# MPC-2120 Panel Computer Hardware User's Manual

Edition 2.1, September 2019

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
  - \* The certification process is in progress.

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

# **Panel Mounting**

The MPC-2120 Series comes with 8 clamp mounts that allow for installation onto a wall (where space has been cut out to accommodate the rest of the hardware) or into computing stations where a flush mount is desired. The maximum thickness of the surface to which the computer will be clamped is 4.6 mm. For a secure mounting, all 8 clamps must be used. The clamp arms are fastened into slots on all four sides of the MPC-2120. Use the short M4 SUS (stainless) screws to fasten the clamp arms to the MPC-2120 mounting slots, as shown in the diagram below. Next, use the clamps to fasten the computer to its mounting point. Note the torque value that is shown in the figure below as guidance when fastening the screws on the clamps.



A	В	С	D	R	Mounting Kits (pcs)
11mm	56mm	287. 4mm	226. 3mm	2mm	8pcs

# **VESA Mounting**

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



# **Wiring Requirements**

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

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

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

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

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



## ATTENTION

### Safety First!

Be sure to disconnect the power cord before installing and/or wiring your MPC-2120 Series.

#### Wiring Caution!

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

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

# **Temperature Requirements**

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

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

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

# **Grounding the MPC-2120 Series**

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



#### ATTENTION

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

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



# **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.



To power off the MPC-2120, we recommend using the "shut down" function provided by the OS installed on the MPC. If you use the **Power** button, you may enter one of the following states depending on the power management settings in the OS: standby, hibernation, or system shutdown mode. If you encounter problems, you can press and hold the **Power** button for 4 seconds to force a hard shutdown of the system.

# **Display-Control Buttons**

The MPC-2120 is provided with two display-control buttons on the right panel.



The usage of the display-control buttons is described in the following table:

Symbol and Name		Usage	Function
_	Power	Press	-Power on from S4/S5
ப			-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
岺	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**



# **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	Dim	DC 222	DC 433	RS-485	RS-485
	PIN	K5-252	K5-422	(4-wire)	(2-wire)
	1	DCD	TxDA(-)	TxDA(-)	-
	2	RxD	TxDB(+)	TxDB(+)	-
0 \ / 0	3	TxD	RxDB(+)	RxDB(+)	DataB(+)
	4	DTR	RxDA(-)	RxDA(-)	DataA(-)
	5	GND	GND	GND	GND
6789	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)-
	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	Yellow	1000 Mbps (Gigabit) Ethernet mode
the 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.



DO 1 2 3 4 Source

# **Installing a CFast or SD Card**

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

To install the storage devices, do the following:

1. Remove the 2 screws holding the storage-slot cover to the MPC-2120.



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





3. Reattach the cover and secure it with screws.

4

# **BIOS Settings**

In this chapter, we describe the BIOS settings for the MPC-2120 embedded computer. The BIOS is a set of input/output control routines for peripherals. The BIOS is used to initialize basic peripherals and helps boot the operating system before the operating system is loaded. The BIOS setup allows the user to modify the system configurations of these basic input/output peripherals. All of the configurations are stored in the CMOS RAM, which has a backup battery power in case the computer is not connected to a power source. Consequently, the data stored in the CMOS RAM is retained when the system is rebooted or the power is disconnected.

The following topics are covered in this chapter:

Entering the BIOS Setup

#### Basic System Information

- Boot Configuration
- PCI Express Configuration
- USB Configuration
- SD Configuration
- Miscellaneous Configuration
- SATA Configuration
- > Console Redirection
- Hardware Monitor
- Security Settings
  - Set Supervisor Password
- Power Settings
  - Wake on LAN
  - Auto Wake on S5

#### Boot Settings

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

#### Exit Settings

- Exit Saving Changes
- Save Change Without Exit
- Exit Discarding Changes
- > Load Optimal Defaults
- Load Custom Defaults
- > Save Custom Defaults
- Discard Changes
- Upgrading the BIOS

# **Entering the BIOS Setup**

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

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

Click Setup Utility to enter the BIOS configuration.

