MPC-3000 Series Hardware User Manual

Version 1.0, September 2024

www.moxa.com/products



MPC-3000 Series Hardware User Manual

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

Copyright Notice

© 2024 Moxa Inc. All rights reserved.

Trademarks

The MOXA logo is a registered trademark of Moxa Inc. All other trademarks or registered marks in this manual belong to their respective manufacturers.

Disclaimer

- Information in this document is subject to change without notice and does not represent a commitment on the part of Moxa.
- Moxa provides this document as is, without warranty of any kind, either expressed or implied, including, but not limited to, its particular purpose. Moxa reserves the right to make improvements and/or changes to this manual, or to the products and/or the programs described in this manual, at any time.
- Information provided in this manual is intended to be accurate and reliable. However, Moxa assumes no
 responsibility for its use, or for any infringements on the rights of third parties that may result from its
 use.
- This product might include unintentional technical or typographical errors. Changes are periodically made to the information herein to correct such errors, and these changes are incorporated into new editions of the publication.

Technical Support Contact Information

www.moxa.com/support

Table of Contents

1.	Introduction	5
	Package Checklist	5
	Product Features	5
	MPC-3000 Hardware Specifications	5
2.	Hardware Introduction	6
	Appearance	6
	Dimensions	9
	Display Control Buttons	12
3.	Hardware Connection Description	13
	Hardware Installation	13
	Panel Mounting	13
	VESA Mounting (optional)	15
	Communication Connections	16
	DC Power Input	16
	Connecting to the Network	16
	Connecting to a Serial Device	17
	Digital Inputs/Digital Outputs	17
	Connecting to a USB Device	
	Installing SD and CFast Card	
	Real-time Clock	
	Powering On/Off the MPC-3000	
	Grounding the MPC-3000	
4.	BIOS Setup	20
	Entering the BIOS Setup	
	Main Page	
	Advanced Settings	
	Boot Configuration	23
	SATA Configuration	24
	CPU Configuration	25
	Video Configuration	
	Chipset Configuration	
	Console Redirection	
	SIO ITE8786E	
	Hardware Monitor	
	Security Settings	
	Current TPM Device	
	TPM State	
	Clear TPM	
	Set Supervisor Password	
	Power Settings	
	Wake on LAN	
	Auto Wake on S5	
	Boot Settings	
	Network Stack	
	PXE Boot capability	
	USB Boot	
	Timeout	
	EFI	
	Exit Settings	
	Exit Saving Changes	37
	Save Change Without Exit	
	Exit Discarding Changes	
	Load Optimal Defaults	
	Load Custom Defaults	יייייי אצ
	Save Custom Defaults	אצ סג
	Discard Changes	סג סג
	Administering Secure Boot	אצ סג
	Enabling LIEFT Secure Boot	סג מג

Δ.	Regulatory Approval Statement	46
	Upgrading the BIOS	41
	Enroll Customer Key	40
	Enroll EFI Image	39

The MPC-3000 Series panel computers with dual-core x6211E or quad-core x6425E processor deliver a reliable, durable, and versatile platform for use in industrial environments. With two software selectable RS-232/422/485 serial ports and two Gigabit Ethernet ports, the MPC-3000 Series panel computers support a wide variety of serial interfaces as well as high-speed IT communications, all with native network redundancy. Both regular and wide-screen models are available to meeting the display needs of various field applications.

Package Checklist

Each model is shipped with the following items:

- 1 MPC-3000 Series 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
- Panel-mounting kit
- Quick installation guide (printed)
- Warranty card

NOTE

Notify your sales representative if any of the above items are missing or damaged.

Product Features

MPC-3000 computers include the following features:

- Panel computers with various screen sizes
- Intel Atom® x6211E dual-core or x6425E quad-core processor
- -30 to 60°C operation temperature, fanless and without a heater
- 400 / 1000 nit sunlight-readable LCD
- Glove-friendly, multi-touch screen
- Class 1 Division 2, ATEX Zone 2, and IECEx compliant
- 12/24 VDC power input

MPC-3000 Hardware Specifications



NOTE

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

This chapter introduces the hardware design of the MPC-3000 Series, including the appearance and dimensions. In addition, various peripherals are also introduced for users to install their applications at different field sites.

Appearance



MPC-3120 Models



MPC-3150 Models



Dimensions

MPC-3070W Models

Unit: mm (inch)



MPC-3100 Models

Unit: mm (inch)





MPC-3120 Models

Unit: mm (inch)



MPC-3120W Models

Unit: mm (inch)



MPC-3150 Models

Unit: mm (inch)



MPC-3150W Models

Unit: mm (inch)



Display Control Buttons

The MPC-3000 is provided with three display-control buttons on the right panel.



