MPC-2120 Panel Computer Hardware User's Manual

Edition 2.1, September 2019

MPC-2120 Panel Computer Hardware User's Manual

The software described in this manual is furnished under a license agreement and may be used only in accordance with the terms of that agreement.

Copyright Notice

Trademarks

Disclaimer

Technical Support Contact Information

www.moxa.com/support

Moxa Americas		**Moxa China (Shanghai office)**	
Toll-free:	1-888-669-2872	Toll-free:	800-820-5036
Tel:	+1-714-528-6777	Tel:	+86-21-5258-9955
Fax:	+1-714-528-6778	Fax:	+86-21-5258-5505
Moxa Europe		**Moxa Asia-Pacific**	
Tel:	+49-89-3 70 03 99-0	Tel:	+886-2-8919-1230
Fax:	+49-89-3 70 03 99-99	Fax:	+886-2-8919-1231
Moxa India			
Tel:	+91-80-4172-9088		
Fax:	+91-80-4132-1045		

Table of Contents

1

Introduction

In this chapter, we give a general introduction to the features and specifications of MPC-2120 panel computers.

The following topics are covered in this chapter:

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

Overview

The MPC-2120 12-inch panel computers with Intel® Atom™ processor E3800 Series deliver a reliable and durable platform of wide versatility for use in industrial environments. With two software selectable RS-232/422/485 serial ports and two gigabit Ethernet LAN ports, the MPC-2120 panel computers support a wide variety of serial interfaces as well as high-speed IT communications, all with native network redundancy.

The MPC-2120 Series 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 harsh, hot, outdoor environments like oil and gas fields, or drilling platforms. The MPC-2120 also features a 1000-nit LCD panel offering a sunlight-readable, projected-capacitive, glove-friendly, multi-touch screen, providing an excellent user experience for applications outdoors.

Package Checklist

The MPC-2120 panel computer is shipped with the following items:

- 1 MPC-2120 panel computer
- 1 2-pin terminal block for DC power input
- 1 10-pin terminal block for DIO
- 1 2-pin terminal block for remote power switch
- 8 panel mounting screws
- 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-2120 Series panel computer has the following features:

- 12-inch panel computer
- Intel® Atom™ Processor E3826 1.46 GHz or E3845 1.91 GHz
- -40 to 70°C wide-temperature design, no fan/no heater
- 1000-nit sunlight-readable LCD
- Glove-friendly and multi-touch screen
- Class 1 Division 2*, ATEX Zone 2*, and IECEx* certified
- Wide range 9 to 36 VDC power input
  * The certification process is in progress.

Hardware Specifications

2

Hardware Introduction

The MPC-2120 Series 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
   ➢ Bottom View
❒ **Dimensions**

Appearance

Front View
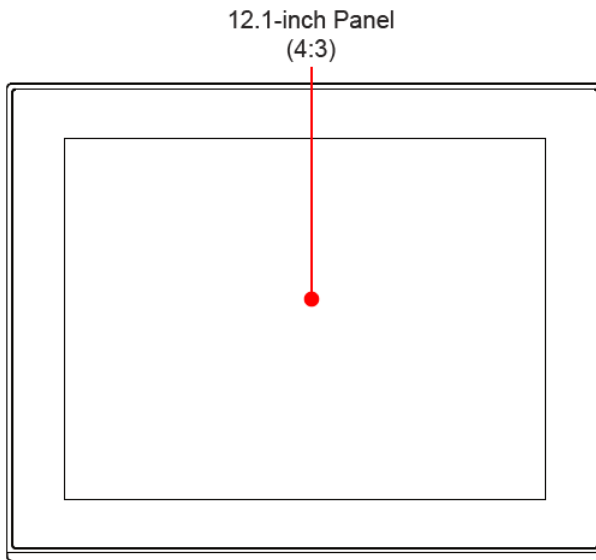
Bottom View

Dimensions

Unit: mm (inch)

286.4 (11.3)
75 (3)
10 (0.4)
225.3 (8.9)
94.5 (3.6)
50 (2)

306 (12)
245 (9.6)

35.2 (1.4)
19.8 (0.8)
9 (0.4)

3
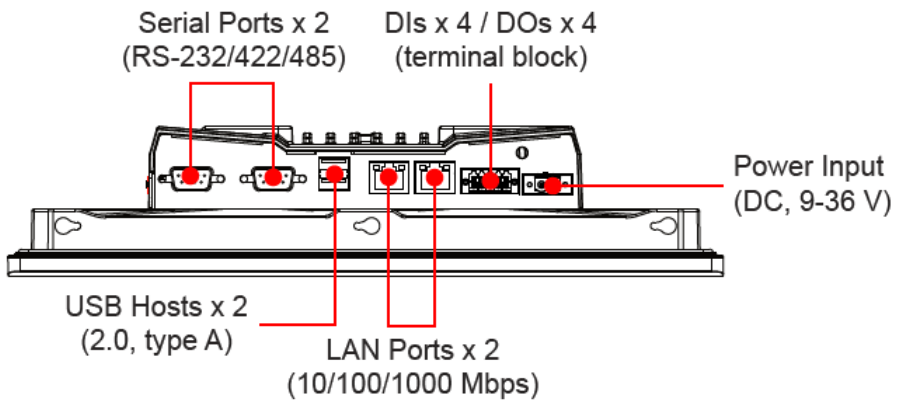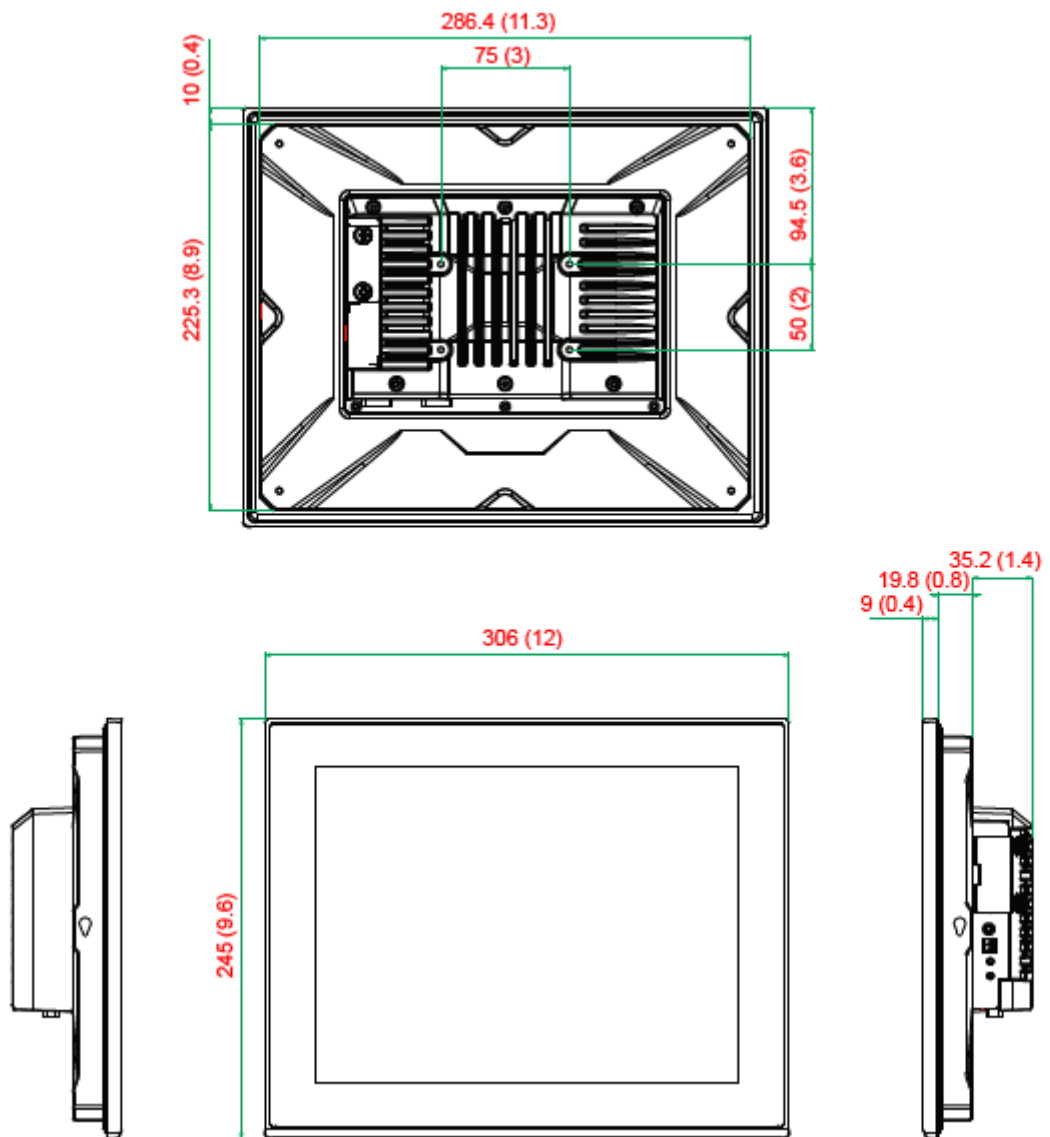
Hardware Connection Description

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**
❐ **VESA Mounting**
❐ **Wiring Requirements**
❐ **Temperature Requirements**
❐ **Grounding the MPC-2120 Series**
❐ **Powering On/Off the MPC-2120 Series**
❐ **Display-Control Buttons**
❐ **Connector Description**
  ➢ DC Power Input
  ➢ Serial Ports
  ➢ Ethernet Ports
  ➢ USB Ports
  ➢ DIO Port
❐ **Installing a CFast or SD Card**

Panel Mounting

The MPC-2120 Series comes with 8 clamp mounts that allow for installation 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 desired. The maximum thickness of the surface to which the computer will be clamped is 4.6 mm. For a secure mounting, all 8 clamps must be used. The clamp arms are fastened into slots on all four sides of the MPC-2120. Use the short M4 SUS (stainless) screws to fasten the clamp arms to the MPC-2120 mounting slots, as shown in the diagram below. Next, use the clamps to fasten the computer to its mounting point. Note the torque value that is shown in the figure below as guidance when fastening the screws on the clamps.
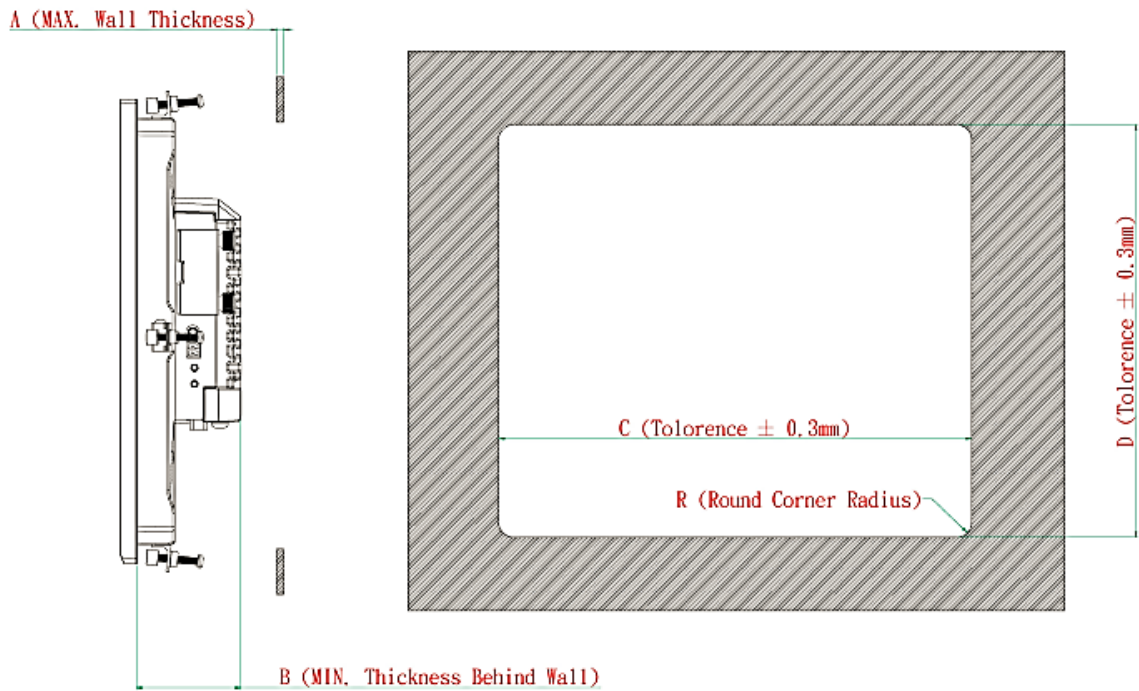
A	B	C	D	R	Mounting Kits (pcs)
11mm	56mm	287.4mm	226.3mm	2mm	8pcs

VESA Mounting

The MPC-2120 is provided with VESA mounting holes on the back panel, which you can use directly without the need for an adapter. The dimension of the VESA mounting area is 50 x 75 mm. You will require four M4 x 6mm screws to mount the MPC-2120.
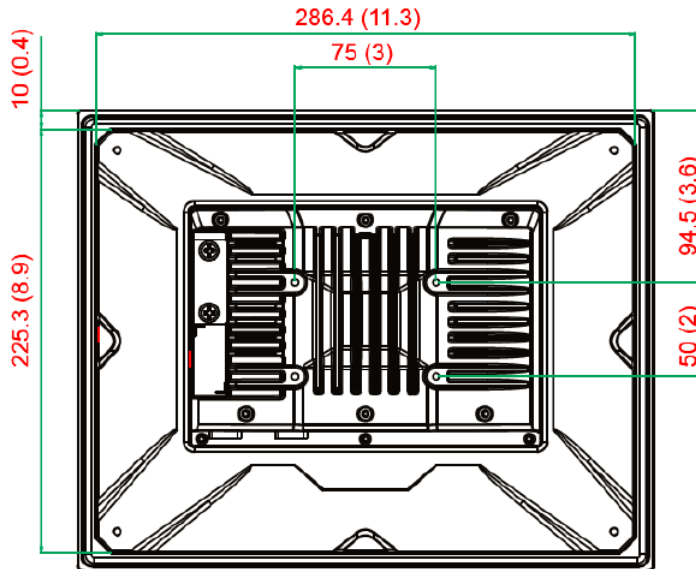
Wiring Requirements

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-2120 Series.

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

Grounding the MPC-2120 Series

Before you power on the MPC-2120 Series, please ground the MPC-2120 as 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
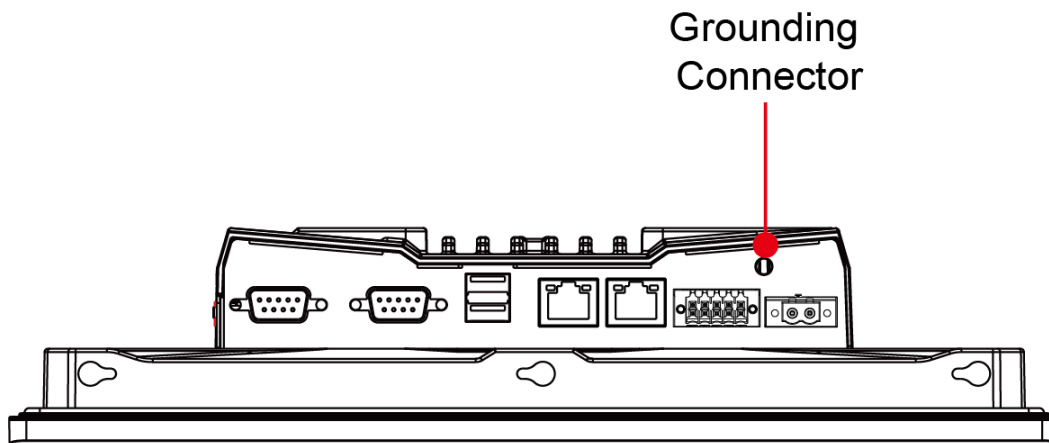
Powering On/Off the MPC-2120 Series

Connect a **Terminal Block to Power Jack Converter** to the MPC-2120 terminal block and connect at least a 30 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.

