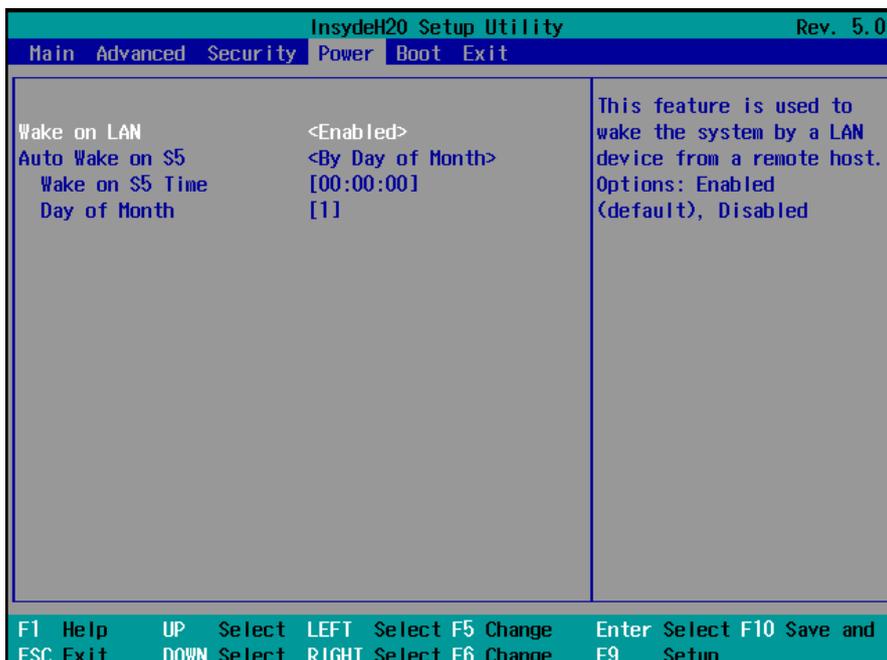
Options: Enabled (default), Disabled.

## Auto Wake on S5

This setting allows you to configure the computer to wake from the S5 (Soft Off) state where the power supply remains engaged but is not supplying power to all other parts of the system.

You can set the auto-wake on S5 schedules for the system to perform a soft-reboot at specific times.

Options: Disabled (default); By Every Day (user specifies at what time each day the computer will power up); By Day of Month (user specifies which day of each month the computer will power up)



# Boot Settings

This screen allows you to configure boot up settings.



## Boot Type

The system will be based on the value used to build the boot environment for different types of operating systems.

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

## PXE Boot to LAN

This setting allows you to enable or disable the PXE boot to LAN function.

Options: Disabled (default), Enabled

## PXE Boot capability

This function is enabled while PXE Boot to LAN is enabled.

Supports Network Stack or Legacy.

Options: Disabled (default), Legacy

## Add Boot Options

This setting allows you to add boot order options for new boot devices and removable devices, such as a USB drive.

Options: Last (default), First, Auto

## USB Boot

This setting allows you to enable or disable the USB boot function.

Options: Enabled (default), Disabled

## Boot Delay Time

This setting allows you to configure the delay time to enter a hot key during POST operations.

Options: 0 Second (default), User define

## Automatic Failover

This setting enables or disables the automatic failover options.

Options: Enabled (default), Disabled

Enable: If a boot to the default device fails, the system will try to boot to the next device.

Disable: If a boot to the default device fails, a warning message will be displayed.

## Boot Order Priority

This setting allows you to determine the booting priority of the boot devices. If this setting is EFI first, the EFI device will boot first; if it is Legacy first, the legacy device will boot first.

Options: Legacy first (default), EFI first

## Legacy

### Normal Boot Menu

This setting allows you to configure the boot order. To change the boot order, press the "-" or "F5" key to move down to an item in the list, and the "+" or "F6" key to move up.

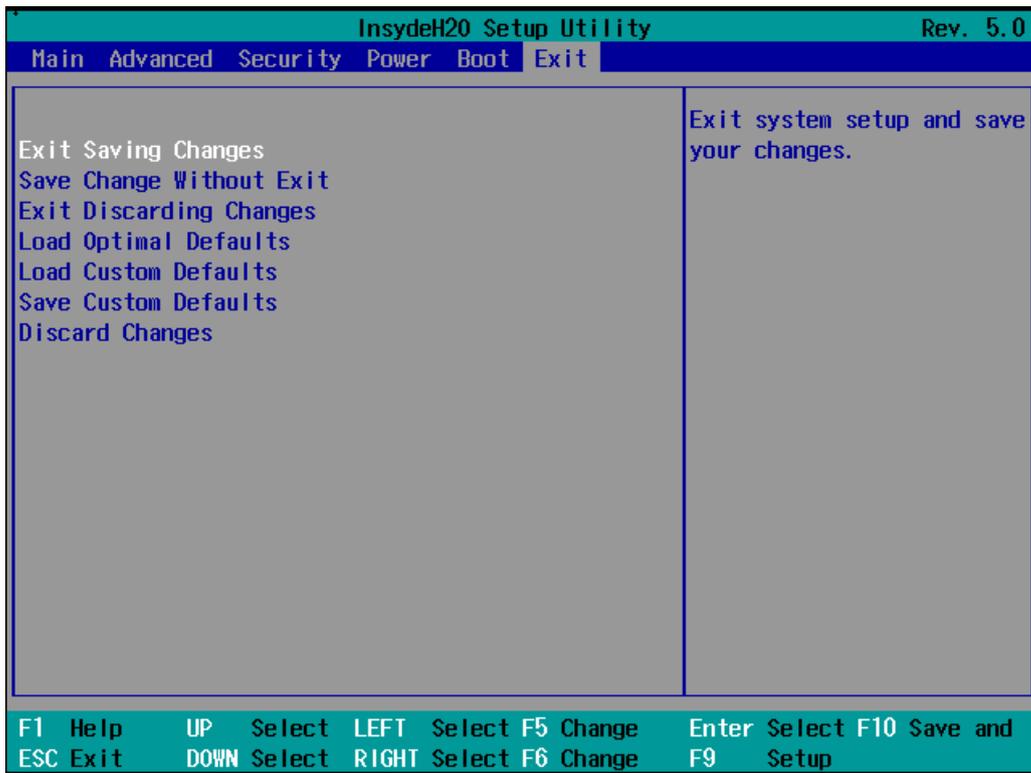
Options: Normal, Advance (default)

## EFI

Use this setting to adjust the boot order settings for an EFI device.

## Exit Settings

This screen shows the various options to exit from the BIOS setup utility.



### Exit Saving Changes

This option allows you to exit the BIOS setup utility and save the values you have just configured.

Options: Yes (default), No

### Save Change Without Exit

This option allows you to save changes without exiting the BIOS setup utility.

Options: Yes (default), No

### Exit Discarding Changes

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

Options: Yes (default), No

### Load Optimal Defaults

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

Options: Yes (default), No

### Load Custom Defaults

This option allows you to load the custom default BIOS settings.

Options: Yes (default), No

## Save Custom Defaults

This option allows you to save the current BIOS settings as a “custom default” that you can load at any time using the “Load Custom Defaults” option.

Options: Yes (default), No

## Discard Changes

This option 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.



### WARNING

An improper BIOS upgrade process may permanently damage the computer. We strongly recommend that you contact Moxa technical support for assistance to obtain all the necessary tools and the most up-to-date advice before attempting to upgrade the BIOS on any Moxa device.

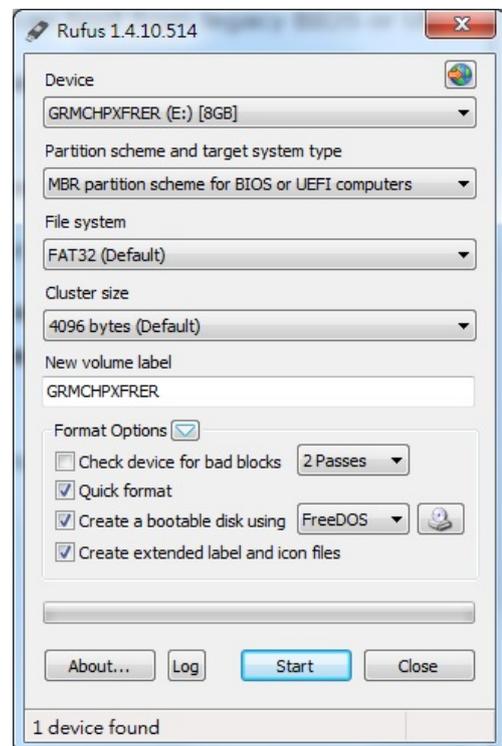
### Step 1: Create a Bootable USB Disk

Before upgrading the BIOS, create a bootable USB drive as a system rescue device.

A useful software suite for creating USB RAM drives is called “Rufus”, which can be used create a bootable RAM drive for your computer.

Complete the following steps to create a bootable USB disk using Rufus:

1. Start Rufus\* and then in the “Device” drop-down list select the USB device that you want to use as a bootable disk.  
\*Rufus official website:  
[https://rufus.akeo.ie/?locale=en\\_US](https://rufus.akeo.ie/?locale=en_US)
2. Select **MBR partition scheme for BIOS or UEFI computers** from the “Partition scheme and target system type” drop-down list so it can boot from a legacy BIOS or UEFI.
3. Select **FAT32 (Default)** from the “File system” drop-down list.
4. Select **4096 bytes (Default)** from the “Cluster size” drop-down list.
5. Enter a drive name in the “New volume label” input box.
6. Select the options: **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**

When you use a USB drive larger than 4 GB, you will need to convert the file system type to FAT32.