The display-control buttons can be used as described in the following table.

Symbol and Name	Usage	Function
		Power on OR
		Enter sleep or hibernation mode OR
15. • 2.4	Press	Wake up
🕐 Power	Power	NOTE: You can modify the function of the Power button in the OS
		settings menu
	Press and hold	Power off
	for 4 seconds	
Brightness +	Press	Manually increase the brightness of the nanel
	11035	
Brightness -	Press	Manually decrease the brightness of the panel

3. Hardware Connection Description

In this chapter, we describe how to install the MPC-3000 and connect the MPC-3000 to the network and to various devices.

Hardware Installation



ATTENTION

All the installations must be installed by skilled persons to avoid any equipment damage.

Panel Mounting

A panel-mounting kit consisting of 6 (MPC-3070W), 7 (MPC-3100), 10 (MPC-3120/3120W), 11 (MPC-3150W) or 12 (MPC-3150) mounting clamps is provided in the MPC-3000 package. Details on the dimension tolerance and the cabinet space required to panel mount the MPC-3000 are illustrated in the following sections:



To install the panel-mounting kit on the MPC-3000, insert the mounting clamps in the mounting holes provided on the rear panel and slide the clamps to the ends of the panel as shown in the following figures:



Use a torque of 5 kgf-cm to secure the mounting screws to fasten the panel-mounting kit onto the wall.



Ensure that there is adequate space behind the panel for ventilation, and that the panel material and thickness can support the weight of the device.

VESA Mounting (optional)



ATTENTION

VESA mounting is not applicable to the marine applications.



4-M4xPitch 0.7 - Length:10mm



MPC-3120W



VESA Mounting (75 x 75 mm) 4-M4xPitch 0.7 - Length:10mm



4-M4xPitch 0.7 - Length:10mm



Communication Connections

DC Power Input

The MPC-3000 uses a DC power input. The DC pin assignments are shown 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 (wire type: Cu) and the torque value 0.5 N-m (4.425 lb-in) should be applied.



Connecting to the Network

The pin assignments for the two Fast Ethernet 10/100/1000 Mbps RJ45 ports are shown in the following table:

		Pin	10/100 Mbps	1000 Mbps
		1	ETx+	TRD(0)+
		2	ETx-	TRD(0)-
		3	ERx+	TRD(1)+
1 8 1 8		4	-	TRD(2)+
		5	-	TRD(2)-
LAN1	LAN2	6	ERx-	TRD(1)-
		7	-	TRD(3)+
		8	-	TRD(3)-

The LEDs 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

Connecting to a Serial Device

The MPC-3000 offers two software-selectable RS-232/422/485 serial ports over a DB9 connector. The pin assignments for the ports are shown in the following table:

RS-232/422/485 Pinouts

DB9 Male Port



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

Digital Inputs/Digital Outputs

The MPC-3000 is provided with a DIO port, which is a 10-pin terminal block that includes 4 DIs and 4 DOs as illustrated in the following figure.

DI 1 2 3 4 GND



Digital Voltage: 30 VDC Digital Output: 10 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)

DO 1 2 3 4 COM

DI Dry Contact

DI Wet Contact

DO Contact







Connecting to a USB Device

Two USB 3.0 ports are available on the bottom panel. Use these ports to connect mass-storage drives and other peripherals.

Installing SD and CFast Card

The MPC-3000 provides two storage options—CFast and SD card. The storage slots are located on the right 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 *MPC-3000 component compatibility report* available on Moxa's website.

card slots.

To install the storage devices, do the following:

1. Remove the 2 screws holding the storage-slot cover to the MPC-3000.





2. Remove the cover and locate the SD and CFast

3. Reattach the cover and secure it with screws.

Real-time Clock

The real-time clock (RTC) is powered by a lithium battery. We strongly recommend that you do not replace the lithium battery without help from a qualified Moxa support engineer. If you need to change the battery, contact the Moxa RMA service team. The contact details are available at: http://www.moxa.com/rma/about_rma.aspx.



ATTENTION

There is a risk of explosion if the clock's lithium battery is replaced with an incompatible battery. Dispose of used batteries according to the Instructions.

Powering On/Off the MPC-3000

Connect a **Terminal Block to Power Jack Converter** to the MPC- 3000 terminal block and connect a 60 W power adapter to the converter. Supply power through the power adapter. After you have connected a power source, the system Power button turns on automatically. It takes about 10 to 30 seconds for the system to boot up. You can change the power-on behavior of your computer by changing the BIOS settings.

