MPC-2070 Panel Computer Hardware User's Manual

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www.moxa.com/product



MPC-2070 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-2070 panel computers.

The following topics are covered in this chapter:

- Overview
- Ordering Information
- Package Checklist
- Product Features
- MPC-2070 Hardware Specifications

Overview

The MPC-2070 7-inch panel computers with Intel® Atom[™] processor E3800 Series deliver a reliable and durable platform of wide versatility for use in industrial environments. With two software selectable RS-232/422/485 serial ports and two gigabit Ethernet LAN ports, the MPC-2070 panel computers support a wide variety of serial interfaces as well as high-speed IT communications, all with native network redundancy.

The MPC-2070 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-2070 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.

Ordering Information

Available Models

- MPC-2070-E2-T: 7-inch fanless panel computer with Intel® Atom[™] Series E3826 processor, 2 RS-232/422/485 serial ports, 2 Gigabit LAN ports, 2 USB 2.0 ports, and CFast slot, 9-36 VDC power input, -40 to 70°C operating temperature
- MPC-2070-E2-T-W7E: 7-inch fanless panel computer with Intel® Atom[™] Series E3826 processor, 2 RS-232/422/485 serial ports, 2 Gigabit LAN ports, 2 USB 2.0 ports, CFast slot with 32 GB card preinstalled, 9-36 VDC power input, -40 to 70°C operating temperature

Package Checklist

The MPC-2070 panel computer is shipped with the following items:

- 1 MPC-2070 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
- 6 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-2070 Series panel computer has the following features:

- 7-inch panel computer
- Intel® Atom[™] Processor E3826 1.46GHz
- -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

MPC-2070 Hardware Specifications

Computer

CPU: Intel® Atom™ Processor E3826, Dual Core, 1.46 GHz
Supported OS: Windows Embedded Standard 7 32/64-bit, Windows 7 Professional 32/64-bit (the OS is not pre-installed in some models)
System Memory: 4 GB pre-installed (SDRAM)
USB: USB 2.0 hosts x 2, type-A connectors, supporting system boot up
Storage: 1 CFast slot + 1 SD card slot (storage is not pre-installed in some models)

Display

Panel Size: 7-inch viewable image size
Touch: Capacitive multi-touch with glove-friendly support
Aspect Ratio: 16:9
Pixels: 800 x 480
Pixel Pitch (RGB): 0.1905 (H) x 0.1905 (V) mm
Response Time: 5 ms (gray to gray)
Contrast Ratio: 600:1
Light Intensity: 1000 cd/m2
Active Display Area: 152.4 (H) x 91.44 (V) mm

Ethernet Interface

LAN: Auto-sensing 10/100/1000 Mbps ports (RJ45 port) x 2 Magnetic Isolation Protection: 1.5 kV built-in

Serial Interface

Serial Standards: 2 RS-232/422/485 ports, software-selectable (DB9 male)

Serial Communication Parameters

Data Bits: 5, 6, 7, 8 Stop Bits: 1, 1.5, 2 Parity: None, Even, Odd, Space, Mark Flow Control: RTS/CTS, XON/XOFF Baudrate: 50 bps to 115.2 Kbps

Serial Signals

RS-232: TxD, RxD, DTR, DSR, RTS, CTS, DCD, GND **RS-422:** TxD+, TxD-, RxD+, RxD-, GND **RS-485-4w:** TxD+, TxD-, RxD+, RxD-, GND **RS-485-2w:** Data+, Data-, GND

Physical Characteristics

Housing: Aluminum sheet metal Weight: 1.40 kg (3.09 lb) Dimensions: 200 x 140 x 45 mm (7.9 x 5.5 x 1.8 in) Mounting: VESA mount (50 x 75 mm), and panel mount System Cooling: Fanless thermal design

Environmental Limits

Operating Temperature: -40 to 70°C (-40 to 158°F)