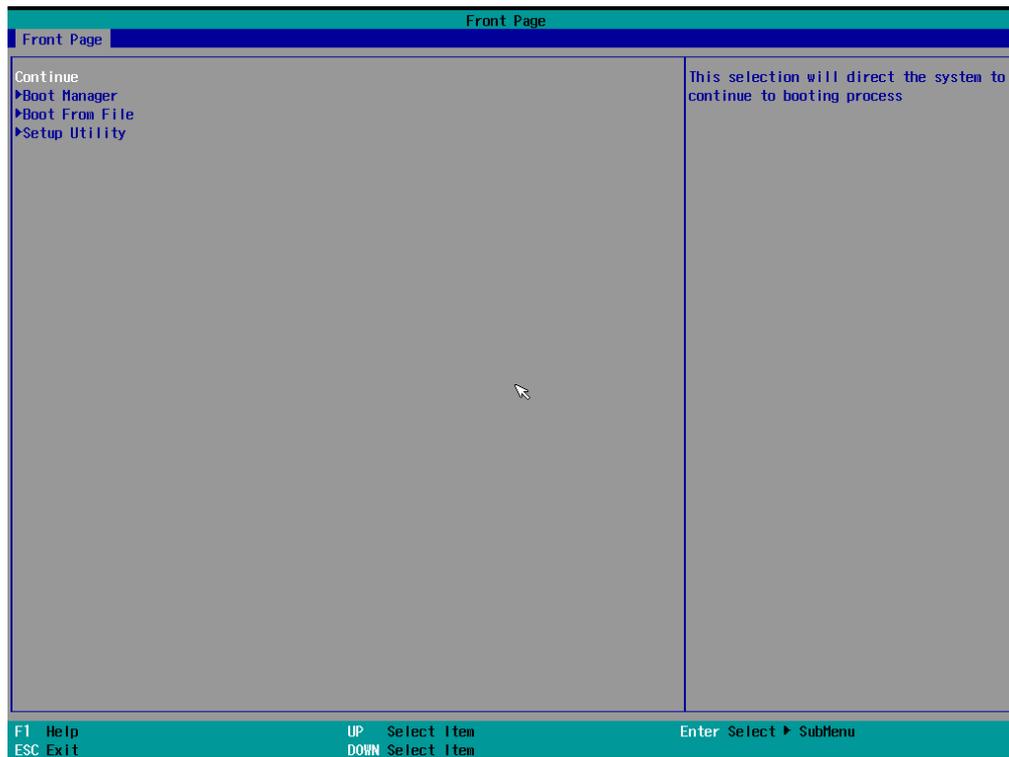
**Step 2: Prepare the Upgrade File**

You must use the BIOS upgrade installation file to upgrade the BIOS. Contact Moxa technical support for assistance.

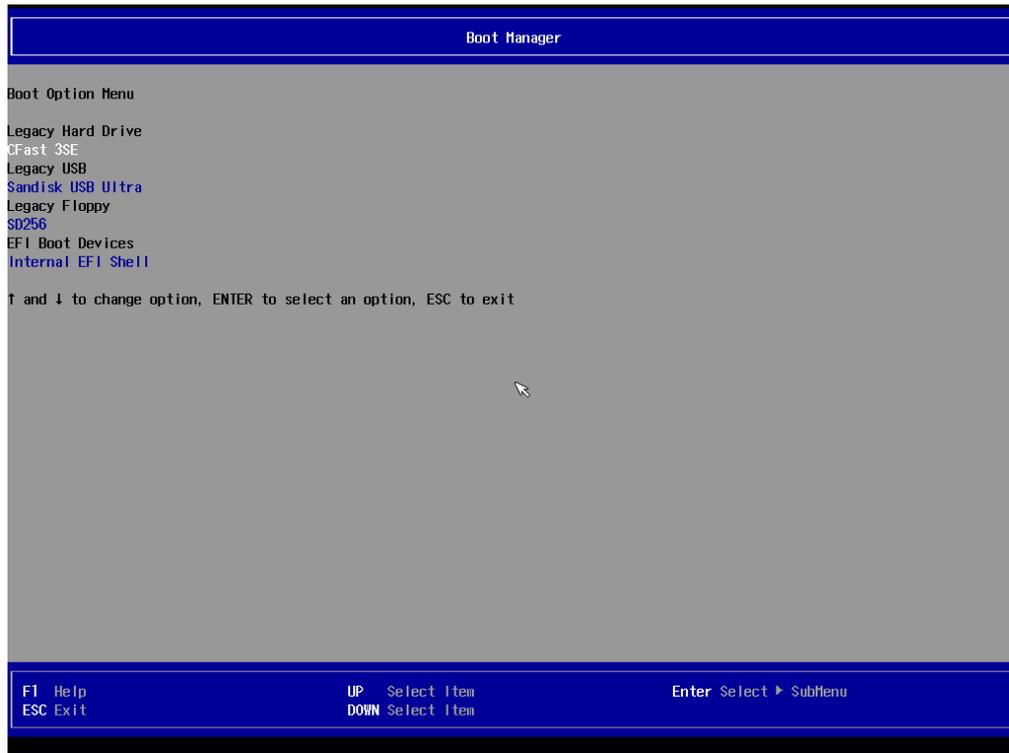
1. Get the BIOS upgrade installation file.  
The file name should be in the format: **MPC-21211xxx.exe** (where "xxx" refers to the version numbers).
2. Copy the file to the bootable USB drive.

**Step 3: Run the Upgrade Program on the MPC-2121 Computer**

1. Reboot the computer, and press F2 during the booting process to display the Boot Manager.



2. Select USB Disk as the first boot source and press [Enter] to continue.



3. When the computer finishes booting up, a command window appears. Go to the directory where the upgrade file is located. For example, if the upgrade file is stored in the MPC-2121 folder, type **cd MPC-2121**.

```
C:\>cd MPC-2121
```

4. Run the upgrade program by typing **21211010.exe**  
Note that the filename for the upgrade program may vary depending on the version.

```
C:\ MPC-2121>21211010.exe
```

5. The upgrade program will run automatically. Wait until the procedure is complete.



### ATTENTION

Do NOT remove the power supply during a BIOS upgrade.

```
C:\MPC-2121> 21211010.exe
Option: -bios -all -nv -desc -me
```

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

```
Insyde H20FFT (Flash Firmware Tool) Version (SEG) 100.00.07.20
Copyright(c) 2012 - 2014, Insyde Software Corp. All Rights
Reserved.

Initializing

Current BIOS Model name :MPC-2121
New   BIOS Model name :MPC-2121

Current BIOS Version :V1.00S10
New   BIOS Version :V1.00S10

Updating Block at FFFF000
```

0%            25%            50%            75%            100%

 100%

- When the upgrade is finished, the computer automatically reboots. You may check the BIOS version on the Main page of the BIOS setup utility.

BIOS Version	V1.00S10
Project Name	MPC-2121

## Display Resolution

---

This chapter describes how to install the graphics driver for your MPC-2121. After installing the driver, you will be able to use the graphic tools described here to adjust the display resolution of your panel computer.

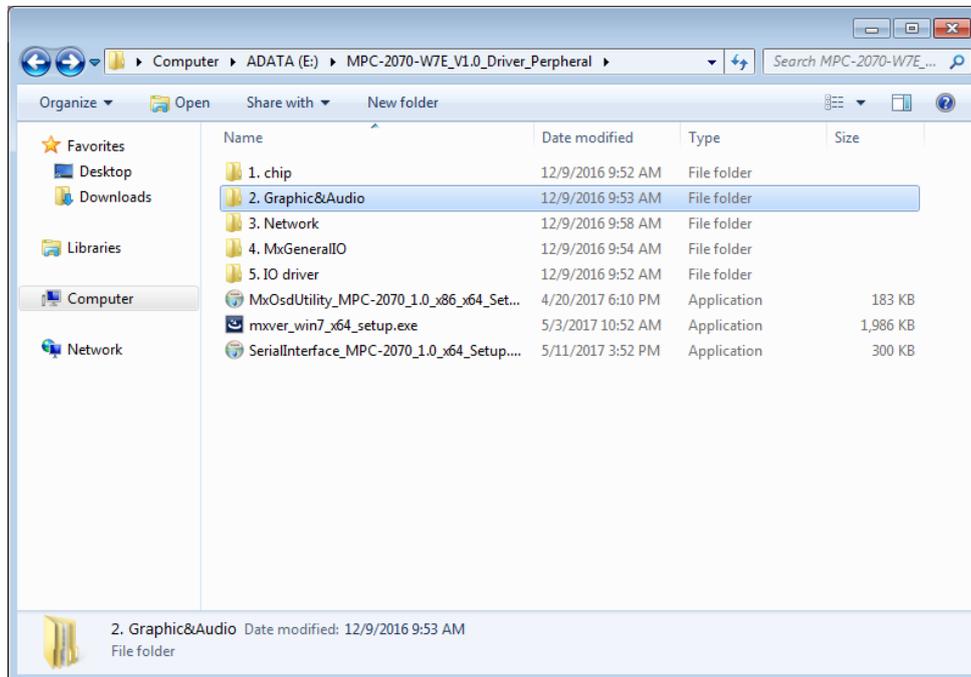
The following topics are covered in this chapter:

