MPC-2101 Panel Computer Hardware User's Manual

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www.moxa.com/product

MPC-2101 Panel Computer Hardware User's Manual

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Table of Contents

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Introduction

In this chapter, we give a general introduction to the features and specifications of MPC-2101 panel computers.

The following topics are covered in this chapter:

❒ **Overview**
❒ **Package Checklist**
❒ **Product Features**
❒ **MPC-2101 Hardware Specifications**

Overview

The MPC-2101 10-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-2101 panel computers support a wide variety of serial interfaces as well as high-speed IT communications, all with native network redundancy.

The MPC-2101 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 vibration prone, harsh, hot, outdoor environments. The MPC-2101 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-2101 panel computer is shipped with the following items:

- 1 MPC-2101 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-2101 Series panel computer has the following features:

- 10-inch panel computer
- Intel® Atom™ Processor: E3845 1.91 GHz
- -40 to 70°C wide-temperature design, no fan / no heater
- 1000-nit sunlight-readable LCD (500-nit is also available)
- Complies with all EN 50155 mandatory test items*
- Wide range 15 to 160 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

MPC-2101 Hardware Specifications

For the up-to-date specifications of the product, refer to Moxa website: www.moxa.com.

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Hardware Introduction

The MPC-2101 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
  ➢ Left-side View
  ➢ Rear View
  ➢ Right-side View
❑ **Ambient Light Sensor**
❑ **Dimensions**
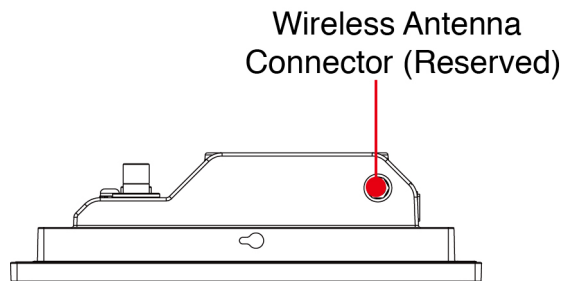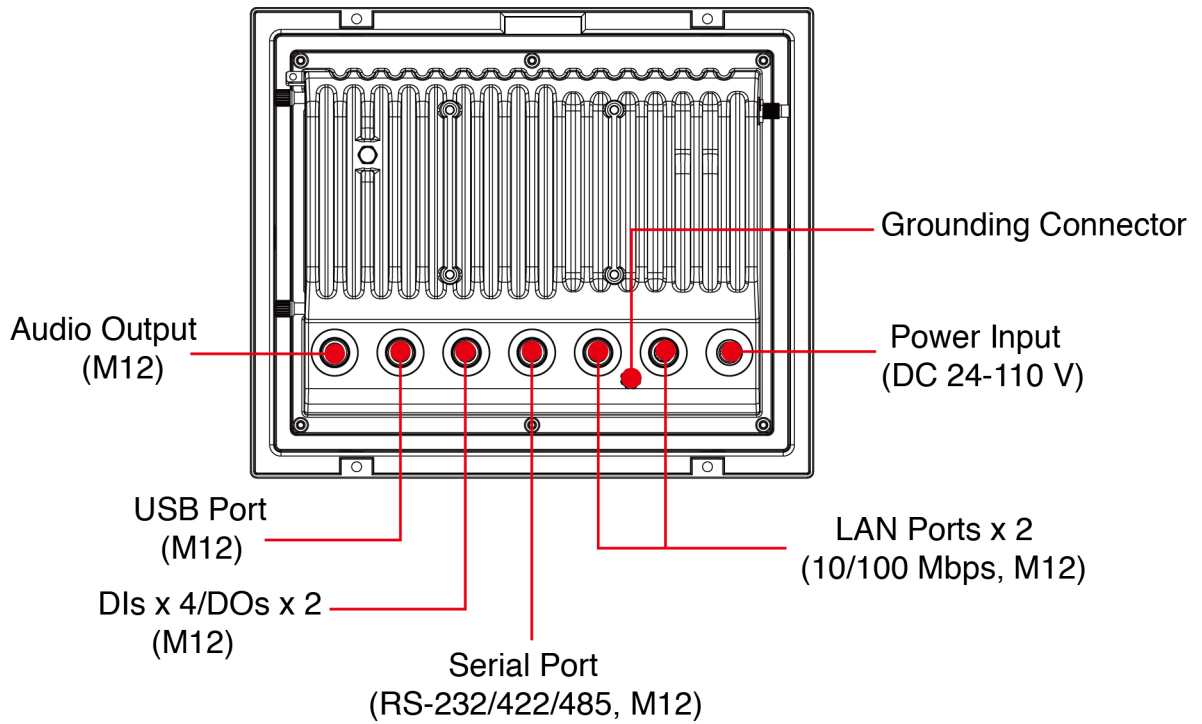
Appearance

Front View

Power LED Indicator —— —— Ambient Light Sensor

10-inch Panel
(4:3)

Left-side View

Wireless Antenna
Connector (Reserved)

Rear View

Grounding Connector

Audio Output
(M12)

Power Input
(DC 24-110 V)

USB Port
(M12)

LAN Ports x 2
(10/100 Mbps, M12)

DIs x 4/DOs x 2
(M12)

Serial Port
(RS-232/422/485, M12)

Right-side View

CFast Socket — Power Button

SD Socket

Remote Power
Switch

Panel Brightness
Control Buttons

Ambient Light Sensor

The MPC-2101 comes with an ambient light sensor located on the upper part of the front panel.

Ambient Light Sensor
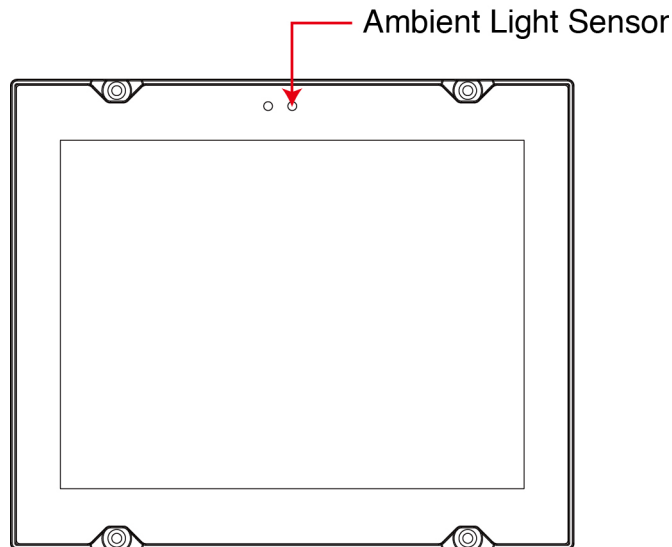
This sensor helps automatically adjust the brightness of the panel with the ambient light condition. The light sensor index is divided into 8 levels from L1 to L8; the lower the sensor index, the darker the panel. The panel brightness index is divided into 10 levels from 1 to 10, the lower the number, 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	Panel Brightness Index
L1	2
L2	5
L3	5
L4	7
L5	7
L6	9
L7	9
L8	9

For detailed configurations, refer to MPC-2101 Software User's Manual.

Dimensions

256.9 (10.11)

58.9 (2.32)

214.4 (8.44)

3
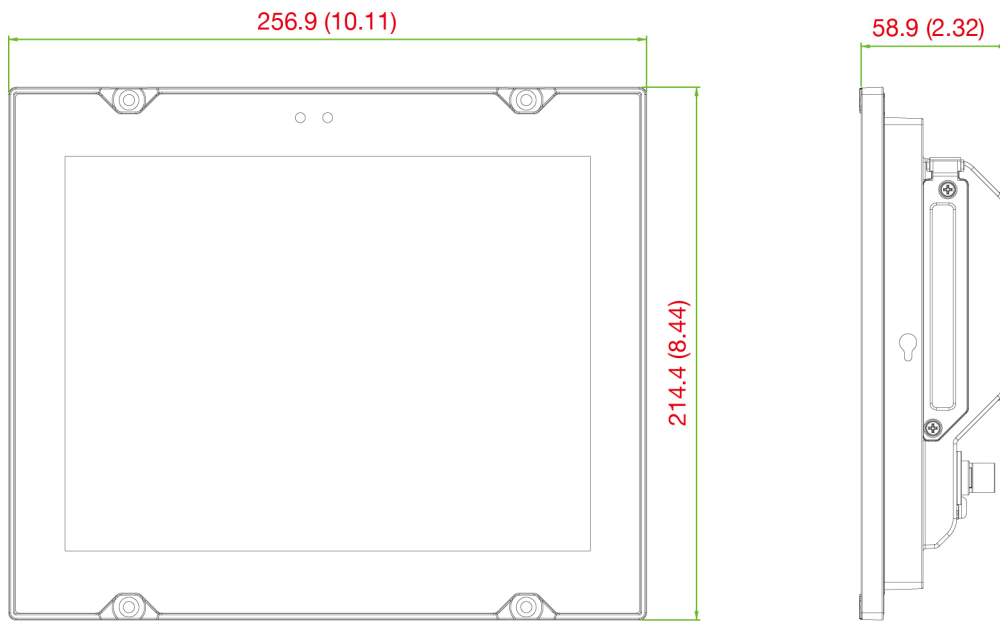
Hardware Connection Description

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**
  ➢ Front-panel Mounting
  ➢ Rear-panel Mounting
❑ **Wiring Requirements**
❑ **Temperature Requirements**
❑ **Grounding the MPC-2101 Series**
❑ **Powering On/Off the MPC-2101 Series**
❑ **Display-Control Buttons**
❑ **Connector Description**
  ➢ DC Power Input
  ➢ Serial Ports
  ➢ Ethernet Ports
  ➢ USB Ports
  ➢ Audio Output Port
  ➢ DIO Port
❑ **Installing a CFast or SD Card**

Panel Mounting

The MPC-2101 can be panel mounted in two ways as described in the following sections.

Front-panel Mounting

The MPC-2101 can also be mounted using the front panel. Use the four screws to attach the front panel of the computer to the wall. Refer to the following figures for the location of the screws.
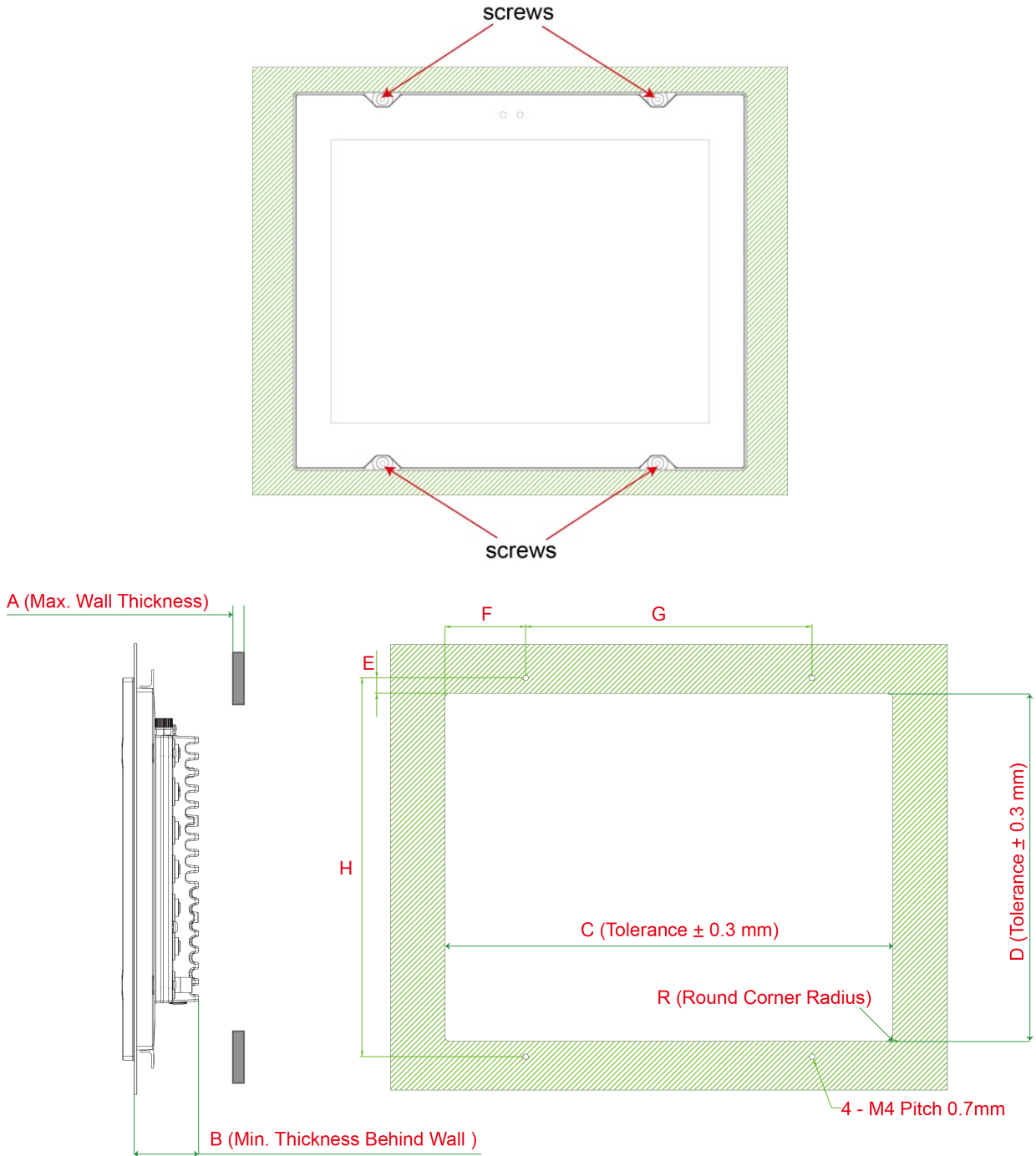
Unit: mm

A	B	C	D	R	E	F	G	H
5	50	235.87	190.87	3	6.57	37.93	160	238

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

$\varnothing$ 5.50 $\varnothing$ 7.50

min 7mm

M4 Pitch 0.7mm
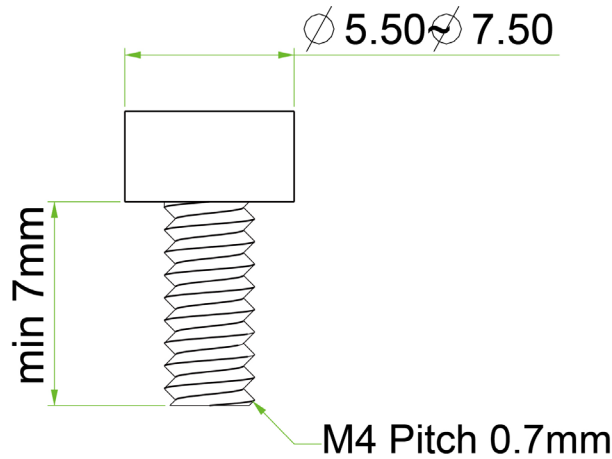
Rear-panel Mounting

A panel-mounting kit consisting of 6 mounting units is provided in the MPC-2101 package. For details on the dimensions and the cabinet space required to panel mount the MPC-2101, refer to the following illustration:

A (Max. Wall Thickness)

D (Tolerance ± 0.3 mm)

C (Tolerance ± 0.3 mm)

R (Round Corner Radius)

B (Min. Thickness Behind Wall)
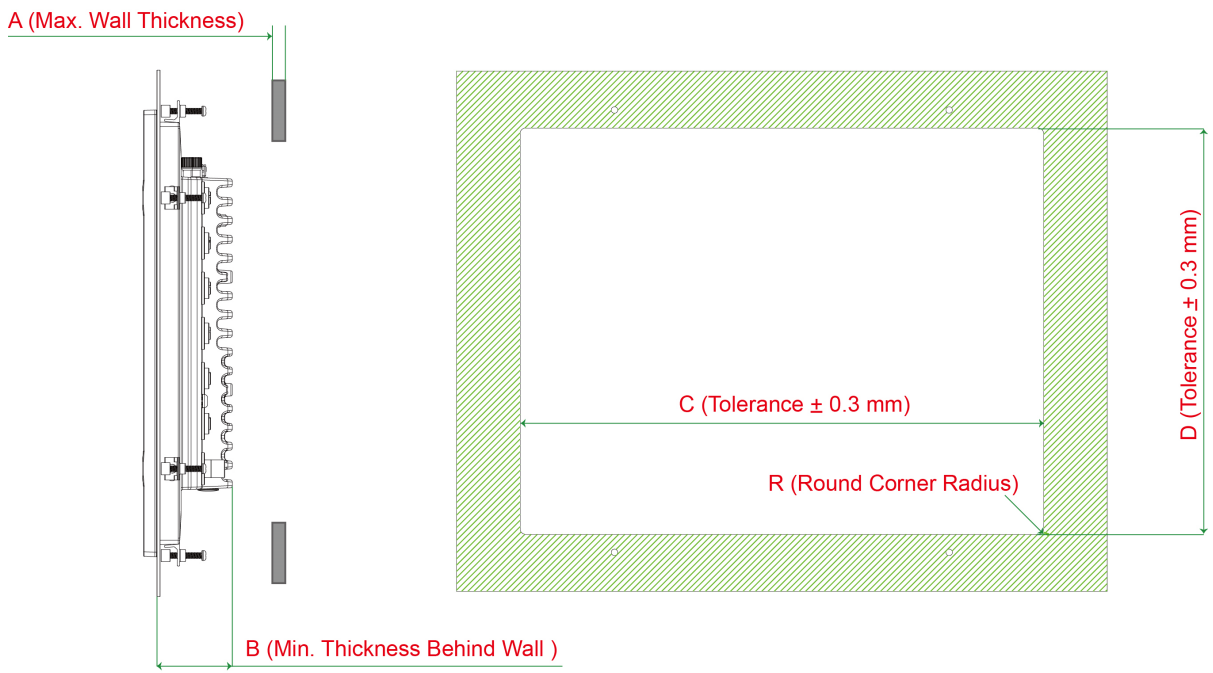
Unit: mm

A	B	C	D	R	Mounting Kit (pcs)
5	50	235.87	190.87	3	6

To install the panel-mounting kit on the MPC-2101, 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:
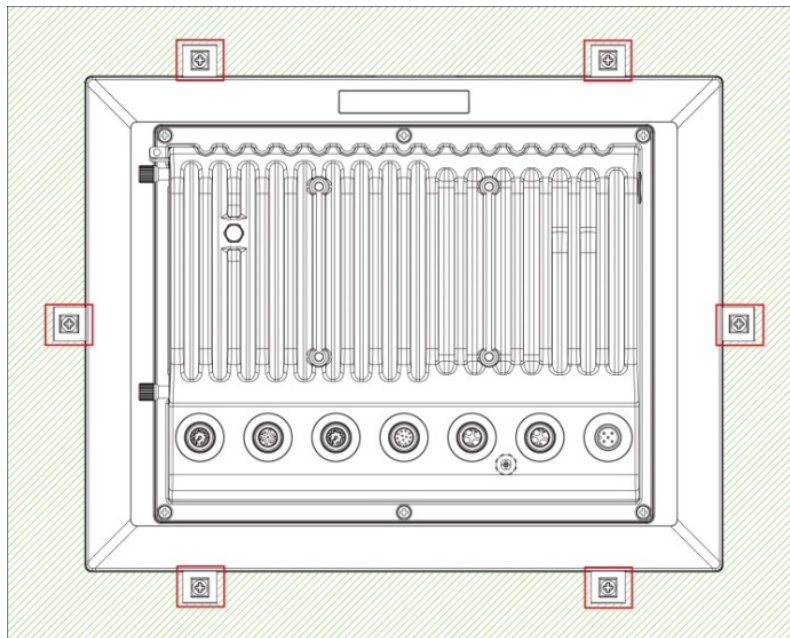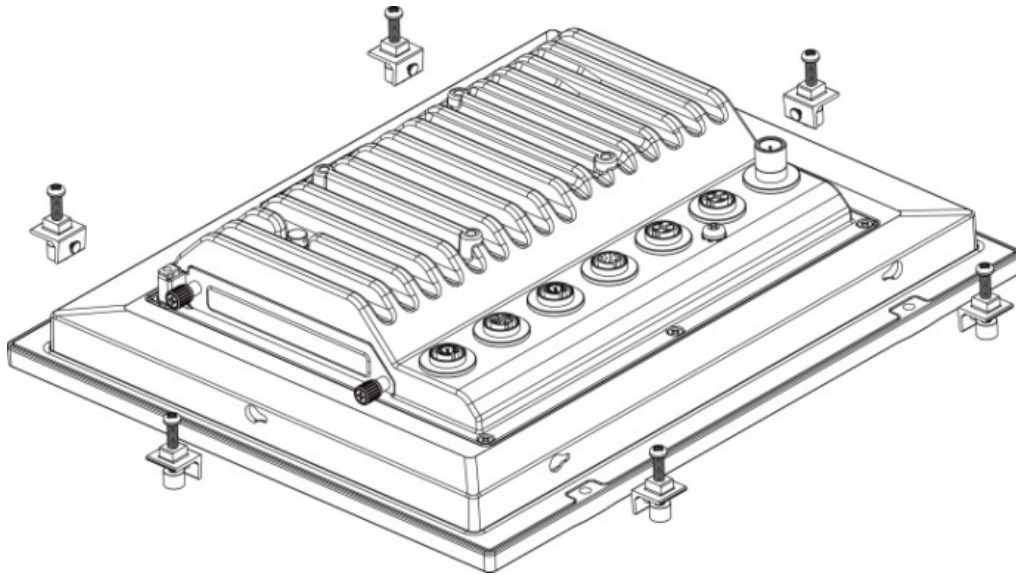
2. Use a torque of 4Kgf-cm to fasten the mounting screws and secure the panel-mounting kit onto the wall.

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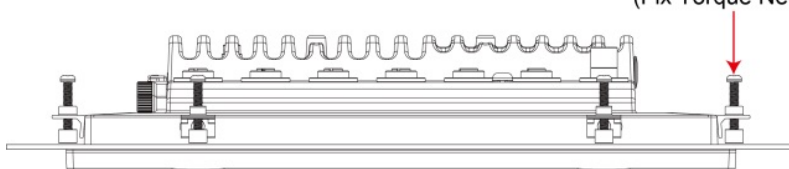
Wiring Requirements

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-2101 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-2101 Series

Before you power on the MPC-2101 Series, mounting it on a well-grounded 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.
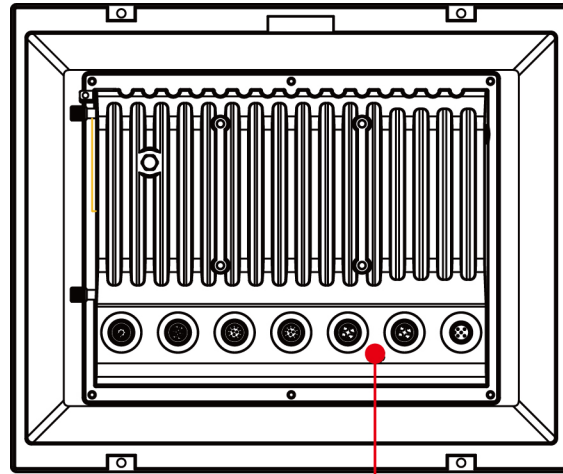
Grounding Connector

Powering On/Off the MPC-2101 Series

Connect an **M12 Connector to Power Jack Converter** to the MPC-2101's 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-2101, 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-2101 is provided with two display-control buttons on the right panel.
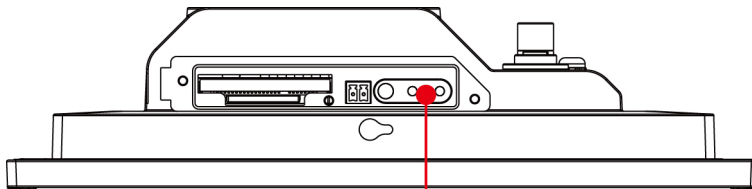
Panel Brightness
Control Buttons

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-2101 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-2101 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-2101 uses a DC power input with an M12 connector. The DC pin assignments are as shown in the figure:
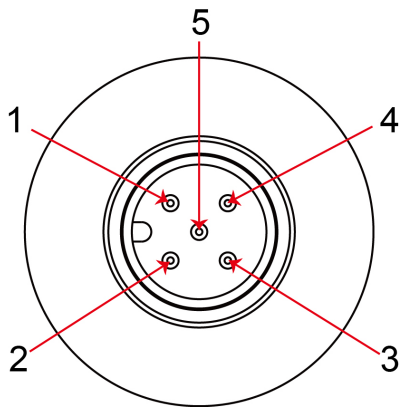
Pin	Definition
1	V+
2	--
3	V-
4	--
5	--

Serial Ports

The MPC-2101 offers a software-selectable RS-232/422/485 serial port over an M12 connector. The pin assignments for the ports are shown in the table below:
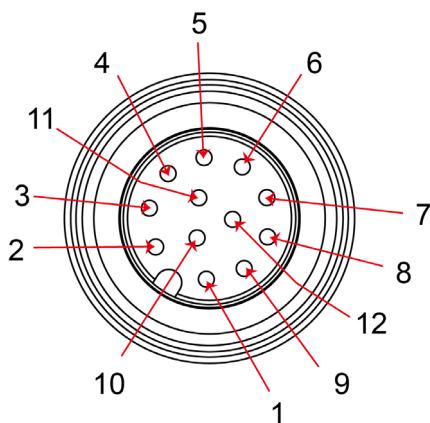
Pin	RS-232	RS-422	RS-485
1	RI	--	--
2	RXD	TX+	--
3	DTR	RX-	D-
4	DSR	--	--
5	CTS	--	--
6	DCD	TX-	--
7	TXD	RX+	D+
8	RTS	--	--
9	GND	GND	GND
10	GND	GND	GND
11	GND	GND	GND
12	--	--	--

Ethernet Ports

The pin assignments for the two Fast Ethernet 100/1000 Mbps ports with M12 connectors are shown in the following table:
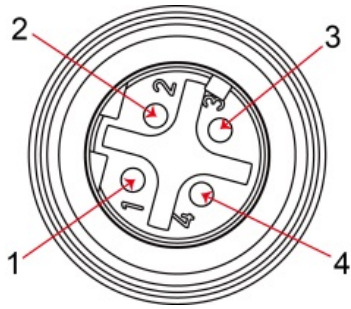
Pin	Definition
1	TD+
2	RD+
3	TD-
4	RD-

USB Ports

A USB 2.0 port with an M12 connector is available on the rear panel. Use this port to connect mass-storage drive and other peripheral.
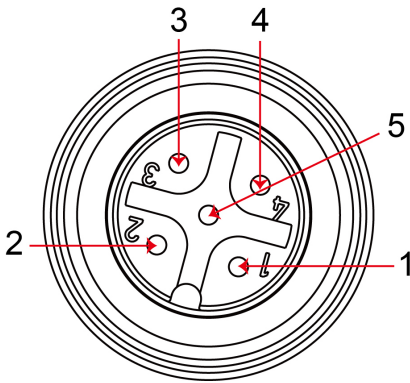
Pin	Definition
1	D-
2	VCC
3	--
4	D+
5	GND

Audio Output Port

The MPC-2101 comes with an audio output port in an M12 connector. Refer to the following figure for the pin definitions.
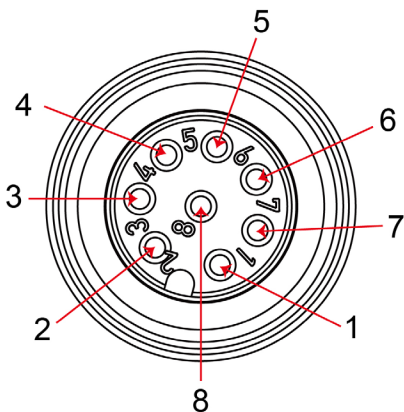
Pin	Definition
1	Detect
2	Line out _L
3	Line out _R
4	GND
5	Speaker out-
6	Speaker out+
7	GND
8	GND

DIO Port

The MPC-2101 is provided with a DIO port with an 8-pin M12 connector that includes 4 DIs and 2 DOs as illustrated in the following diagram:
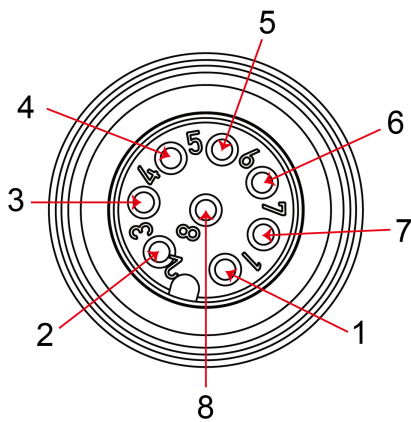
Pin	Definition
1	COM
2	DI_0
3	DI_1
4	DI_2
5	DI_3
6	DO_0
7	GND
8	DO_1

For DI and DO wiring methods, refer to the following figure:
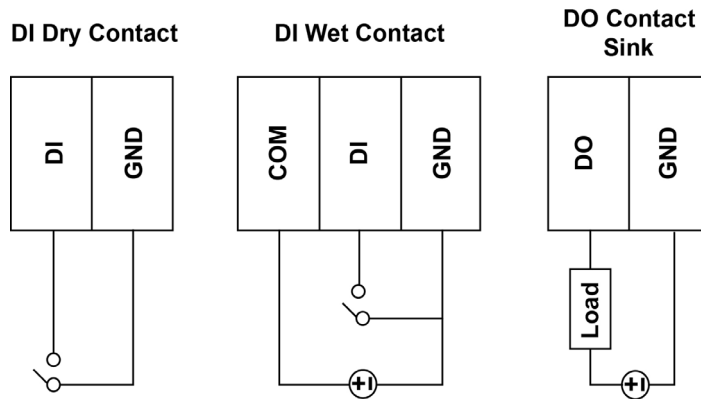
Installing a CFast or SD Card

MPC-2101 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-2101 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-2101.

screws
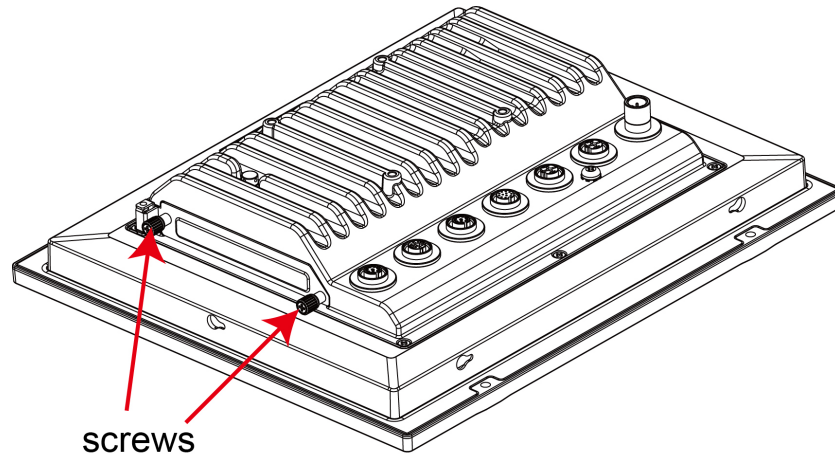
2. The CFast socket is located on the upper part of the slot, while the SD socket on the lower part of the slot. Check the following figure for details.