	Front Page	
Front Page		
Continue ÞBoot Manager ÞBoot From File ÞSetup Utility		This selection will direct the system to continue to booting process
	Ŕ	
F1 Help ESC Exit	UP Select Item DOWN Select Item	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	0 to 23, 0 to 59, 0 to 59.
	E3845 @ 1.91GHz	INCREASE/REDUCE : +/
System Bus Speed	83 MHz	
System Memory Speed	1333 MHz	
Cache RAM	2048 KB	
Total Memory	4096 MB	
VLV SOC	11 (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]	
F1 Help UP Select	LEFT Select F5 Change	Enter Select F10 Save and
ESC Exit DOWN Select	RIGHT Select F6 Change	F9 Setup

# **Advanced Settings**

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

		InsydeH20 Se	tup Utility	Rev. 5.0
Main Adva	nced Security	/ Power Boot	Exit	
<ul> <li>▶Boot Config</li> <li>▶PCI Express</li> <li>▶USB Config</li> <li>▶SD Config</li> <li>▶SD Config</li> <li>▶Miscellanet</li> <li>▶SATA Config</li> <li>▶Console Ret</li> <li>▶Hardware March</li> </ul>	guration s Configuratio uration ration ous Configurat guration direction onitor	on tion		Configures Boot Settings.
F1 Help FSC Exit	UP Select	LEFT Select	F5 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 Numlock	<0n>	Selects Power-on Numlock	state	for
F1 Help UP Selec	t LEFT Select F5 Change	Enter Select F10	Save a	and

# **PCI Express Configuration**

### **PCIE PORT 1 Speed**

Configure PCIe Port1 Speed

Options: Auto, Gen1 and Gen2

# **PCIE PORT 2 Speed**

Configure PCIe Port2 Speed

Options: Auto, Gen1 and Gen2

# **USB** Configuration

	InsydeH20 Setup Utility		Rev. 5.0
Advanced			
USB Configuration		Disable USB port	
USB Port #0 USB Port #1	<enab led=""> <enab led=""></enab></enab>		
F1 Help UP S ESC Exit DOWN S	Select LEFT Select F5 Change Select RIGHT Select F6 Change	Enter Select F10 F9 Setup	Save and

#### USB Port #0

Enable or Disable the USB port 0; if disabled, the system won't detect when a USB device is plugged in. Option: Enabled (default), Disabled

#### USB Port #1

Enable or Disable the USB port 1; if disabled, the system won't detect when a USB device is plugged in. Option: Enabled (default), Disabled

# **SD Configuration**

	InsydeH20 Setup Utility	Rev. 5.0
Advanced		
Advanced SD Configuration SDR25 Capability Support for SDCard DDR50 Capability Support for SDCard	<enabled> <d i="" sabled=""></d></enabled>	Disable/Enable SDR25 Capability in SD Card controller
F1 Help 11 Select Item	F5/F6 Change Values	F9 Setup Defaults
Esc Exit ↔ Select Menu	Enter Select 🕨 SubHenu	F10 Save and Exit

### SDR25 Capability Support for SD Card

Set Input/output timing for SDR25 mode.

Option: Enabled (default), Disabled

### **DDR50 Capability Support for SD Card**

Set Input/output timing for DDR50 mode.

Option: Disabled (default), Enabled

### **Miscellaneous Configuration**

*	InsydeH20 Setup Utility	Rev. 5.0
Advanced		
Miscellaneous Configurati	on	Control power button light when system work
Power Button Light	<enabled></enabled>	
Power ON after Power	<enable></enable>	
Failure		
DO-0 Level	<h1gh></h1gh>	
DO-1 Level	<high></high>	
D0-2 Level	<h1gh></h1gh>	
DO-3 Level	<h1gh></h1gh>	
F1 Help UP Select	LEFT Select F5 Change	Enter Select F10 Save and
ESC Exit DOWN Select	RIGHT Select F6 Change	F9 Setup

#### **Power Button Light**

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

Options: Enable(default), Disable.

