# MPC-2120 Panel Computer Hardware User's Manual

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www.moxa.com/product



## MPC-2120 Panel Computer Hardware User's Manual

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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<sup>™</sup> 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<sup>™</sup> 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

## **Hardware Specifications**

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

## **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.

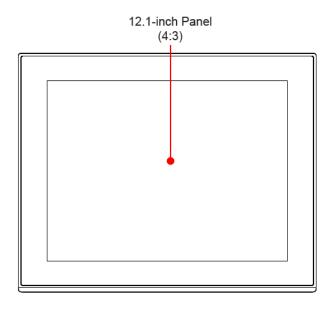
The following topics are covered in this chapter:

#### Appearance

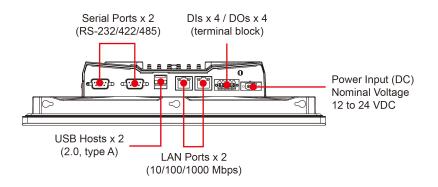
- Front View
- ➢ Bottom View
- Dimensions

## Appearance

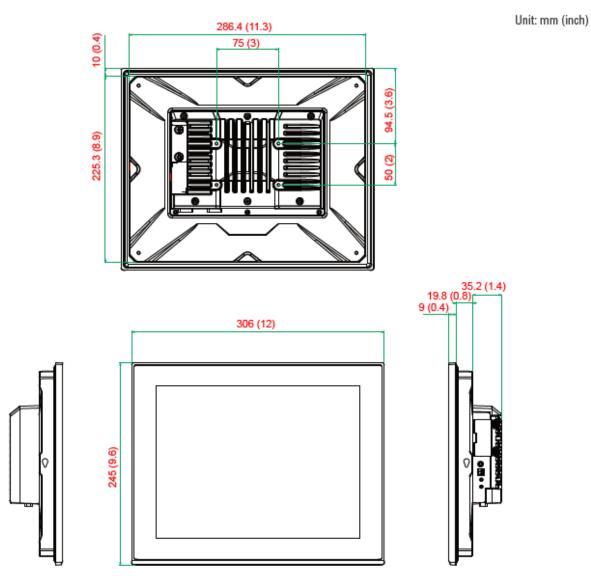
### **Front View**



### **Bottom View**



## Dimensions



## **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
- **D** Temperature Requirements
- **Grounding the MPC-2120 Series**
- D 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**

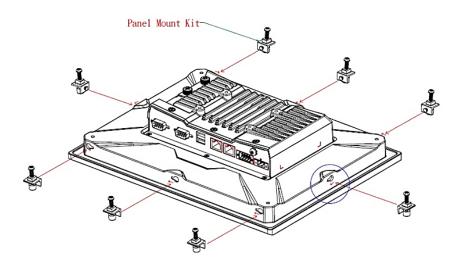
A panel-mounting kit consisting of 8 mounting units is provided in the MPC-2120 package. For details on the dimensions and the cabinet space required to panel mount the MPC-2120, refer to the following illustration:



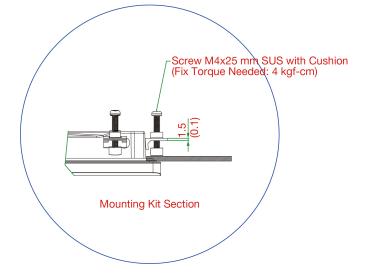
B (MIN. Thickness Behind Wall)

Α	В	С	D	R	Mounting Kits (pcs)
4.5 mm (limited max. 5.5 mm for wall thinness)	56 mm (required panel mount space for MPC)	288.4 ± 0.3 mm	227.3 ± 0.3 mm	6.5 ± 0.5 mm	8 pcs

To install the panel-mounting kit on the MPC-2120, 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:

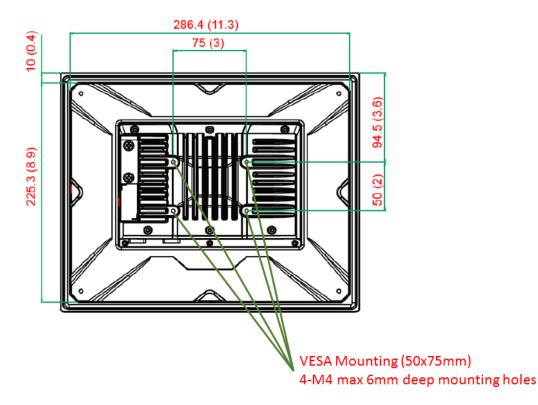


Use a torque of 4 Kgf-cm to secure the mounting screws to fasten the panel-mounting kit onto the wall.