- ❑ **Installing the Graphics Driver**
- ❑ **Adjusting the Display Resolution**

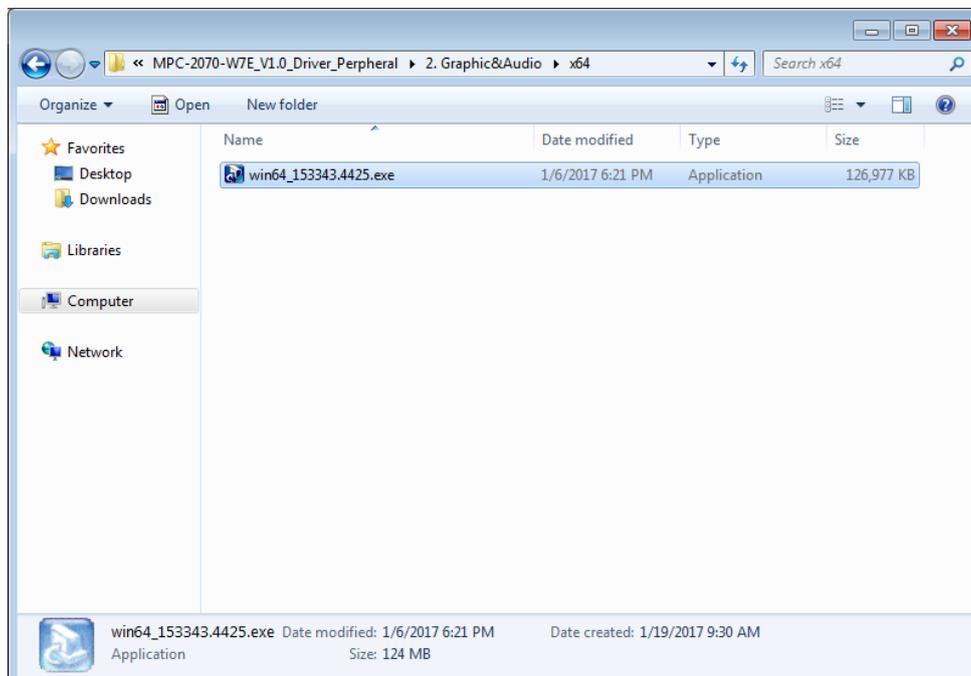
# Installing the Graphics Driver

A stock graphics driver for Windows Embedded Standard 7 is available for download from the MPC-2121 product page on Moxa's website. To install the driver, do the following:

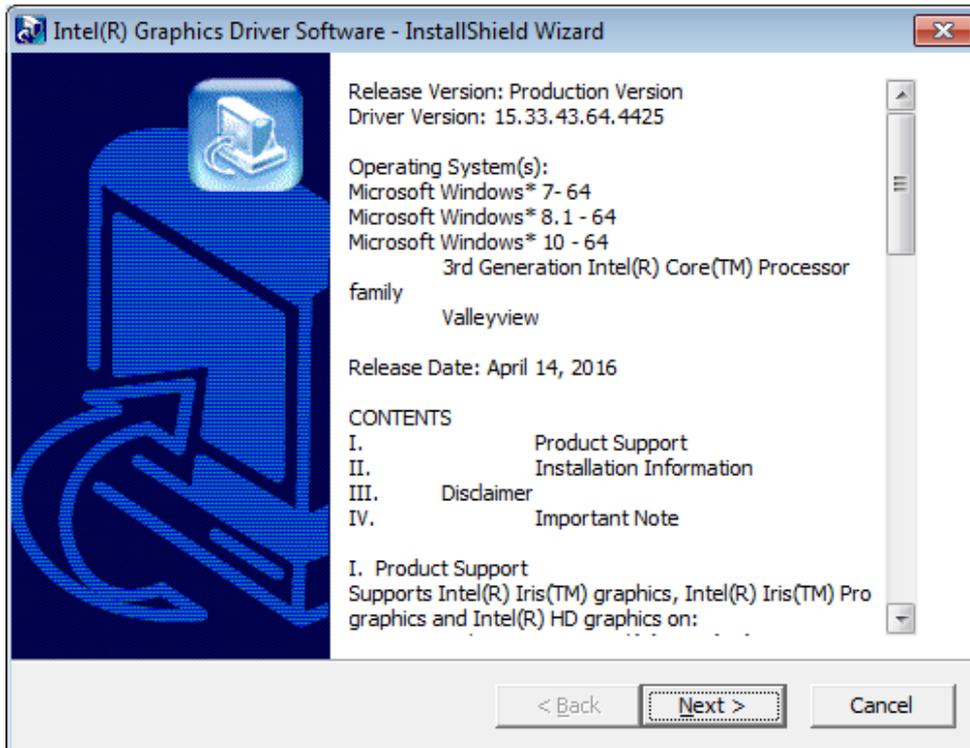
1. Browse to the **Driver** folder and open the **MPC-2121-W7E\_V1.0\_Driver\_Perpheral** folder.
2. In the **2.Graphic&Audio** folder, open the **x86 (32-bit) or x64 (64-bit)** folder depending on the platform used in your panel computer.



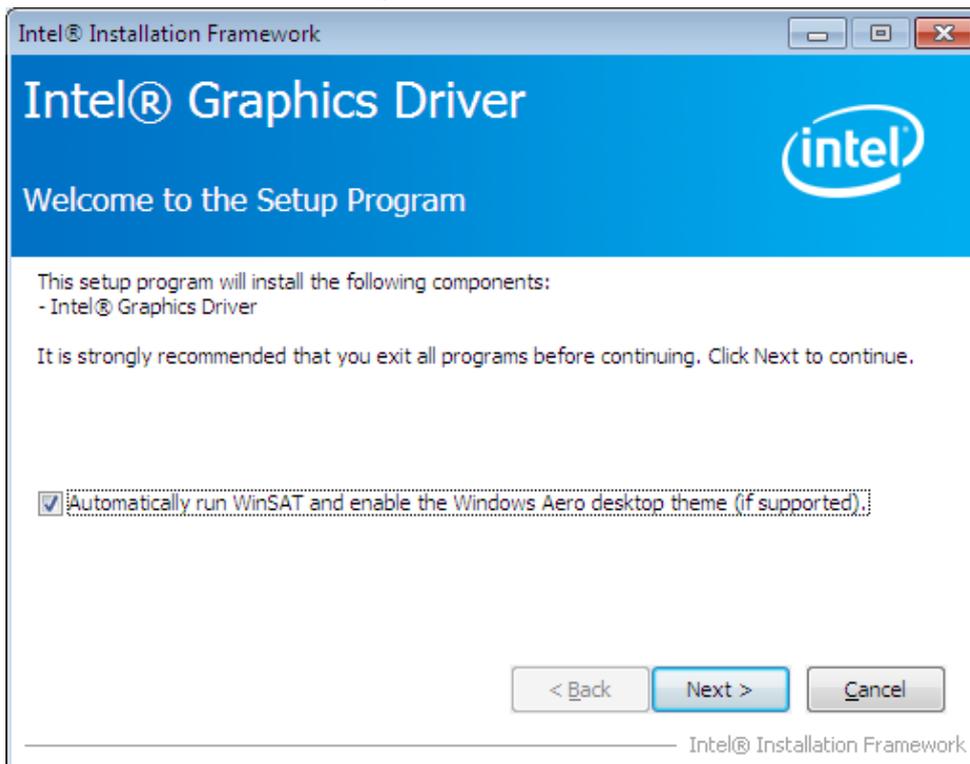
3. Double click on the executable file (for example, the **win64\_153343.4425** file in the **x64** folder) to run it.



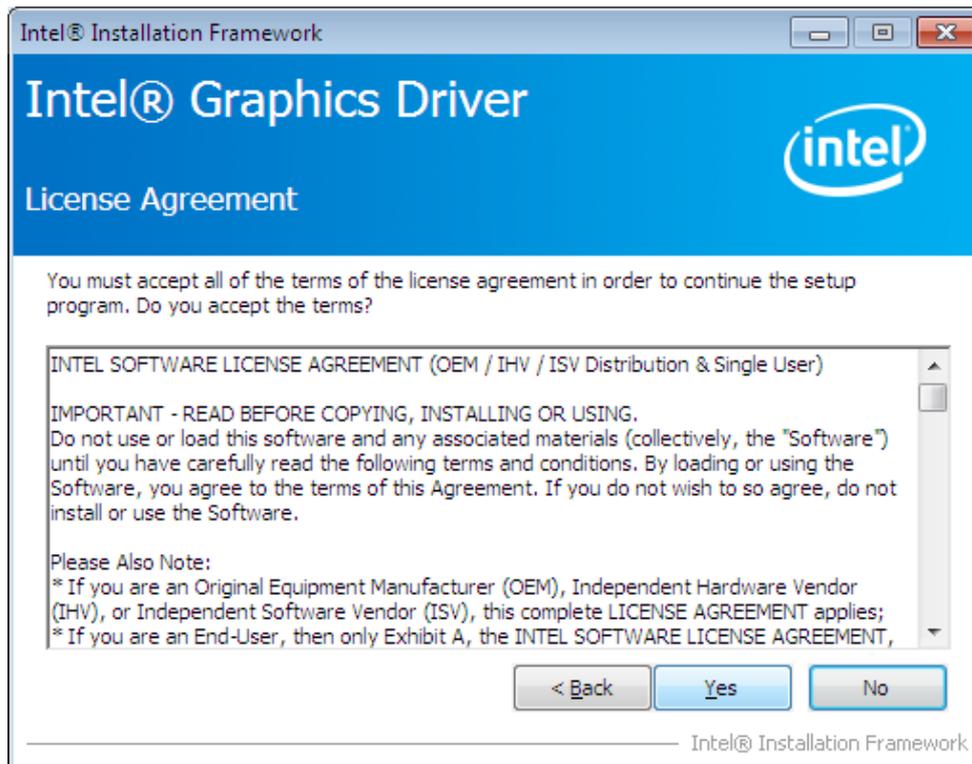
4. In the installation wizard that opens up, click **Next** to continue.