DC 9-36V ⎓
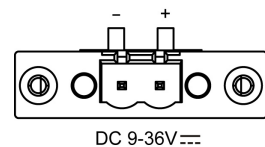
To power off the MPC-2120, we recommend using the "shut down" function provided by the OS installed on the MPC. If you use the **Power** button, you may enter one of the following states depending on the power management settings in the OS: standby, hibernation, or system shutdown mode. If you encounter 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-2120 is provided with two display-control buttons on the right panel.
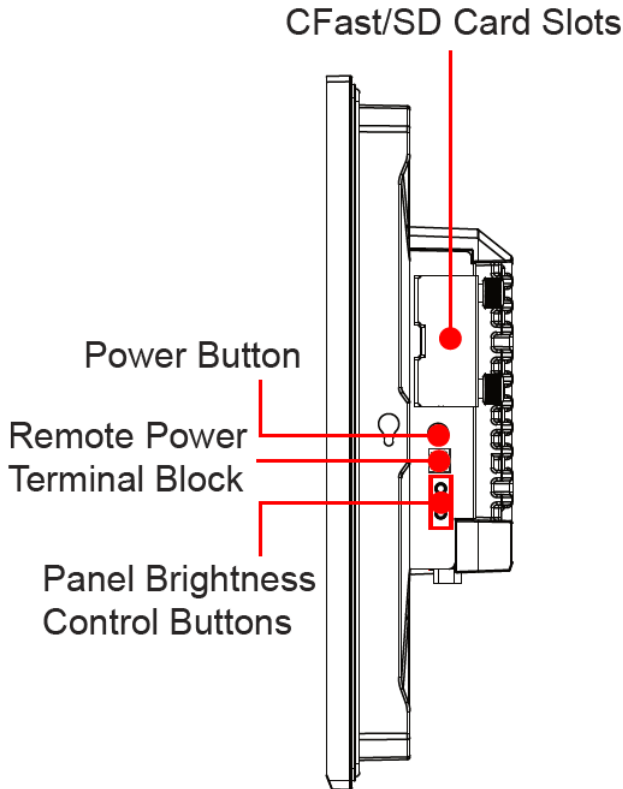
The usage of the display-control buttons is described in the following table:

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-2120 Series 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-2120 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-2120 uses a DC power input. To connect the power source to the 2-pin terminal block, use a 60 W power adapter. The terminal block is available in the accessories package. The DC pin assignments are show in the figure.	
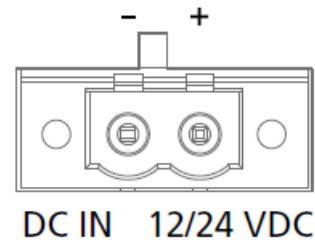
Serial Ports

The MPC-2120 offers two software-selectable RS-232/422/485 serial ports over a DB9 connector. The pin assignments for the ports are shown in the table below:
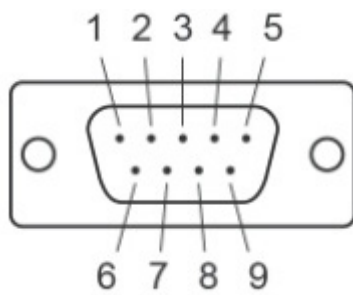
Pin	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DCD	TxDA(-)	TxDA(-)	–
2	RxD	TxDB(+)	TxDB(+)	–
3	TxD	RxDB(+)	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	RxDA(-)	DataA(-)
5	GND	GND	GND	GND
6	DSR	–	–	–
7	RTS	–	–	–
8	CTS	–	–	–

Ethernet Ports

The pin assignments for the two Fast Ethernet 100/1000 Mbps RJ45 ports are shown in the following table:

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.

LAN (on connectors)	Green	100 Mbps Ethernet mode
	Yellow	1000 Mbps (Gigabit) Ethernet mode
	Off	No activity or 10 Mbps Ethernet mode
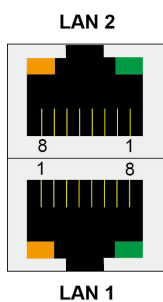
Pin	100 Mbps	1000 Mbps
1	ETx+	TRD(0)+
2	ETx-	TRD(0)-
3	ERx+	TRD(1)+
4	–	TRD(2)+
5	–	TRD(2)-
6	ERx-	TRD(1)-
7	–	TRD(3)+
8	–	TRD(3)-

The indicators on the LAN ports indicate the following:

LAN 1/LAN 2 (indicators on the connectors)	Green	100 Mbps Ethernet mode
	Yellow	1000 Mbps (Gigabit) Ethernet mode
	Off	No activity / 10 Mbps Ethernet mode

USB Ports

Two USB 2.0 ports are available on the bottom panel. Use these ports to connect mass storage drives and other peripherals.

DIO Port

The MPC-2120 is provided with a DIO port, which is a 10-pin terminal block that includes 4 DIs and 4 DOs as illustrated in the diagram.
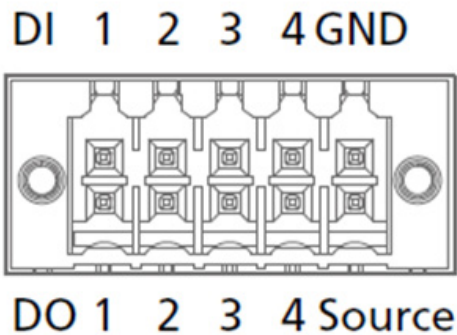
Installing a CFast or SD Card

MPC-2120 provides two storage options—CFast and SD card. The storage slots are located on the left panel. You can install the OS on the CFast card and save your data into the SD card. For a list of compatible CFast models, check the component compatibility report for MPC-2120 available on the Moxa website.

To install the storage devices, do the following:

1. Remove the 2 screws holding the storage-slot cover to the MPC-2120.
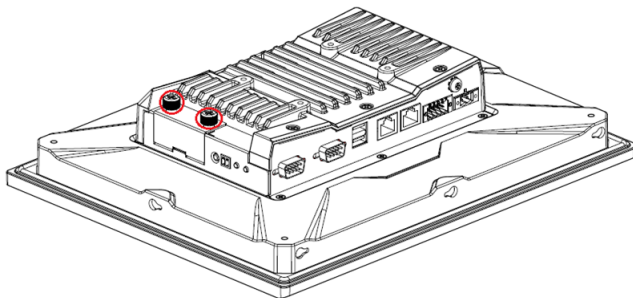
2. Insert the CFast or SD card into the slot using the push-push mechanism.
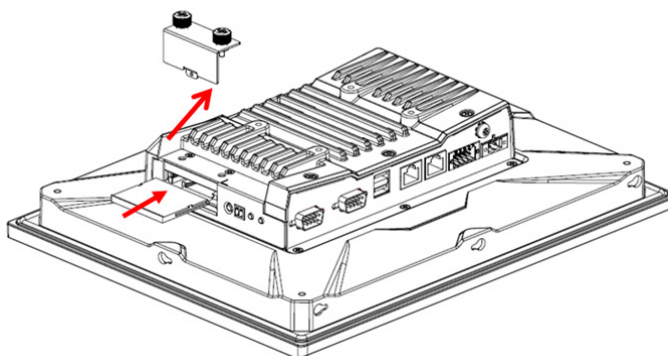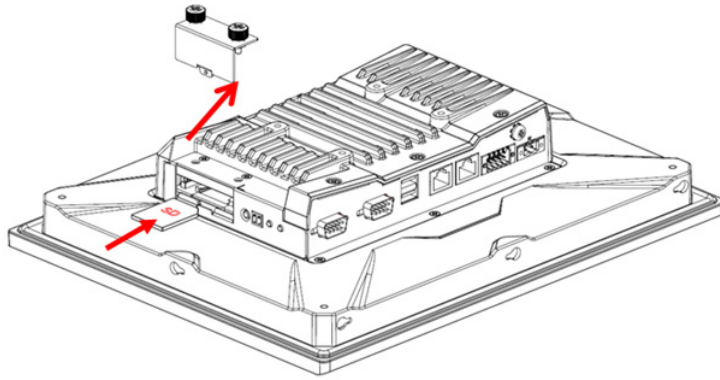
3. Reattach the cover and secure it with screws.

4

BIOS Settings

In this chapter, we describe the BIOS settings for the MPC-2120 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**

➢ Boot Configuration

➢ PCI Express Configuration

➢ USB Configuration

➢ SD Configuration

➢ Miscellaneous Configuration

➢ SATA Configuration

➢ Console Redirection

➢ Hardware Monitor

❒ **Security Settings**

➢ Set Supervisor Password

❒ **Power Settings**

➢ Wake on LAN

➢ Auto Wake on S5

❒ **Boot Settings**

➢ Boot Type

➢ PXE Boot to LAN

➢ PXE Boot capability

➢ Add Boot Options

➢ USB Boot

➢ 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**.

```
                                    Front Page
 Front Page
Continue                                              This selection will direct the system to
▶Boot Manager                                        continue to booting process
▶Boot From File
▶Setup Utility










                                        ⌖



 F1  Help                    UP    Select Item           Enter Select ▶ SubMenu
 ESC Exit                    DOWN  Select Item
```
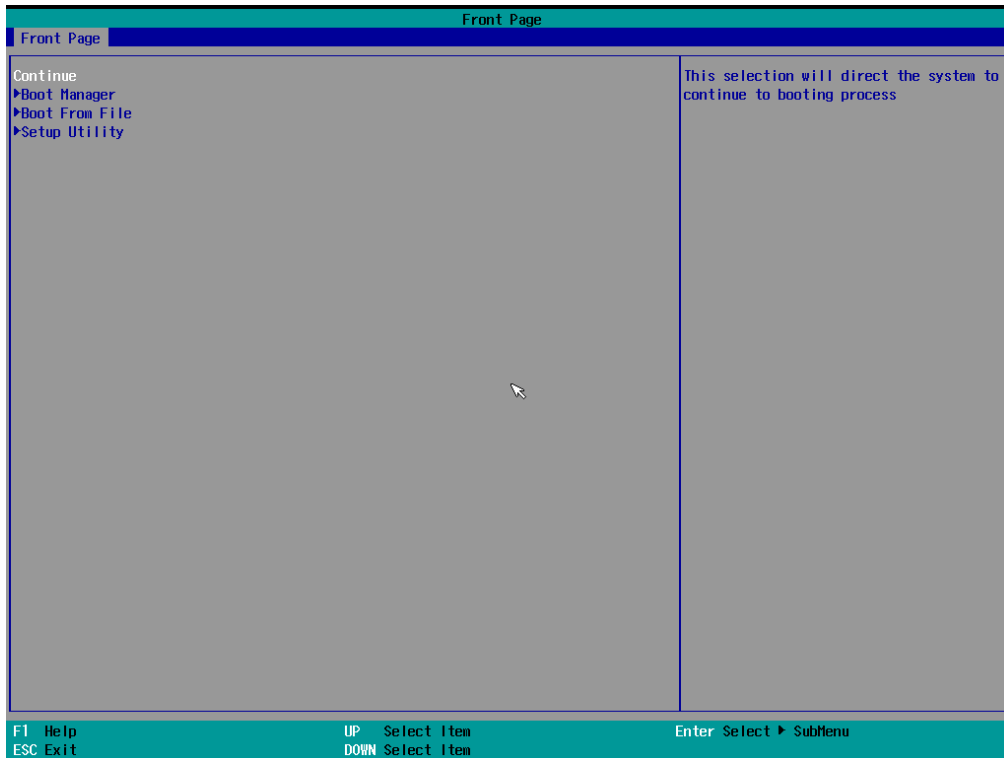
When you click **Setup Utility**, a basic description of each function key is listed at the bottom of the screen. Refer to these descriptions to learn how to use them.

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.

```
                   InsydeH20 Setup Utility              Rev. 5.0
  Main  Advanced  Security  Power  Boot  Exit

 BIOS Version          V1.00S10           This is the help for the
 Project Name          MC-2120            hour, minute, second
                                          field. Valid range is from
 Processor Type        Intel(R) Atom(TM) CPU   0 to 23, 0 to 59, 0 to 59.
                       E3845 @ 1.91GHz    INCREASE/REDUCE : +/-.
 System Bus Speed      83 MHz
 System Memory Speed   1333 MHz
 Cache RAM             2048 KB
 Total Memory          4096 MB

 VLV SOC               11 (D0 Stepping)
 MRC Version           1.43
 MCU Version           V1.00S04
 IGD VBIOS Version     3842
 Microcode Revision    905

 System Time           [00:00:33]
 System Date           [01/01/2014]


 F1  Help      UP    Select  LEFT  Select F5 Change   Enter Select F10 Save and
 ESC Exit      DOWN  Select  RIGHT Select F6 Change   F9       Setup
```

Advanced Settings

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

```
                   InsydeH20 Setup Utility              Rev. 5.0
  Main  Advanced  Security  Power  Boot  Exit

                                          Configures Boot Settings.

 ▶Boot Configuration
 ▶PCI Express Configuration
 ▶USB Configuration
 ▶SD Configuration
 ▶Miscellaneous Configuration
 ▶SATA Configuration
 ▶Console Redirection
 ▶Hardware Monitor










 F1  Help      UP    Select  LEFT  Select F5 Change   Enter Select F10 Save and
 ESC Exit      DOWN  Select  RIGHT Select F6 Change   F9       Setup
```