CFast Socket

SD Socket
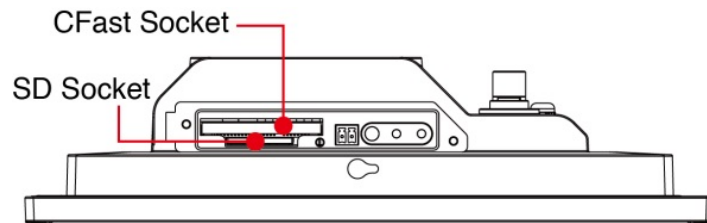
3. Insert the CFast or SD card into the slot using the push-push mechanism.

CF Card
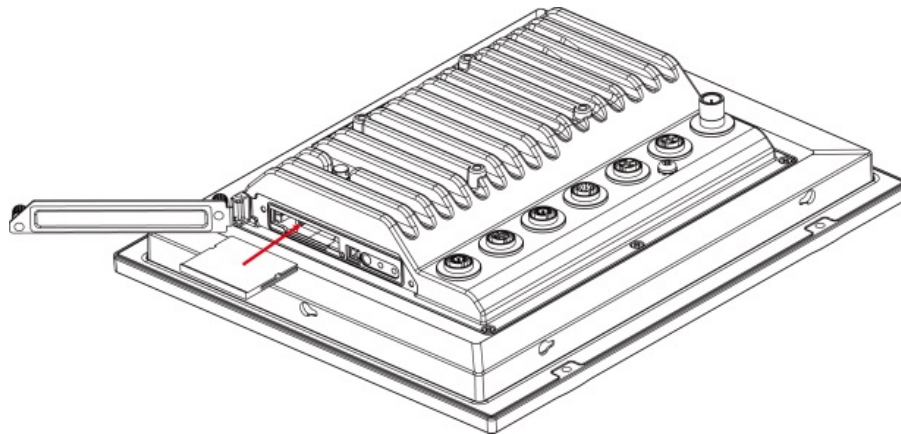
SD Card
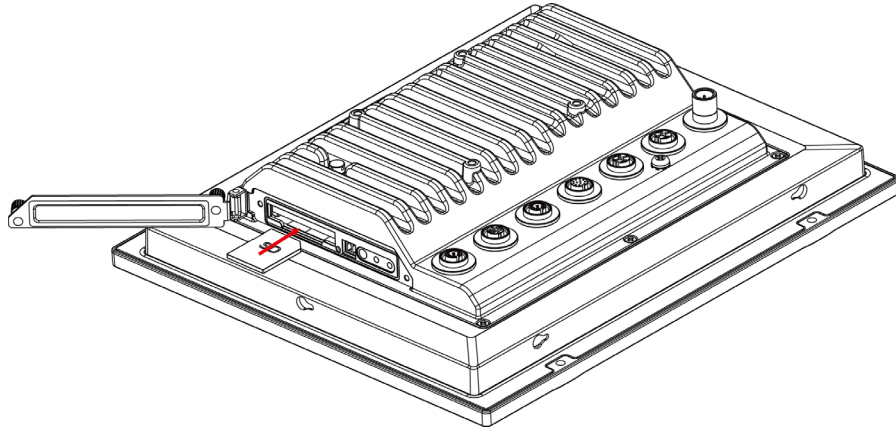
4. Reattach the cover and secure it with screws.

4

BIOS Settings

In this chapter, we describe the BIOS settings for the MPC-2101 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**.
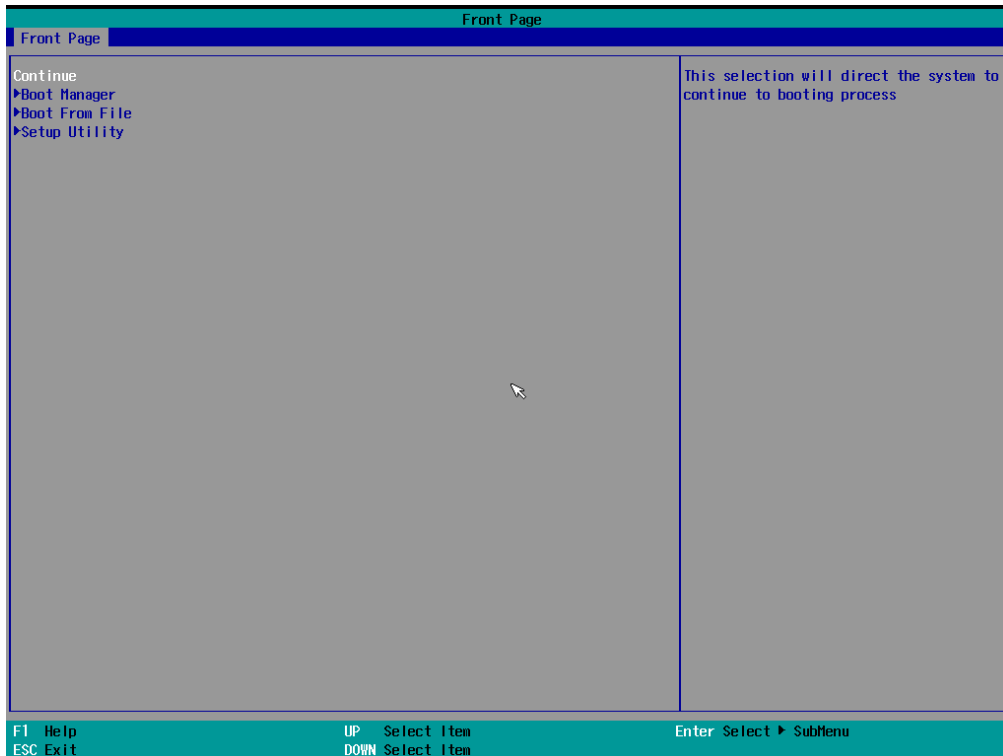
When you click **Setup Utility**, a basic description of each function key is listed at the bottom of the screen. Refer to these descriptions to learn how to use them.

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.

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

 BIOS Version                 V1.30S04                This is the help for the hour, minute,
 Project Name                 MPC-2101                second field. Valid range is from 0 to
                                                      23, 0 to 59, 0 to 59. INCREASE/REDUCE :
 Processor Type               Intel(R) Atom(TM) CPU  E3845  @ 1.91GHz    +/-.
 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                  V1.00S08
 IGD VBIOS Version            3842
 Microcode Revision           90A

 System Time                  [10:12:57]
 System Date                  [03/06/2019]



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

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
 ▶SMART RECOVERY Info



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

Boot Configuration

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

Options: On (default), Off

```
                          InsydeH2O 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
```
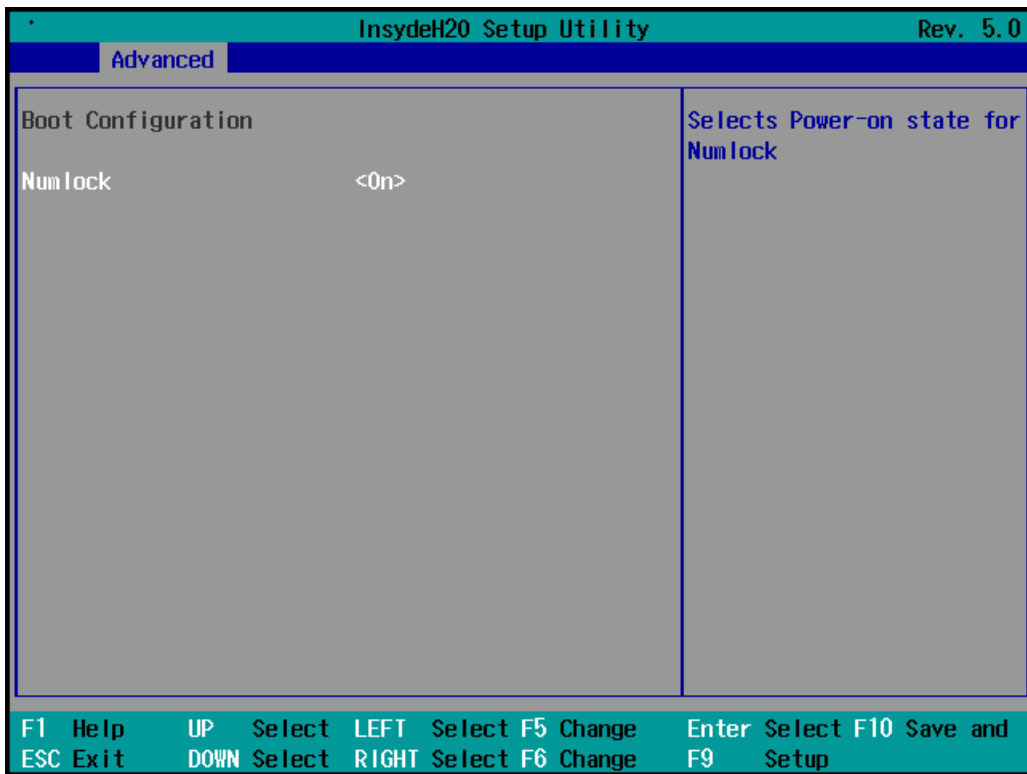
PCI Express Configuration

PCIE PORT 1 Speed

Configures the PCIe Port1 speed.

Options: Auto, Gen1 and Gen2

PCIE PORT 2 Speed

Configures the PCIe Port2 speed.

Options: Auto, Gen1 and Gen2

USB Configuration

```
                          InsydeH2O Setup Utility                    Rev. 5.0
        Advanced

 USB Configuration                               Disable USB port

 USB Port #0                    <Enabled>




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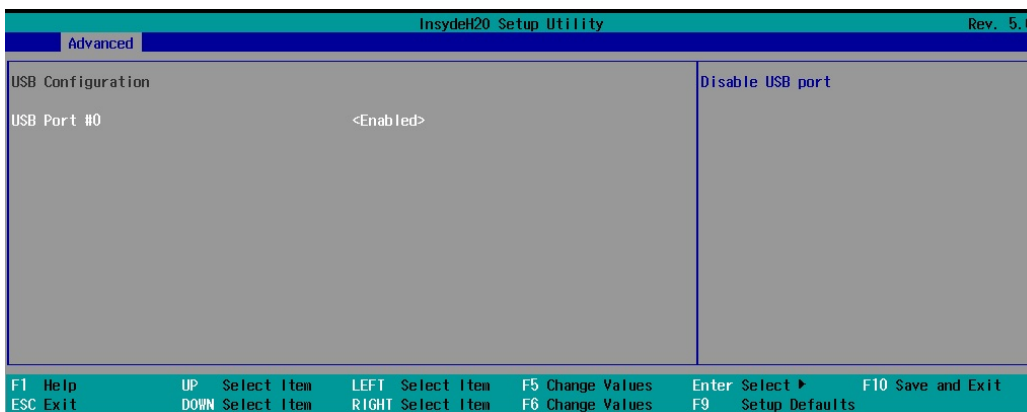
USB Port #0

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

Options: Enabled (default), Disabled

SD Configuration
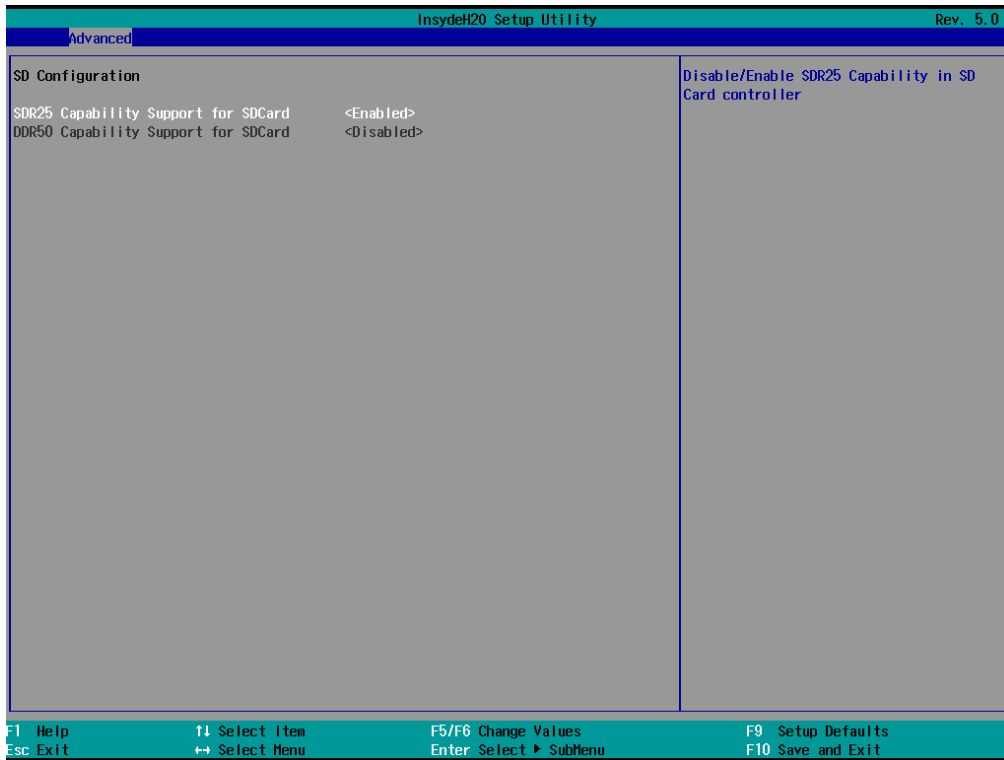
SDR25 Capability Support for SD Card

Sets the input/output timing for the SDR25 mode.

Options: Enabled (default), Disabled

DDR50 Capability Support for SD Card

Set Input/output timing for DDR50 mode.

Options: Disabled (default), Enabled

Miscellaneous Configuration