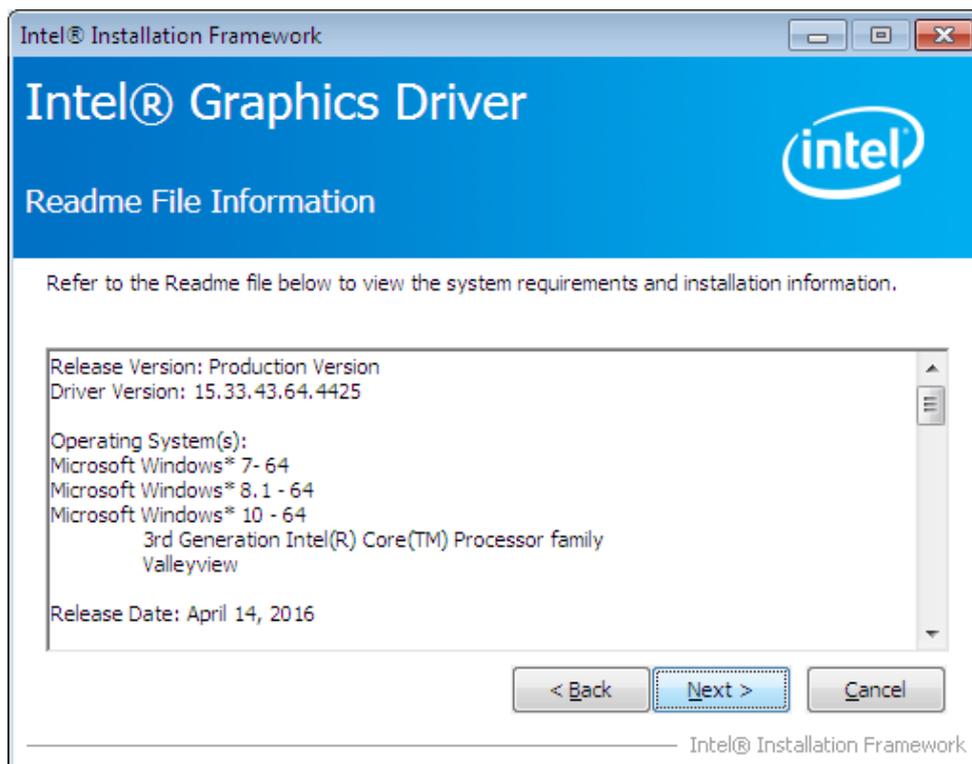
5. Click **Next** to start the installation process.



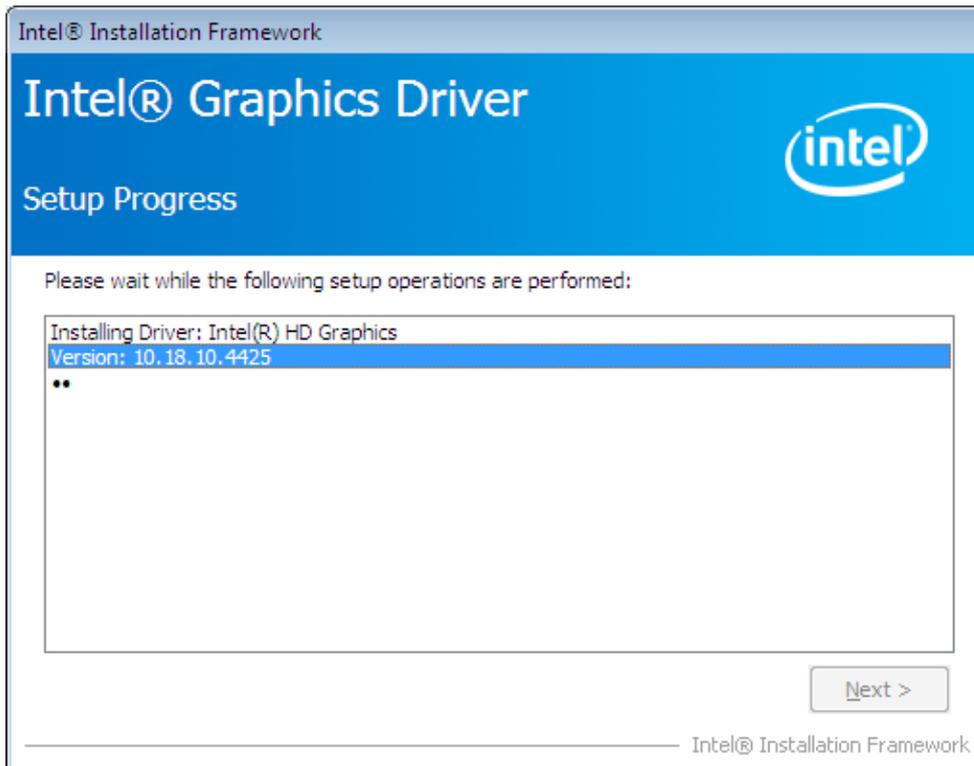
6. Click **Yes** to accept the license agreement.



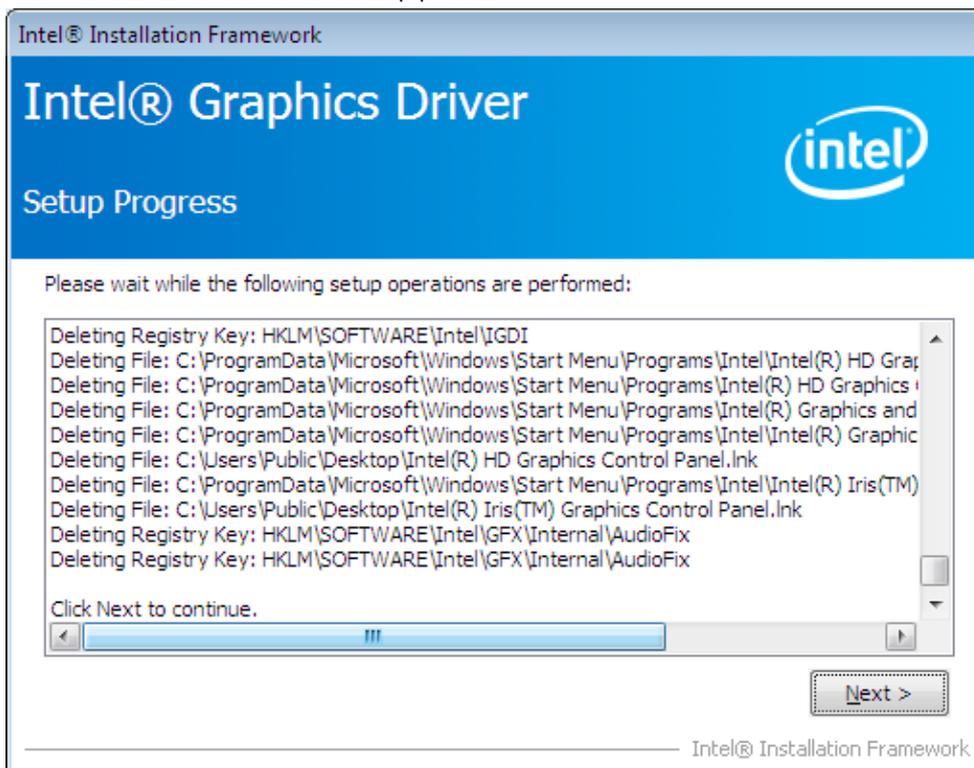
7. Click **Next** to continue with the installation.



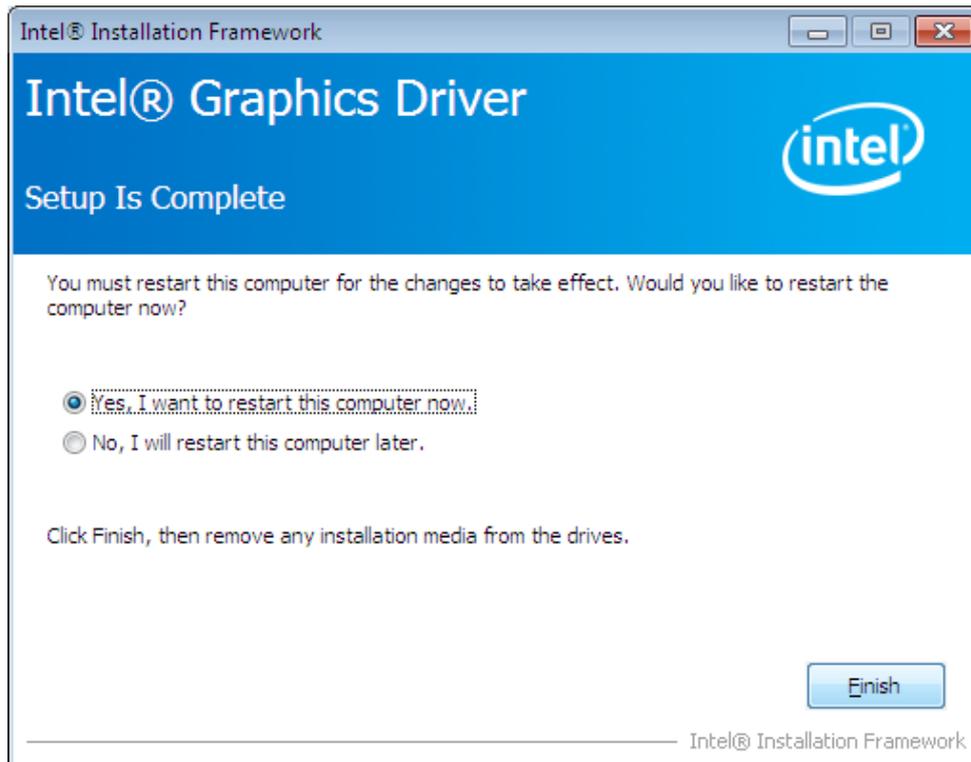
- 8. Wait until the installation is completed.