Boot Configuration

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

Options: On (default), Off

```
·                        InsydeH20 Setup Utility                Rev. 5.0
      Advanced

 Boot Configuration                                   Selects Power-on state for
                                                      Numlock
 Numlock                    <On>



















 F1  Help      UP    Select  LEFT  Select F5 Change   Enter Select F10 Save and
 ESC Exit      DOWN  Select  RIGHT Select F6 Change   F9    Setup
```
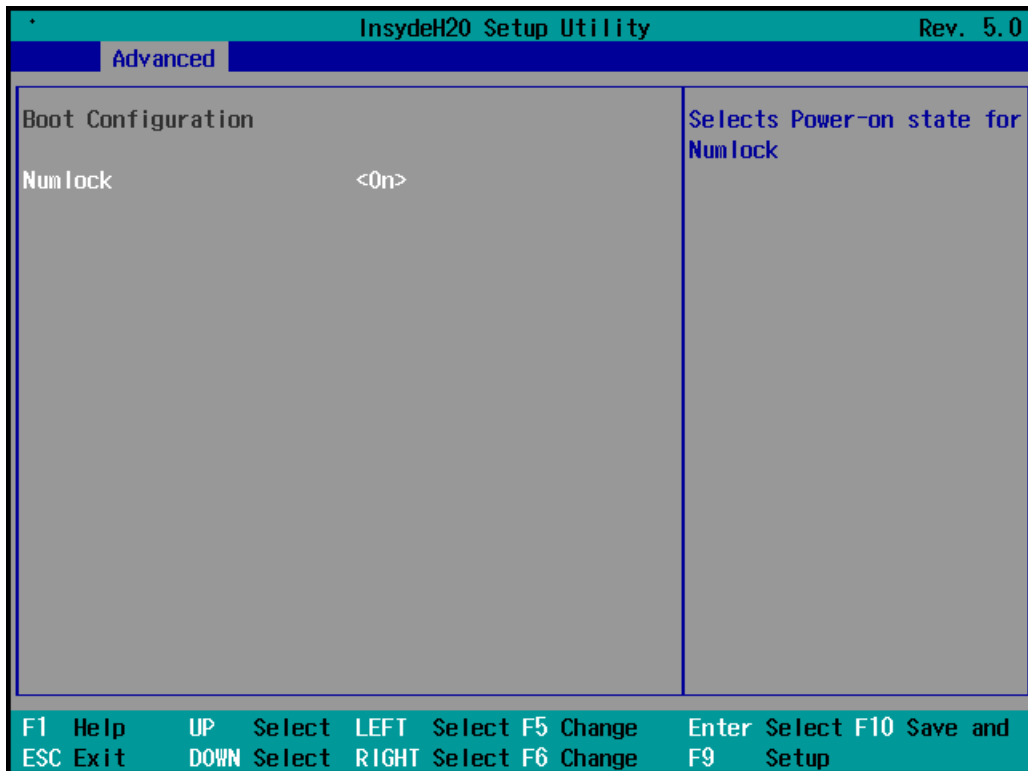
PCI Express Configuration

PCIE PORT 1 Speed

Configure PCIe Port1 Speed

Options: Auto, Gen1 and Gen2

PCIE PORT 2 Speed

Configure PCIe Port2 Speed

Options: Auto, Gen1 and Gen2

USB Configuration

```
                        InsydeH20 Setup Utility                    Rev. 5.0
        Advanced

  USB Configuration                                    Disable USB port

  USB Port #0              <Enabled>
  USB Port #1              <Enabled>




  F1   Help       UP   Select   LEFT  Select F5 Change   Enter Select F10 Save and
  ESC  Exit       DOWN Select   RIGHT Select F6 Change   F9    Setup
```
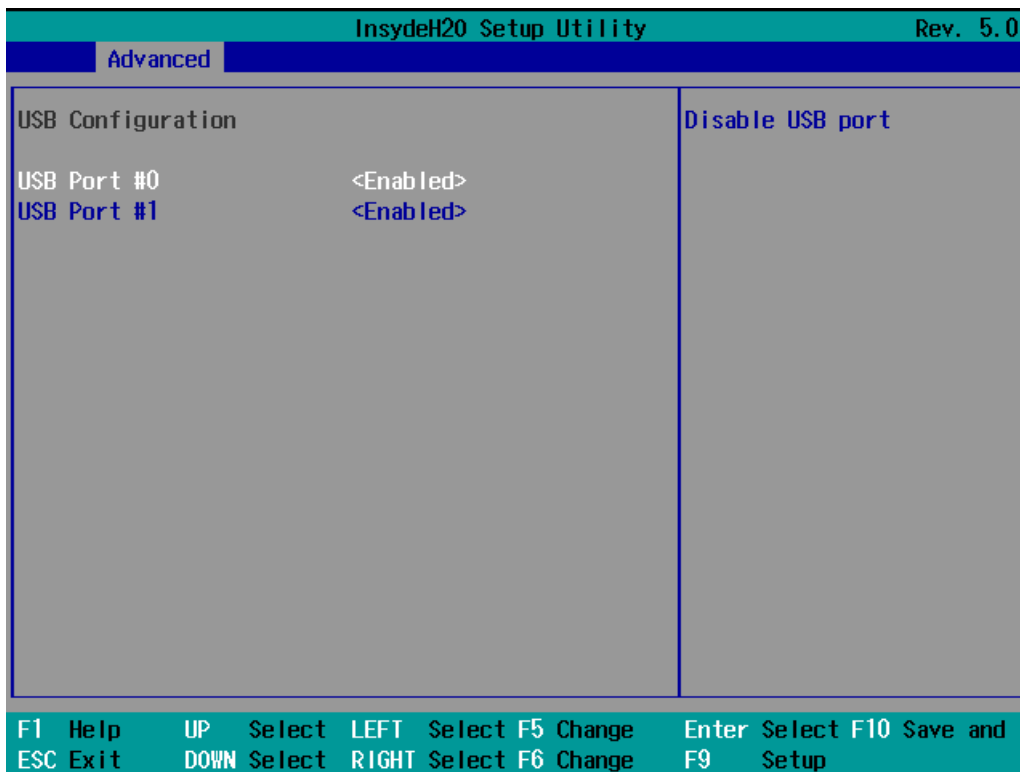
USB Port #0

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

Option: Enabled (default), Disabled

USB Port #1

Enable or Disable the USB port 1; if disabled, the system won't detect when a USB device is plugged in.

Option: Enabled (default), Disabled

SD Configuration

```
                                    InsydeH20 Setup Utility                              Rev. 5.0
       Advanced
 SD Configuration                                              Disable/Enable SDR25 Capability in SD
                                                              Card controller
 SDR25 Capability Support for SDCard      <Enabled>
 DDR50 Capability Support for SDCard      <Disabled>




 F1  Help            ↑↓ Select Item      F5/F6 Change Values         F9  Setup Defaults
 Esc Exit            ↔ Select Menu        Enter Select ▶ SubMenu      F10 Save and Exit
```
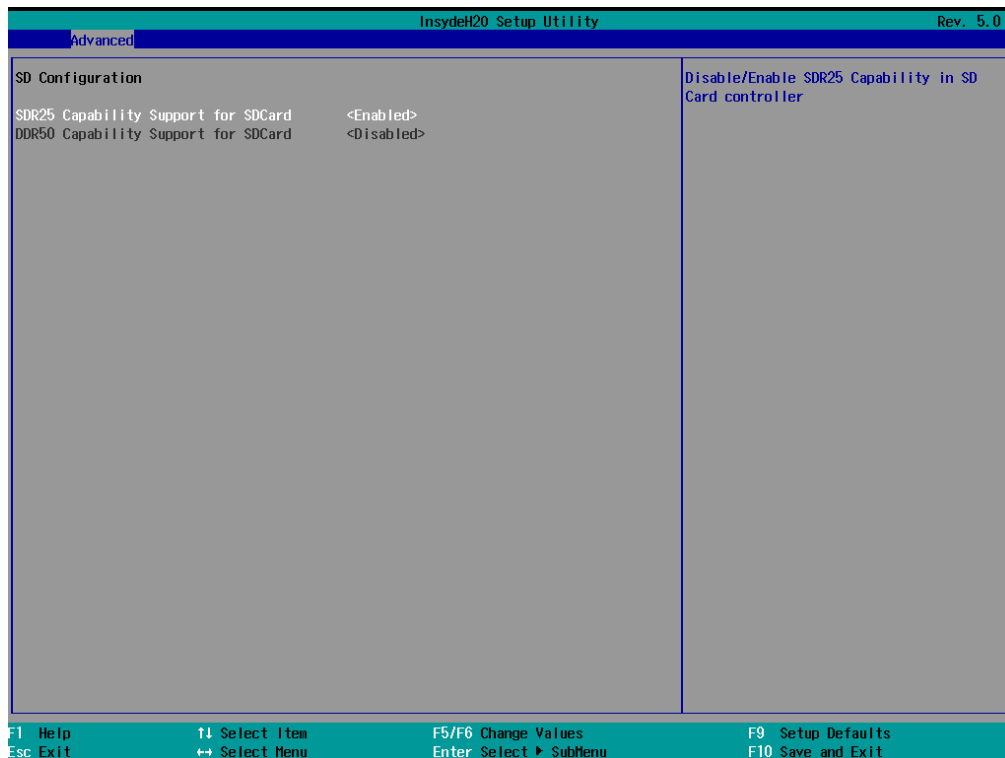
SDR25 Capability Support for SD Card

Set Input/output timing for SDR25 mode.

Option: Enabled (default), Disabled

DDR50 Capability Support for SD Card

Set Input/output timing for DDR50 mode.

Option: Disabled (default), Enabled

Miscellaneous Configuration

```
                        InsydeH20 Setup Utility              Rev. 5.0
        Advanced

    Miscellaneous Configuration                    Control power button light
                                                   when system work
    Power Button Light         <Enabled>
    Power ON after Power       <Enable>
    Failure
    DO-0 Level                 <HIGH>
    DO-1 Level                 <HIGH>
    DO-2 Level                 <HIGH>
    DO-3 Level                 <HIGH>




    F1  Help      UP    Select  LEFT  Select F5 Change   Enter Select F10 Save and
    ESC Exit      DOWN  Select  RIGHT Select F6 Change   F9        Setup
```
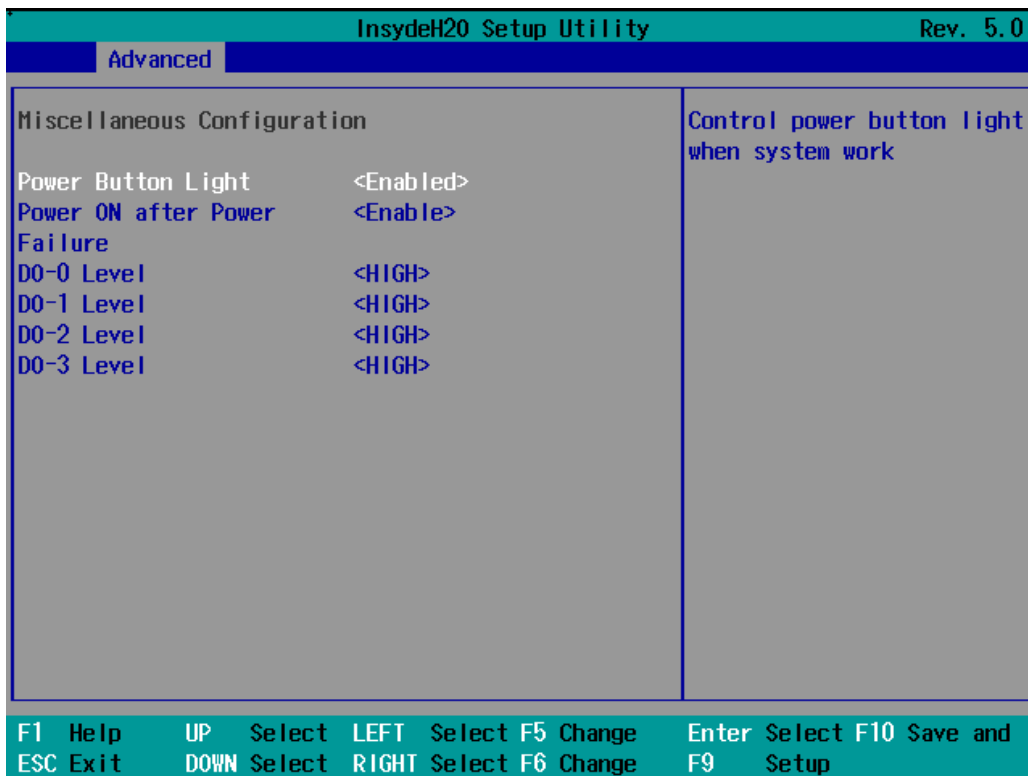
Power Button Light

Use this setting to control the power button light 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 as high or low.

Options: High (default), Low

DO-1 Level

This item allows you set the DO 1 as high or low.

Options: High (default), Low

DO-2 Level

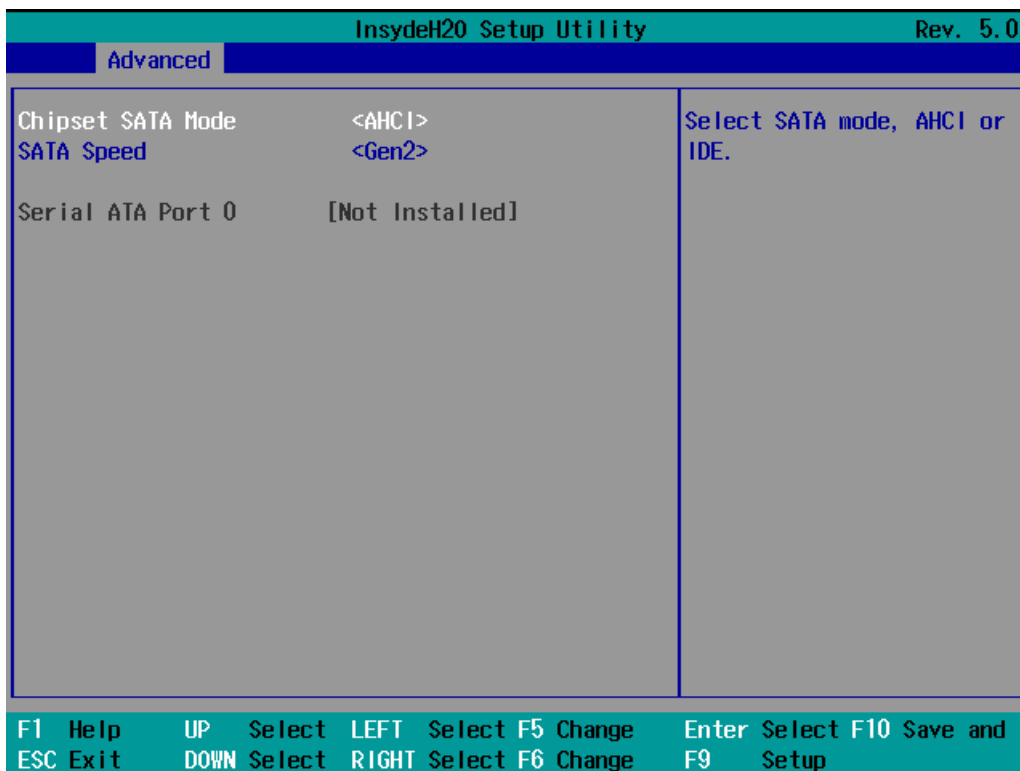This item allows you set the DO 2 as high or low

Options: High (default), Low

DO-3 Level

This item allows you set the DO 3 as high or low.