## **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  $50 \times 75$  mm. You will require four M4 x 6 mm 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**

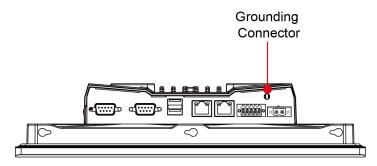
Before you power on the MPC-2120 Series, please ground the MPC-2120 as grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting the power.



#### ATTENTION

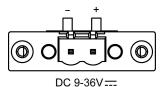
This product is intended to be mounted to a well-grounded mounting surface, such as a metal panel.

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



## **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.

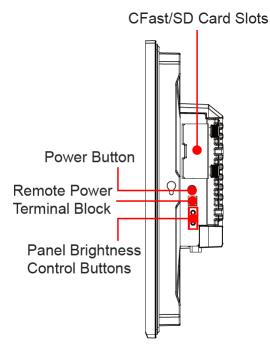


DC 9-30V ----

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 on from S4/S5
ወ	Power	Press	• 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



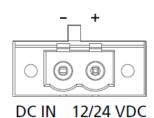
#### ATTENTION

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. The DC pin assignments are show in the figure. To connect the power source to the 2-pin terminal block, use the 60-W power adapter. The terminal block is available in the accessories package. The required wire size is 12-18 AWG, and the torque value 0.5 N-m (4.425 lb-in) should be applied.



Nominal Voltage 12-24 VDC

### **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:

1 2 3 4 5	Pin	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
	1	DCD	TxDA(-)	TxDA(-)	-
$\setminus$	2	RxD	TxDB(+)	TxDB(+)	-
	3	TxD	RxDB(+)	RxDB(+)	DataB(+)
6789	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.

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

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

The indicators on the LAN ports indicate the following:

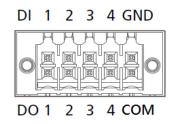
LAN 1/LAN 2	Green 100 Mbps Ethernet mode	
(Indicators on the	Yellow	1000 Mbps (Gigabit) Ethernet mode
connectors)	Off	No activity / 10 Mbps Ethernet mode

### **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.



DIO Voltage: 30 VDC

DO Output: 100 mA (single port)

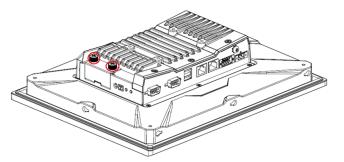
DIO terminal block (plug matched with socket) with wire size 30 and torque value 0.5 N-m (4.425 lb-in)  $\,$ 

## **Installing a CFast or SD Card**

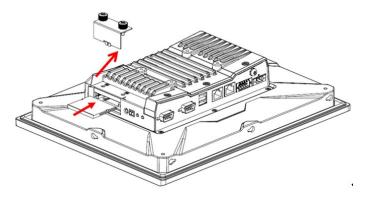
MPC-2120 provides two storage options—CFast and SD card. The storage slots are located on the left panel. You can install the OS on the CFast card and save your data into the SD card. For a list of compatible CFast models, check the component compatibility report for MPC-2120 available on the Moxa website.

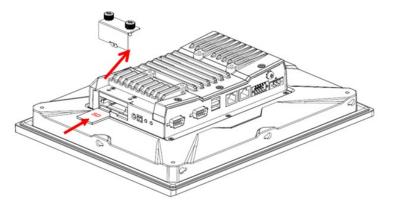
To install the storage devices, do the following:

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 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
- 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 ⊁Boot Hanager ≯Boot From File ⊁Setup Utility		This selection will direct the system to continue to booting process
	~	
F1 Help ESC Exit	UP Selectitem DOWN Selectitem	Enter Select ▶ SubHenu

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.