- 9. Click **Next** to continue with the setup process.



10. Select **Yes, I want to restart this computer now** and then click **Finish** to exit from the wizard.

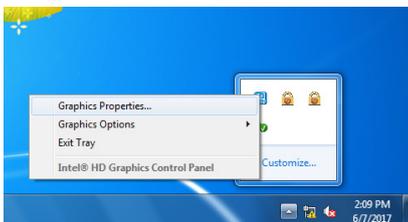


After your MPC-2121 reboots, you can use the Intel graphics tool to adjust the display resolution.

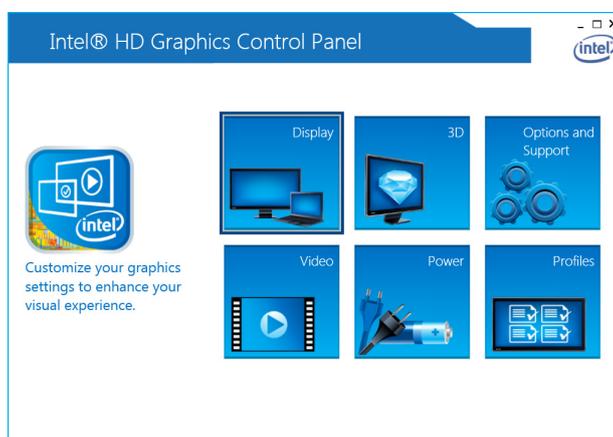
## Adjusting the Display Resolution

Follow these steps to adjust the display resolution of your MPC-2121:

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

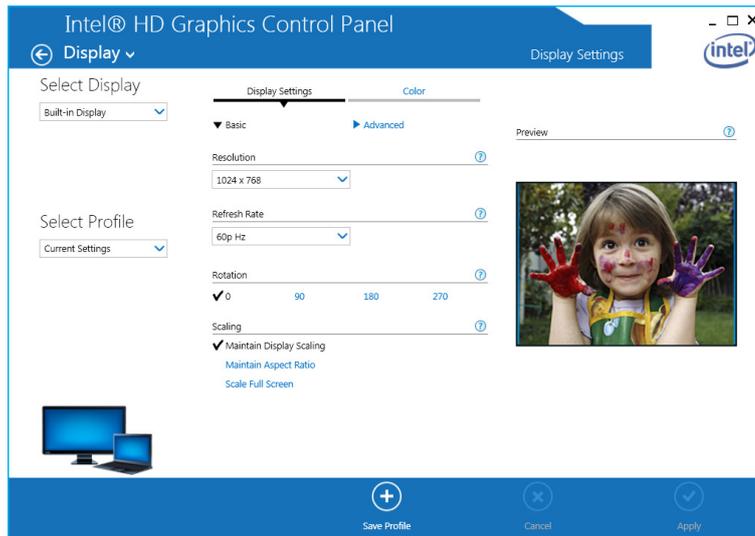


2. Select **Display**.



You can now adjust the resolution, refresh rate, and the display rotation settings.

3. Select **Maintain Display Scaling** to maximize the display so that it fits the screen.



4. Click **Apply**.

## Serial Port Driver and Utility

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This chapter describes how to install the serial port driver. After installing the drivers, you can configure the serial interface mode (RS-232/422/485) for the software selectable serial port.

The following topics are covered in this chapter:

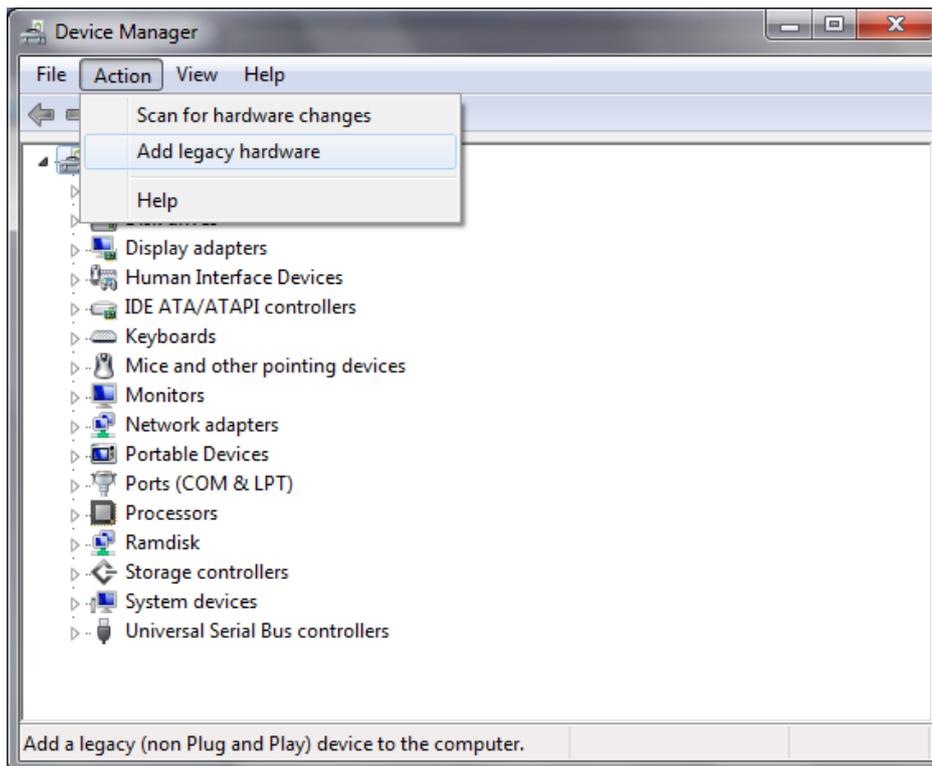
- **Overview**
- **Installing the MxGeneralIo Driver**
- **Installing the Serial Interface Utility**
- **Configuring the Serial Interface Mode**

# Overview

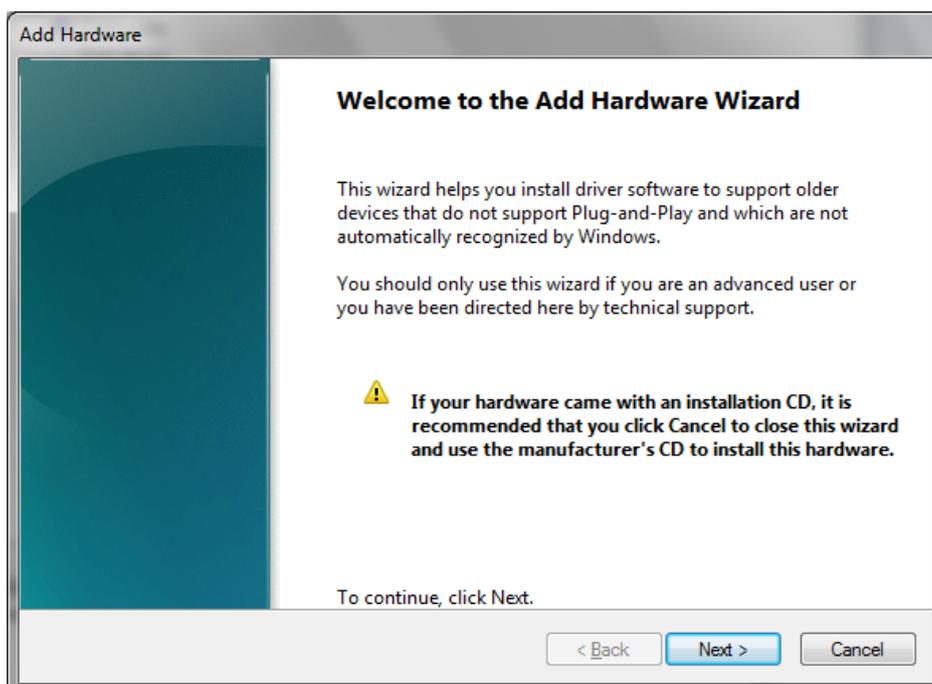
The MPC-2121 supports the following serial modes: **RS-232, RS-422, 2-wire RS-485, and 4-wire RS-485**. These modes can be configured on COM1 and COM2. Before you do configuration the serial port, you should install the "MxGeneralIo" driver from the driver list.