#### **Power ON after Power Failure**

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

Options: ON (default), OFF

#### **DO-0** Level

This item allows you set the DO 0 as high or low.

Options: High (default), Low

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

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

Options: High (default), Low

#### **DO-2** Level

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

Options: High (default), Low

#### **DO-3 Level**

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

Options: High (default), Low

# **SATA Configuration**

		InsydeH20	) Setup	Utility				Rev.	5.0
Advanced	1								
Chipset SATA Mo SATA Speed	ode	<ahc1> <gen2></gen2></ahc1>			Select IDE.	SATA I	mode,	AHC I	or
Serial ATA Port	t0[	Not Insta	lled]						
F1 Help UF	Select	LEFT <u>Se</u>	lect F5	Change	Enter	Select	F10_	Save a	and
ESC Exit DO	OWN Select	RIGHT Se	lect F6	Change	F9	Setup			

### **Chipset SATA Mode**

Select SATA mode

Options: AHCI (default), IDE

### **SATA Speed**

Select SATA Speed

Options: Gen1 (default), Gen2

# **Console Redirection**

Advanced	InsydeH20 Setup Utility	Rev. 5.0
Console Redirection Setup		Enable Console Redirection Eurotion
Console Serial Redirect	<uisabied></uisabied>	
ACPI SPCR Table	<d i="" led="" sab=""></d>	
Fl Help 14 Select Item	F5/F6 Change Values	F9 Setup Defaults
Esc Exit ↔ Select Menu	Enter Select 🕨 SubMenu	FIO 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**

Advanced		InsydeH20 Setup Utility	Rev. 5.0
Hardware Monitor			
Voltage VCORE GFX 3, 3V 5V	0 0 3 4	1.928 V 1.992 V 3.392 V 3.392 V .660 V	
Temperature CPU (°C/°F) System (°C/°F)	3	39°C/102°F 16°C/114°F	
F1 Help Esc Exit	î↓ Select Item ↔ Select Menu	F5/F6 Change Values Enter Select ≻ SubHenu	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.

			Insyde	120 Set	up Utility		Rev	. 5.0
Main	Advanced	Security	Power	Boot	Exit			
Superv Set Su	isor Passw pervisor P	vord Password	Not In:	stalled		Install or ( password and password mu than one cha	Change the 1 the leng 1st be gre aracter.	th of ater
F1 He ESC Ex	lp UP it DOW	Select N Select	LEFT	Select Select	F5 Change F6 Change	Enter Selec F9 Setup	t 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.

	InsydeH20 Setup Utility	Rev. 5.0
Main Advanced	Security Power Boot Exit	
Wake on LAN Auto Wake on S5	<enabled> <disabled></disabled></enabled>	This feature is used to wake the system by a LAN device from a remote host. Options: Enabled (default), Disabled
F1 Help UP	Select LEFT Select F5 Change	Enter Select F10 Save and

## 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)

Main Advanced	Ins Security Do	ydeH20 Setup	Utility			Rev. 5	. 0
	Security PU		ATU				_
Wake on LAN Auto Wake on S5 Wake on S5 Time Day of Month	<en &lt;₿y [00 [1]</en 	abled> Day of Mont :00:00]	h>	This feat wake the device fr Options: (default)	ture is system l rom a rei Enabled ), Disab	used to ay a LAN note hos led	ıt.
F1 Help UP ESC Exit DOWN	Select LEF Select RIG	T SelectF5 HT SelectF6	Change Change	Enter Sel F9 Set	lect F10 tup	Save an	d

# **Boot Settings**

The screen allows you to configure boot settings.

	InsydeH20 Setup Util	ity	Rev. 5.0
Main Advanced Security Power	Boot Exit		
Hain Advanced Security Power Boot Type PXE Boot to LAN PXE Boot capability Add Boot Options USB Boot Boot Delay Time Automatic Failover Boot Order Priority HLegacy FEF1	Boot     Exit       shual Boot Type>       <0isabled>       <0isabled>       <0isabled>       <0iabled>       <0ast>       <0ast)       <0ast)    <	Select boot type to Dual ty type or UEFI type	ne, Legacy
F1 Help 14 Select Esc Exit (+) Select	lten F5/F6 Change Value Menu Enter Select ► Sub	rs F9 Setup Defaults Menu 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.