Storage Temperature: -40 to 70°C (-40 to 158°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

Anti-Vibration: 2 Grms, 5-500 Hz frequency, compliant with IEC 60068-2-6 standard

Anti-shock: 20 Grms, half sine wave under system operating, 11 ms duration, compliant with IEC 60068-2-27 standard

Power Requirements

Input Voltage:

• DC: 12/24 VDC (Range 9 to 36 VDC) Power Consumption: Less than 70 W

Standards and Certifications

Safety: UL 60950-1, IEC 60950-1 EMC: EN 55032, EN 55024 EMI: CISPR 32, FCC Part 15B Class A EMS:

IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV IEC 61000-4-5 Surge: Power: 1 kV; Signal: 1 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8

Ingress Protection Rating: IP66 (front) / IP22 (rear) Green Product: RoHS, cRoHS, WEEE

Warranty

Warranty Period:

- Computer system: 3 years
- LCD panel: 1 year

Details: See www.moxa.com/warranty

Hardware Introduction

The MPC-2070 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.

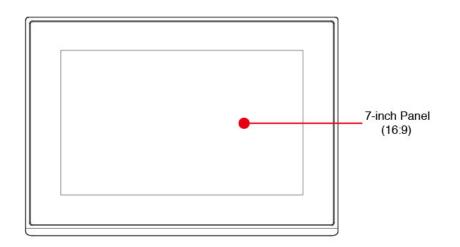
The following topics are covered in this chapter:

□ Appearance

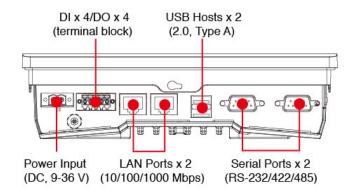
- > Front View
- ➢ Bottom View
- Dimensions

Appearance

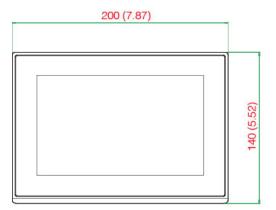
Front View

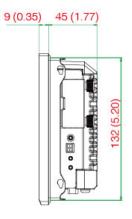


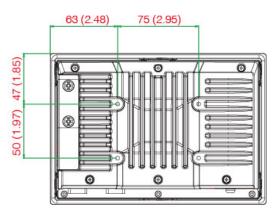
Bottom View

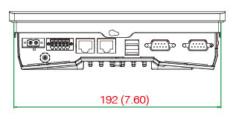


Dimensions









Hardware Connection Description

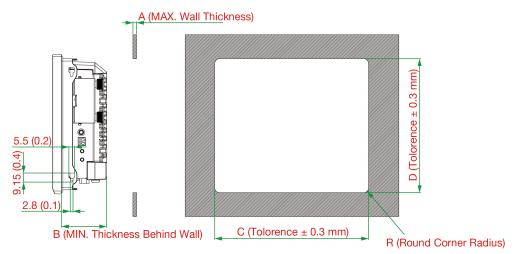
In this chapter, we show how to connect the panel computer to the network and to various devices.

The following topics are covered in this chapter:

- Panel Mounting
- VESA Mounting
- Wiring Requirements
- **D** Temperature Requirements
- **Grounding the MPC-2070 Series**
- D Powering On/Off the MPC-2070 Series
- Display-Control Buttons
- Connector Description
 - DC Power Input
 - Serial Ports
 - > Ethernet Ports
 - USB Ports
 - > DIO Port
- Installing a CFast or SD Card

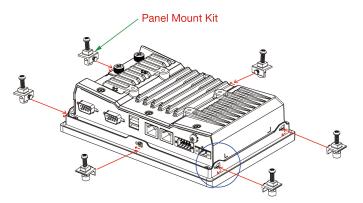
Panel Mounting

A panel-mounting kit consisting of 6 mounting units is provided in the MPC-2070 package. For details on the dimensions and the cabinet space required to panel mount the MPC-2070, refer to the following illustration:

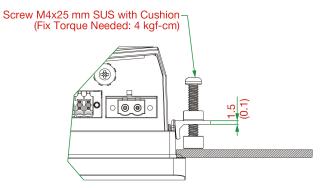


А	В	С	D	R	Mounting Kits (pcs)
4.5 mm (limited max. 5 mm for wall thinness)	46 mm (required panel mount space for MPC)	193.3 ± 0.3 mm	133.3 ± 0.3 mm	5 ± 0.5 mm	6 pcs

To install the panel-mounting kit on the MPC-2070, 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:

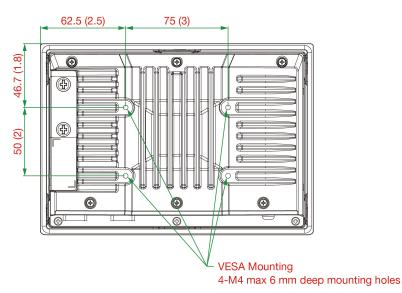


Use a torque of 4 Kgf-cm to secure the mounting screws to fasten the panel-mounting kit onto the wall.



VESA Mounting

The MPC-2070 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 50×75 mm. You will require four M4 x 6mm screws to mount the MPC-2070.



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-2070 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-2070 Series

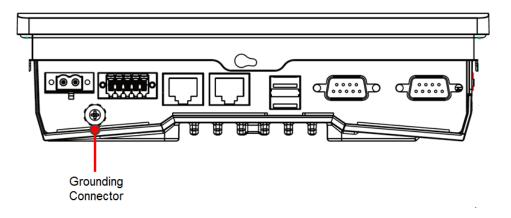
Before you power on the MPC-2070 Series, please ground the MPC-2070 as grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting the power.



ATTENTION

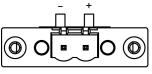
This product is intended to be mounted to a well-grounded mounting surface, such as a metal panel.

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-2070 Series

Connect a **Terminal Block to Power Jack Converter** to the MPC-2070 terminal block and connect at least a 30 W power adapter to the converter. Supply power through the power adapter. After you have connected a power source, press the **Power** button to turn the computer on. It takes about 10 to 30 seconds for the system to boot up.

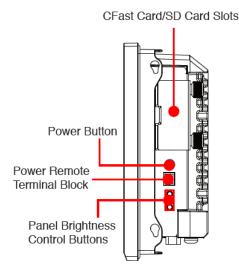


DC 9-36V ===

To power off the MPC-2070, 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-2070 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
		Press	Power on from S4/S5
45	Power		• S0 to S3/S4/S5
Ο			• 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



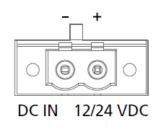
ATTENTION

The MPC-2070 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-2070 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-2070 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-2070 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:

12345	
6789	

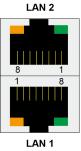
	Pin	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
	1	DCD	TxDA(-)	TxDA(-)	-
0	2	RxD	TxDB(+)	TxDB(+)	-
	3	TxD	RxDB(+)	RxDB(+)	DataB(+)
	4	DTR	RxDA(-)	RxDA(-)	DataA(-)
	5	GND	GND	GND	GND
	6	DSR	-	-	-
	7	RTS	-	-	-
	8	CTS	-	-	-

Ethernet Ports

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

The 10/100/1000 Mbps Ethernet LAN port uses 8-pin RJ45 connectors. The following diagram shows the pinouts and the descriptions for these ports.