```
                              InsydeH20 Setup Utility                        Rev. 5.0
      Advanced
  Miscellaneous Configuration                              Control Light Sensor light when system
                                                           work
  Light Sensor LED                   <Enabled>
  Power ON after Power Failure       <Enable>
  DO-0 Level                         <HIGH>
  DO-1 Level                         <HIGH>




  F1  Help         UP    Select Item   LEFT  Select Item   F5 Change Values   Enter Select ▶     F10 Save and Exit
  ESC Exit         DOWN  Select Item   RIGHT Select Item   F6 Change Values   F9    Setup Defaults
```
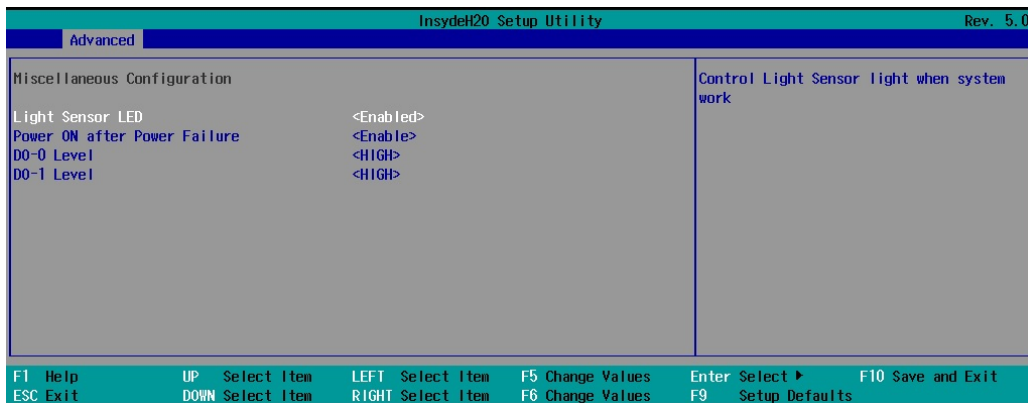
Light Sensor LED

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 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

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
```
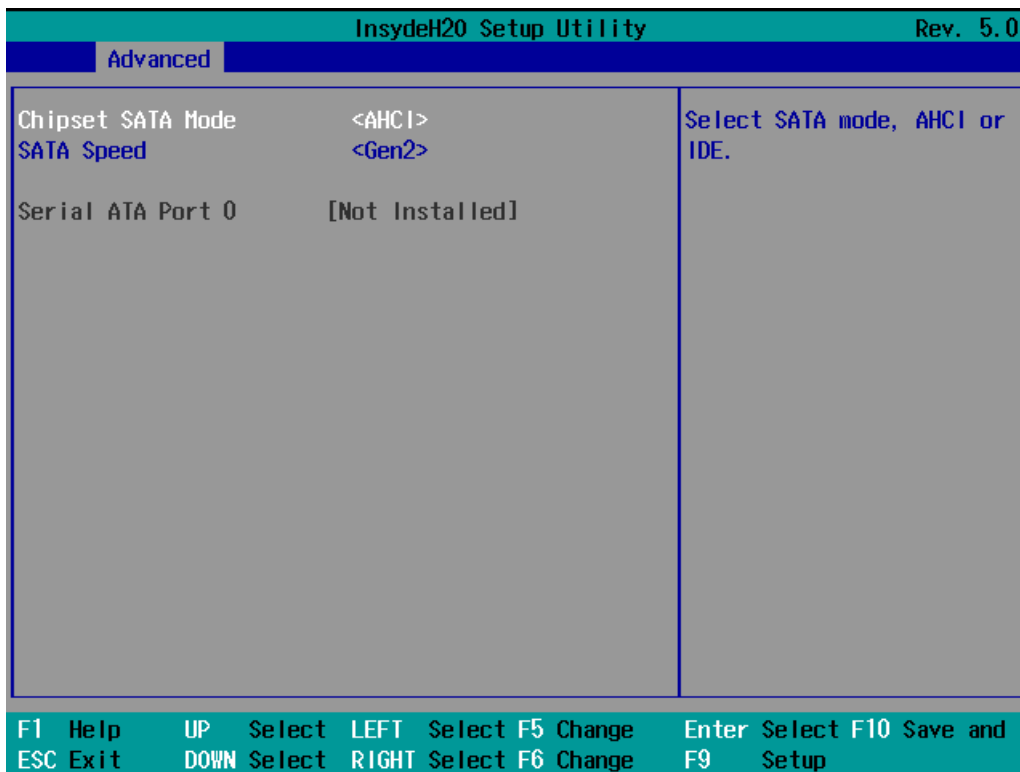
Chipset SATA Mode

Select the SATA mode.

Options: AHCI (default), IDE

SATA Speed

Select the SATA speed.

Options: Gen1 (default), Gen2

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.
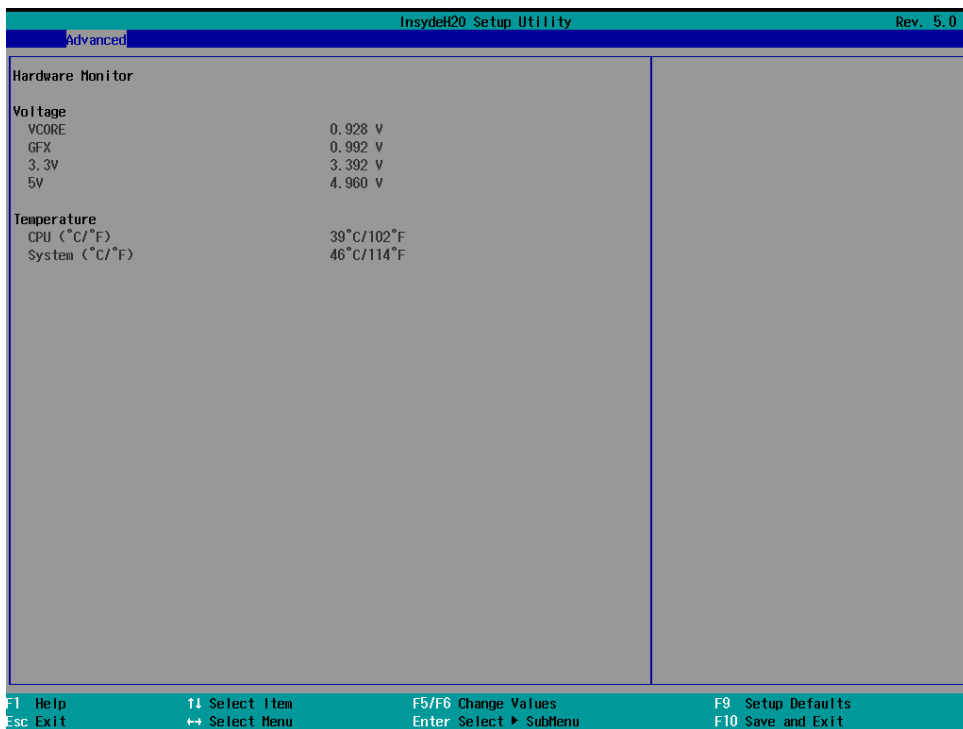
Options: Disabled (default), Enabled

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).
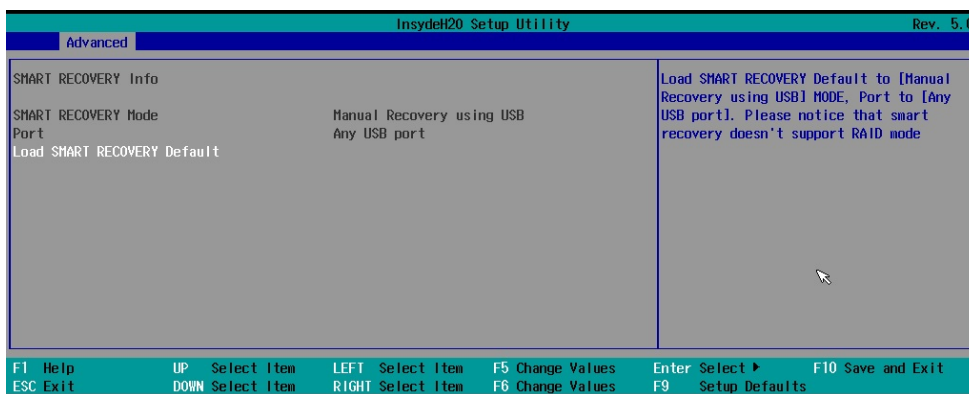
Options: Disabled (default), Enabled

Hardware Monitor

This page 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.

Smart Recovery Info

This page shows the Smart Recovery information.

```
                          InsydeH20 Setup Utility                              Rev. 5.0
      Advanced

 SMART RECOVERY Info                                    Load SMART RECOVERY Default to [Manual
                                                        Recovery using USB] MODE, Port to [Any
 SMART RECOVERY Mode        Manual Recovery using USB   USB port]. Please notice that smart
 Port                       Any USB port                recovery doesn't support RAID mode
 Load SMART RECOVERY Default




 F1  Help       UP   Select Item    LEFT  Select Item   F5 Change Values   Enter Select ▶      F10 Save and Exit
 ESC Exit       DOWN Select Item    RIGHT Select Item   F6 Change Values   F9   Setup Defaults
```
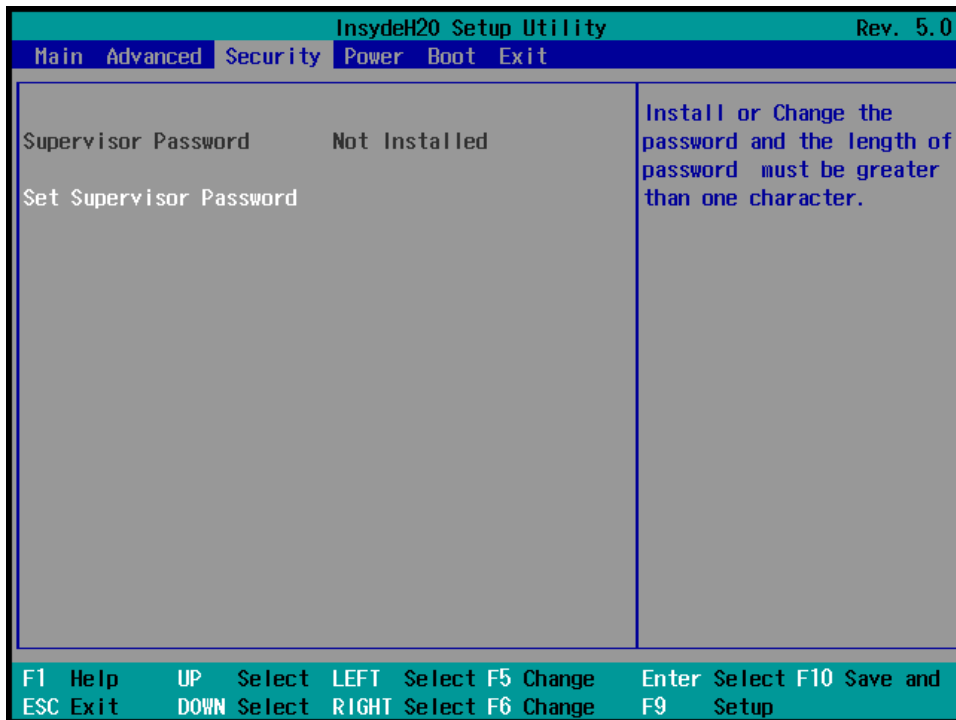
Load Smart Recovery Default

This page allows you to load Smart Recovery default value to the MPC-2101 panel computer.

Security Settings

This page allows you to configure a supervisor password.

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

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


 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]
```

4-10

Power Settings

The screen allows you to configure power settings.

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

                                                        Enable/Disable Sleep and Hibernate (the
                                                        state of the system)
 ACPI S3 S4                        <Disabled>
 Wake on LAN                       <Enabled>
 Auto Wake on S5                   <Disabled>




 F1  Help           UP    Select Item     LEFT  Select Item    F5 Change Values    Enter Select ▶      F10 Save and Exit
 ESC Exit           DOWN  Select Item     RIGHT Select Item    F6 Change Values    F9   Setup Defaults
```
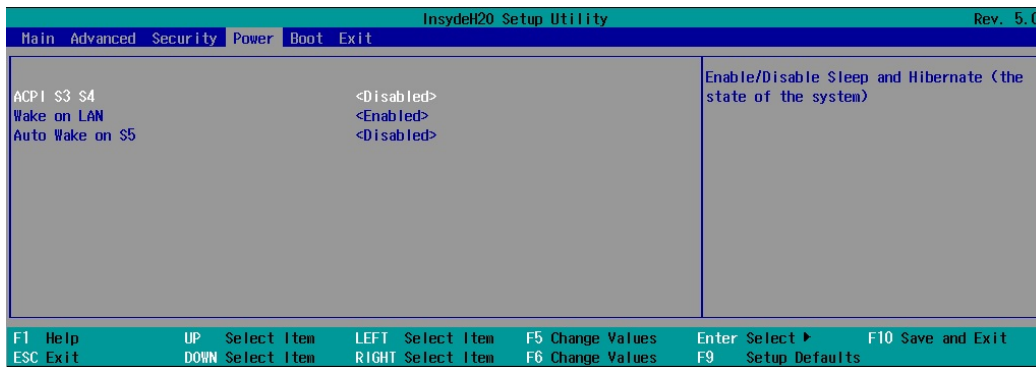
ACPI S3 S4

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

Option: Disabled (default), Enabled.

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




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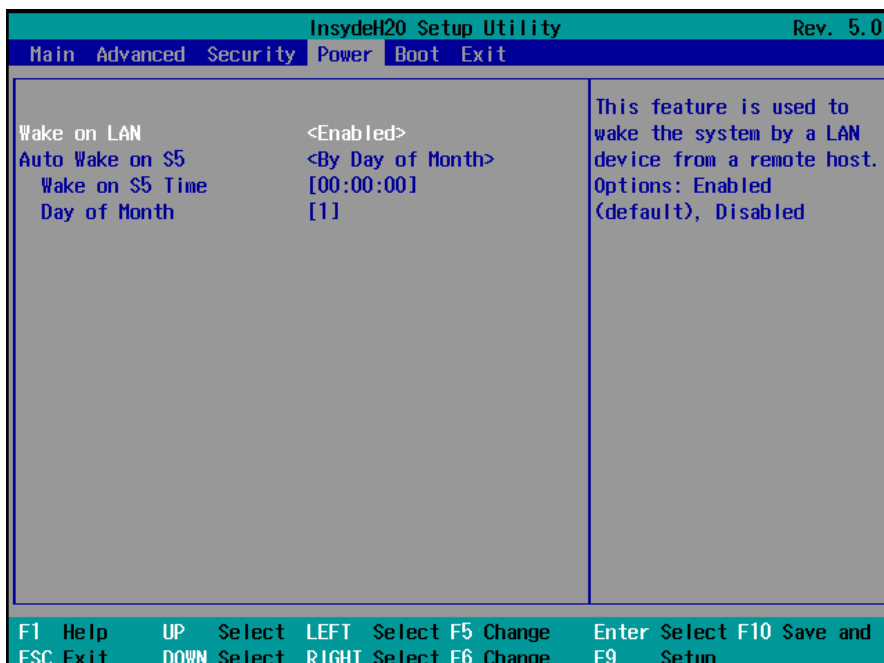
Boot Settings

The screen allows you to configure boot settings.