•			Insyde	120 Set	up Uti	lity				Rev.	5.0
Main	Advanced	Security	Power	Boot	Exit						
Exit S Save C Exit D Load C Save C Discar	aving Char Change With Liscarding Uptimal De Custom Def Custom Def Custom Def Cd Changes	nges nout Exit Changes faults aults aults					Exit your	system s	setup	and	save
F1 He ESC Ex	it DO	Select IN Select	LEFT S RIGHT S	Select Select	F5 Char F6 Char	nge nge	Enter F9	Select Setup	F10 S	ave	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.

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	
V Quick format	
✓ Create a bootable disk using FreeDOS ▼	
Create extended label and icon files	
About Log Start Close	
device found	



### ATTENTION

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

4

#### 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 Henu Legacy Hard Drive CFast 3SE Legacy USB Sandisk USB Uitra Legacy Floppy SD256 EFI Boot Devices Internal EFI Shell † and 4 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
- 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> 2070101	0.exe			
Option: -bios -all -nv -desc	c -me			
	Please	do not remove t	he AC power!	
Insyde H20FFT Copyright(c)	(Flash 2012	Firmware Tool) - 2014, Insyde S Reserved.	Version (SEG) oftware Corp.	100.00.07.20 All Rights
	Initia	lizing		
	Current New	BIOS Model name : BIOS Model name :	MPC-2070 MPC-2070	
	Current New	BIOS Version : V1.00 BIOS Version : V1.00	9S10 9S10	
	Updati	ng Block at FFFF	F000	
0% 25	8	50%	75%	100%
				100%

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

BIOS Version	V1.00S10
Project Name	MPC-2120

# **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.

🗲 🗢 📕 🕨 Compu	ter  ADATA (E:)  MPC-2070-W7E_V1.0_Driver_	Perpheral 🕨	<b>- 4</b>	Search MPC-2070-W7E_	
Organize 🔻 🛛 📜 Ope	n Share with 🔻 New folder			≡ - □	?
🔆 Favorites	Name	Date modified	Туре	Size	
Mesktop	鷆 1. chip	12/9/2016 9:52 AM	File folder		
鷆 Downloads	퉬 2. Graphic&Audio	12/9/2016 9:53 AM	File folder		
	]] 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	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	G SerialInterface_MPC-2070_1.0_x64_Setup	5/11/2017 3:52 PM	Application	300 KB	
2. Graphic&	Audio Date modified: 12/9/2016 9:53 AM				

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

G ♥ ■ « MPC-20	70-W7E_V1.0_Driver_Perpheral  2. Graphic&Au	dio 🕨 x64	✓ <sup>4</sup> → Sear	rch хб4	٩
Organize 🔻 📑 Oper	n New folder				
🔆 Favorites	Name	Date modified	Туре	Size	
Marktop	win64_153343.4425.exe	1/6/2017 6:21 PM	Application	126,97	7 KB
🧸 Downloads					
ᇘ Libraries					
Computer					
The computer					
🗣 Network					
win64 152242	4425 ovo Data modified: 1 /6/2017 6-21 DM	Data created: 1/10	/2017 0.20 AM		
Application	Size: 124 MB	Date created: 1/19,	/2017 9:50 AIM		

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

🛃 Intel(R) Graphics Driver Soft	tware - 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:	
	< 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	- 0 🗙
Intel® Graphics Driver Readme File Information	(intel)
Refer to the Readme file below to view the system requirements and installa	ation 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>Back</u> Intel@	> <u>C</u> ancel 3 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\Inter(dSD1 Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Prog Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Prog Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Prog Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Prog Deleting File: C:\Users\Public\Desktop\Intel(R) HD Graphics Contro Deleting File: C:\Users\Public\Desktop\Intel(R) Iris(TM) Graphics Co Deleting Registry Key: HKLM\SOFTWARE\Intel\GFX\Internal\Audio Deleting Registry Key: HKLM\SOFTWARE\Intel\GFX\Internal\Audio	grams\Intel\Intel(R) HD Grap 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.	<b>•</b>
	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.