Options: High (default), Low

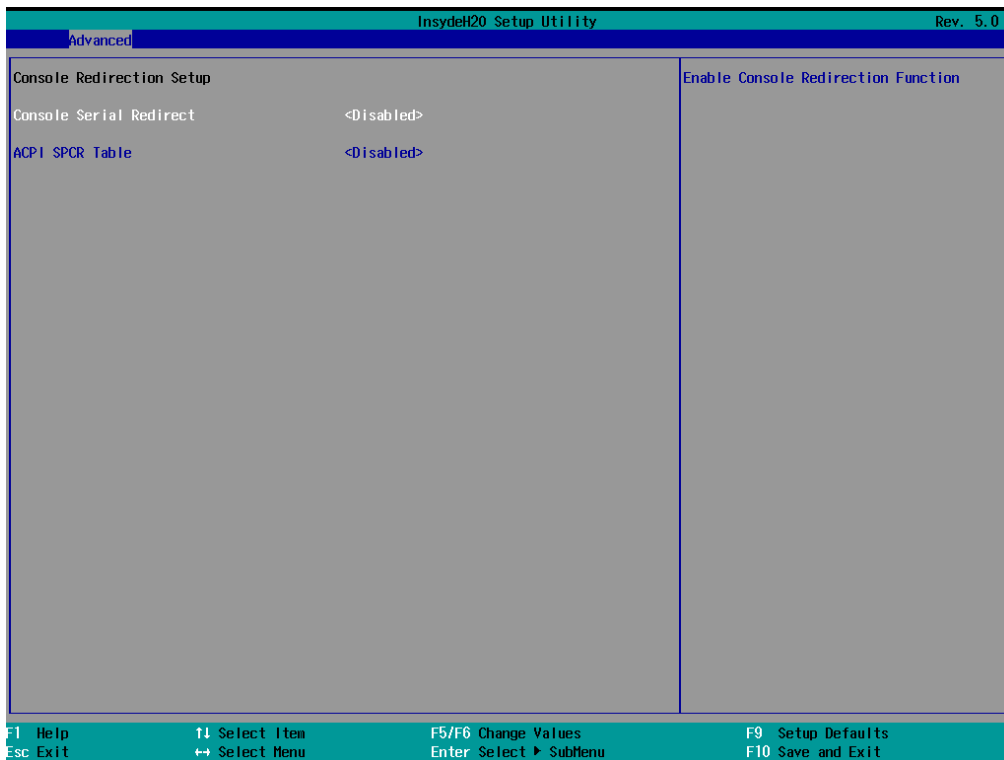## SATA Configuration

```
                    InsydeH20 Setup Utility              Rev. 5.0
      Advanced

 Chipset SATA Mode        <AHCI>               Select SATA mode, AHCI or
 SATA Speed               <Gen2>               IDE.

 Serial ATA Port 0     [Not Installed]








 F1  Help      UP   Select  LEFT  Select F5 Change   Enter Select F10 Save and
 ESC Exit      DOWN Select  RIGHT Select F6 Change   F9    Setup
```

Chipset SATA Mode

Select SATA mode

Options: AHCI (default), IDE

SATA Speed

Select SATA Speed

Options: Gen1 (default), Gen2

4-8

Console Redirection

```
                              InsydeH20 Setup Utility                        Rev. 5.0
      Advanced
 Console Redirection Setup                                     Enable Console Redirection Function

 Console Serial Redirect            <Disabled>

 ACPI SPCR Table                    <Disabled>




 F1  Help              ↑↓ Select Item        F5/F6 Change Values        F9  Setup Defaults
 Esc Exit              ↔ Select Menu         Enter Select ▶ SubMenu     F10 Save and Exit
```

Console Serial Redirect

When the Console Redirection Function is enabled, the console information will be output to both the HDMI monitor and through the serial port.
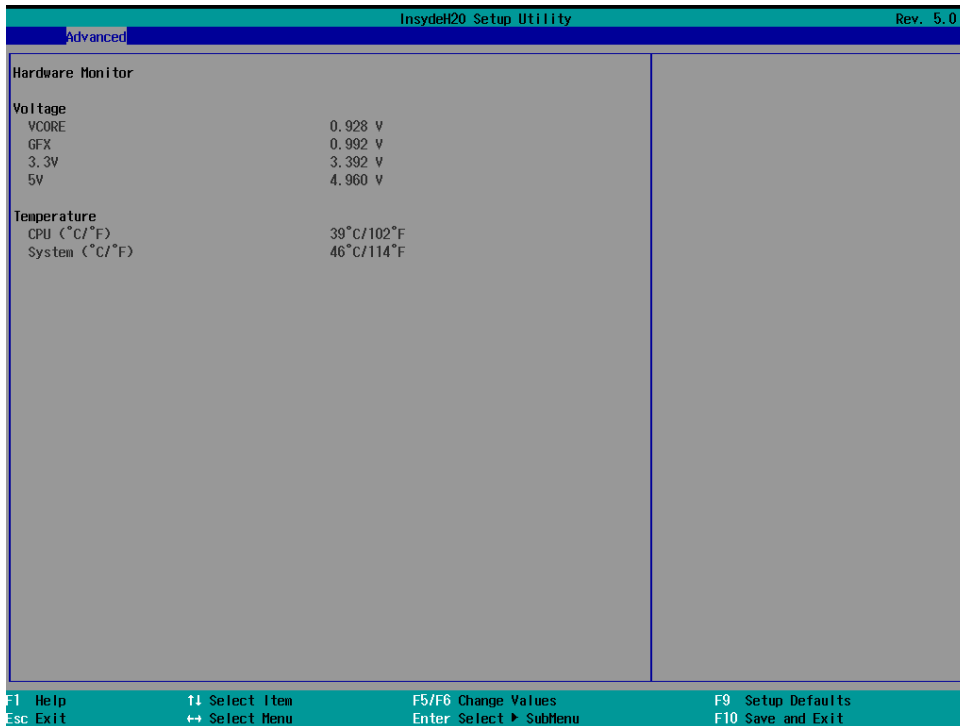
Options: Disabled (default), Enabled

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).
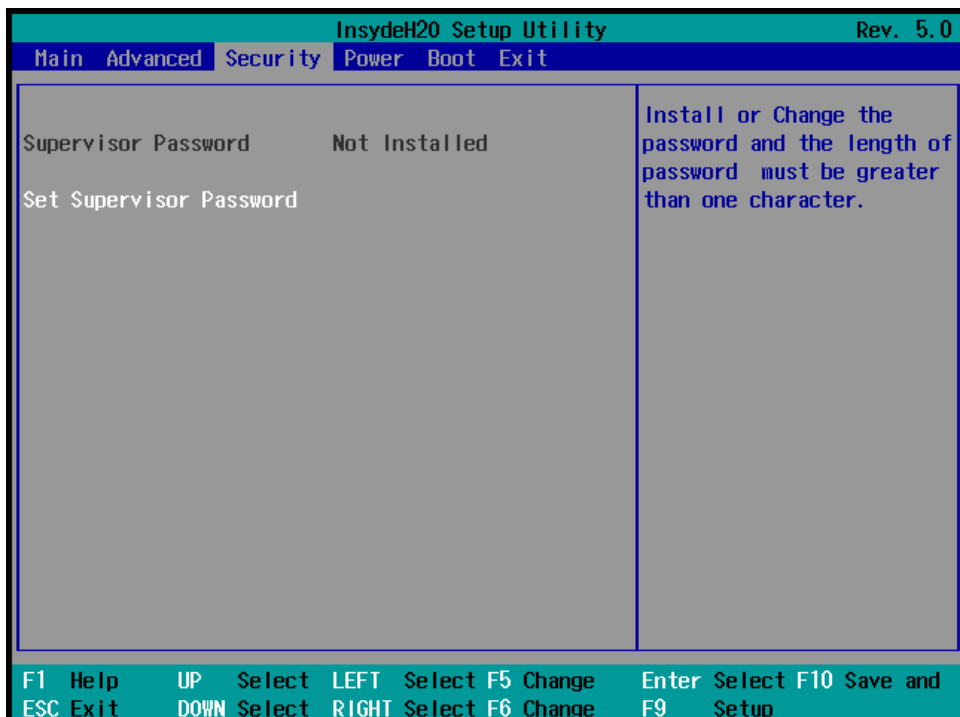
Options: Disabled (default), Enabled

Hardware Monitor

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

```
                            InsydeH20 Setup Utility                    Rev. 5.0
          Advanced

 Hardware Monitor

 Voltage
   VCORE                          0.928 V
   GFX                            0.992 V
   3.3V                           3.392 V
   5V                             4.960 V

 Temperature
   CPU (°C/°F)                    39°C/102°F
   System (°C/°F)                 46°C/114°F




 F1  Help          ↑↓ Select Item      F5/F6 Change Values        F9  Setup Defaults
 Esc Exit          ↔  Select Menu      Enter Select ▶ SubMenu     F10 Save and Exit
```

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

Security Settings

This screen allows you to configure a supervisor password.

```
                       InsydeH20 Setup Utility                     Rev. 5.0
   Main  Advanced  Security  Power  Boot  Exit

                                                    Install or Change the
                                                    password and the length of
  Supervisor Password      Not Installed            password  must be greater
                                                    than one character.
  Set Supervisor Password




 F1   Help      UP   Select  LEFT  Select F5 Change   Enter Select F10 Save and
 ESC  Exit      DOWN Select  RIGHT Select F6 Change   F9    Setup
```

Set Supervisor Password

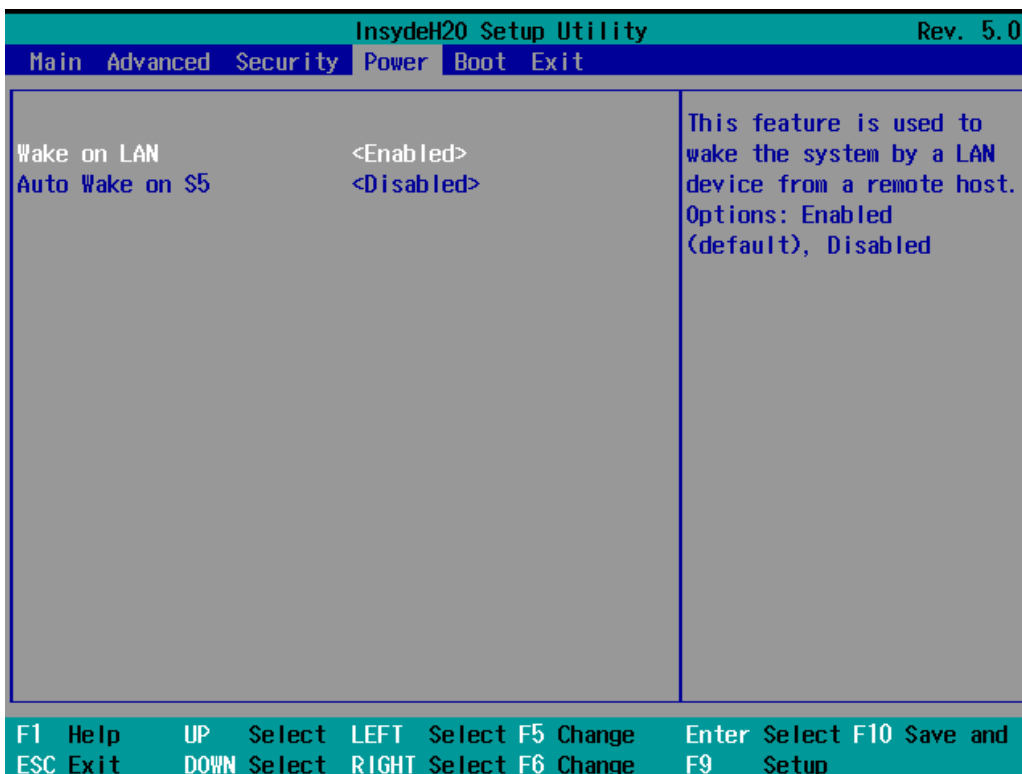This setting allows you to set the supervisor password.

Type a new 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].

```
        Set Supervisor Password

Enter New Password:
Enter New Password Again:

            [YES] [NO]
```

Power Settings

The screen allows you to configure power settings.

```
                    InsydeH20 Setup Utility                    Rev. 5.0
   Main  Advanced  Security  Power  Boot  Exit

  Wake on LAN              <Enabled>        This feature is used to
  Auto Wake on S5         <Disabled>        wake the system by a LAN
                                            device from a remote host.
                                            Options: Enabled
                                            (default), Disabled












  F1  Help      UP   Select  LEFT  Select F5 Change   Enter Select F10 Save and
  ESC Exit      DOWN Select  RIGHT Select F6 Change   F9      Setup
```

Wake on LAN

This setting allows you to wake the system 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)

```
                          InsydeH20 Setup Utility                    Rev. 5.0
     Main  Advanced  Security  Power  Boot  Exit

                                                  This feature is used to
     Wake on LAN              <Enabled>           wake the system by a LAN
     Auto Wake on S5          <By Day of Month>   device from a remote host.
       Wake on S5 Time        [00:00:00]          Options: Enabled
       Day of Month           [1]                 (default), Disabled




     F1  Help      UP    Select  LEFT   Select F5 Change   Enter Select F10 Save and
     ESC Exit      DOWN  Select  RIGHT  Select F6 Change   F9      Setup
```
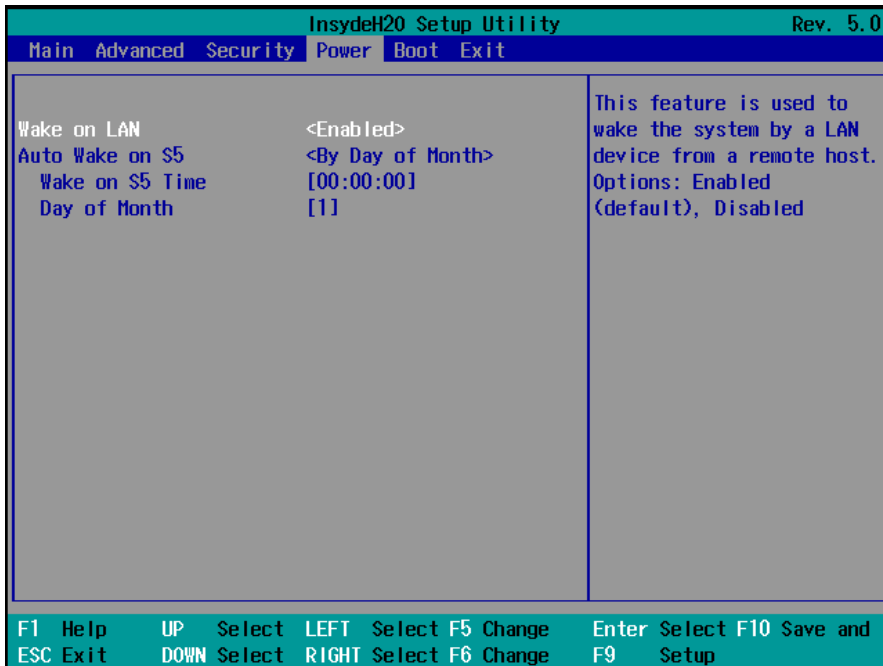
Boot Settings

The screen allows you to configure boot settings.

```
                          InsydeH20 Setup Utility                    Rev. 5.0
     Main  Advanced  Security  Power  Boot  Exit
                                                   Select boot type to Dual type, Legacy
     Boot Type               <Dual Boot Type>      type or UEFI type
     PXE Boot to LAN         <Disabled>
     PXE Boot capability     <Disabled>
     Add Boot Options        <Last>
     USB Boot                <Enabled>
     Boot Delay Time         [0]
     Automatic Failover      <Enabled>

     Boot Order Priority     <Legacy First>
     ▶Legacy
     ▶EFI




     F1  Help          ↑↓ Select Item      F5/F6 Change Values      F9  Setup Defaults
     Esc Exit          ↔  Select Menu      Enter Select ▶ SubMenu   F10 Save and Exit
```

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 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.

Options: 0 Second (default), User define

Automatic Failover

Options: Enabled (default), Disabled

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

Disable: If boot to default device fails, a warning message will pop up.

Boot Order Priority

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

Adjust boot order settings for an EFI device.

Exit Settings

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

```
                    InsydeH20 Setup Utility                    Rev. 5.0
   Main  Advanced  Security  Power  Boot  Exit

                                             Exit system setup and save
                                             your changes.
   Exit Saving Changes
   Save Change Without Exit
   Exit Discarding Changes
   Load Optimal Defaults
   Load Custom Defaults
   Save Custom Defaults
   Discard Changes




   F1  Help      UP   Select  LEFT  Select F5 Change   Enter Select F10 Save and
   ESC Exit      DOWN Select  RIGHT Select F6 Change   F9      Setup
```

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, every user should first create a bootable USB drive as a system rescue device.