## Installing the MxGeneralIo Driver

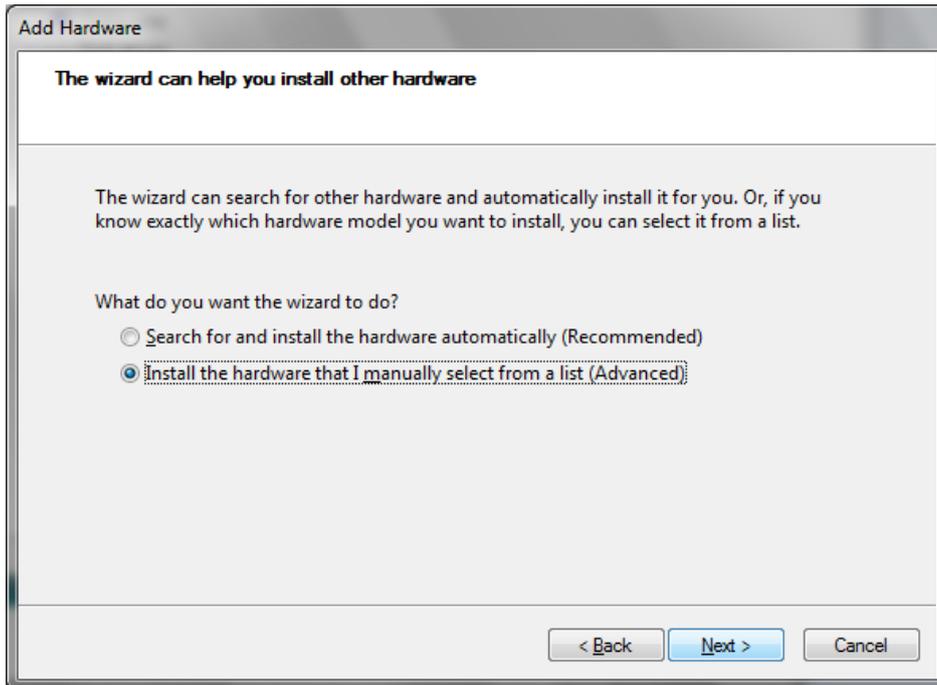
1. Open **Device Manager** from your MPC-2121 and select **Add legacy hardware**



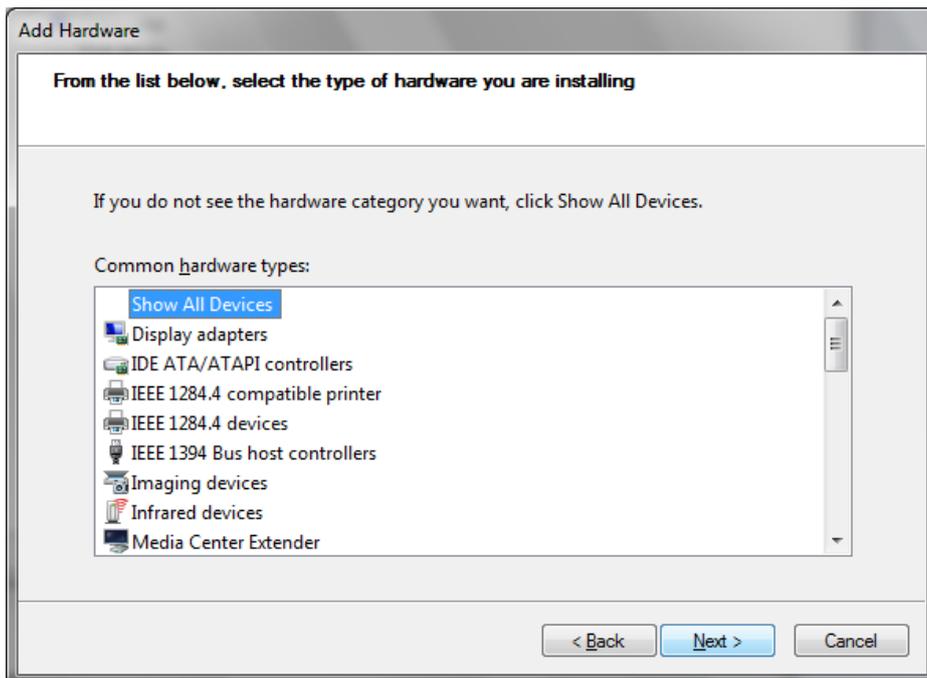
2. Click **Next**



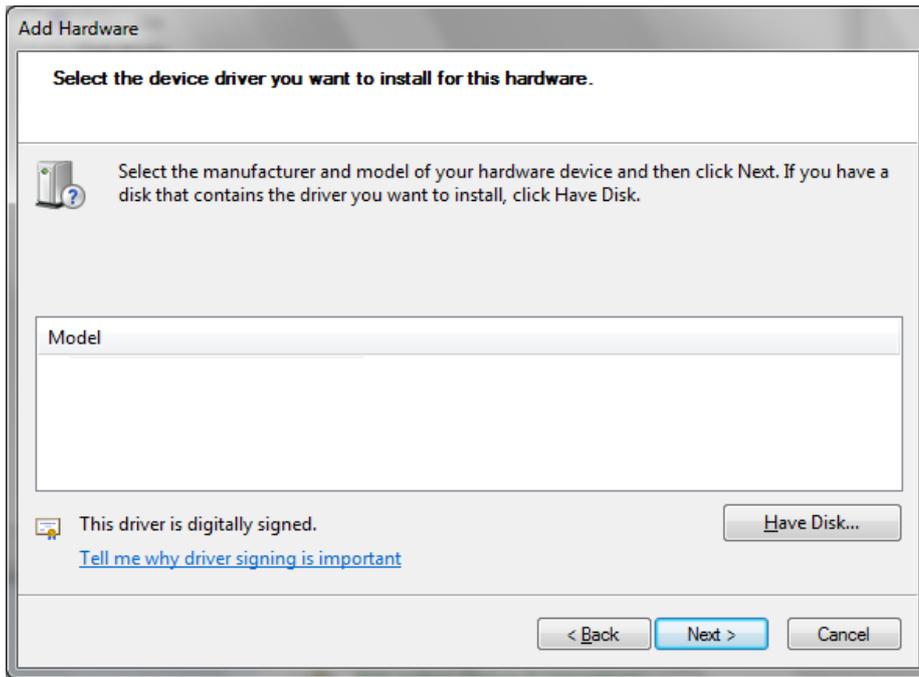
3. Select the second item **Install the hardware that I manually select from a list (Advanced)** and click **Next**