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


 Boot Type                      <Dual Boot Type>         Select boot type to Dual type, Legacy
 PXE Boot to LAN                <Disabled>               type or UEFI type
 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 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.
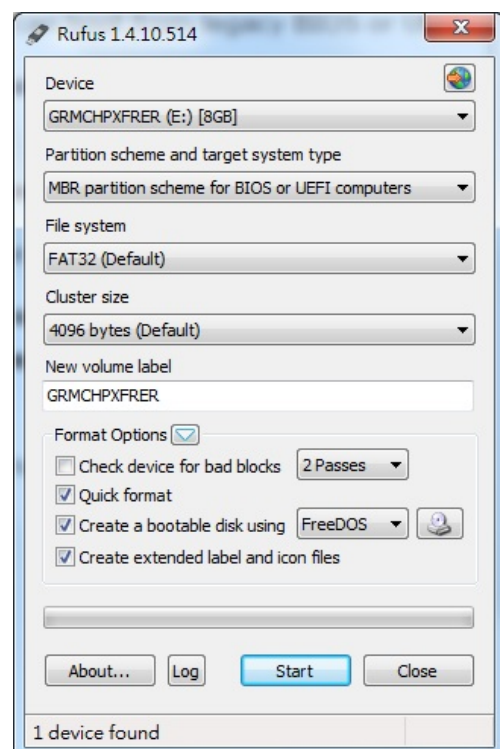
> ⚠️ **ATTENTION**
>
> When you use a USB drive larger than 4 GB, you will need to convert the file system type to FAT32.

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-21011xxx.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-2101 Computer

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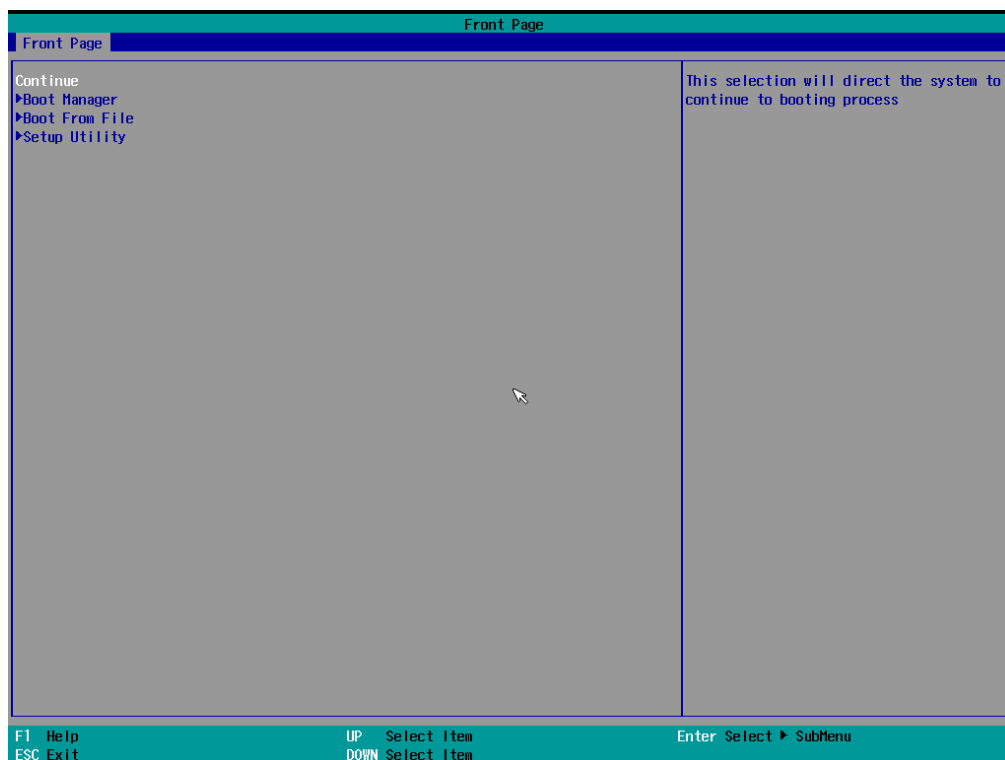
2. Select USB Disk as the first boot source and press [Enter] to continue.

```
                              Boot Manager

Boot Option Menu

Legacy Hard Drive
CFast 3SE
Legacy USB
Sandisk USB Ultra
Legacy Floppy
SD256
EFI Boot Devices
Internal EFI Shell

↑ and ↓ to change option, ENTER to select an option, ESC to exit




F1  Help              UP   Select Item       Enter Select ▶ SubMenu
ESC Exit              DOWN Select Item
```

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-2101 folder, type **cd MPC-
    2101.**

    ```
    C:\cd MPC-2101
    ```

4. Run the upgrade program by typing **21011010.exe**
    Note that the filename for the upgrade program may vary depending on the version.

    ```
    C:\ MPC-2101>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 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-2101

5

Display Resolution

This chapter describes how to install the graphics driver for your MPC-2101. 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-2101 product page on Moxa's website. To install the driver, do the following:

1. Browse to the **Driver** folder and open the **MPC-2101-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.
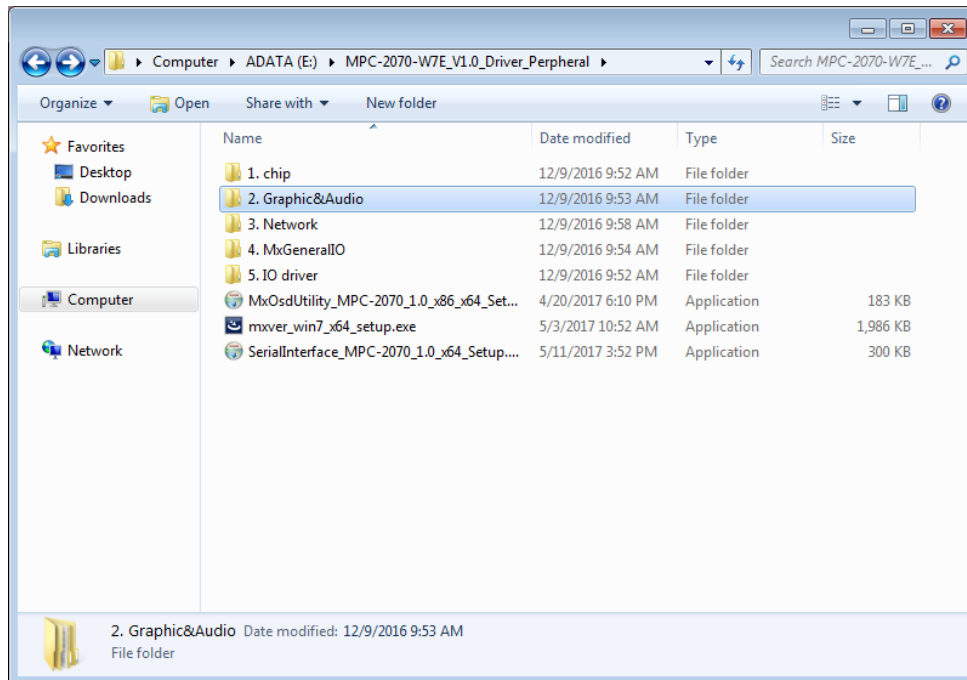
3. Double click on the executable file (for example, the **win64_153343.4425** file in the **x64** folder) to run it.
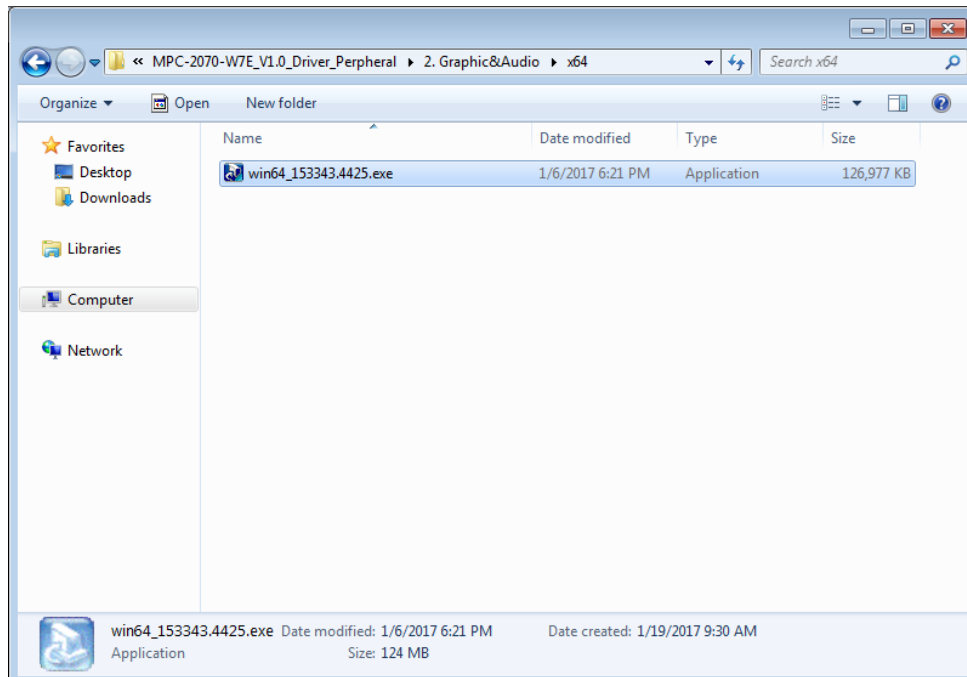
4. In the installation wizard that opens up, click **Next** to continue.
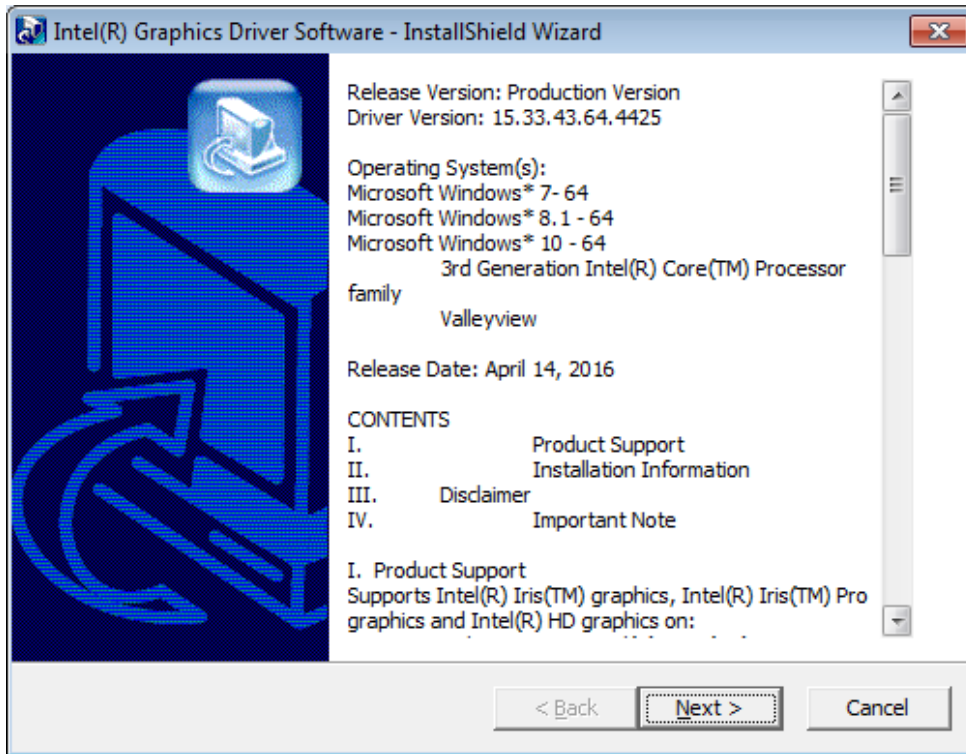
5. Click **Next** to start the installation process.
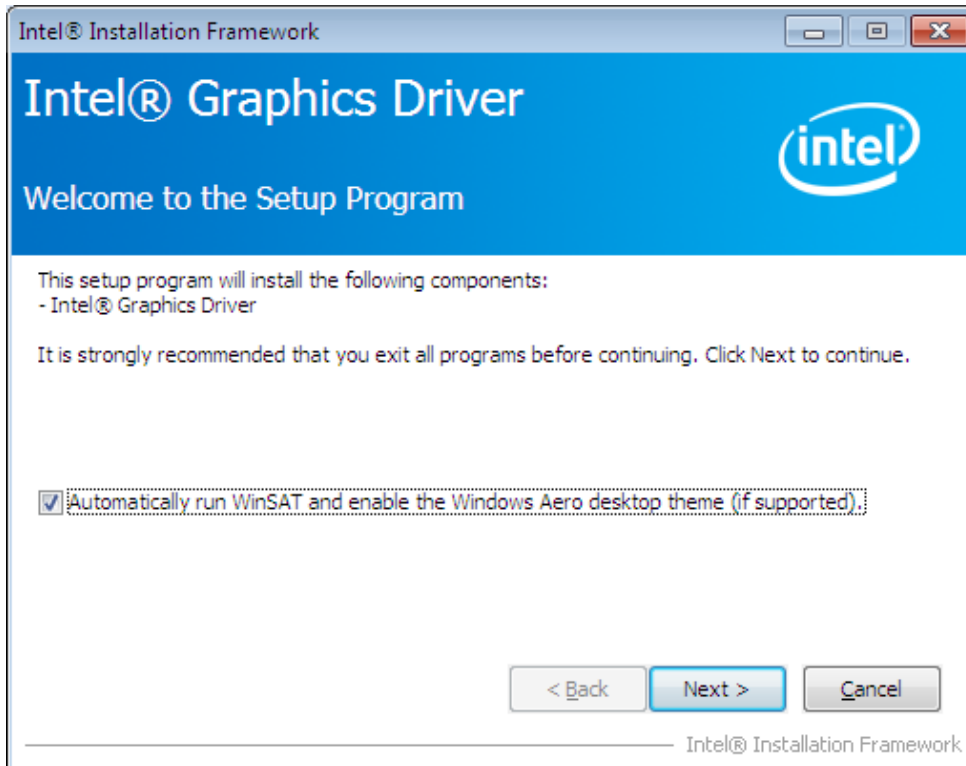
6. Click **Yes** to accept the license agreement.