A useful software suite for creating USB RAM drives can be found by searching for Rufus, which can then be downloaded and used to create a bootable RAM drive.

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

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.
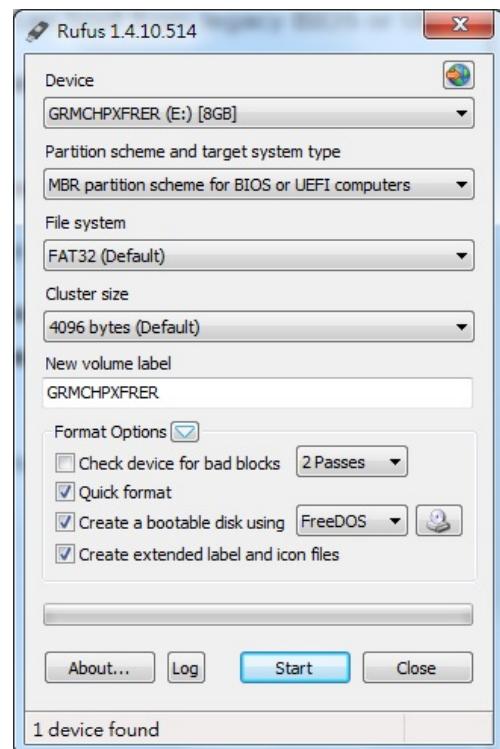
⚠️ **ATTENTION**

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-21201xxx.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-2120 Computer

1. Reboot the computer, and press F2 during the booting process to display the Boot Manager.
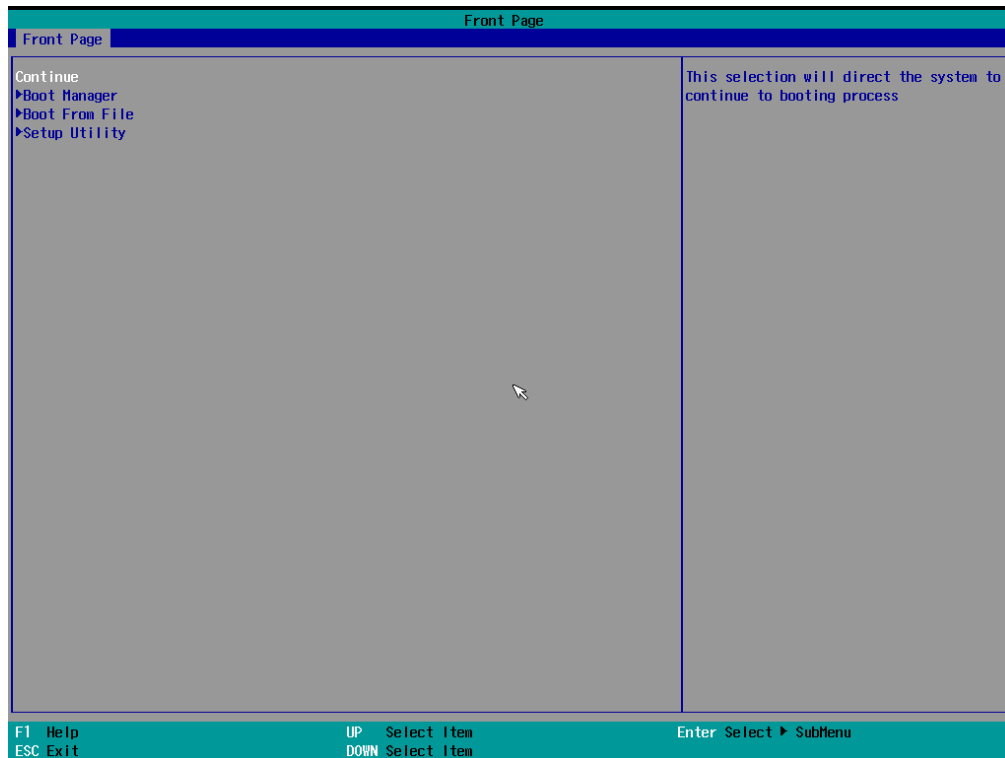
2. Select USB Disk as the first boot source and press [Enter] to continue.

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-2120 folder, type `cd MPC-2120`.

```
C:\cd MPC-2120
```

4. Run the upgrade program by typing `21201010.exe`

   Note that the filename for the upgrade program may vary depending on the version.

```
C:\ MPC-2120>20701010.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-2070> 20701010.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-2070
            New     BIOS Model name : MPC-2070

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


            Updating Block at FFFFF000

        0%       25%        50%        75%       100%

                                                         100%
```