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



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

The indicators on the LAN ports indicate the following:

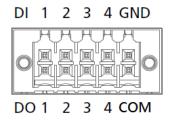
LAN 1/LAN 2	Green	100 Mbps Ethernet mode
(Indicators on the	Yellow	1000 Mbps (Gigabit) Ethernet mode
connectors)	Off	No activity / 10 Mbps Ethernet mode

USB Ports

Four 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-2070 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)

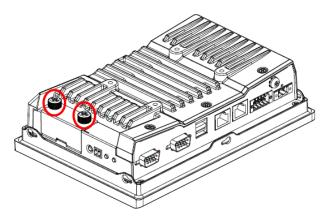
DIO terminal block (plug matched with socket) with wire size 30 and torque value 0.5 N-m (4.425 lb-in).

Installing a CFast or SD Card

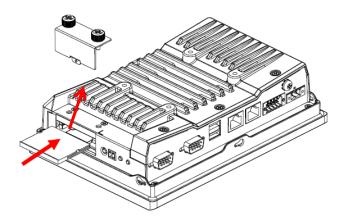
MPC-2070 provides two storage options—CFast and SD card. The storage slots are located on the left panel. You can install the OS on the CFast card and save your data into the SD card. For a list of compatible CFast models, check the component compatibility report for MPC-2070 available on the Moxa website.

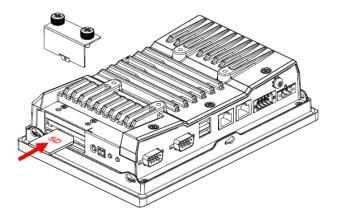
To install the storage devices, do the following:

1. Remove the 2 screws holding the storage-slot cover to the MPC-2070.



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-2070 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
	R	
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-2070	hour, minute, second
Processor Type	Intel(R) Atom(TM) CPU E3845 @ 1.91GHz	field. Valid range is from 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)	
	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	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.

Main Advand	insyc ed Security Pow	<mark>leH2O Setup</mark> er Boot E:				Rev. 🤅	ō. O
▶Boot Configu ▶PCI Express ▶USB Configura	ration Configuration ration ition is Configuration iration rection		Config	ures Bo	oot Se	etting	5.
F1 Help ESC Exit	UP Select LEFT DOWN Select RIGH			Select Setup	F10 \$	Save ar	nd

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
Advar	nced		
Boot Configu Numlock	iration	<0n>	Selects Power-on state for Numlock
F1 Help ESC Exit		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	Insyde	120 Setup Util	i ty		Rev. 5.0
USB Configuration	n		Disabl	e USB port	
USB Port #0 USB Port #1	<enable< td=""><td></td><td></td><td></td><td></td></enable<>				
F1 Help UP	Select LEFT S		-	Select F10	Save and
	Select RIGHT S		-	Setup	Save dilu

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	InsydeH20 Setup Utility	Rev. 5.0
Advanced SD Configuration SDR25 Capability Support for SDCard DDR50 Capability Support for SDCard	<enabled> <disabled></disabled></enabled>	Disable/Enable SDR25 Capability in SD Card controller
l Help ti Select item sc Exit ↔ Select Henu	F5/F6 Change Values Enter Select ► SubHenu	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	on	Control power button light when system work
Power Button Light	<enabled></enabled>	
	<enable></enable>	
Failure		
DO-O Level	<h1gh></h1gh>	
DO-1 Level	<h1gh></h1gh>	
D0-2 Level	<h1gh></h1gh>	
D0-3 Level	<hightarrow (hight<="" (hightarrow="" td=""><td></td></hightarrow>	
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 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

Advance	ed ed	Insyde	H2O Setup	Utility				Rev.	5.0
Chipset SATA I SATA Speed	Mode	<ahc1> <gen2></gen2></ahc1>			Select IDE.	SATA	mode,	AHC I	or
Serial ATA Po	rt 0	(Not Ins	talled]						
· · · · · · · · · · · · · · · · · · ·	UP Select DOWN Select		Select F5 Select F6	-	Enter F9	Select Setup	F10 \$	Save a	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	Utility Rev.	5.0
Console Redirection Setup		Enable Console Redirection Function	
Console Serial Redirect	<disabled></disabled>		
ACP1 SPCR Table	<disabled></disabled>		
l Help î↓ Select sc Exit ↔ Select		Yalues F9 Setup Defaults • SubHenu 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