7. Click **Nex**t to continue with the installation.
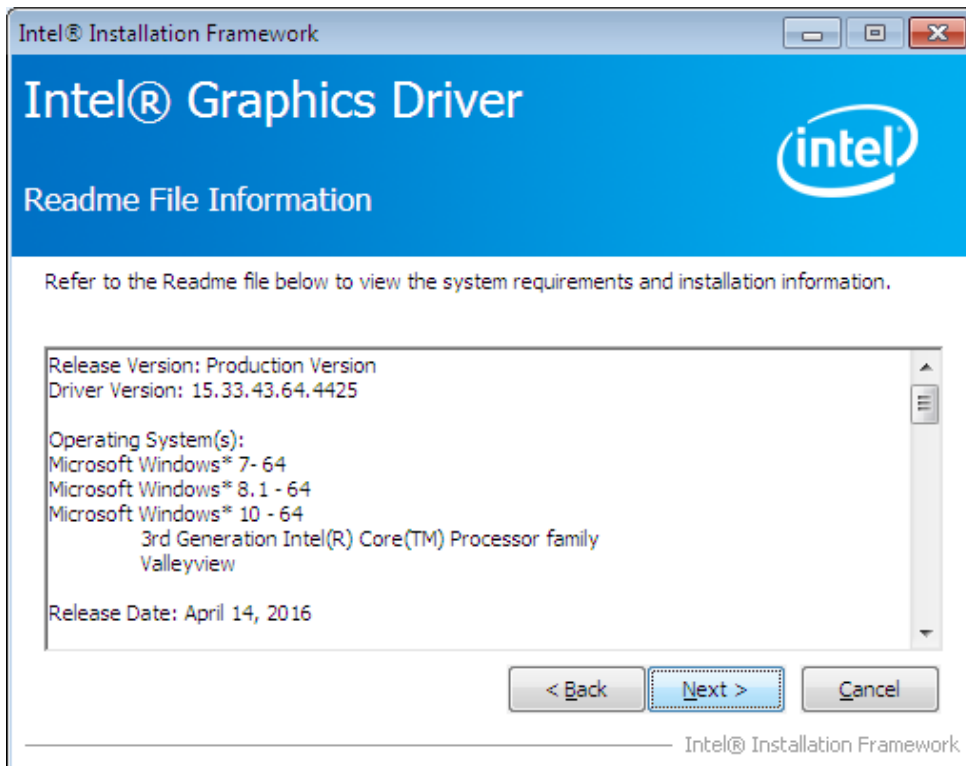
8. Wait until the installation is completed.
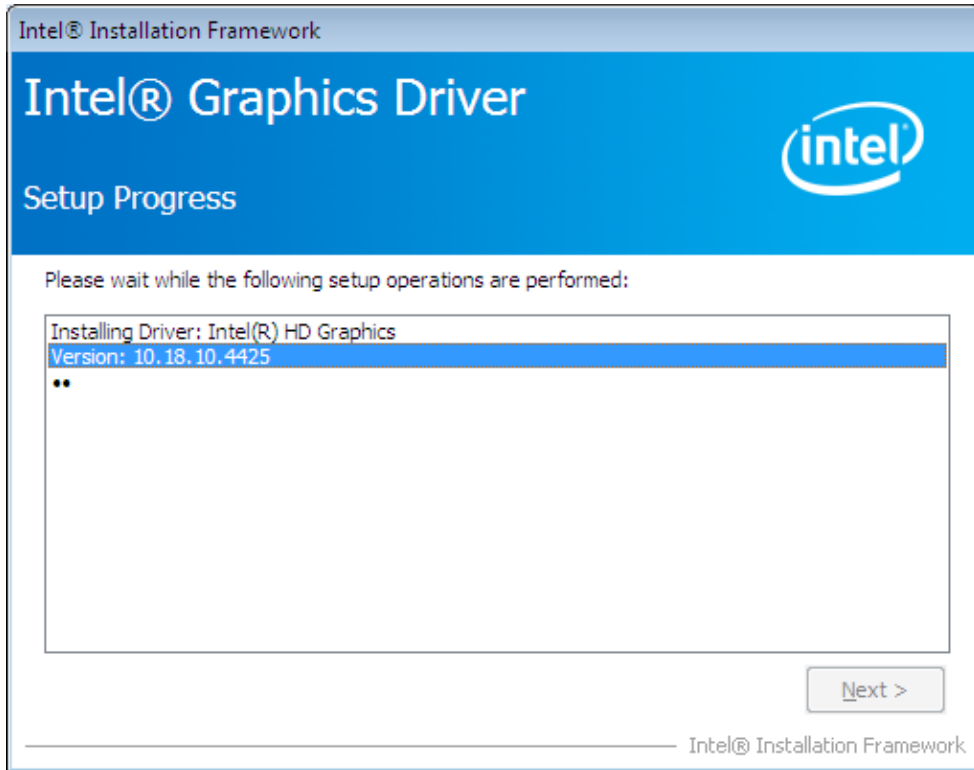
9. Click **Next** to continue with the setup process.
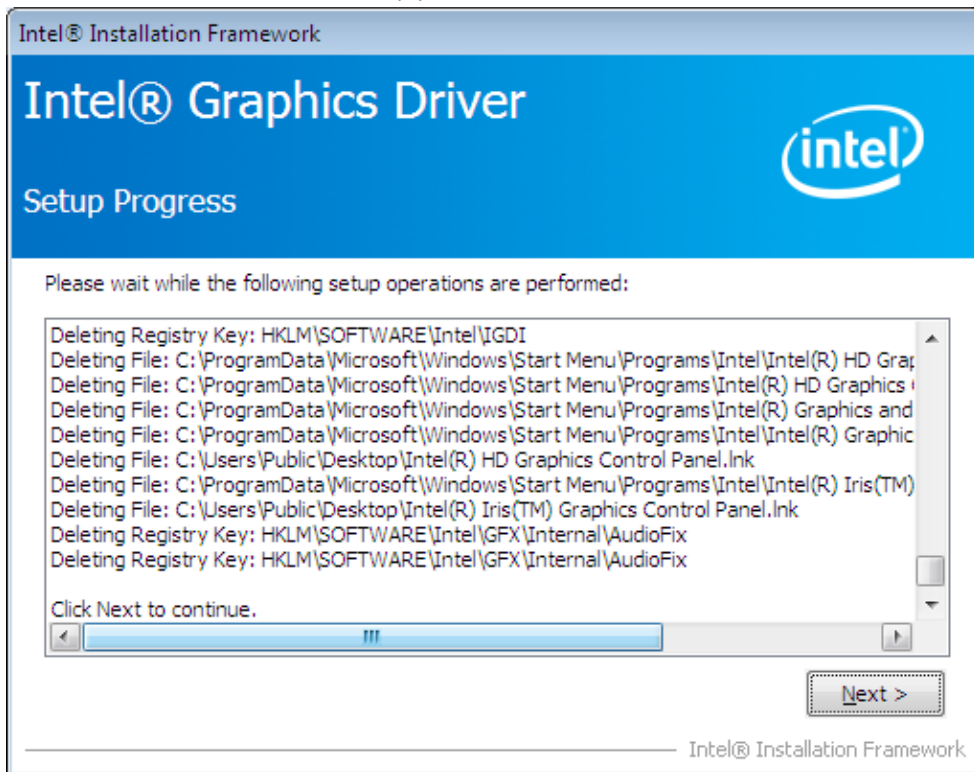
10. Select **Yes, I want to restart this computer now** and then click **Finish** to exit from the wizard.
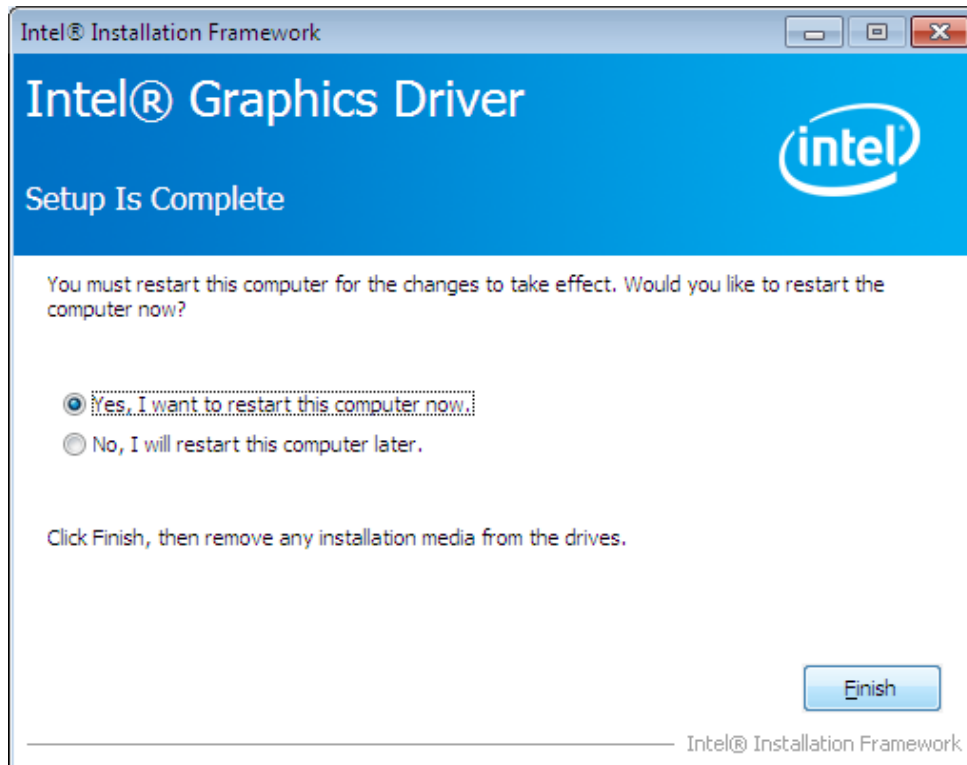
After your MPC-2101 reboots, you can use the Intel graphics tool to adjust the display resolution.

Adjusting the Display Resolution

Follow these steps to adjust the display resolution of your MPC-2101:

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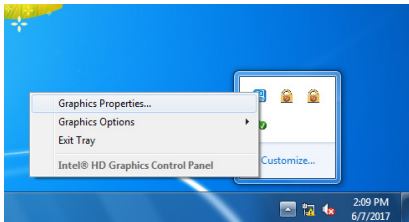
2. Select **Display**.
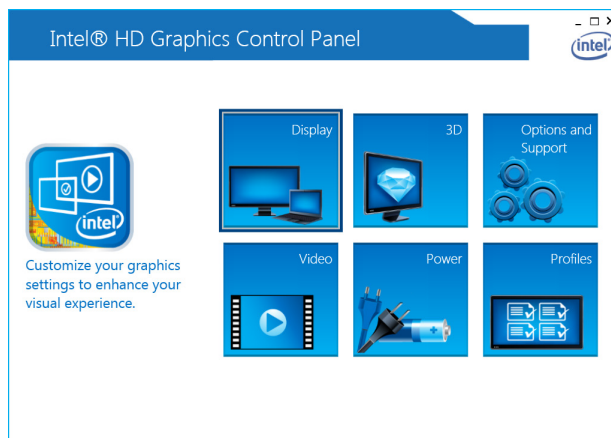
You can now adjust the resolution, refresh rate, and the display rotation.

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

4. Click **Apply**.

6
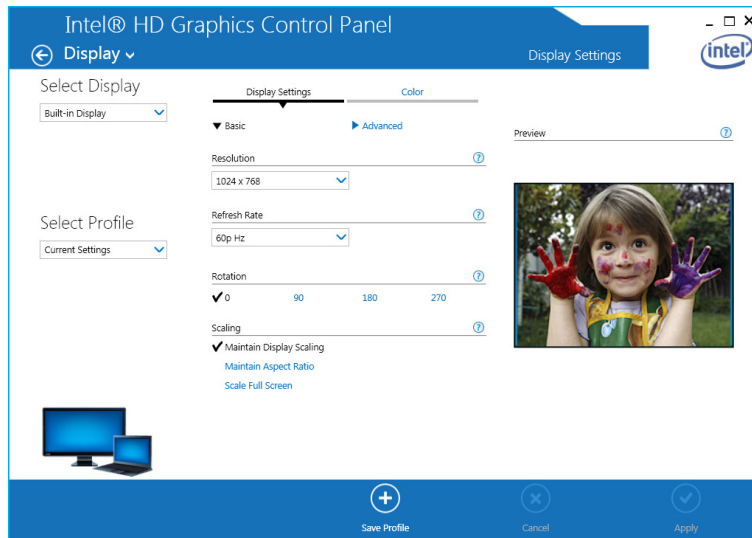
Serial Port Driver and Utility

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 Serial Interface Utility**
❒ **Configuring the Serial Interface Mode**