To power off the MPC-3000, 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.

Grounding the MPC-3000

Proper grounding and wire routing help to limit the effects of noise from electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting the power source.

The minimum cross-sectional area required for the protective earthing conductor is 3.31 mm². A mandatory external bonding facility with a cross-sectional area of at least 4 mm² must be installed for effective conductivity.





ATTENTION

This equipment is intended to be supplied by the external power source, which is evaluated according to UL/EN/IEC 62368-1 or UL/IEC 60950-1. The power source shall comply with ES1/SELV and LPS requirements, output rating is 12 VDC, 5.6 A (min.) or 24 VDC, 2.8 A (min.), and an ambient temperature of 60°C minimum.

If you are using a Class I adapter, the power cord should be connected to an outlet with an earthing connection.

In this chapter, we describe the BIOS settings for the MPC-3000 computer. The BIOS is a set of input/output control routines for peripherals to initialize the basic settings. The BIOS helps boot the system before the operating system is loaded. The BIOS setup allows the user to modify the system configuration for basic input/output peripherals. All the configurations are stored in the CMOS RAM, which has a backup battery 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.

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 will appear. You can configure the following settings on this screen.

- Continue: Continue to boot up
- Boot Manager: Select the device for boot up
- Device Management: Enter the device configuration menu
- Boot From File: Select the UEFI boot up file
- Administer Secure Boot: Enter the Secure Boot menu
- Setup Utility: Enter the BIOS configuration menu

Select F2 to enter the BIOS configuration.

Front Page		
Front Page		
Continue +Boot Manager +Device Management +Boot From File +Administer Secure Boot +Setup Utility	This selection will direct the system to continue to booting process	
F1 Help 1/J Select Item	Enter Select ► SubMenu	

When you enter the **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	General Help	↑↓-	Select Item
F5/ F6	Change Values	\leftrightarrow	Select Menu
F9	Setup Defaults	ESC	Exit
F10	Save and Exit	EN TER	Select or go to Submenu.

The BIOS configuration screen will be shown when you enter the **Setup Utility** option.

	InsydeH20	Setup Utility	Rev. 5.0
Main Advanced Security Po	wer Boot Exit		
BIOS Version Project Name Processor Type System Bus Speed System Hemory Speed Cache RAH Total Hemory HCU Version	V1.0.0501 HPC-3150W-E4-T Intel Atom(R) x62 100 HHz 2400 HHz 1536 KB 16384 HB 0.9.0[\$05]	11E Processor @ 1.306Hz	This is the help for the hour, minute, second field. Valid range is from 0 to 23, 0 to 59, 0 to 59. INCREASE/REDUCE : +/
System Time System Date	[22:51:35] [09/03/2024]		
F1 Help Esc Exit	1/4 Select Item ←/→ Select Item	F5/F6 Change Values Enter Select ► SubMenu	F9 Setup Defaults F10 Save and Exit

NOTE

The **Processor Type** information may vary depending on the model that you have purchased.

Main Page

The Main page displays basic hardware information, such as model name, BIOS version, and CPU type.

	Insydel	120 Setup Utility	Rev. 5.0
Main Advanced Security P	Power Boot Exit		
BIOS Version Project Name Processor Type System Bus Speed System Memory Speed Cache RAM Total Memory MCU Version	V1.0.0S01 MPC-3150W-E4-T Intel Atom(R) ; 100 MHz 2400 MHz 1536 KB 16384 HB 0.9.0[S05]	(6211E Processor @ 1.30GHz	This is the help for the hour, minute, second field. Valid range is from 0 to 23, 0 to 59, 0 to 59. INCREASE/REDUCE : +/
System Time System Date	[22:51:351 [09/03/2024]		
F1 Help Esc Exit	1/↓ Select Item +/→ Select Item	F5/F6 Change Values Enter Select ► SubHenu	F9 Setup Defaults F10 Save and Exit

Advanced Settings

Select the **Advanced** tab in the main menu to open the advanced features screen.