Advanced		InsydeH20 Setup Utility	Rev. 5.0
Hardware Monitor			
Voltage VCORE GFX 3.3V 5V	0.9 3.3	128 V 192 V 192 V 160 V	
Temperature CPU (°C/°F) System (°C/°F)		°C/102°F °C/114°F	
1 Help scExit	†↓ Select Item ↔ Select Henu	F5/F6 Change Values Enter Select ► SubMenu	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			up Utility Exit			Re	v. 5.0
Supervisor Password Set Supervisor Password	Not In	stalled		passwi passwi	ll or Ch ord and ord mus one char	the len st be gr	gth of
F1 Help UP Select ESC Exit DOWN Select			F5 Change F6 Change	Enter F9	Select Setup	F10 Sav	e 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	Secur i ty			p Utility Exit			F	λev.	5.0
Wake o		SELUTILY	<enab ii<br=""><d i="" sab<="" td=""><td>ed></td><td></td><td>wake devic Optio</td><td>feature the syst e from a ns: Enat ult), Di</td><td>tem by a remot pled</td><td>a L te h</td><td>AN</td></d></enab>	ed>		wake devic Optio	feature the syst e from a ns: Enat ult), Di	tem by a remot pled	a L te h	AN
F1 He ESC Ex	IP UP	Select N Select			5 Change 6 Change	Enter F9	Select Setup	F10 Sa	ave	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)

	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="" honth="" 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. 5.0
Hain Advanced Secu	urity Power <mark>Boot</mark> Exit			
Boot Type PXE Boot to LAN PXE Boot capability Add Boot Options	<d< b=""> <d< th=""><th>ual Boot Type> isabled> isabled> ast></th><th>Select boot type to Dual typ type or UEFI type</th><th>e, Legacy</th></d<></d<>	ual Boot Type> isabled> isabled> ast>	Select boot type to Dual typ type or UEFI type	e, Legacy
USB Boot Boot Delay Time Automatic Failover Boot Order Priority	[0 <e< td=""><td>nabled>] nabled> egacy First></td><td></td><td></td></e<>	nabled>] nabled> egacy First>		
PLegacy PEF1				
F1 Help Esc Exit	1↓ 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					
 ✓ Quick format ✓ Create a bootable disk using FreeDOS ▼ 					
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.

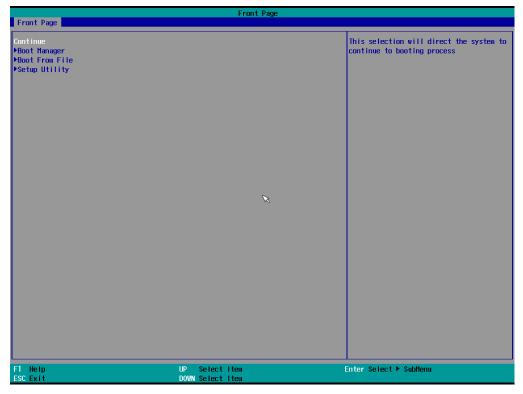
Step 2: Prepare the Upgrade File

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-20701xxx.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-2070 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 OFast 3SE Legacy USB Sandisk USB Ultra Legacy Floppy SD256 EFI Boot Devices Internal EFI Shell 1 and 4 to change option, ENTER to select	an option, ESC to exit			
	R			
F1 Help ESC Exit	UP Selectitem DOWN Selectitem	Enter Select ⊨ SubHenu		

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-2070 folder, type cd MPC-2070.

C:\cd MPC-2070

Run the upgrade program by typing 20701010.exe
 Note that the filename for the upgrade program may vary depending on the version.