Overview

The MPC-2101 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-2101 and select **Add legacy hardware.**
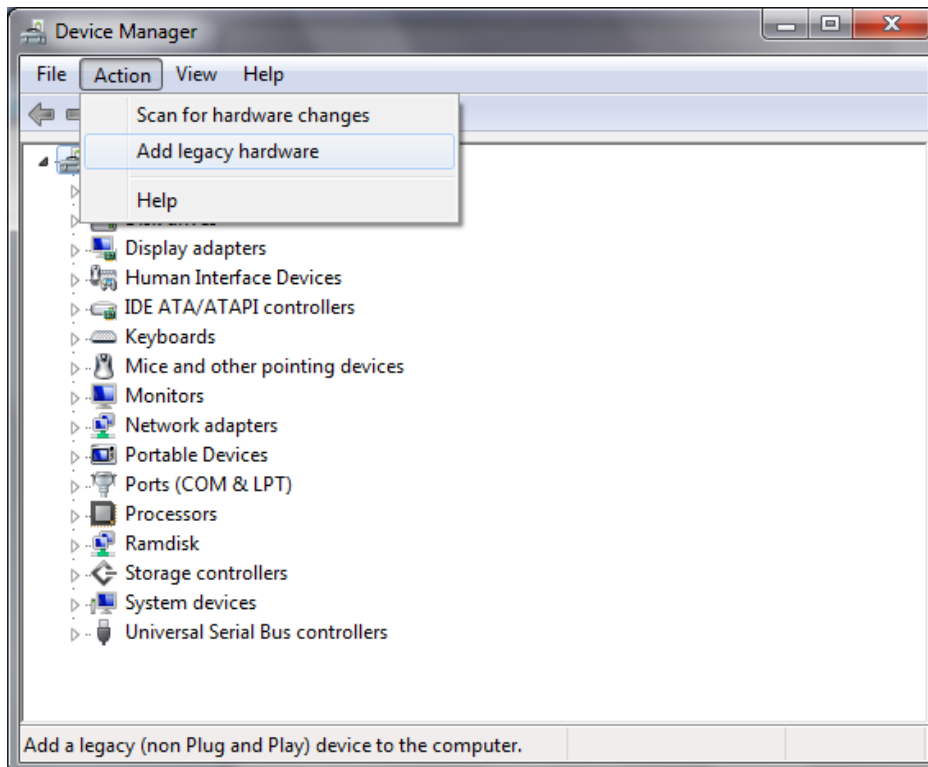
2. Click **Next.**
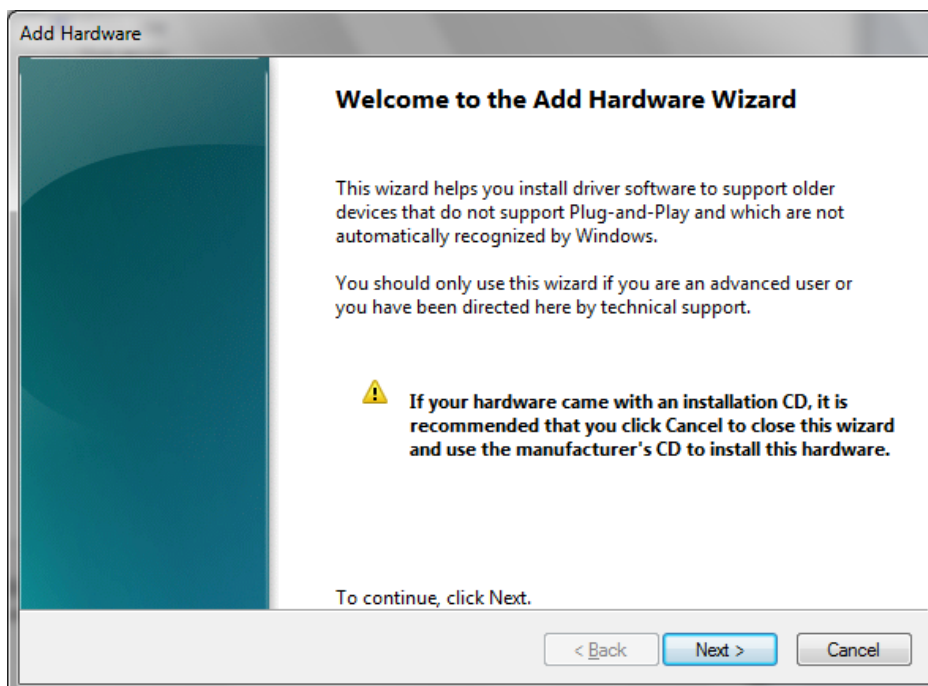
3. Select the second item **Install the hardware that I manually select from a list (Advanced)** and
    click **Next.**
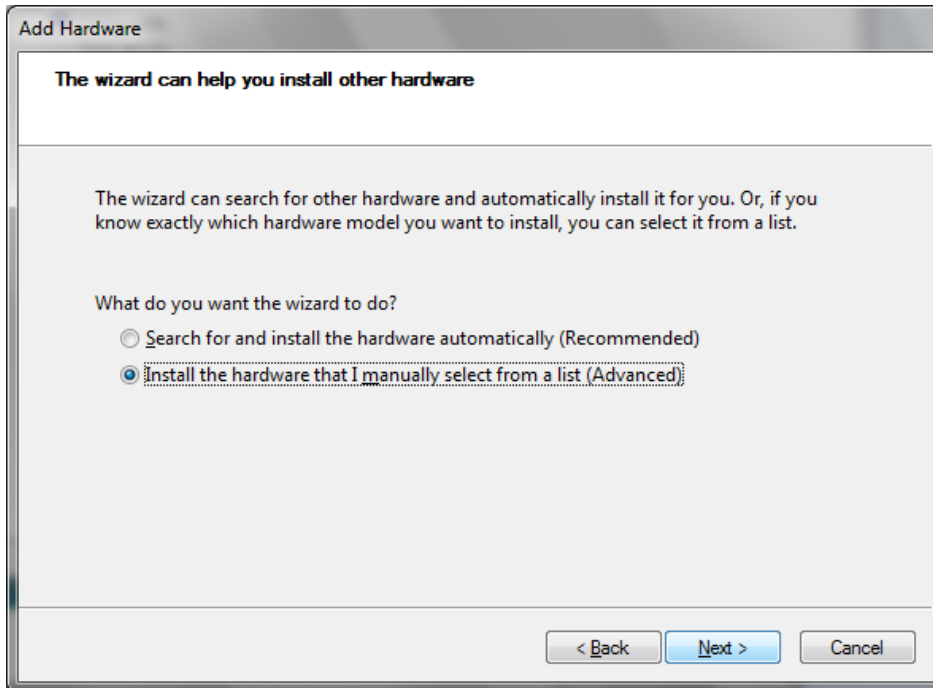
4. Click **Next.**
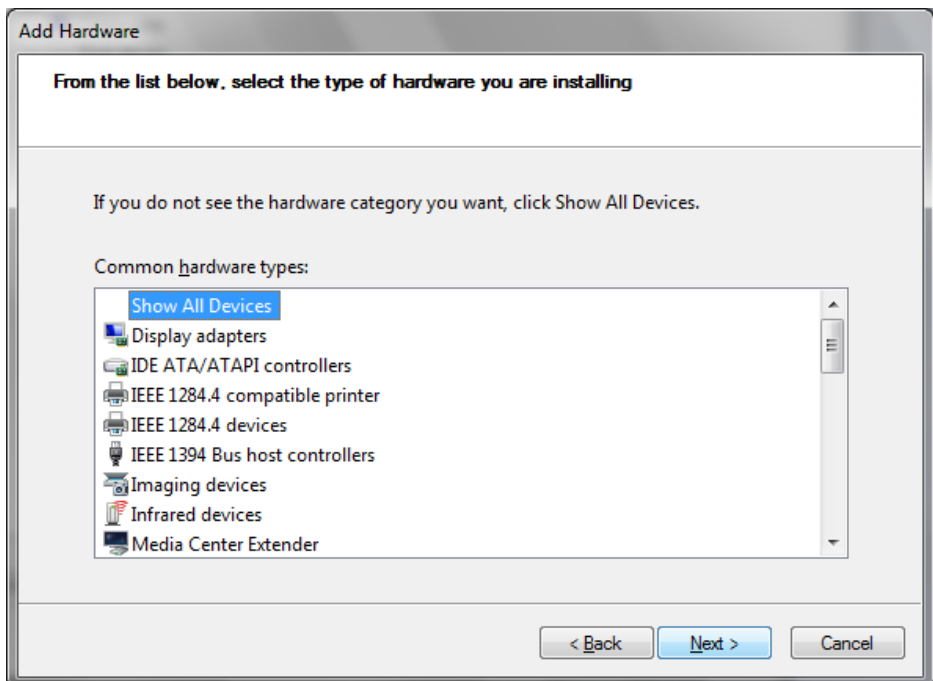
5. Select **Have Disk...**
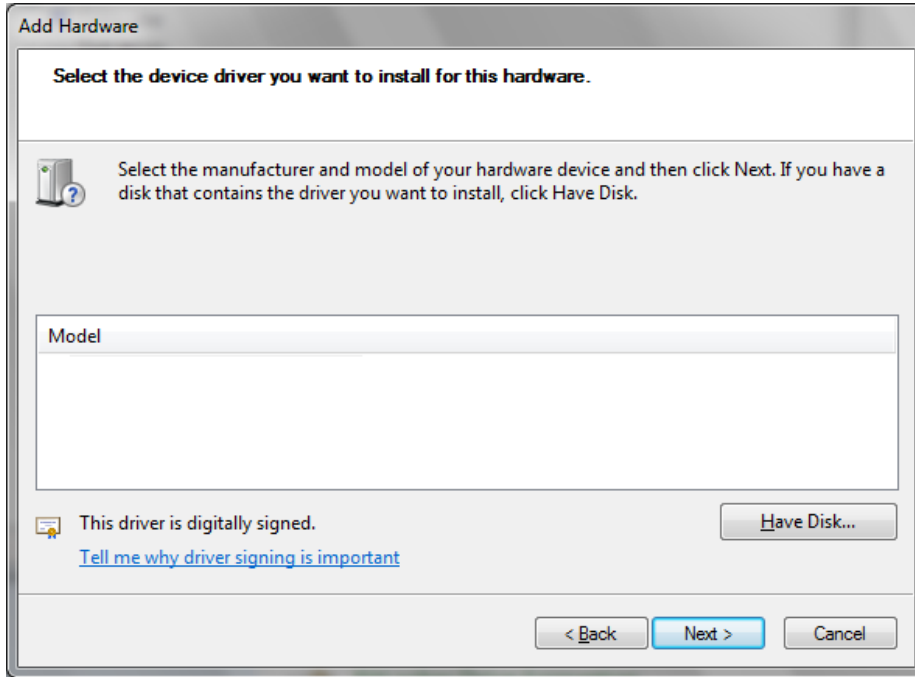
6. Point to the path **Driver\MPC-2101-W7E_V1.0_Driver_Perpheral\4.MxGeneralIO\x64** and select **MxGeneralIo.inf.**
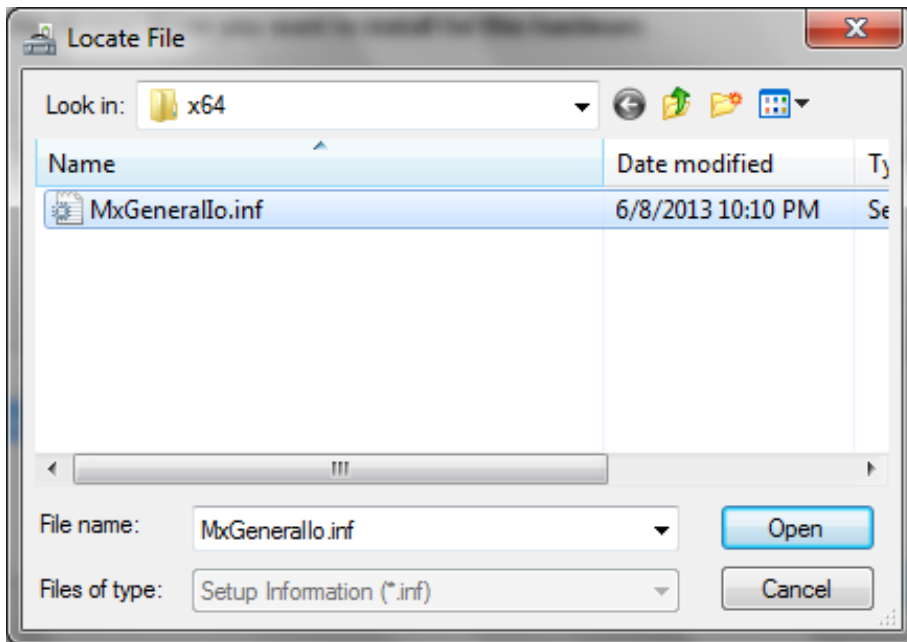
7. Select **Next.**

8. Select **Next.**
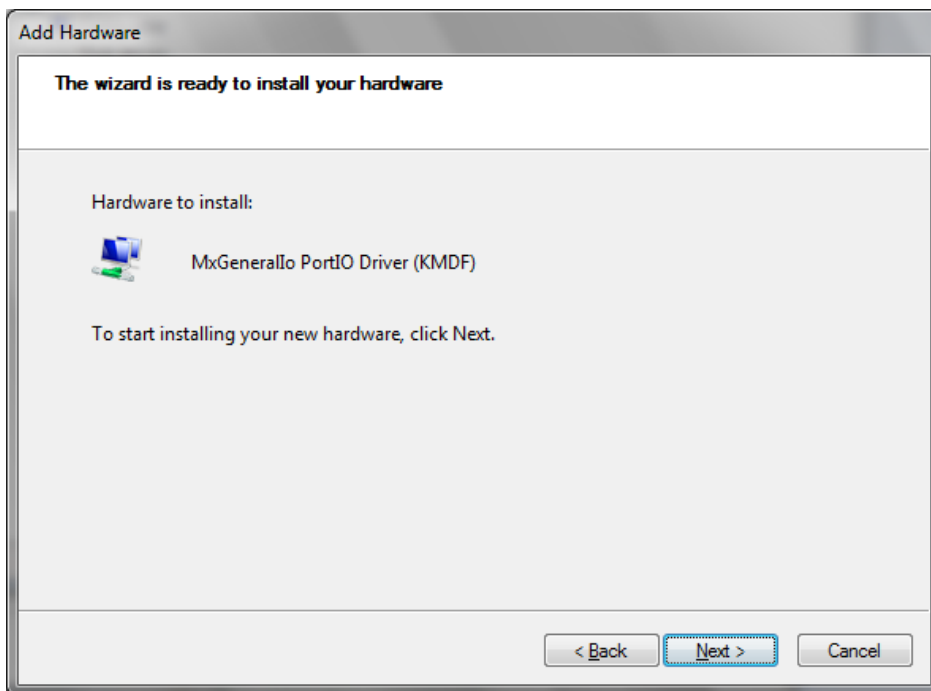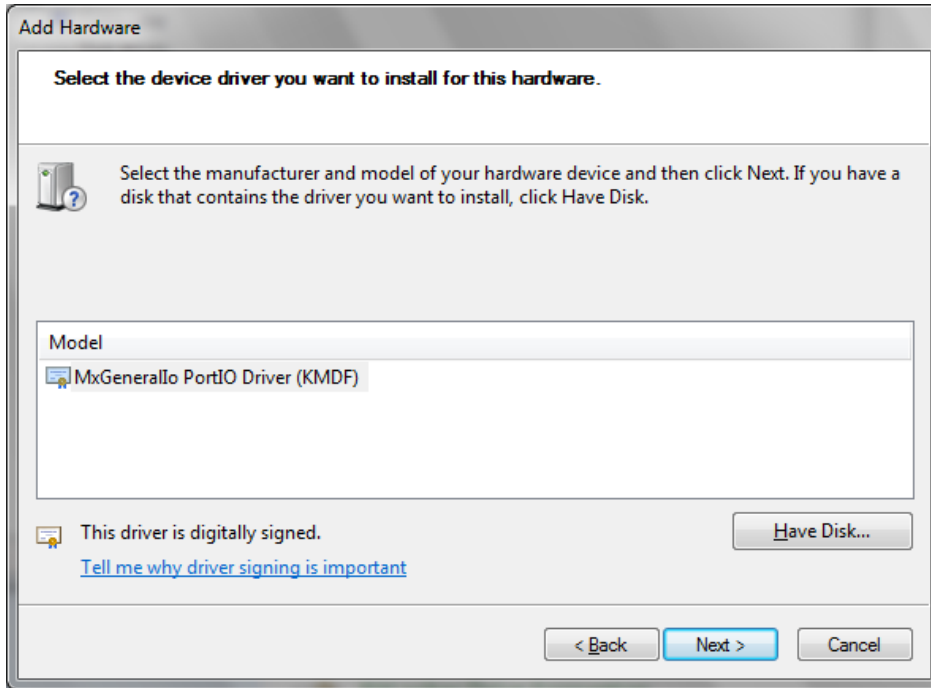
9. Select **Finish.**
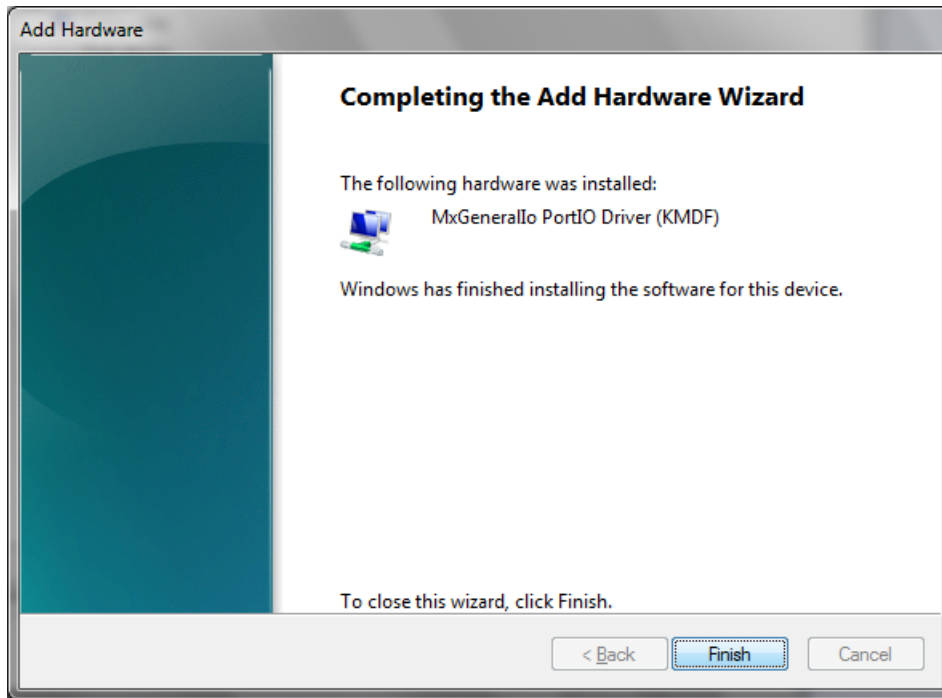
10. Double check if the driver has successfully installed.