Main Advanced Security	InsydeH20 Setup Utility Power Boot Exit	Rev. 5.0
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 E3845 @ 1.91GHz	0 to 23, 0 to 59, 0 to 59. INCREASE/REDUCE : +/
System Bus Speed	83 MHz	
System Memory Speed	1333 MHz	
Cache RAM	2048 KB	
Total Memory	4096 MB	
VLV SOC	11 (DO 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]	
-	LEFT Select F5 Change RIGHT Select F6 Change	Enter Select F10 Save and 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	
<ul> <li>Boot Configuration</li> <li>PC1 Express Configuration</li> <li>USB Configuration</li> <li>SD Configuration</li> <li>Miscellaneous Configuration</li> <li>SATA Configuration</li> <li>Console Redirection</li> <li>Hardware Monitor</li> </ul>	Configures Boot Settings.
F1 Help UP Select LEFT Select F5 Change ESC Exit DOWN Select RIGHT Select F6 Change	Enter Select F10 Save and 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	<0n>	
F1 Help UP Select	LEFT Select F5 Change RIGHT Select F6 Change	Enter Select F10 Save and 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

Advanced	InsydeH20 Setup Utility	Rev. 5.0
USB Configuration		Disable USB port
USB Port #0 USB Port #1	<enab led=""> <enab led=""></enab></enab>	
	ct LEFT Select F5 Change ct RIGHT Select F6 Change	Enter Select F10 Save and 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

Advanced Advanced	InsydeH20 Setup Utility	Rev. 5.0
SD Configuration SDR25 Capability Support for SDCard	<enabled></enabled>	Disable/Enable SDR25 Capability in SD Card controller
DDR50 Capability Support for SDCard	<d i="" led="" sab=""></d>	
Help 1↓ Select Item c Exit ↔ Select Menu	F5/F6 Change Values Enter Select ► SubMenu	F9 Setup Defaults 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**

Advanced	InsydeH20 Setup Utility	Rev. 5.0
Miscellaneous Configurat	ion	Control power button light when system work
Power Button Light Power ON after Power Failure DO-O Level DO-1 Level DO-2 Level DO-3 Level	<enabled> <enable> <high> <high> <high> <high></high></high></high></high></enable></enabled>	
F1 Help UP Select ESC Exit DOWN Select	LEFT Select F5 Change RIGHT Select F6 Change	Enter Select F10 Save and 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 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 to set the DO 0 as high or low.

Options: High (default), Low

#### **DO-1** Level

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

Options: High (default), Low

#### DO-2 Level

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

Options: High (default), Low

#### DO-3 Level

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

Options: High (default), Low

### **SATA Configuration**

		In	sydeH20 Se	tup	Utility	1				Rev.	5.0
Adva	nced										
Chipset SAT SATA Speed	A Mode		IC 1> en2>				elect DE.	SATA	mode,	AHC I	or
Serial ATA	Port O	[Not	Instal led	]							
F1 Help ESC Exit		Select LE Select RIO	T Select HT Select			Ei Fi		Select Setup	t <b>F10</b>	Save	and

#### **Chipset SATA Mode**

Select SATA mode

Options: AHCI (default), IDE

#### **SATA Speed**

Select SATA Speed

Options: Gen1 (default), Gen2

### **Console Redirection**

Advanced	InsydeH20 Setup Ut	ility Rev. 5
Console Redirection Setup		Enable Console Redirection Function
Console Serial Redirect	<disabled></disabled>	
ACPI SPCR Table	<d i="" led="" sab=""></d>	
l Help 1↓ Select I sc Exit ↔ Select Me		

#### **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**

Advanced		InsydeH20 Setup Utility	Rev. 5.0
Hardware Monitor			
Voltage VCORE GFX 3.3V 5V	0.9 3.3	928 V 992 V 982 V 960 V	
Temperature CPU (°C/°F) System (°C/°F)		°C/102°F °C/114°F	
1 Help isc Exit	11 Select Item ↔ Select Menu	F5/F6 Change Values Enter Select ► Sublienu	F9 Setup Defaults F10 Save and Exit

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

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

## **Security Settings**

This screen allows you to configure a supervisor password.

Main Advanced Security			p Utility Exit			Rev	. 5.0
Supervisor Password Set Supervisor Password	Not In:	stalled		passwi passwi	ord and	ange the the leng t be gre acter.	th of
F1 Help UP Select ESC Exit DOWN Select			5 Change 6 Change	Enter F9	Select Setup	F10 Save	and

#### **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].



## **Power Settings**

The screen allows you to configure power settings.