6. 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-2120
```

5

Display Resolution

This chapter describes how to install the graphics driver for your MPC-2120. 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-2120 product page on Moxa's website. To install the driver, do the following:

1. Browse to the **Driver** folder and open the **MPC-2120-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.
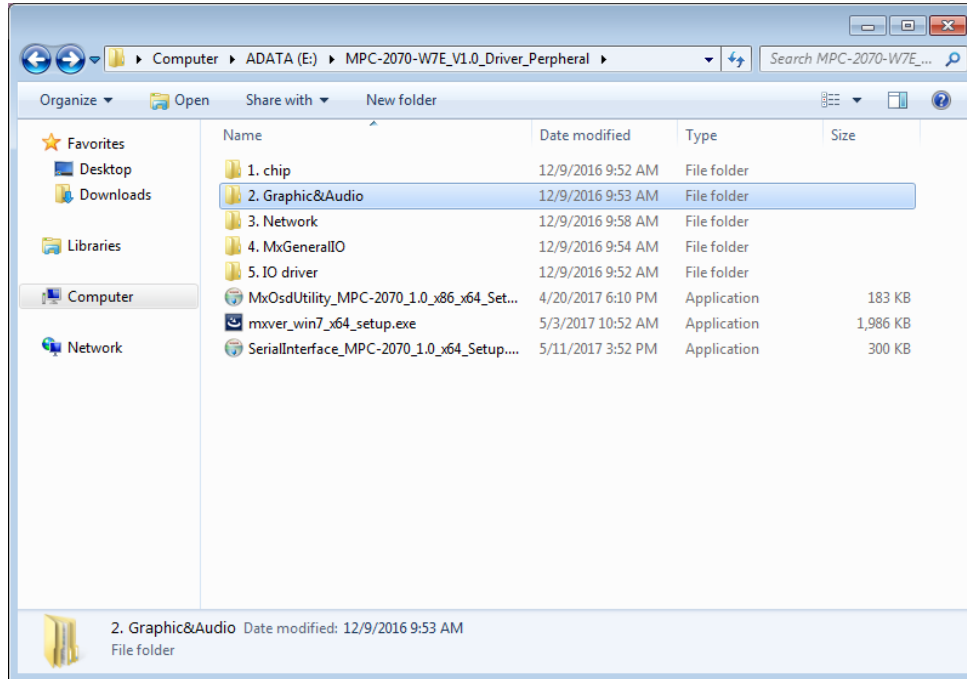
3. Double click on the executable file (for example, the **win64_153343.4425** file in the **x64** folder) to run it.
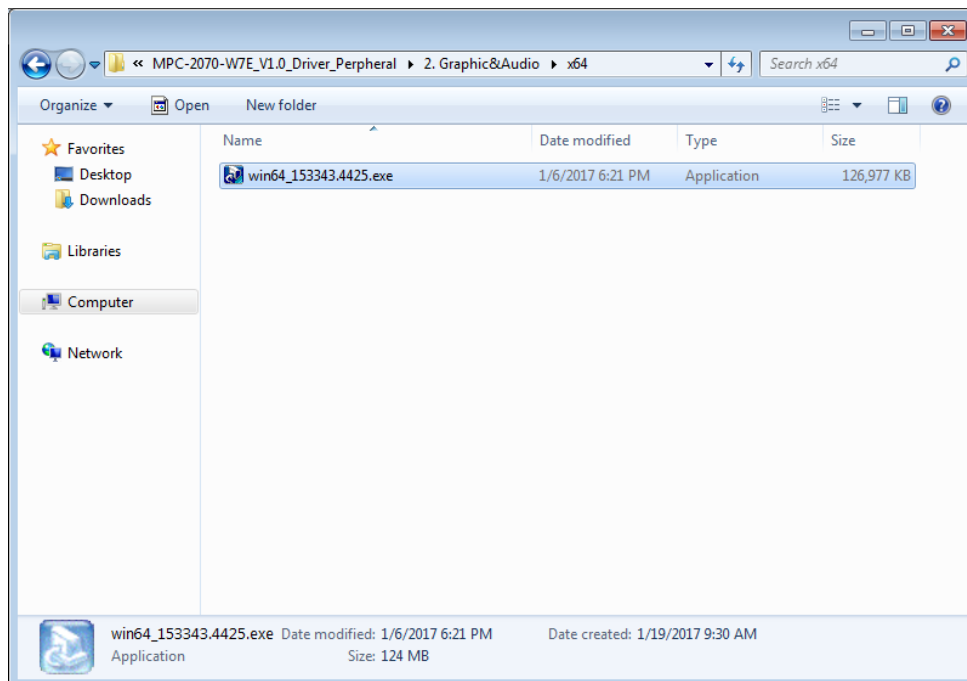
4. In the installation wizard that opens up, click **Next** to continue.
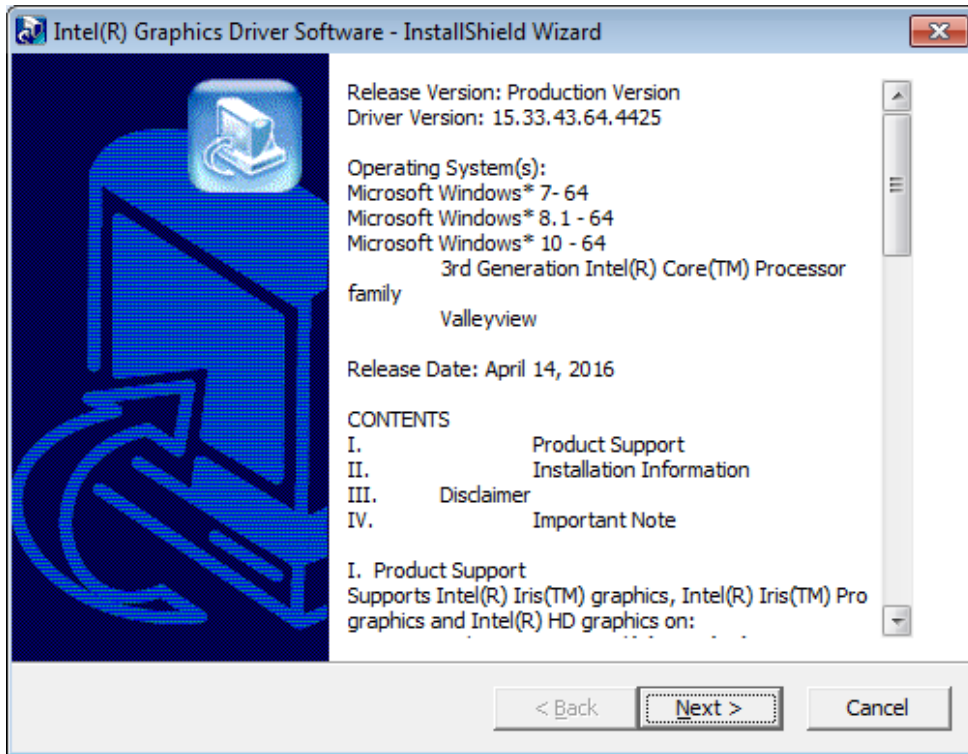
5. Click **Next** to start the installation process.
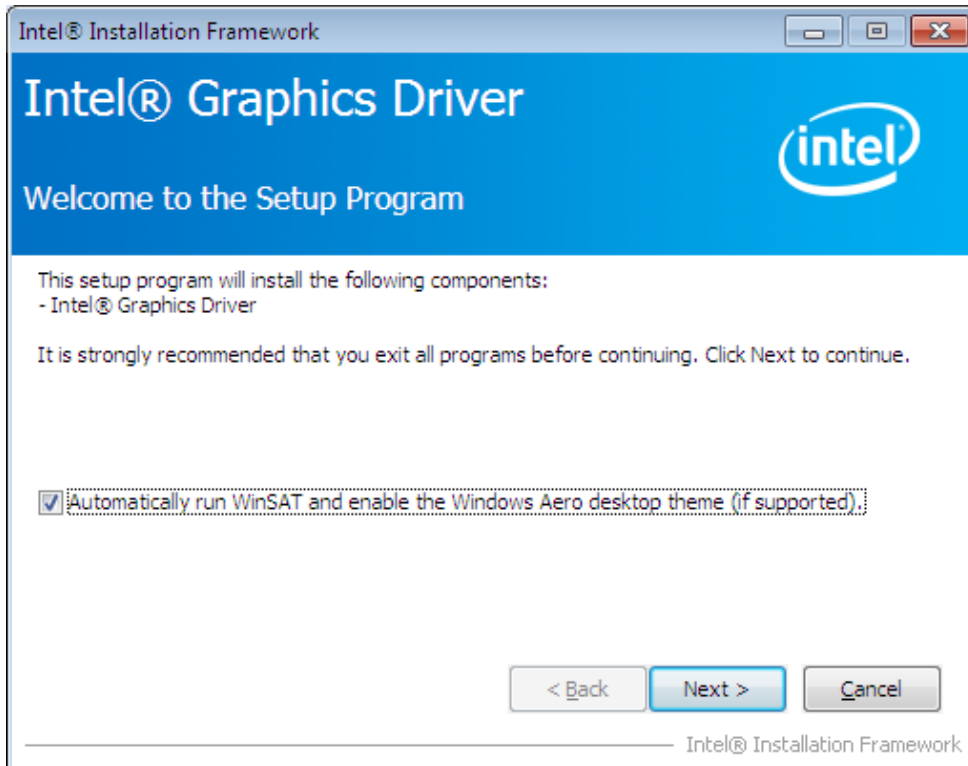
6. Click **Yes** to accept the license agreement.
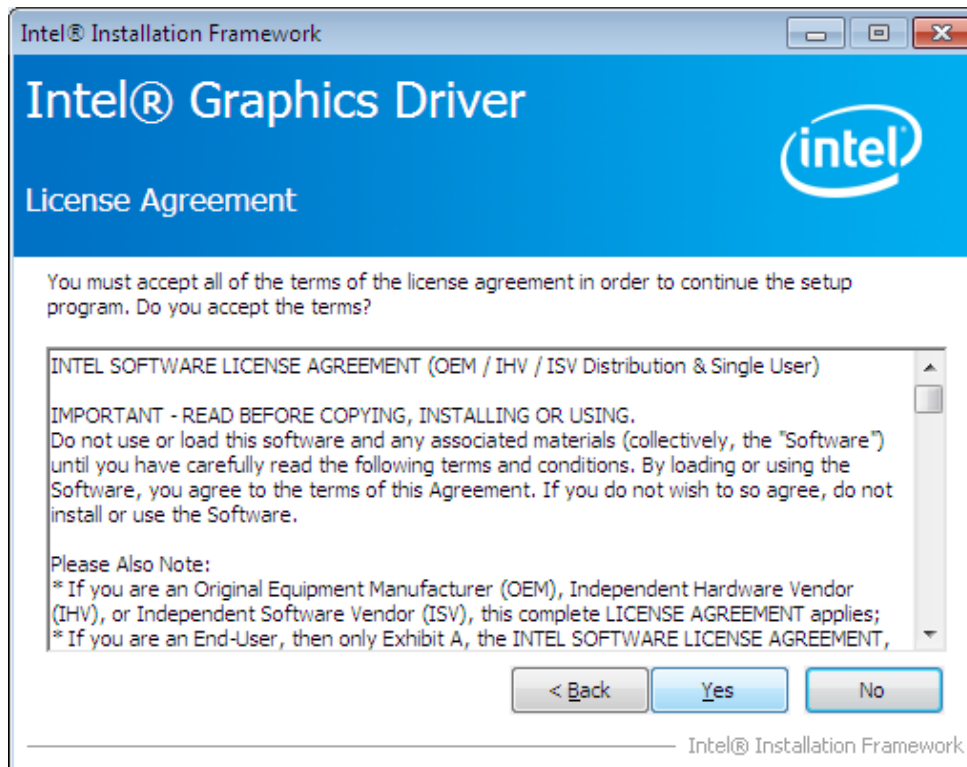
7. Click **Nex**t to continue with the installation.
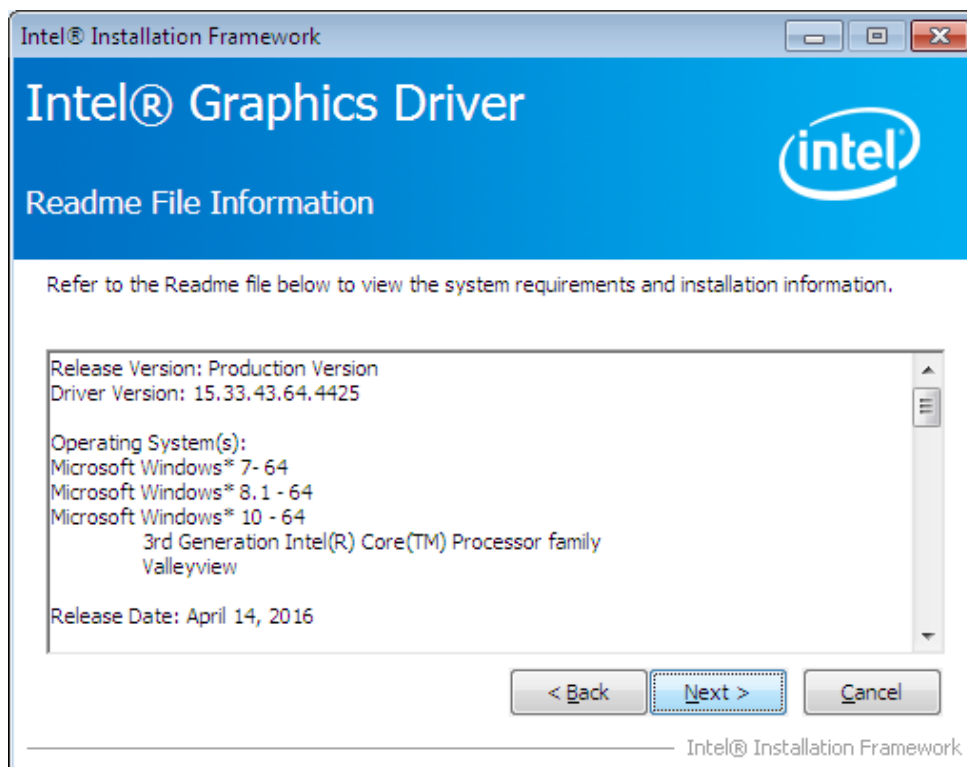
8. Wait until the installation is completed.
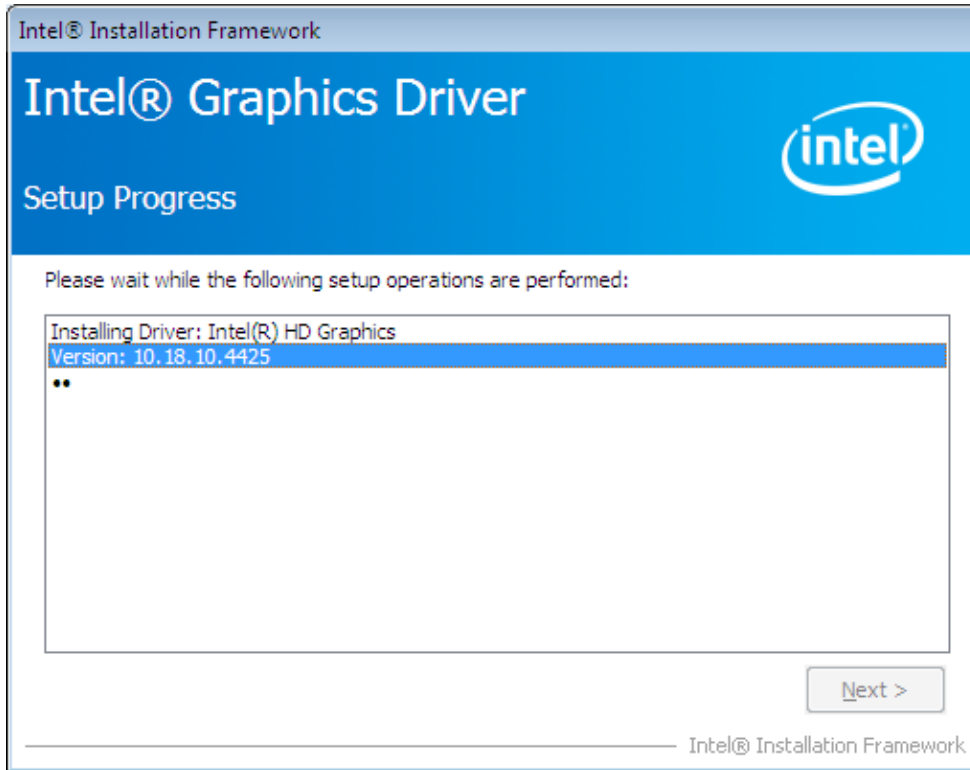
9. Click **Next** to continue with the setup process.
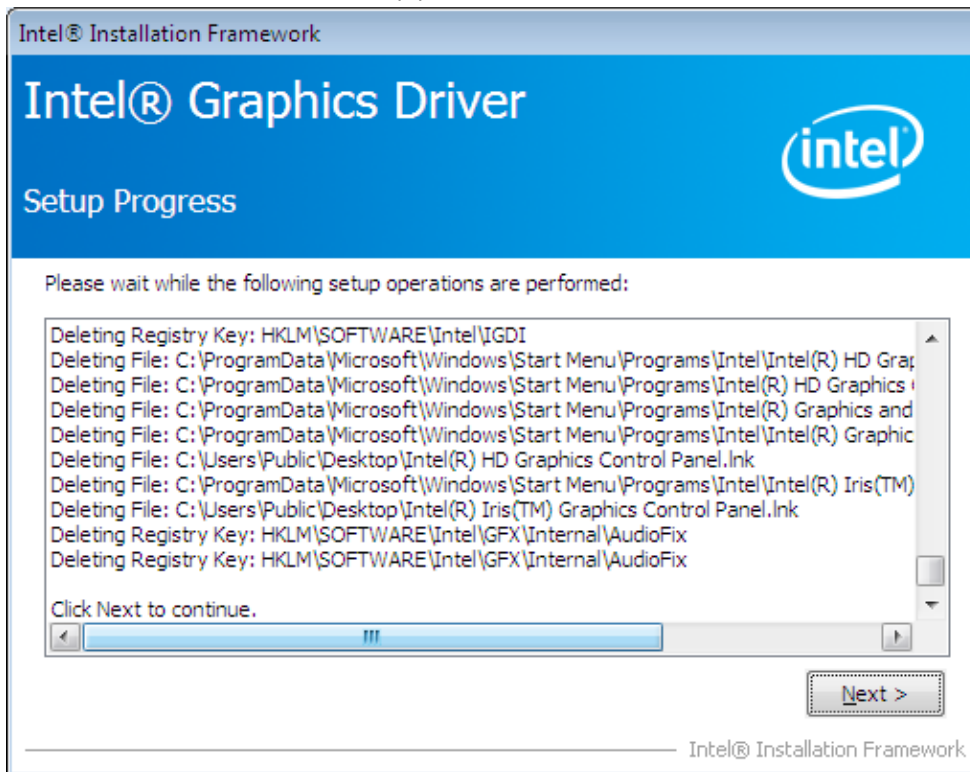
10. Select **Yes, I want to restart this computer now** and then click **Finish** to exit from the wizard.
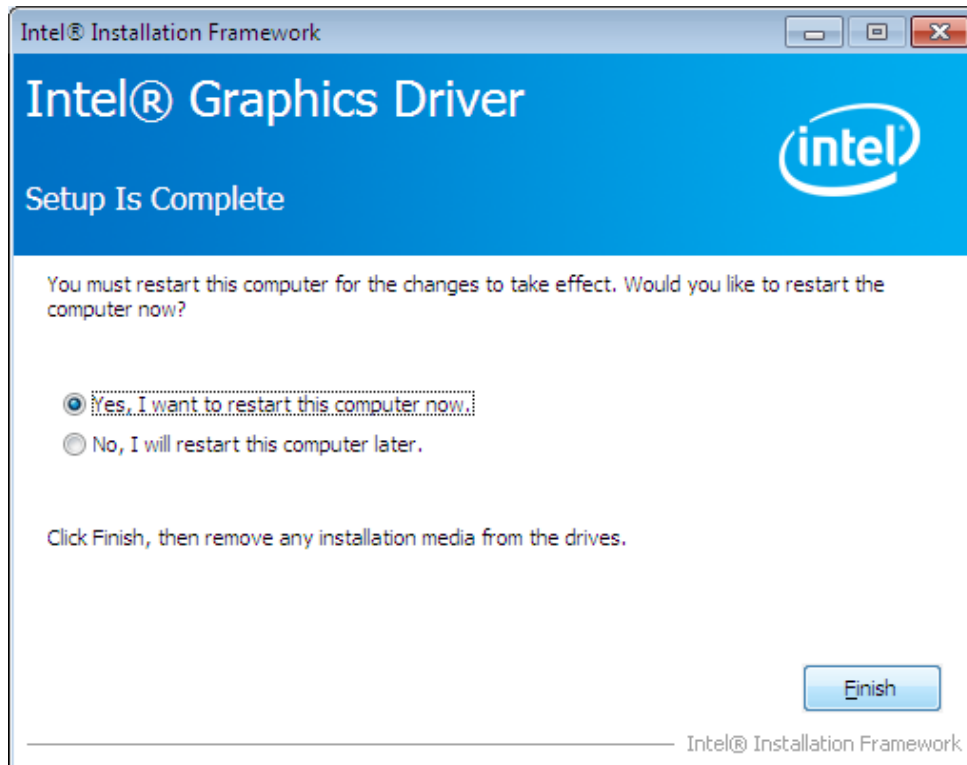