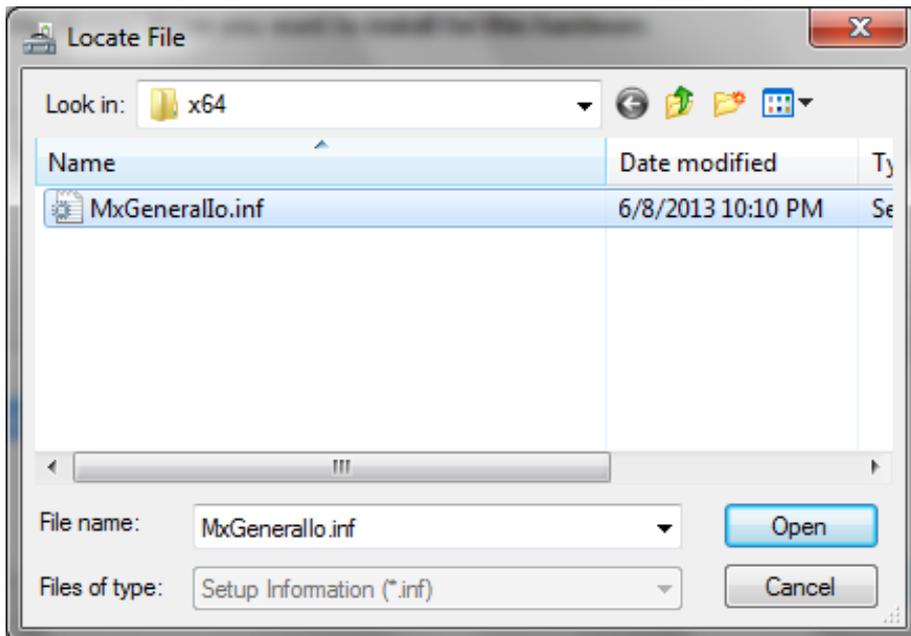
4. Click **Next**



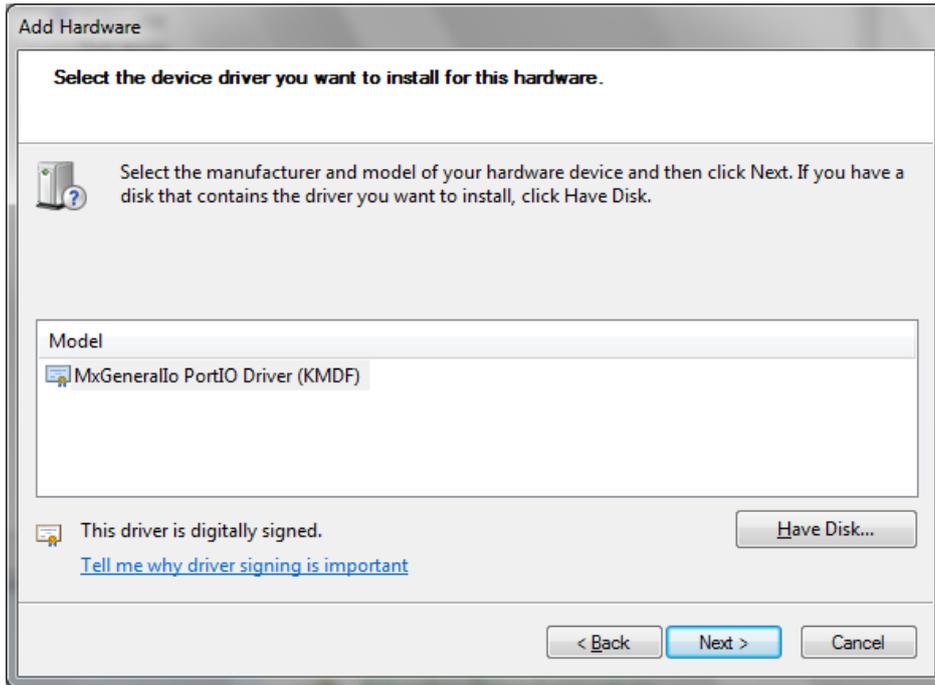
- 5. Select **Have Disk...**



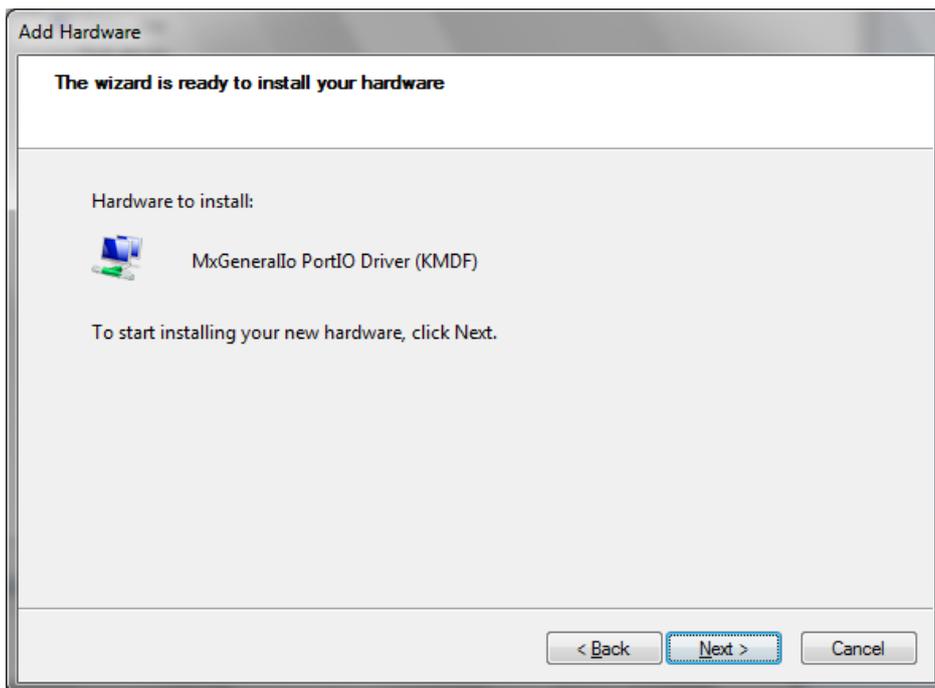
- 6. Point to the path **Driver\MPC-2121-W7E\_V1.0\_Driver\_Perpheral\4.MxGeneralIO\x64** and select **MxGeneralIo.inf**

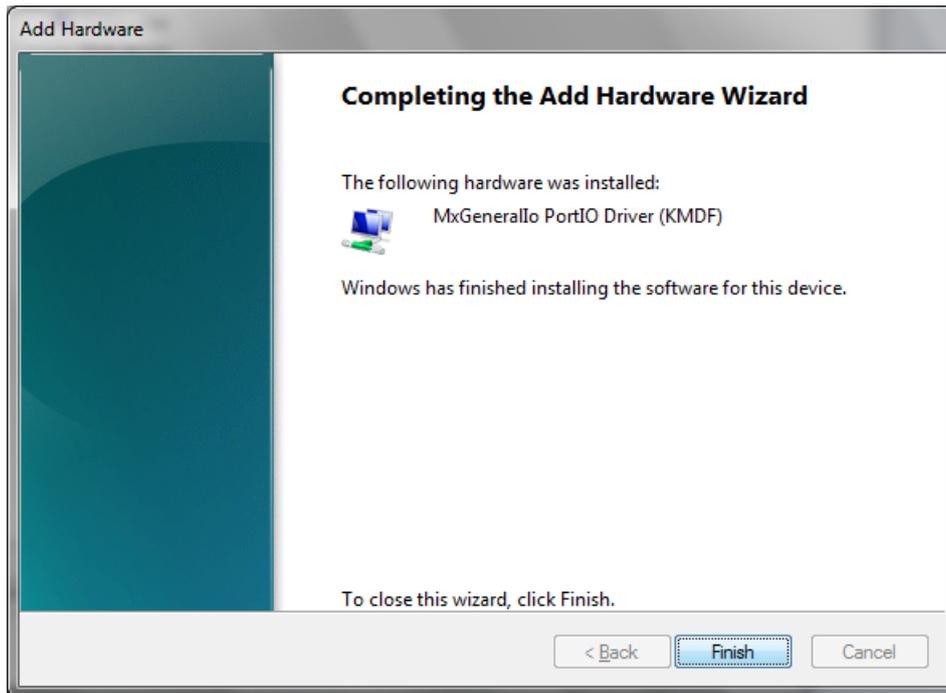


7. Select **Next**



8. Select **Next**



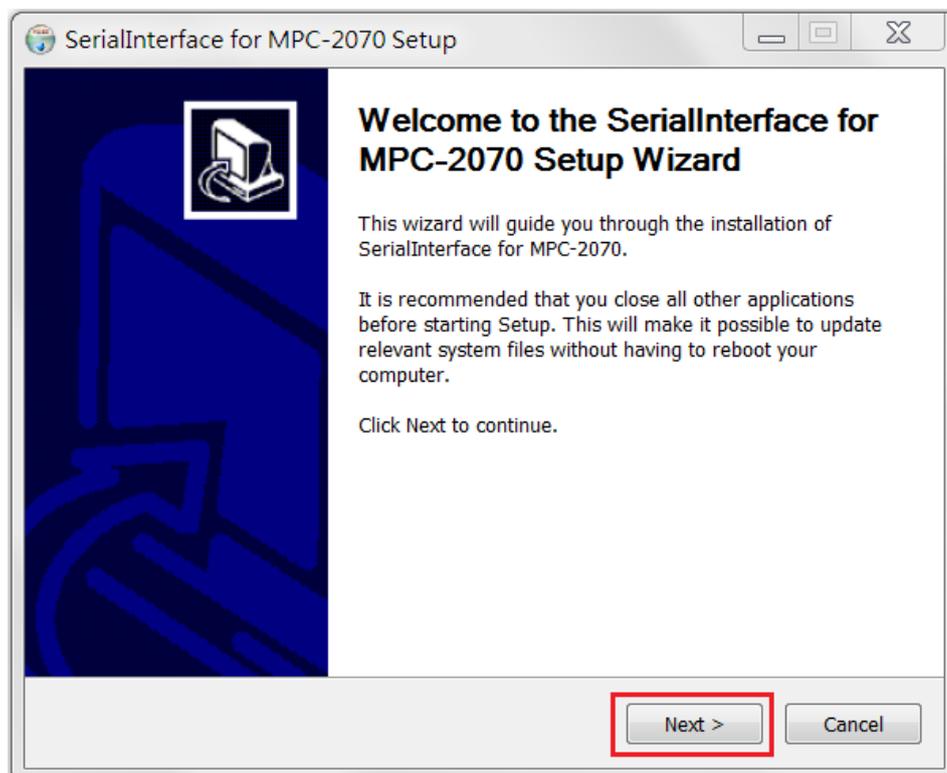
9. Select **Finish**

10. Double check if the driver has successfully installed.

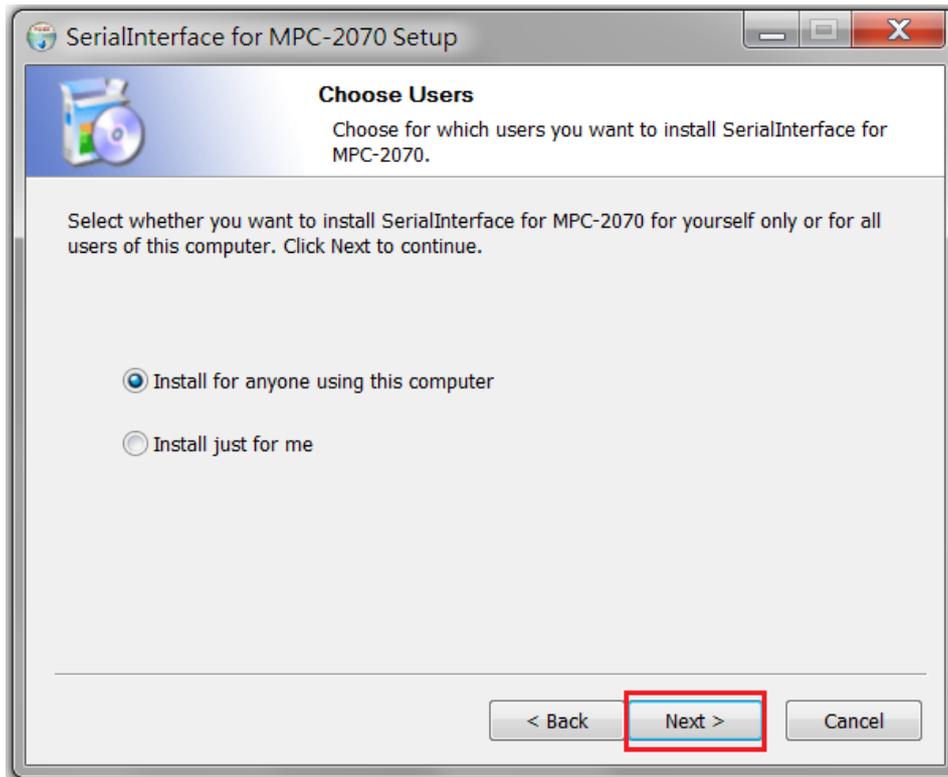
## Installing the Serial Interface Utility

Complete the following steps to install the SerialInterface utility:

1. The SerialInterface setup \*.exe file can be found on the product DVD: <Software DVD>\Utility\MPC-2121\_SerialInterface\ to. Execute "SerialInterface\_MPC-2070\_1.0\_x64\_Setup.exe" and when the application program launches, click **Next** to continue, and then click **Next** again.