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-2101_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.
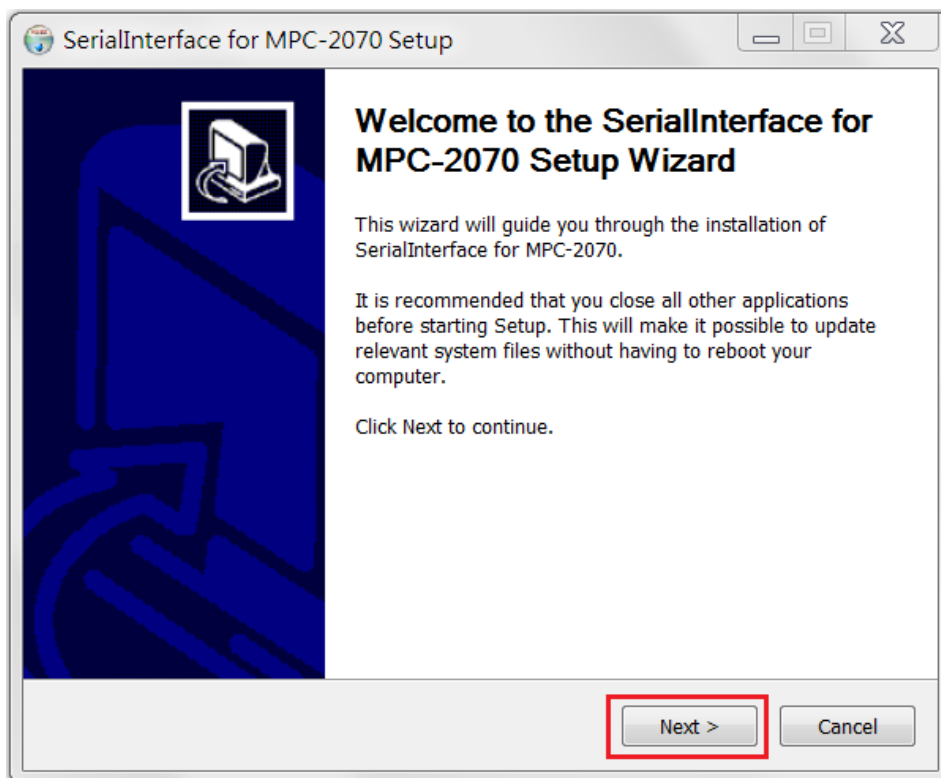
2. Click **Next** to continue.
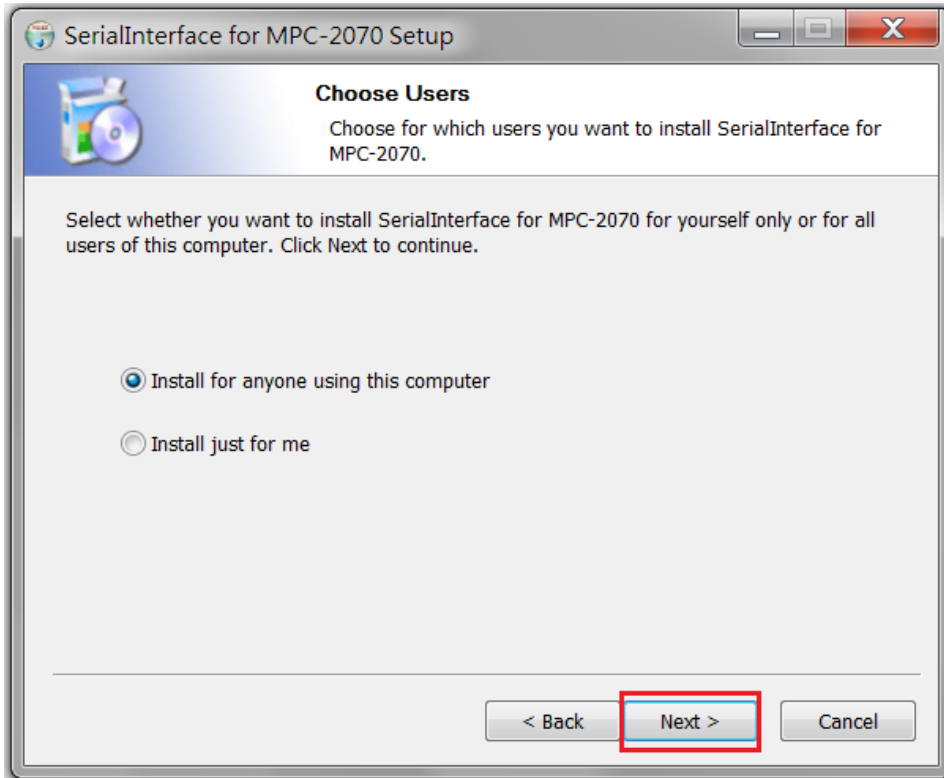
3. The default destination folder is **C:\Program Files(x86)\Moxa\Mxsp**; click **Install** to continue.
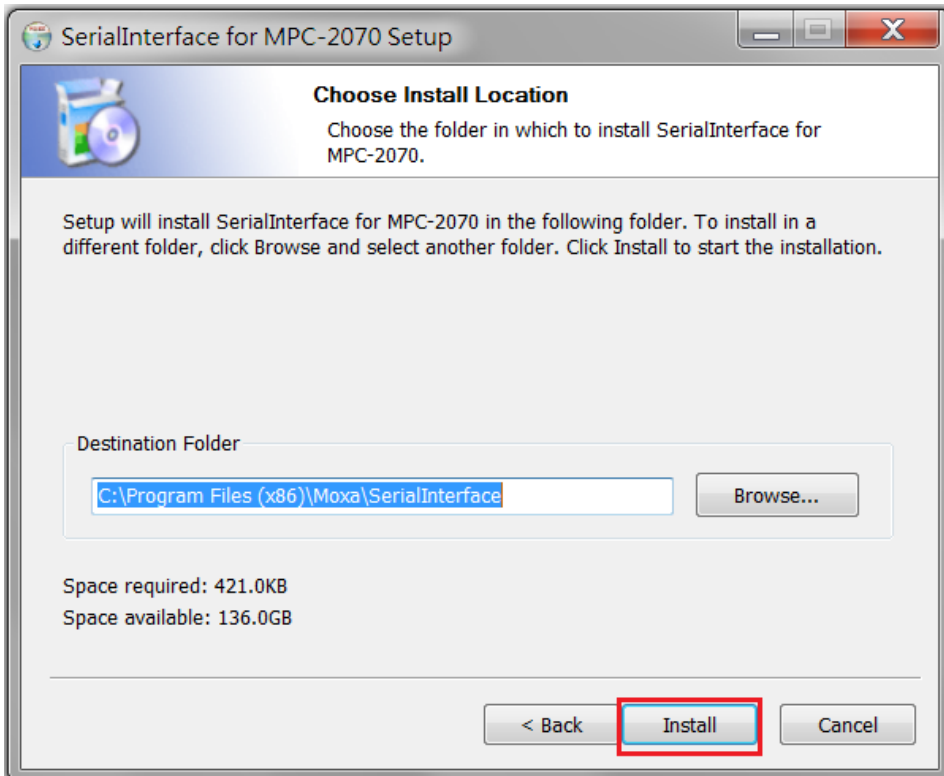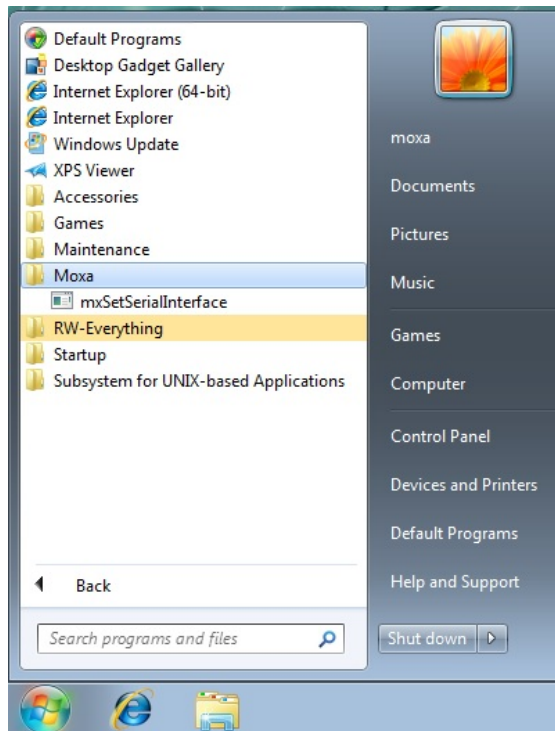
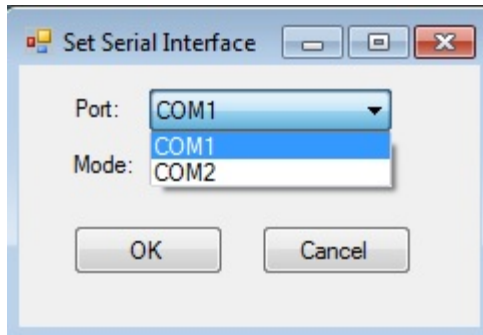4. Click **Finish** to complete installation.
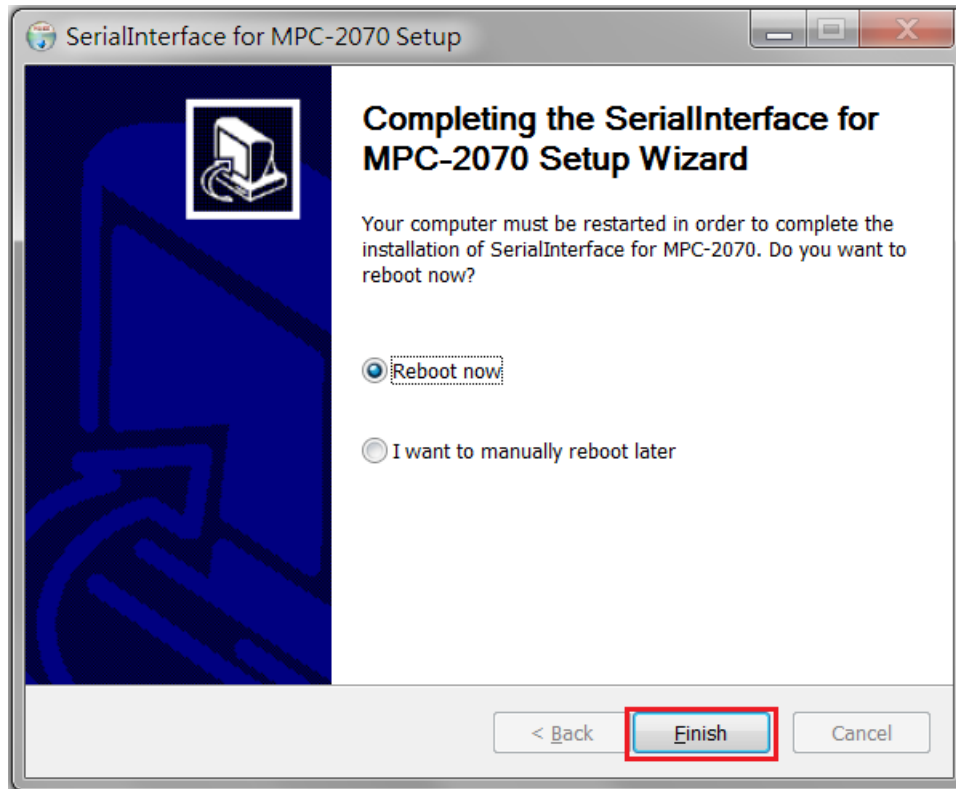
Configuring the Serial Interface Mode

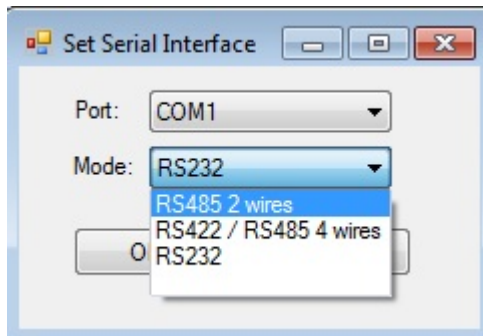Complete the following steps to configure the interface mode:

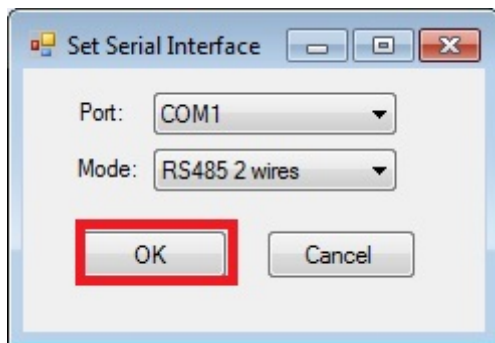1. From the Start menu, Click **All Programs → Moxa → mxSetSerialInterface**.

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.

<u>Class A</u> : 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.