Main Advanced	InsydeH20 Security Power Bo	Setup Utility ot Exit	Rev. 5.0
Wake on LAN Auto Wake on S5	<enabled> <disabled></disabled></enabled>	This wake devic Optio	feature is used to the system by a LAN e from a remote host. ns: Enabled ult), Disabled
F1 Help UP ESC Exit DOW	Select LEFT Sele N Select RIGHT Sele		Select F10 Save and 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	
Wake on LAN Auto Wake on S5 Wake on S5 Time Day of Month	<enabled> <by day="" month="" of=""> [00:00:00] [1]</by></enabled>	This feature is used to wake the system by a LAN device from a remote host. Options: Enabled (default), Disabled
-	LEFT Select F5 Change RIGHT Select F6 Change	Enter Select F10 Save and F9 Setup

## **Boot Settings**

The screen allows you to configure boot settings.

		InsydeH20 Setup Utility	Rev. 5.
Hain Advanced Securi	ty Power <mark>Boot</mark> Exit		
Main Advanced Securi Boot Type PXE Boot capability Add Boot Options USB Boot Boot Delay Time Automatic Failover Boot Order Priority PLegacy PEFI	ବାଦ ଦା ପା ସା ସା ସା ସା ସା ସା ସା ସା ସା ସା ସା ସା ସା	al Boot Type> sabled> sabled> st> abled>	Select boot type to Dual type, Legacy type or UEFI type
	11 Select Iten → Select Henu	F5/F6 Change Values Enter Select ≻ SubHenu	F9 Setup Defaults 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 Saving Changes Save Change Without Exit Exit Discarding Changes Load Optimal Defaults Load Custom Defaults Save Custom Defaults Discard Changes		Exit system setup and your changes.	1 save
F1 Help UP Select ESC Exit DOWN Select	LEFT Select F5 Change RIGHT Select F6 Change	Enter Select F10 Save F9 Setup	e and

### **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:

- 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: <u>https://rufus.akeo.ie/?locale=en\_US</u>
- 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.
- Select FAT32 (Default) from the "File system" drop-down list.
- Select 4096 bytes (Default) from the "Cluster size" drop-down list.
- Enter a drive name in the "New volume label" input box.
- Select the options: Quick format, Create a bootable disk using FreeDOS, and Create extended label and icon files.
- Click Start to format and create the bootable USB drive.

7 Rufus 1.4.10.514				
Device 🚳				
GRMCHPXFRER (E:) [8GB]				
Partition scheme and target system type				
MBR partition scheme for BIOS or UEFI computers				
File system				
FAT32 (Default)				
Cluster size				
4096 bytes (Default)				
New volume label				
GRMCHPXFRER				
Format Options 🔽				
Check device for bad blocks 2 Passes				
<ul> <li>✓ Quick format</li> <li>✓ Create a bootable disk using FreeDOS ▼</li> </ul>				
Create extended label and icon files				
About Log Start Close				
L device found				

#### ATTENTION

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

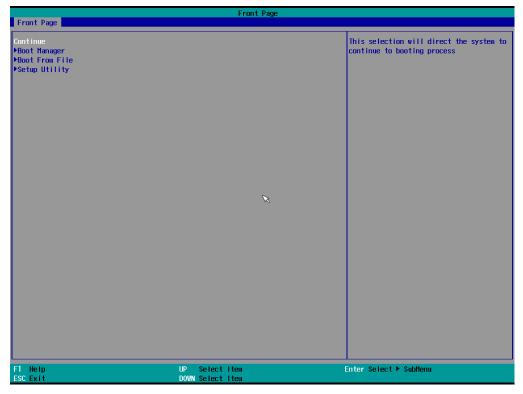
#### Step 2: Prepare the Upgrade File

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

- 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.

Boot Manager				
Boot Option Menu Legacy Hard Drive OFast 3SE Legacy USB Sandisk USB Ultra Legacy Floppy S0256 EFI Boot Devices Internal EFI Shell 1 and 1 to change option, ENTER to select an option, ESC to exit				
	R			
	~~			
F1 Help ESC Exit	UP Select Item DOWN Select Item	Enter Select 🕨 SubMenu		

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> 207010 Option: -bios -all -nv -de		
	Please do not remove the AC power!	
	(Flash Firmware Tool) Version (SEG) 100.00.07. 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% 2	5% 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.