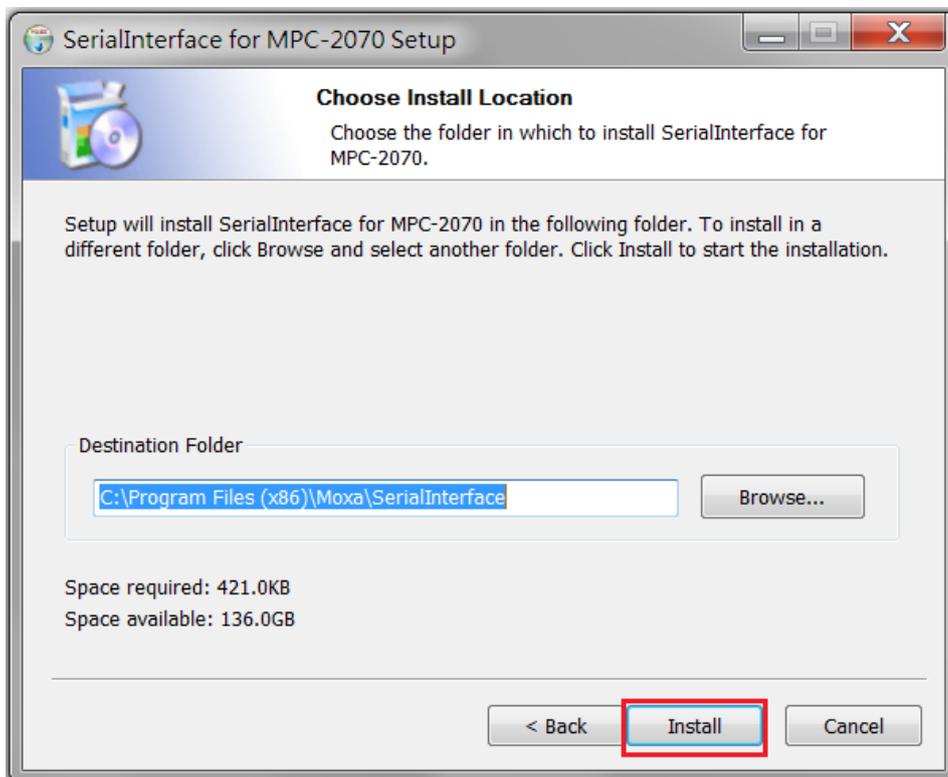


- 2. Click **Next** to continue.

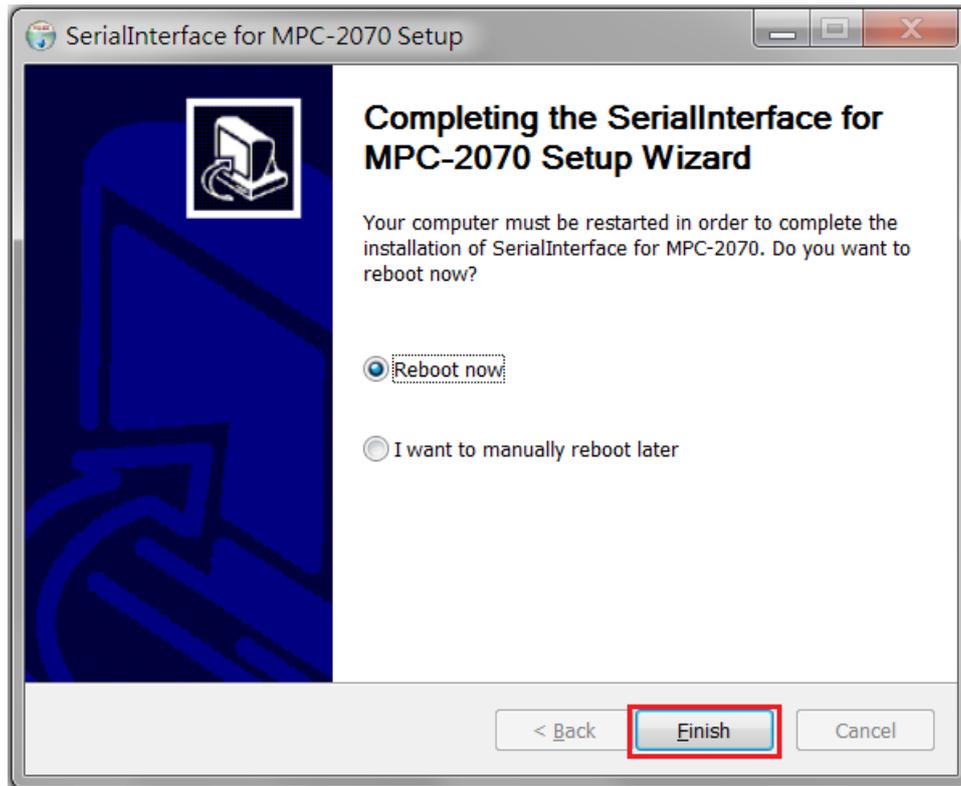


The default destination folder is **C:\Program Files(x86)\Moxa\ SerialInterface**.

- 3. Click **Install** to continue.



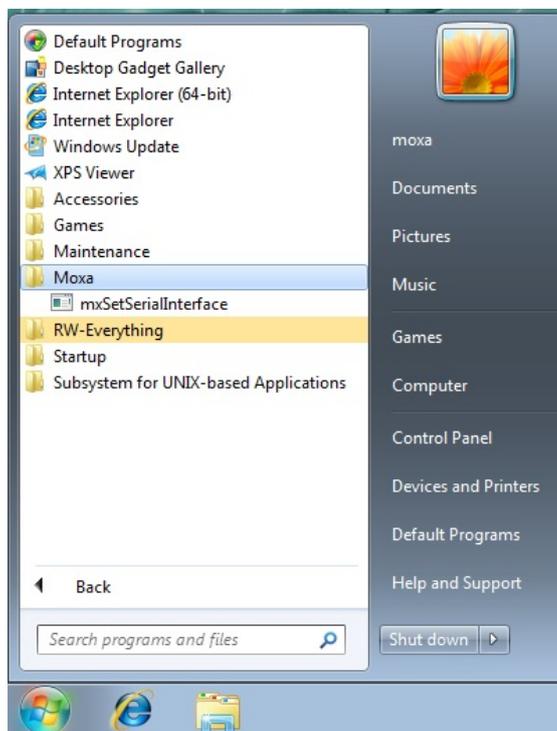
- Click **Finish** to complete the installation process and reboot the computer.



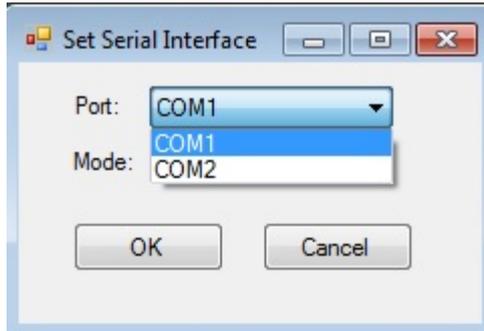
## Configuring the Serial Interface Mode

Complete the following steps to configure the interface mode:

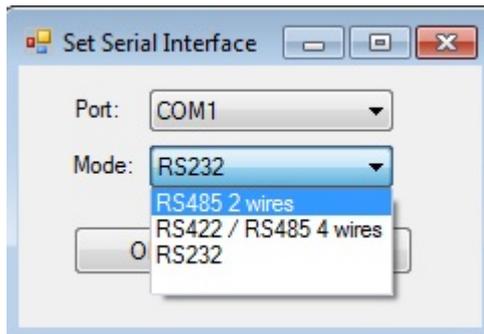
- From the Start menu, Click **All Programs** → **Moxa** → **mxSetSerialInterface**.



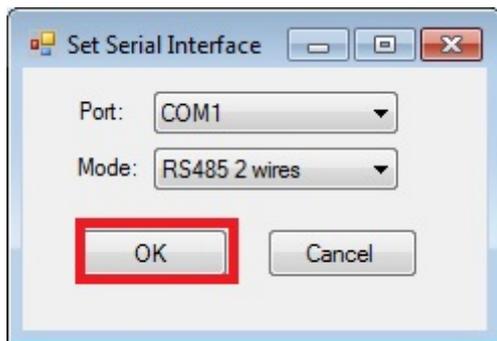
2. Select a port (COM1 or COM2).



3. Select the mode that you want to use for the port selected in the previous step.



4. Click **OK**



# 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 compensatory measures.