Main Advanced Security Power Boot Exit PBoot Configuration Sala Configures Boot Settings. PSAIA Configuration PCPU Configuration PCPU Configuration PCPU Configuration PCONSOLE Redirection Redire		In	sydeH20 Setup Utility	Rev. 5.0
Boot Configuration +SATA Configuration +CPU Configuration +Video Configuration +Chipset Configuration +Console Redirection Configuration +S10 IT8786E	Main Advanced Secu	rity Power Boot	Exit	
	 Boot Configuration SATA Configuration CPU Configuration Video Configuration Console Redirection Console Redirection \$10 IT8786E 	n Configuration		Configures Boot Settings.
F1 Help T/1 Select Item F5/F6 Change Values F9 Setup Defaults	F1 Help	1/1 Select Item	F5/F6 Change Values	F9 Setup Defaults

Boot Configuration

The **Numlock** option allows configuration of the Numlock value

Options: On (default), Off.

	Insy	deH20 Setup Utility	Rev. 5.0
Advanced			
Boot Configuration		Sel	ects Power-on state for Numlock
Numlock	<0n>		
F1 Help	t/l Select Item	E5/E6 Change Values	E9 Setup Defaults
Esc Exit	+/+ Select Item	Enter Select ► SubMenu	F10 Save and Exit

SATA Configuration

This section allows you to select the SATA speed limit and hot plug setting.



SATA Speed Limited

Options: Gen 1, Gen 2, Gen 3 (default)

Serial ATA Port

This setting displays information on the installed drives.

SATA Port Hot Plug

This setting allows you to enable/disable hot-plugging capabilities (the ability to remove the drive while the computer is running) that are configured by software for installed storage drives.

Options: Disabled (default), Enabled

CPU Configuration

Advanced	InsydeH.	20 Setup Utility	Rev. 5. (
Advanced CPU Configuration Active Processor Con Turbo Hode	res <att> <enabted></enabted></att>	Nunt	per of cores to enable in n processor package.
F1 Help Esc Exit	1/↓ Select Item +/→ Select Item	F5/F6 Change Values Enter Select ► SubMenu	F9 Setup Defaults F10 Save and Exit

Active Processor Cores

This item indicates the number of cores to enable in each processor package (Cores number depended on the processor).

Options: All (default), 1, 2, 3

Turbo Mode

Enable/Disable processor Turbo Mode (not supported in models with Intel \mbox{B} Celeron \mbox{B}).

Options: Disabled, Enabled (default)

Video Configuration

Advanced	Insy	deH20 Setup Utility	Rev. 5.0
Video Configuration			Select DVHT 5.0 Pre-Allocated (Fixed)
DVMT Pre-Allocated DVMT Total Gfx Hem	<64M> <256M>		Internal Graphics Device.
F1 Help	1/1 Select Item	F5/F6 Change Values	F9 Setup Defaults
Esc Exit	+/→ Select Item	Enter Select 🕨 SubMenu	FIU Save and Exit

DVMT Pre-Allocated

This item allows you to configure pre-allocated memory capacity for the IGD. Pre-allocated graphics memory is invisible to the operating system.

Options: 64M (default), 96M, 128M, 160M

DVMT: The amount of video memory your computer has is dependent on the amount of pre-allocated memory set for your system plus the Dynamic Video Memory Technology (DVMT). DVMT dynamically allocates system memory for use as video memory creating the most efficient use of available resources for maximum 2D/3D graphics performance.

DVMT Total Gfx Mem.

This item allows you to configure the maximum amount of memory DVMT will use when allocating additional memory for the internal graphics device.

Options: 256 MB (default), 128 MB, Max.

Chipset Configuration

This section allows you to configure the chipset settings.

Advanced	InsydeH20 Setup Utility	Rev. 5.0
Chipset Configuration		This item allows you to enable/disable
Power ON after Power Failure Load Default After Cleaning RTC Battery	<0N> <enabled></enabled>	the computer from automatically powering up after a system crash. Options: ON (default), OFF, Last State
00-1 Level 00-2 Level 00-3 Level 00-4 Level	diigh>diigh>diigh>diigh>diigh>	
F1 Help 1/1 Select Esc Exit +/+ Select	Item F5/F6 Change Values Item Enter Select ► Subt	s F9 Setup Defaults 1enu F10 Save and Exit

Power ON after Power Failure

This item allows you to enable/disable the computer from automatically powering up after system power is re-enabled.

Options: ON (default), OFF, Last State

Load Default After Cleaning RTC Battery

System will load default when detecting RTC battery loss.

Options: Disabled, Enabled (default)

DO-X Level

This item allows users to set the DO to high or low.

Options: High (default), Low

Console Redirection

This section allows you to configure the console redirection settings.