# **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.

Organize 🔻 🛛 🛜 Oper	n Share with 🔻 New folder			!≕ ▼ 🔲
쑦 Favorites	Name	Date modified	Туре	Size
🧮 Desktop	퉬 1. chip	12/9/2016 9:52 AM	File folder	
〕 Downloads	\mu 2. Graphic&Audio	12/9/2016 9:53 AM	File folder	
	퉬 3. Network	12/9/2016 9:58 AM	File folder	
🥞 Libraries	퉬 4. MxGeneralIO	12/9/2016 9:54 AM	File folder	
	퉬 5. IO driver	12/9/2016 9:52 AM	File folder	
🖳 Computer	(7) MxOsdUtility_MPC-2070_1.0_x86_x64_Set	4/20/2017 6:10 PM	Application	183 KB
	mxver_win7_x64_setup.exe	5/3/2017 10:52 AM	Application	1,986 KB
📬 Network	🌍 SerialInterface_MPC-2070_1.0_x64_Setup	5/11/2017 3:52 PM	Application	300 KB

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

G ⊂  Second	170-W7E_V1.0_Driver_Perpheral > 2. Graphic8	≀Audio 🕨 x64	✓ Seal	rch x64	م
Organize 🔻 📑 Oper				•	
🔆 Favorites	Name	Date modified	Туре	Size	
Desktop	🛃 win64_153343.4425.exe	1/6/2017 6:21 PM	Application	126,977 K	В
ᠾ Downloads					
🥽 Libraries					
🖳 Computer					
🙀 Network					
win64_153343 Application	3.4425.exe Date modified: 1/6/2017 6:21 PM Size: 124 MB	Date created: 1/19/	/2017 9:30 AM		

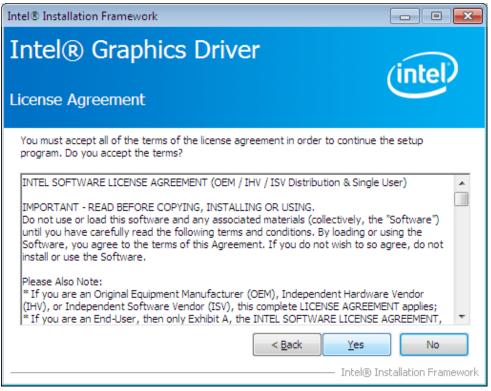
4. In the installation wizard that opens, click **Next** to continue.

🚺 Intel(R) Graphics Driver Soft	ware - InstallShield Wizard	×
	Release Version: Production Version Driver Version: 15.33.43.64.4425 Operating System(s): Microsoft Windows* 7-64 Microsoft Windows* 10 - 64 3rd Generation Intel(R) Core(TM) Processor family Valleyview Release Date: April 14, 2016 CONTENTS I. Product Support II. Installation Information III. Disclaimer IV. Important Note I. Product Support Supports Intel(R) Iris(TM) graphics, Intel(R) Iris(TM) Pro graphics and Intel(R) HD graphics on:	4
	< Back Next > Ca	ncel

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

Intel® Installation Framework	
Intel® Graphics Driver Welcome to the Setup Program	(intel)
This setup program will install the following components: - Intel® Graphics Driver It is strongly recommended that you exit all programs before continuing. Click	Next to continue,
Automatically run WinSAT and enable the Windows Aero desktop theme (i	f supported).
< <u>B</u> ack Next >	Installation Framework

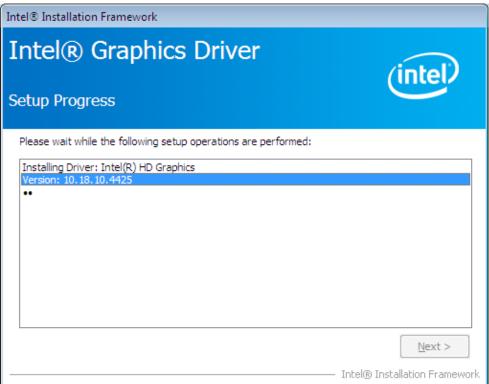
6. Click **Yes** to accept the license agreement.