Graphics Properties	
Graphics Options	+ <b>b</b>
Exit Tray	
Intel® 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. Open Device Manager from your MPC-2120 and select Add legacy hardware



2. Click Next

Add Hardware	
	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.
	< <u>B</u> ack Next > Cancel

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

	Add Hardware				
	The wizard can help you install other hardware				
	The wizard can search for other hardware and automatically install it for you. Or, if you know exactly which hardware model you want to install, you can select it from a list.				
	What do you want the wizard to do?				
l	Search for and install the hardware automatically (Recommended)				
	Install the hardware that I manually select from a list (Advanced)				
l					
l					
l					
	< <u>B</u> ack <u>N</u> ext > Cancel				

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	A			
http://www.commons.com/commons.com/commons.com/commons.com/commons.com/commons.com/commons.com/commons.com/com/com/com/com/com/com/com/com/com/				
iDE ATA/ATAPI controllers				
🖶 IEEE 1284.4 compatible printer				
📾 IEEE 1284.4 devices				
🖳 IEEE 1394 Bus host controllers				
The second secon				
🖉 Infrared devices				
Senter Extender	Ŧ			
< 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          Model         Image: This driver is digitally signed.         Image: This driver is digitally signed.         Image: 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				
Look in: 🌗 x64 🗸 🗸		- G 🤌 📂 🛄-		
Name	*	Date modified T	i	
MxGene	ralIo.inf	6/8/2013 10:10 PM S	e	
•		•		
File name:	MxGenerallo.inf	- Open		
Files of type:	Setup Information (*.inf)	✓ Cancel	ŧ	

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				
MxGeneralIo PortIO Driver (KMDF)				
This driver is digitally signed.       Have Disk         Tell me why driver signing is important       Important				
< Back Next > Cancel				

8. Select Next

Add Hardware			
The wizard is ready to install your hardware			
Hardware	e to install:		
2	MxGeneralIo PortIO Driver (KMDF)		
To start in	nstalling your new hardware, click Next.		
	< <u>B</u> ack	<u>N</u> ext >	Cancel

9. Select Finish



10. Double check if the driver has successfully installed.

# **Installing the SerialInterface Utility**

Complete the following steps to install the SerialInterface utility:

 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.

😙 SerialInterface for MPC-2070 Setup				
6	Choose Users Choose for which users you want MPC-2070.	to install SerialInterface for		
Select whether you want to install SerialInterface for MPC-2070 for yourself only or for all users of this computer. Click Next to continue.				
Install for anyone using this computer				
Install just for me				
	< Back	Next > Cancel		

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

🕞 SerialInterface for	MPC-2070 Setup			. 🗆 🗙
6	Choose Install L Choose the folder MPC-2070.	.ocation r in which to insta	ıll SerialInterfac	e for
Setup will install Seria different folder, click B	lInterface for MPC-2070 Prowse and select anothe	in the following f er folder. Click Ins	older. To install stall to start the	in a installation.
Destination Folder	(x86)\Moxa\SerialInterfa	ce	Brow	/se
Space required: 421.0 Space available: 136.	)KB DGB			
		< 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 Seri	al Interface 📃 🔳 💌
Port: Mode:	COM1 COM1 COM2
0	OK Cancel

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

🖳 Set Seria	I Interface 📃 🔍 💌
Port:	COM1 👻
Mode:	RS232 -
0	RS485 2 wires RS422 / RS485 4 wires RS232

4. Click OK

🖳 Set Serial Inte	rface 🗖 🗖 💌
Port: COM	1 •
Mode: RS48	35 2 wires 🔻
ок	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.



#### 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.