Advanced	Insyd	eH20 Setup Utility	Rev. 5.(
Console Redirection Setup			Enable Console Redirection Function
Console Serial Redirect	<disabled></disabled>		
F1 Help	↑/↓ Select Item	F5/F6 Change Values	F9 Setup Defaults
Esc Exit	+/+ Select Item	Enter Select ► SubMenu	F10 Save and Exit

Console Serial Redirect

When the Console Redirection Function is enabled, the console information will be sent both to the display monitor and the serial port (COM1).

Options: Disabled (default), Enabled

SIO ITE8786E

This section allows users to configure SIO settings.

Advanced	Insyde#2	20 Setup Utility	Rev. 5.0
IT8786E Chip 1 I/O Configuration Port PUART Port 1 Configuration PUART Port 2 Configuration PHardware Monitor	2Eh/2Fh		UART Configuration
F1 Help Esc Exit	1/↓ Select Item +/→ Select Item	F5/F6 Change Values Enter Select ► SubMenu	F9 Setup Defaults F10 Save and Exit
	InsydeH2) Setup Utility	Rev. 5.0
Advanced	InsydeH2) Setup Utility	Rev. 5.0
Advanced UART Port 1 Configurat UART Port 1 Base 1/0 Address Interrupt	ion <enabled> <3F8h> <1RQ4></enabled>) Setup Utility	Rev. 5.0 Configure UART Port using options : [Disabled] Disable device [Enabled] Enable device and use below settings
Advanced UART Port 1 Configurat UART Port 1 Base 1/0 Address Interrupt UART Hode	InsydeH2d ion <enab led=""> <3F8h> <1R04> <r\$232></r\$232></enab>	O Setup Utility	Rev. 5.0 Configure UARI Port using options : [Disabled] Disable device [Enabled] Enable device and use below settings

UART Port 1

This function allows users to configure the resources for the UART port 1. Disable: Disable the UART port 1 connection Enable: Enable the UART port 1 connection (default)

UART Port 2

This function allows users to configure the resources for the UART port 2. Disable: Disable the UART port 2 connection Enable: Enable the UART port 2 connection (default)



NOTE

All other UART ports can only be configured by an OS utility.

Hardware Monitor

This section allows you to view stats such as CPU and system temperature, voltage levels, and other chipset information.

	Insyde#2	20 Setup Utility	Rev. 5.0
Advanced			
Hardware Monitor			
Voltage 3.3V 5V	3. 278 V 5. 123 V		
Temperature System (°C/°F) System2 (°C/°F) CPU (°C/°F)	49.0 °C/ 1: 38.0 °C/ 10 43.0 °C/ 10	20.2 °F 00.4 °F 09.4 °F	
F1 Help Esc Exit	1/1 Select Item +/+ Select Item	F5/F6 Change Values Enter Select ► SubMenu	F9 Setup Defaults F10 Save and Exit

Security Settings

This section allows users to configure security-related settings with a supervisor password.

	Insyde	H2O Setup Utility	Rev. 5.0
Main Advanced Security Po	wer Boot Exit		
Current TPM Device TPM State Clear TPM	<tph (dtph)<br="" 2.0="">All Hierarchies []</tph>	⊳ ⊱Enabled, Owned	Clear TPH. Removes all TPH context associated with a specific Owner.
Supervisor Password	Not Installed		
Set Supervisor Password			
F1 Help Esc Evit	1/↓ Select Item	F5/F6 Change Values	F9 Setup Defaults F10 Save and Evit
200	001000-100		

Current TPM Device

This item shows if the system has TMP device and its type.

TPM State

This item allows you view the status of current TPM settings.

Clear TPM

This item allows users to remove all TPM context associated with a specific owner.

Set Supervisor Password

This item allows you to set the supervisor password. Select the **Set Supervisor Password** option and enter the password and confirm the password again.

To delete the password, select the **Set Supervisor Password** option and enter the old password; leave the new password fields blank, and then press enter.

	Ins	ydeH20 Setup Utility	Rev. 5.0
Main Advanced Security Powe	er Boot Exit		
Current TPM Device TPM State Clear TPM	<tpm (d<br="" 2.0="">All Hierarc []</tpm>	TPH)> hies Enabled, Owned	Password length must be 8 or more characters
Supervisor Password	Not Install	ed	
Set Supervisor Password	Set Enter New Pa Enter New Pa	Supervisor Password ssword: ssword Again:	
Fl Help Esc Exit	t/l Select Item +/→ Select Item	F5/F6 Change Values Enter Select ► SubMenu	F9 Setup Defaults F10 Save and Exit

After setting the supervisor password, users can choose when the input password screen should be displayed.