After your MPC-2120 reboots, you can use the Intel graphics tool to adjust the display resolution.

Adjusting the Display Resolution

Follow these steps to adjust the display resolution of your MPC-2120:

1. Right-click on the Intel HD Graphics Control Panel icon on the taskbar, and select **Graphics Properties**.
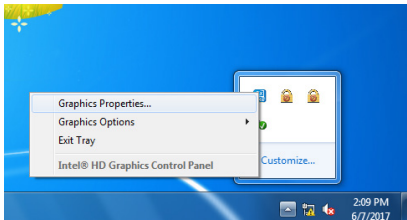
2. Select **Display**.
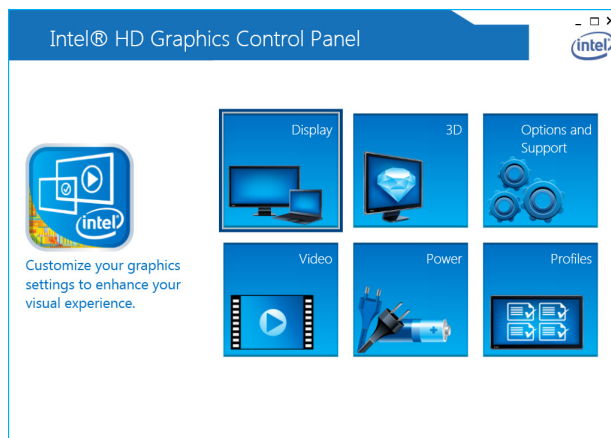
You can now adjust the resolution, refresh rate, and the display rotation.

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

4. Click **Apply**.

6
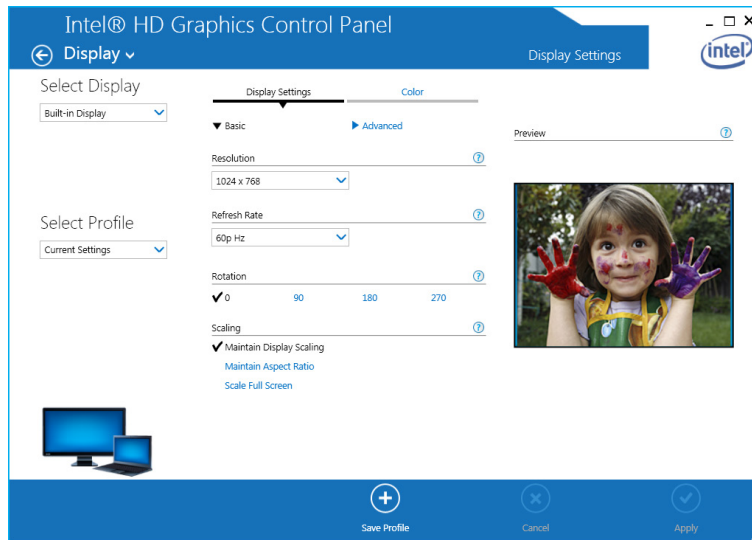
Serial Port Driver and Utility

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 SerialInterface Utility**
□ **Configuring the Serial Interface Mode**

Overview

The MPC-2120 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-2120 and select **Add legacy hardware**
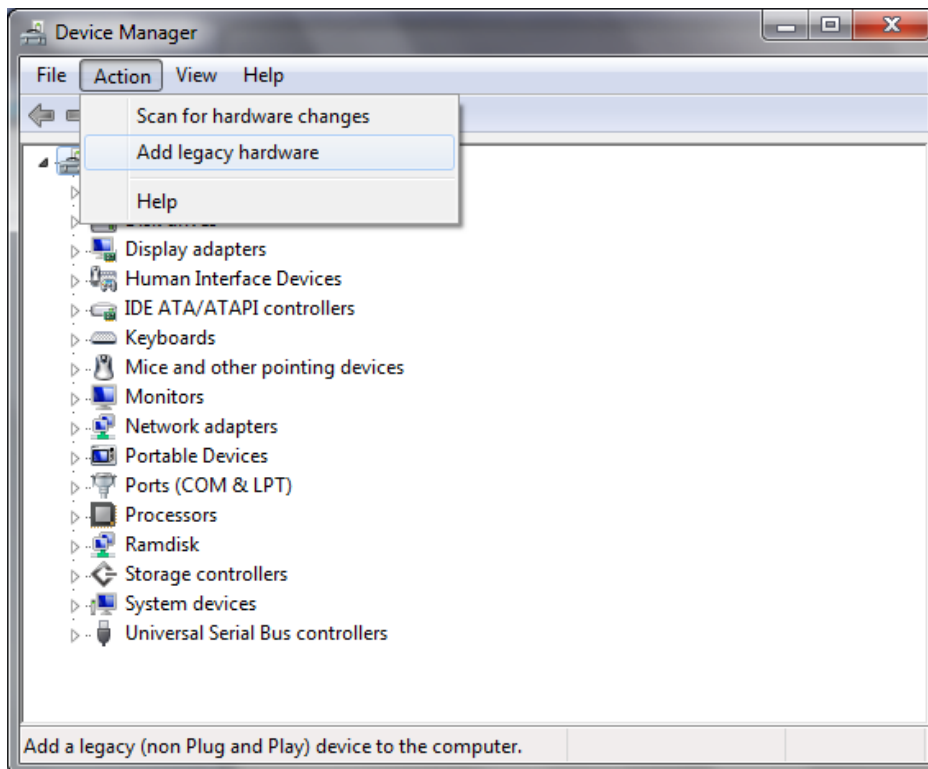
2. Click **Next**
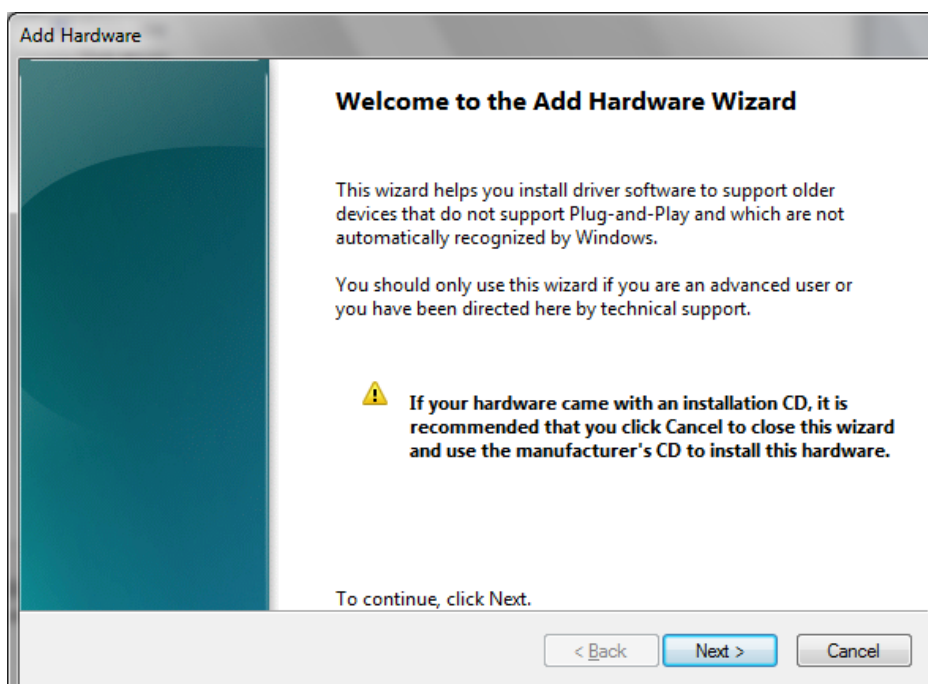
3. Select the second item **Install the hardware that I manually select from a list (Advanced)** and click **Next**
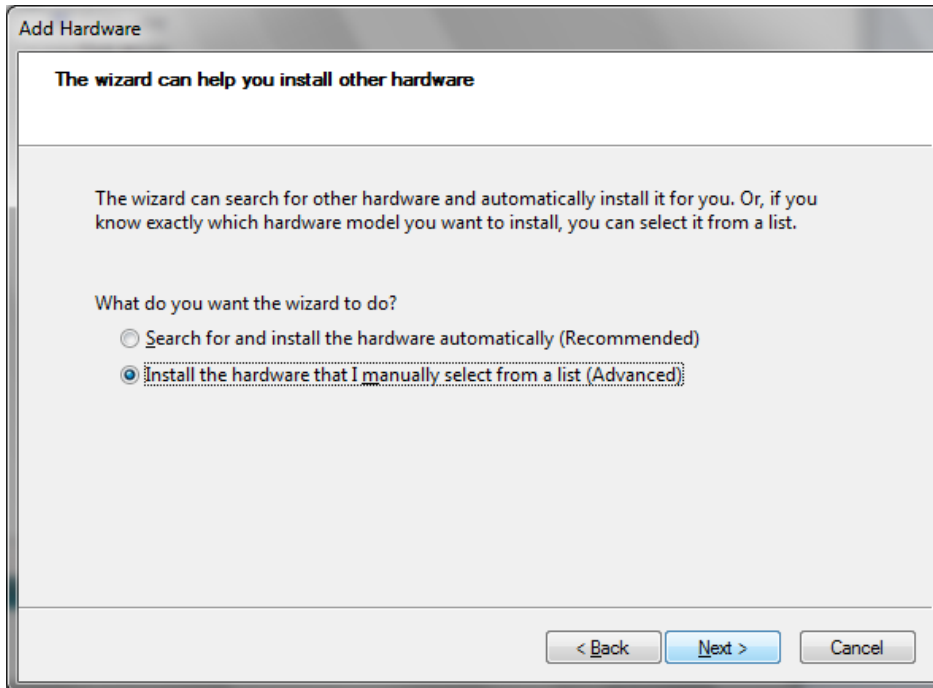
4. Click **Next**
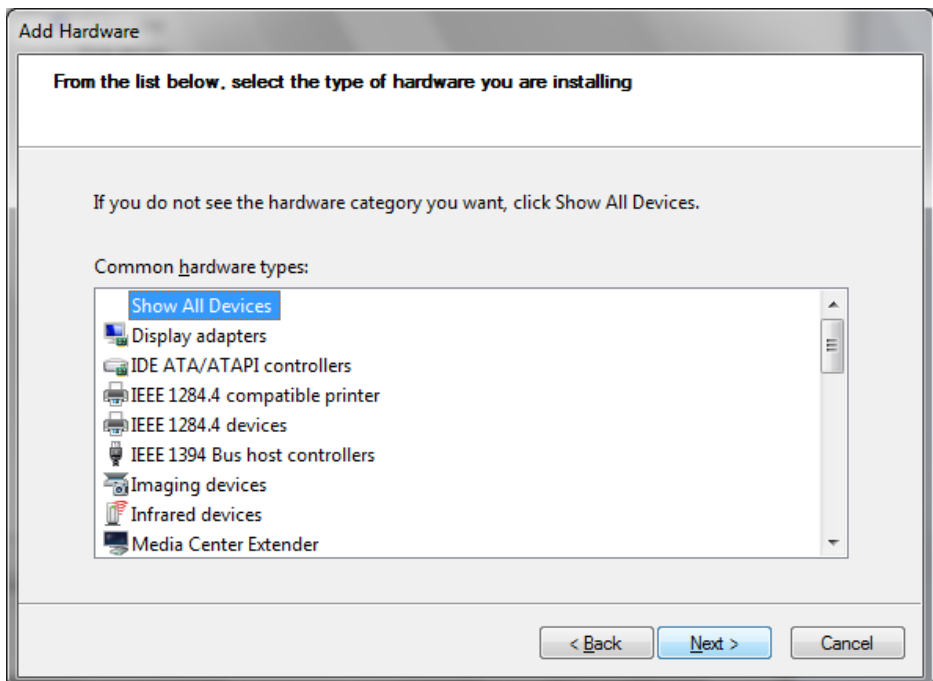
5. Select **Have Disk...**
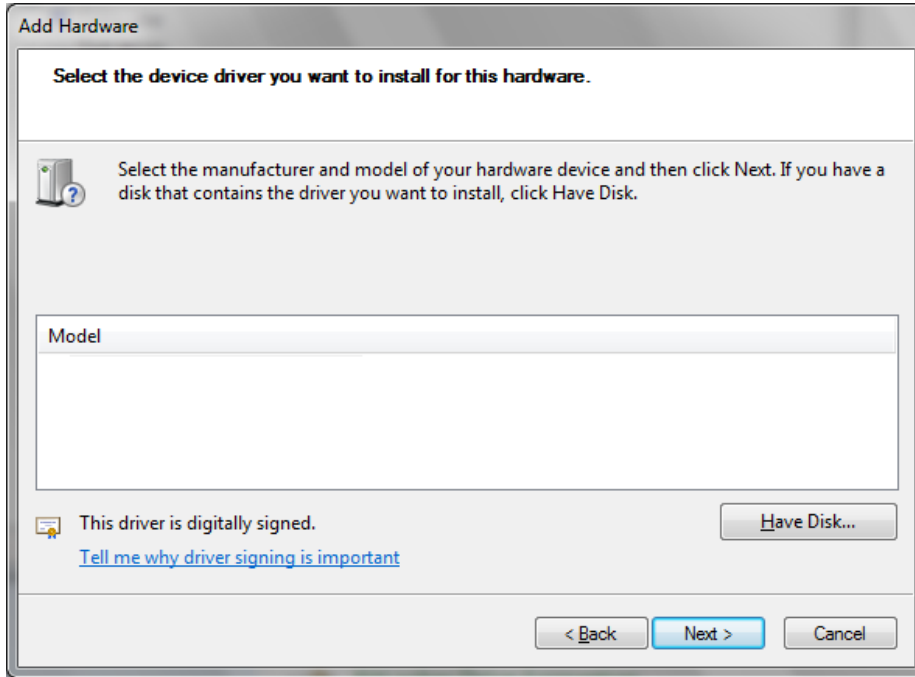
6. Point to the path **Driver\MPC-2120-W7E_V1.0_Driver_Perpheral\4.MxGeneralIO\x64** and select **MxGeneralIo.inf**