7. Click **Nex**t to continue with the installation.

Intel® Installation Framework	
Intel® Graphics Driver Readme File Information	(intel)
Refer to the Readme file below to view the system requirements and installa	tion information.
Release Version: Production Version Driver Version: 15.33.43.64.4425 Operating System(s): Microsoft Windows* 7- 64 Microsoft Windows* 8.1 - 64 Microsoft Windows* 10 - 64 3rd Generation Intel(R) Core(TM) Processor family Valleyview	
Release Date: April 14, 2016	-
< <u>B</u> ack <u>Next</u>	> <u>C</u> ancel ) Installation Framework

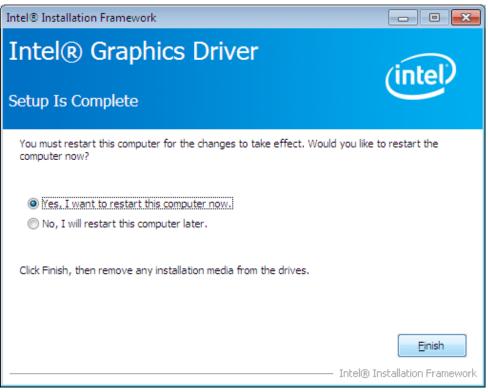
8. Wait until the installation is completed.



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

Intel® Installation Framework	
Intel® Graphics Driver Setup Progress	intel
Please wait while the following setup operations are performed:	
Deleting Registry Key: HKLM\SOFTWARE\Intel\IGDI Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Prog Deleting File: C:\Desrs\Public\Desktop\Intel(R) HD Graphics Contro Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Prog Deleting File: C:\Desrs\Public\Desktop\Intel(R) ITis(TM) Graphics Co Deleting Registry Key: HKLM\SOFTWARE\Intel\GFX\Internal\Audio Deleting Registry Key: HKLM\SOFTWARE\Intel\GFX\Internal\Audio	grams\Intel(R) HD Graphics ( grams\Intel(R) Graphics and grams\Intel\Intel(R) Graphic I Panel.Ink grams\Intel\Intel(R) Iris(TM) ontrol Panel.Ink Fix
Click Next to continue.	· · · · · · · · · · · · · · · · · · ·
	· · · · · · · · · · · · · · · · · · ·
	Next >
	<ul> <li>Intel® Installation Framework</li> </ul>

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.

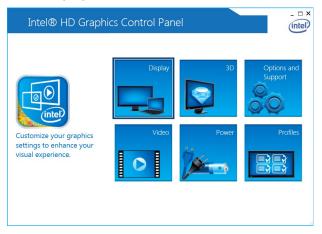
### **Adjusting the Display Resolution**

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.

G	raphics Properties	7 🙆 🙆	
	raphics Options xit Tray	· 9	
I	ntel® HD Graphics Control Panel	Customize	

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.

# **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**

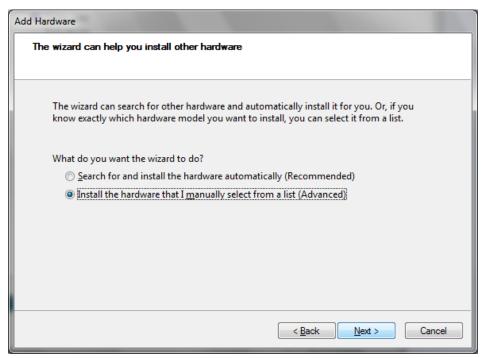
1. Item 30pen Device Manager from your MPC-2120 and select Add legacy hardware



2. Click Next

Add Hardware	A TRANSPORT
	Welcome to the Add Hardware Wizard
	This wizard helps you install driver software to support older devices that do not support Plug-and-Play and which are not automatically recognized by Windows.
	You should only use this wizard if you are an advanced user or you have been directed here by technical support.
	If your hardware came with an installation CD, it is recommended that you click Cancel to close this wizard and use the manufacturer's CD to install this hardware.
	To continue, click Next.
	< Back Next > Cancel

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



4. Click Next

Add Hardware	
From the list below, select the type of hardware you are installing	
If you do not see the hardware category you want, click Show All Devices.	
Common <u>h</u> ardware types:	
Show All Devices	*
http://www.selance.com/actions	=
IDE ATA/ATAPI controllers	
🖶 IEEE 1284.4 compatible printer	
🖶 IEEE 1284.4 devices	
🟺 IEEE 1394 Bus host controllers	
Traging devices	
Infrared devices	
Senter Extender	+
< Back Next >	Cancel

5. Select Have Disk...

Add Hardware
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Model
This driver is digitally signed.
Tell me why driver signing is important
< <u>B</u> ack Next > Cancel