	InsydeH20 Setup Util	ity Rev. 5.0
Main Advanced Security Powe	r Boot Exit	
Current TPM Device TPM State Clear TPM	<tpm (dtpm)="" 2.0=""> All Hierarchies Enabled, Own []</tpm>	Enable:System will ask input password on post time. Disable:System will ask input password when go to Setup Utility. Config-Only:System will ask input password when yoor process 52 into
Supervisor Password	Installed	Frontpage
Set Supervisor Password Power on Password	<d i="" led="" sab=""></d>	
	Power on Password Enabled Disabled Config-Only	
F1 Help Esc Exit	1/1 Select Item F5/F6 Char +/+ Select Item Enter Select	nge Values F9 Setup Defaults ect⊧SubHenu F10 Save and Exit

Enable: System will ask for the password on post time

Disable: System will ask for the password to go to the setup utility

Config-Only: System will only ask for the password when you select the config (F2) option

Power Settings

This section allows users 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>	C S H	Deternines the action taken when the system power is off and a PCI Power fanagement Enable wake up event occurs.
F1 Help	1/4 Select Item	F5/F6 Change Values	F9 Setup Defaults
ESC EXIT	tr+ select Item	enter serect 🕨 SubMenu	FIU Save and Exit

Wake on LAN

This feature is used to wake the system by a LAN device from a remote host.

Options: Enabled (default), Disabled

Auto Wake on S5

This item allows you to configure the computer to wake from S5 status. S5 stands for Soft Off, where the PSU remains engaged but power to all other parts of the system is cut. Auto-wake on S5 schedules a soft-reboot at certain periodic times that may be specified in the BIOS.

Options: Disabled (default); By Every Day (user specifies a regular daily time when the computer will power up); By Day of Month (user specifies a regular day each month when the computer will power up)

Boot Settings

This section allows users to configure boot settings.

Hain Advanced Security Power Boot Exit Network Stack <disabled> PXE Boot capability <disabled> USB Boot <enabled> Timeout [3]</enabled></disabled></disabled>
Network Stack <disabled> PXE Boot capability <disabled> USB Boot <enabled> Timeout [3] ►EF1</enabled></disabled></disabled>
F1 Help 1/4 Select Item F5/F6 Change Values F9 Setup Defaults

NOTE

If you do not add any storage, you will not see the EFI option.

Network Stack

It deploys an Internet Protocol (IP) stack. The IP stack provides an application library to open/close connections to remote devices and send/receive data between the remote devices.

Options: Disabled (default), Enabled

PXE Boot capability

This item will be shown only when you have enabled the Network Stack.

PXE Booting is booting a system over a network. This item allows users to start PXE over IPv4 or IPv6 Options: Disabled (default), UEFI: IPv4, UEFI: IPv6, UEFI: IPv4/IPv6

USB Boot

Set booting to USB boot devices capability.

Options: Enabled (Default), Disabled

Timeout

This item allows users to set the number of seconds that the firmware will wait before booting from the default boot selection.

EFI

This item allows users to select the boot order. Use F5 (move down) or F6 (move up) to change the boot order.

Boot	Ins	ydeH20 Setup Utility	Rev. 5.
EFI			
EFT Hard Drive (YCA12107260500029-M.2 (S42) 3HE4)	[X]		
EFI USB Device (SanDisk)	[X]		
			FA
FT Help 1/4 Sel	ect item	F57F5 Change Values Enter Select ▶ SubMenu	F9 Setup Defaults F10 Save and Exit

Exit Settings

The section allows users to exit the BIOS environment.

Main Advanced Secur	In ity Power Boot	sydeH20 Setup Utility Exit	Rev. 5. (
Exit Saving Changes Save Change Without Exi Exit Discarding Changes Load Optimal Defaults Save Custom Defaults Discard Changes	t		Exit system setup and save your changes.
F1 Help Esc Exit	↑/↓ Select Item +/+ Select Item	F5/F6 Change Value Enter Select ► Sul	es F9 Setup Defaults oMenu F10 Save and Exit

Exit Saving Changes

This item allows you to exit the BIOS environment and save the values you have just configured. Options: Yes (default), No

Save Change Without Exit

This item allows you to save changes without exiting the BIOS environment. Options: Yes (default), No

Exit Discarding Changes

This item allows you to exit without saving any changes that might have been made to the BIOS. Options: Yes (default), No

Load Optimal Defaults

This item allows you to revert to the factory default BIOS values. Options: Yes (default), No

Load Custom Defaults

This item allows you to load custom default values for the BIOS settings.