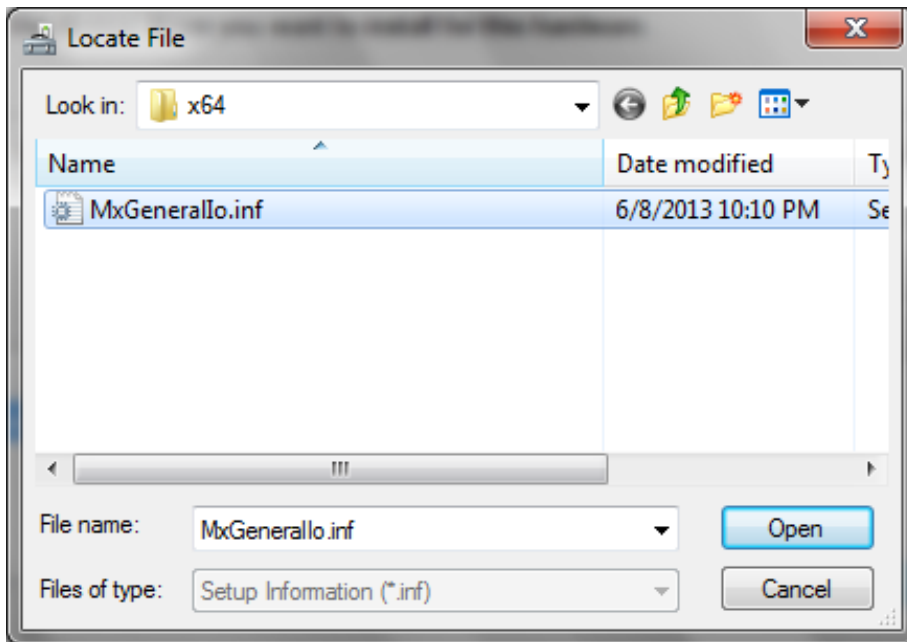
7. Select **Next**
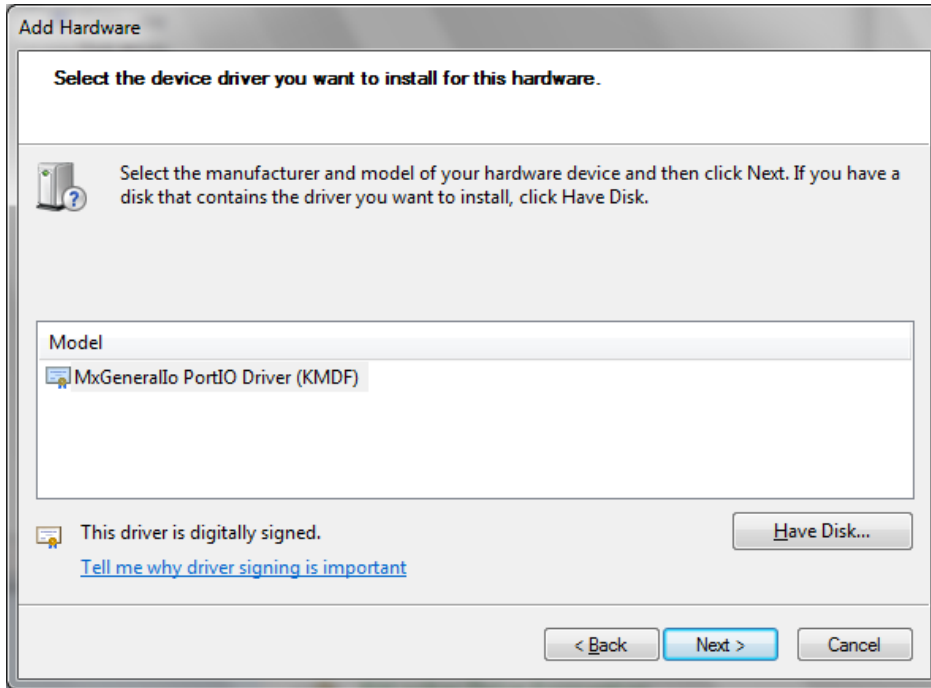
8. Select **Next**
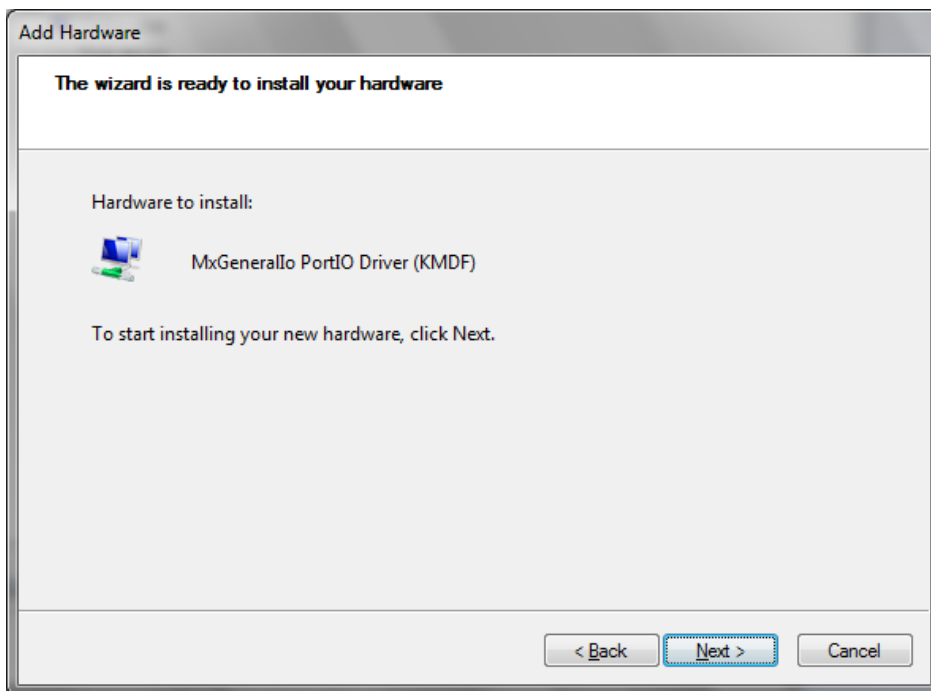
9. Select **Finish**
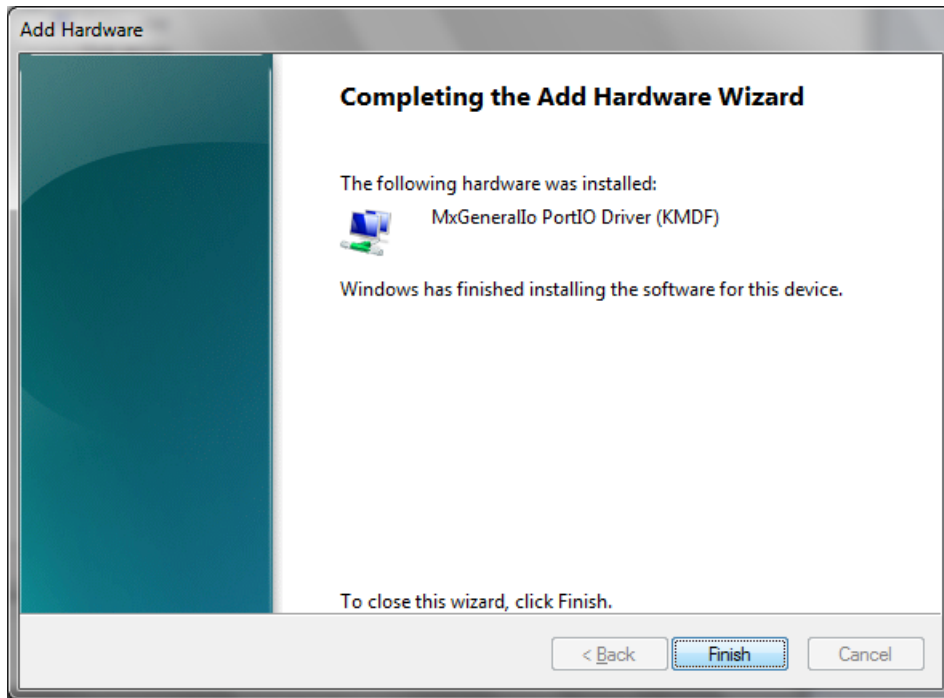
10. Double check if the driver has successfully installed.

Installing the SerialInterface 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-2120_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.
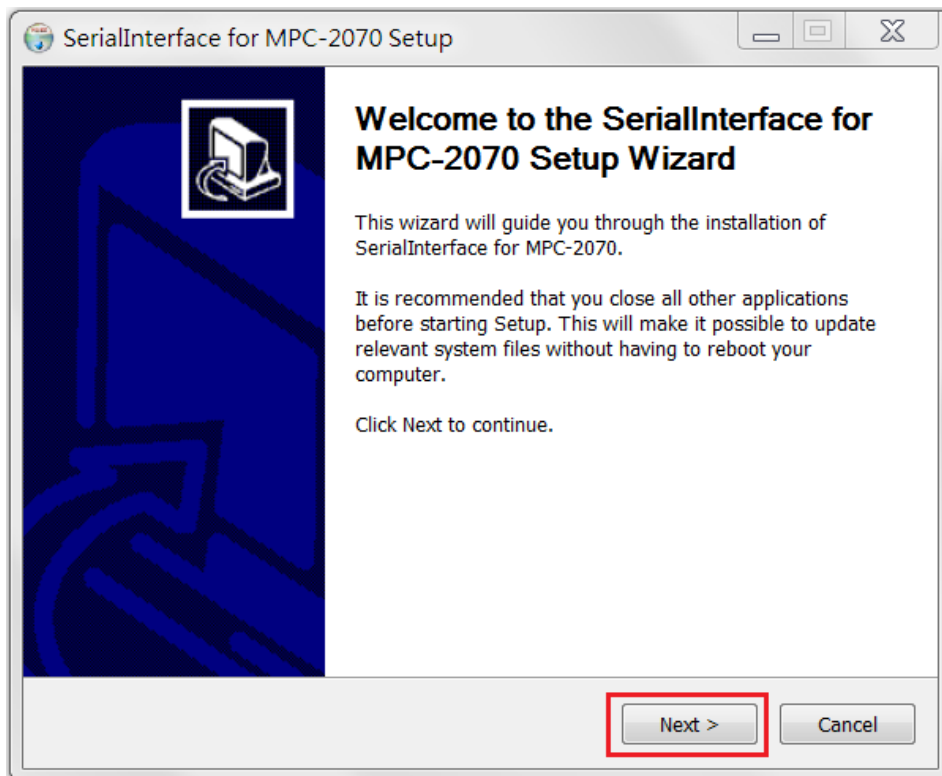
2. Click **Next** to continue.
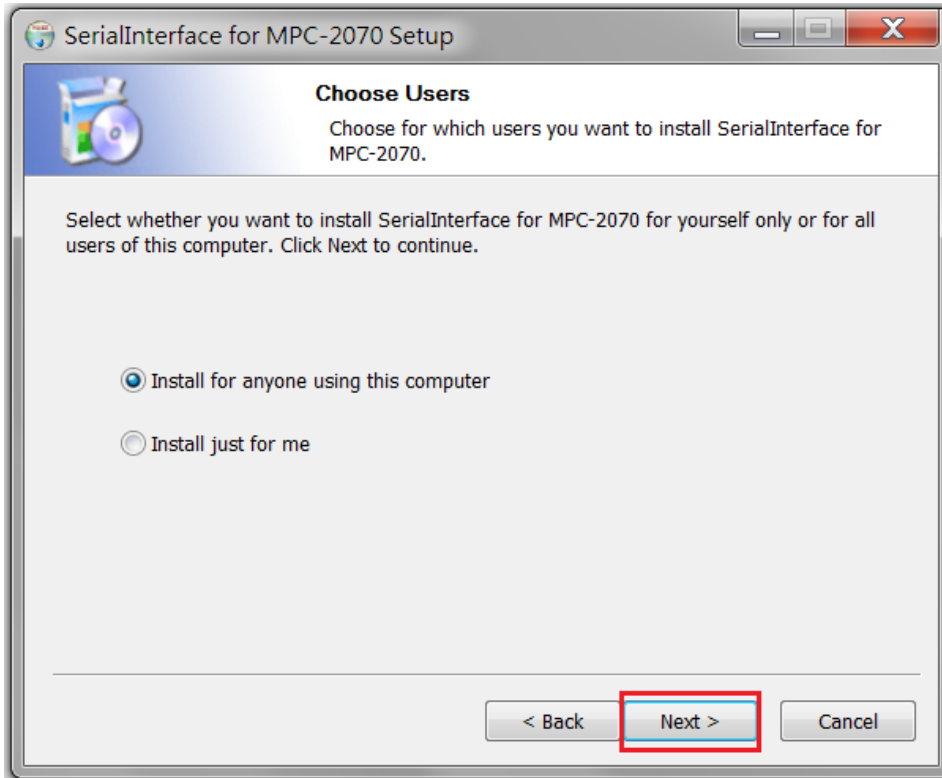
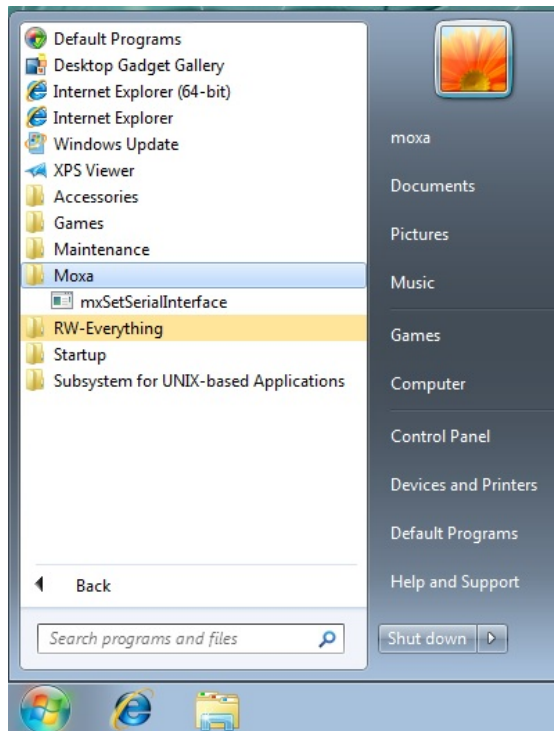3. The default destination folder is **C:\Program Files(x86)\Moxa\Mxsp**; click **Install** to continue.
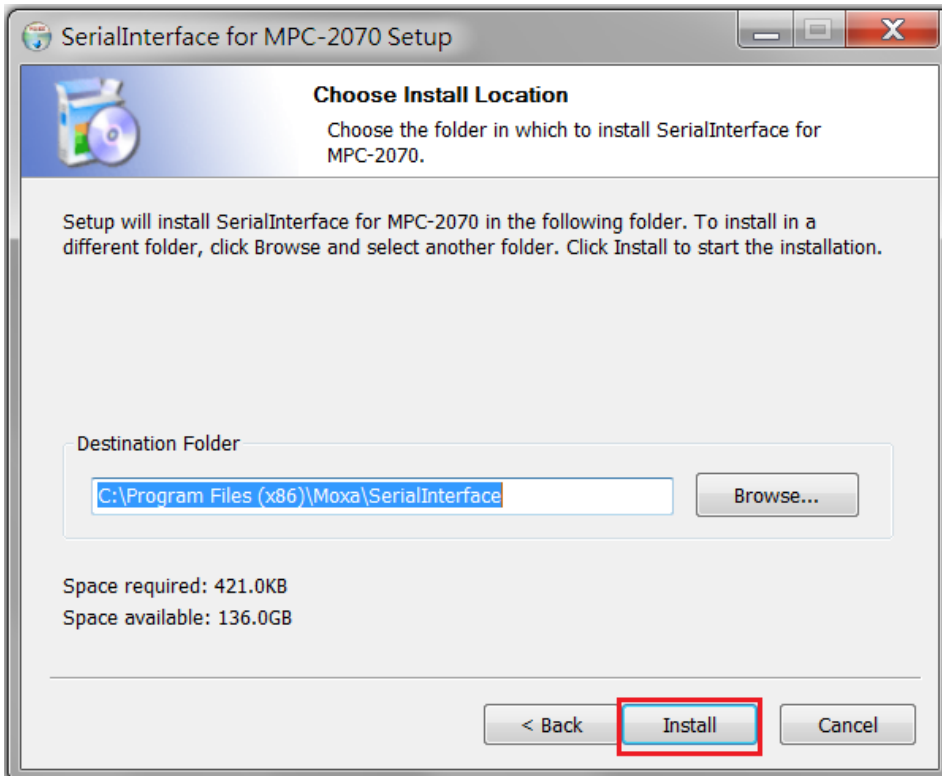
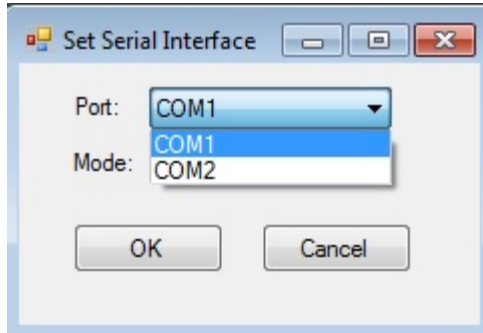4. Click **Finish** to complete installation.
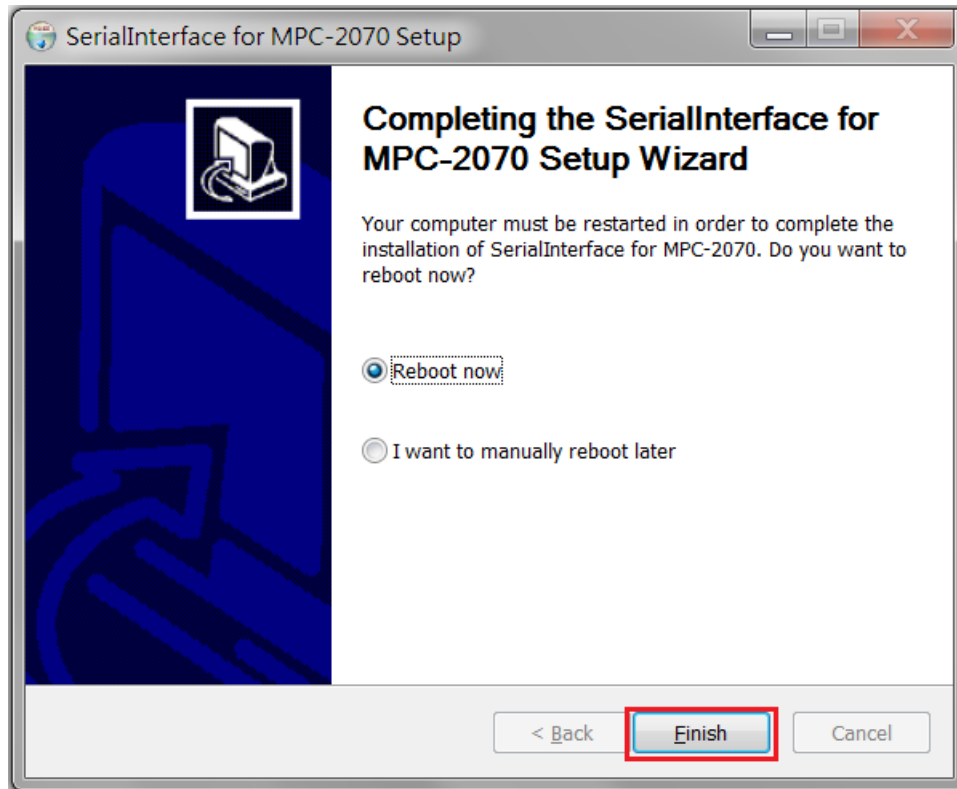
Configuring the Serial Interface Mode

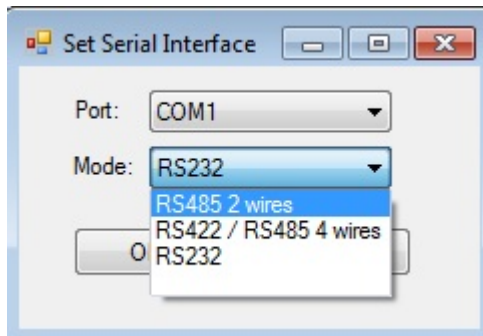Complete the following steps to configure the interface mode:

1. From the Start menu, Click **All Programs → Moxa → mxSetSerialInterface**.
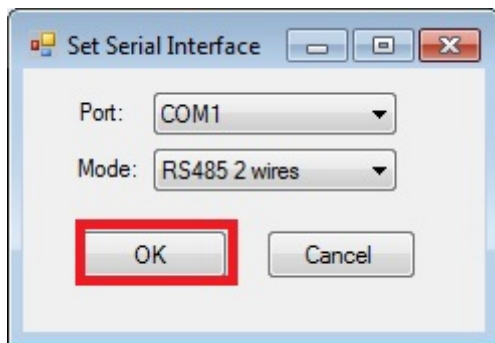
2. Select a port (COM1 or COM2).

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

4. Click **OK**

A

Regulatory Approval Statement

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.