6. Point to the path Driver\MPC-2120-W7E\_V1.0\_Driver\_Perpheral\4.MxGeneralIO\x64 and select MxGeneralIo.inf

📇 Locate File	- res and is read to be	×
Look in: 📗	x64	- 🥝 🤌 📴
Name	*	Date modified Ty
MxGener	alIo.inf	6/8/2013 10:10 PM Se
	11	
File name:	MxGenerallo.inf	✓ Open
Files of type:	Setup Information (*.inf)	Cancel

#### 7. Select Next

Add Hardware
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Model
This driver is digitally signed. <u>Tell me why driver signing is important</u>
< <u>B</u> ack Next > Cancel

#### 8. Select Next

Add Hardware		
The wizard is ready to install your hardware		
Hardware to install:		
MxGeneralIo PortIO Driver (KMDF)		
To start installing your new hardware, click Next.		
	< <u>B</u> ack Next > Ca	ncel

9. Select Finish

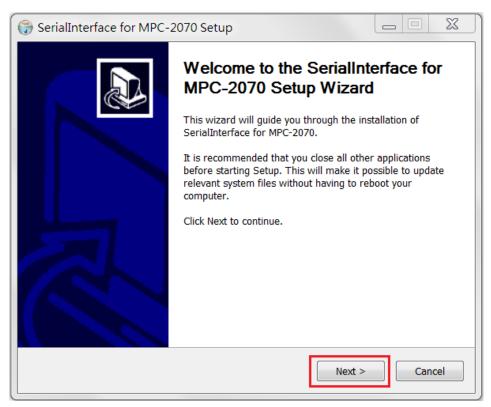
Add Hardware	
	Completing the Add Hardware Wizard
	The following hardware was installed: MxGeneralIo PortIO Driver (KMDF) Windows has finished installing the software for this device.
4	To close this wizard, click Finish.
	< <u>B</u> ack <b>Finish</b> Cancel

10. Double check if the driver has successfully installed.

### Installing the SerialInterface Utility

Complete the following steps to install the SerialInterface utility:

 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.



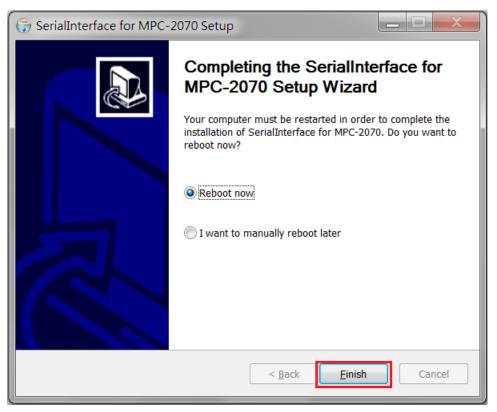
2. Click **Next** to continue.

G SerialInterface for MP	C-2070 Setup			_ □	X
6	Choose Users Choose for which u MPC-2070.	users you want	to install Se	rialInterface	for
Select whether you want to users of this computer. Cl		e for MPC-2070	) for yoursel	f only or for	all
Install for anyon	e using this computer				
Install just for m	e				
		< Back	Next >	Can	icel

3. The default destination folder is **C:\Program Files(x86)\Moxa\Mxsp**; click **Install** to continue.

😚 SerialInterface for	MPC-2070 Setup			_ 🗆 🗙
6	Choose Install I Choose the folde MPC-2070.	L <b>ocation</b> r in which to insta	ll SerialInterfa	ice for
	lInterface for MPC-2070 Prowse and select anothe			
Destination Folder	(x86)\Moxa\SerialInterfa	ce	Bro	wse
Space required: 421.0 Space available: 136.0				
		< Back	Install	Cancel

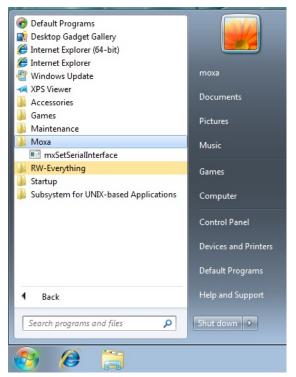
4. Click **Finish** to complete installation.



### **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).

🖳 Set Seria	al Interface 📃 🔳 💌
Port: Mode:	COM1 COM1 COM2
C	K Cancel

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

🖳 Set Seria	l Interface 🗖 🗖 💌
Port:	COM1 -
Mode:	RS232 -
0	RS485 2 wires RS422 / RS485 4 wires RS232

4. Click OK

🖳 Set Serial Interface 📃 🔲 💌
Port: COM1 -
Mode: RS485 2 wires 🔻
OK Cancel



## **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.