Options: Yes (default), No

Save Custom Defaults

This item allows you to save the current BIOS values as a "custom default" that may be reverted to at any time by the load custom defaults selection.

Options: Yes (default), No

Discard Changes

This item allows you to discard all settings you have just configured.

Options: Yes (default), No

Administering Secure Boot

Press F2 to go to the Administer Secure Boot.



Secure Boot helps computers resist attacks and infection from malware. The feature defines an interface between the operating system and BIOS. It detects tampering with boot loaders, key operation system files, and unauthorized option ROMs by validating their digital signatures.

Enabling UEFI Secure Boot

Set as "enabled" in "Restore Secure Boot to Factory Settings" under Administer Secure Boot menu. Press F10 as save and exist.



Moxa has included the Microsoft key in the BIOS by default. If you cannot boot up the computer using a non-Windows OS, use the following examples.

Enroll EFI Image

Administer Secure Boot			
Administer Secure Boot System Status: Secure Boot Database Secure Boot Status User Customized Security Options: *Select a UEF1 file as trusted for executi Enforce Secure Boot Erase all Secure Boot Settings Restore Secure Boot to Factory Settings *PK Options *DB Options *DBM Opt	Administer Secure Boo Installed and Locked Disabled NO <enabled> <disabled> <enabled> <enabled></enabled></enabled></disabled></enabled>	Add sepecific EFI database.	image hash to allowed
FI Help 1/1 Select	Iten F5/F6 Cham Iten Enter Sele	je Values F9 Setup t b Sublem F10 Save a	Defaults nd Fvit

	Ad	minister Secure Boot	
Administer Secure Boot			
Administer Secure Boot <,> <,> bootx64.efi	Ad	ninister Secure Boot	
F1 Help Esc Exit	1/↓ Select Item +/→ Select Item	F5/F6 Change Values Enter Select ► SubMenu	F9 Setup Defaults F10 Save and Exit

- 1. Enter Administer Secure Boot and select the option Select a UEFI file as trusted for execution.
- Enter the loader name followed by the UEFI standard \EFI\BOOT\BOOT{machine type short-name}.
 E.g., efi\boot\BootX64.efi, Debian (EFI\debian\grubx64.efi), Suse (EFI\opensuse\grubx64.efi)

Enroll Customer Key

Administer Secure Boot	Administer Se	cure Boot	
System Status:			Enroll/Delete Signature
Secure Boot Database Secure Boot Status User Customized Security	Installed and Locked Disabled NO		
Options:			
<pre>>Select a UEFI file as trusted for execu Enforce Secure Boot Erase all Secure Boot Settings Restore Secure Boot to Factory Settings >PKK Options >MEK Options >DB Otions >DBR Options >DBR Options >DBR Options</pre>	tion <enabled> <enabled> <enabled></enabled></enabled></enabled>		
F1 Help 1/4 Selec Esc Exit +/+ Selec	t Iten F5/ t Iten Ent	F6 Change Values er Select⊧ SubHenu	F9 Setup Defaults F10 Save and Exit

	Ad	minister Secure Boot	
Administer Secure Boot			
▶Enroll Signature ▶Delete Signature			Enroll Signature
DB Signature List: 01. [PKCS7] Microsoft Win 02. [PKCS7] Microsoft Cor 03. [PKCS7] QA Certificat	dows Production PCA 2011 poration UEFI CA 2011 e.		
F1 Help	1/4 Select Iten	F5/F6 Change Values	F9 Setup Defaults

Enter "DB OPTION" and enroll your key. Please make sure your key is CRT format and uses RSA 2048 or better.

Upgrading the BIOS

This section describes how to upgrade the BIOS on your computer.



NOTE

It is possible to permanently damage the computer when upgrading the BIOS. We strongly recommend that you contact Moxa's technical support staff for assistance to obtain all the necessary tools and the most current advice before attempting to upgrade the BIOS on any Moxa device.

Step 1: Create a Bootable USB Disk

Before upgrading the BIOS, you must create a bootable USB drive as a system boot device for use in the future.

- 1. Insert a USB disk in the computer's USB drive.
- 2. Search for "format" and select Create and format hard disk partitions.



𝒫 format

3. Right-click on the USB disk item and select Format.



4. Select **FAT32** and click **OK** to start formatting the disk.

Volume label:	New Volume
File system:	NTFS
Allocation unit size:	NTFS FAT32 exFAT
Perform a quick for	mat
Enable file and fold	er compression

Step 2: Prepare the Upgrade File

You must use the BIOS upgrade installation file to upgrade the BIOS. Contact Moxa's technical department for assistance. The BIOS upgrade file includes an **efi** folder and an **xxxx.efi** file. Copy the **efi** folder and **xxxx.efi** file to the bootable USB disk.