C:\MPC-2070>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-2070. 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-2070 product page on Moxa's website. To install the driver, do the following:

- 1. Browse to the **Driver** folder and open the **MPC-2070-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			!≕ ▼ 🔲
🔆 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		

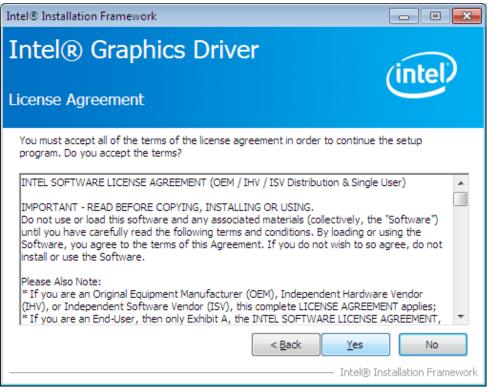
4. In the installation wizard that opens, click **Next** to continue.

🚺 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 (f supported).
< <u>B</u> ack Next	> <u>C</u> ancel 9 Installation Framework

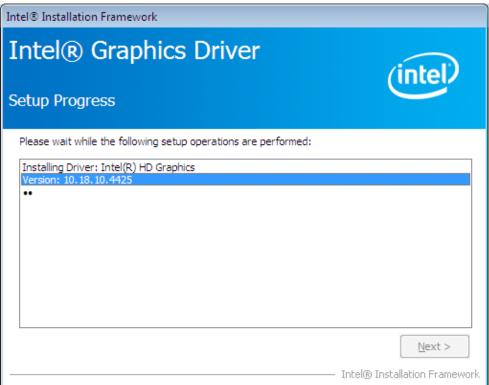
6. Click **Yes** to accept the license agreement.



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

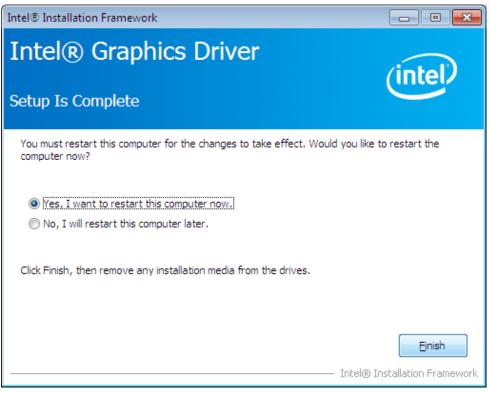
8. Wait until the installation is completed.



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\Programs\Intel\Intel(R) HD Graphics Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel(R) HD Graphics Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel(R) Graphics and Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) Graphics Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) Graphics Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) Graphic Deleting File: C:\Users\Public\Desktop\Intel(R) HD Graphics Control Panel.Ink Deleting File: C:\Users\Public\Desktop\Intel(R) Iris(TM) Graphics Control Panel.Ink Deleting Registry Key: HKLM\SOFTWARE\Intel\GFX\Internal\AudioFix Deleting Registry Key: HKLM\SOFTWARE\Intel\GFX\Internal\AudioFix	
Click Next to continue.	· · ·
	ľ
	Next >
	 Intel® Installation Framework

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



After your MPC-2070 reboots, you can use the Intel graphics tool to adjust the display resolution.

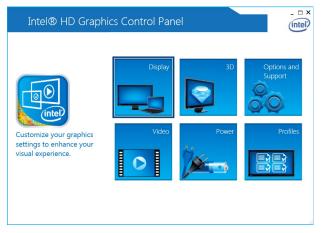
Adjusting the Display Resolution

Follow these steps to adjust the display resolution of your MPC-2017:

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

Graphics Properties	
Graphics Options	۲ g
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:

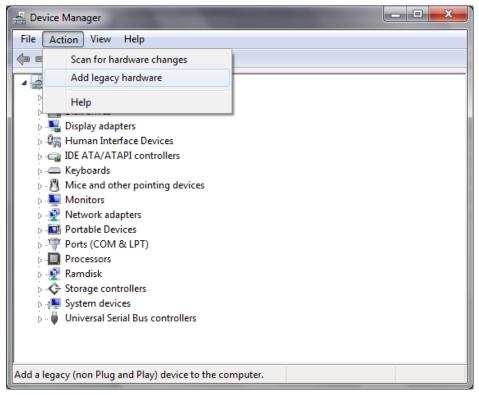
- Overview
- □ Installing the MxGeneralIO Driver
- Installing the SerialInterface Utility
- Configuring the Serial Interface Mode

Overview

The MPC-2070 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

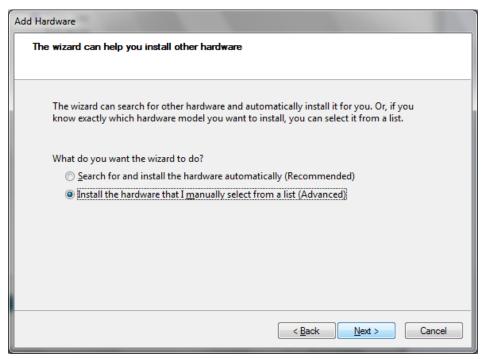
1. Open Device Manager from your MPC-2070 and select Add legacy hardware



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	<u> </u>
Not the second s	=
IDE ATA/ATAPI controllers	
🖶 IEEE 1284.4 compatible printer	
🖶 IEEE 1284.4 devices	
IEEE 1394 Bus host controllers	
Traging devices	
Infrared devices	
Senter Extender Stender	Ŧ
< <u>B</u> ack <u>N</u> ext >	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-2070-W7E_V1.0_Driver_Perpheral\4.MxGeneralIO\x64 and select MxGeneralIo.inf

📇 Locate File	- res and is called in the	X
Look in: 📗	x64	- G 👂 📂 🛄-
Name	*	Date modified T ₃
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 Finish 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-2070_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.



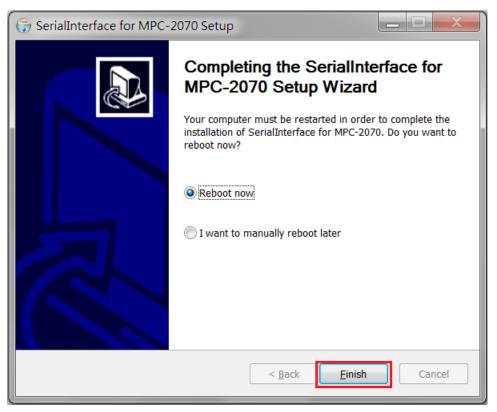
2. Click **Next** to continue.

😚 SerialInterface for M	PC-2070 Setup				X
6	Choose Users Choose for which u MPC-2070.	users you want	to install Se	rialInterface	for
Select whether you want users of this computer. C	to install SerialInterfac lick Next to continue.	e for MPC-207	'0 for yoursel	f only or for	all
Install for anyor	ne using this computer				
🔘 Install just for r	ne				
		< Back	Next >	Can	cel

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

😚 SerialInterface for	MPC-2070 Setup			_ 🗆 🗙
H	Choose Install I	ocation		
	Choose the folde MPC-2070.	r in which to insta	ll SerialInterfa	ce for
	alInterface for MPC-2070 Browse and select anothe			
Destination Folder C:\Program Files	(x86)\Moxa\SerialInterfa	ce	Brov	vse
Space required: 421.				
Space available: 136	OGB			
		< Back	Install	Cancel

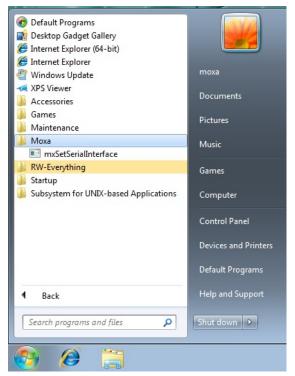
4. Click **Finish** to complete installation.



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
	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.