Step 3: Run the Upgrade Program on Your Computer

- Reboot the computer with the boot disk and press F2 to go to the Boot Manager.
 If the BIOS cannot recognize the USB drive as the boot-up device, the USB drive might not have a partition table. Use the Windows command line tool **diskpart** to rebuild the partition table.
- 2. Select the USB Disk.

	Boot Manager
Boot Option Menu	
EFI Boot Devices EFI USB Device (USB3.0 FLASH DRIVE) Windows Boot Manager (2.5" SATA SSD 3ME) EFI USB Device 1 (JetFlashTranscend 8GB)	
↑ and \downarrow to change option, ENTER to select an option, ESC	to exit

The screen will switch to the SHELL environment.

3. Type **fs0:**, go to the directory where the upgrade file is located, and type **xxxxx.efi** (the file name is based on the upgrade file from Moxa).



4. Wait until the upgrade procedure is completed.



ATTENTION

Do NOT switch off the power supply during the BIOS upgrade, since doing so may cause the system to crash.

Insyde H2OFFT (Flash Firmware Tool) Version (SEG) 200.02.00.11 Copyright (C) 2024 Insyde Software Corp. All Rights Reserved. Loading New BIOS Image File: Done Current BIOS Model Name: MPC-3000 New BIOS Model Name: MPC-3000 Current BIOS Version: V1.0.0500 New BIOS Version: V1.0.0501	Insyde H2OFFT (Flash Firmware Tool) Version (SEG) 200.02.00.11 Copyright (C) 2024 Insyde Software Corp. All Rights Reserved. Loading New BIOS Image File: Done Current BIOS Model Name: MPC-3000 New BIOS Model Name: MPC-3000 Current BIOS Version: V1.0.0500 New BIOS Version: V1.0.0501 0% 25% 50% 75% 100%	Please do not remove the power!
Loading New BIOS Image File: Done Current BIOS Model Name: MPC-3000 New BIOS Model Name: MPC-3000 Current BIOS Version: V1.0.0800 New BIOS Version: V1.0.0801	Loading New BIOS Image File: Done Current BIOS Model Name: MPC-3000 New BIOS Model Name: MPC-3000 Current BIOS Version: V1.0.0500 New BIOS Version: V1.0.0501 0% 25% 50% 75% 100% 38%	Insyde H2OFFT (Flash Firmware Tool) Version (SEG) 200.02.00.11 Copyright (C) 2024 Insyde Software Corp. All Rights Reserved.
Current BIOS Model Name: MPC-3000 New BIOS Model Name: MPC-3000 Current BIOS Version: V1.0.0800 New BIOS Version: V1.0.0801	Current BIOS Model Name: MPC-3000 New BIOS Model Name: MPC-3000 Current BIOS Version: V1.0.0500 New BIOS Version: V1.0.0501 0% 25% 50% 75% 100% 38%	Loading New BIOS Image File: Done
Undating Block at EECO2000	Updating Block at FECA3000h 0% 25% 50% 75% 100% ***********************************	Current BIOS Model Name: MPC-3000 New BIOS Model Name: MPC-3000 Current BIOS Version: V1.0.0500 New BIOS Version: V1.0.0501
	0% 25% 50% 75% 100% ***********************************	Updating Block at FECA3000h
0% 25% 50% 75% 100%		0% 25% 50% 75% 100%

When the upgrade is finished, the computer will automatically reboot.

You can check the BIOS version on the Main page to confirm the upgrade.

					InsydeH20 Setup Utility
Main	Advanced	Security	Power	Boot	Exit
BIOS V Projec Proces	Version t Name sor Type				V1.0.0S01 MPC-3150W-E4-T Intel Atom(R) x6211E Processor @ 1.30GHz

If the system has more than one boot device, you will see more than one fsx (x represents the number).

FI Shell	version 2.50 [22281.4149]
Current ru	unning mode 1.1.2
Device map	oping table
fs0	:HardDisk - Alias <mark>hd33e0a2 blk0</mark>
	PciRoot(0x0)/Pci(0x17, 0x0)/Sata(0x4, 0x0, 0x0)/HD(2, GPT, 0AC3B829-99B0-4FDE-844D-8A10C1D55C6C, 0xFA000, 0x32000)
fs1	:Removable HardDisk - Alias hd25r0b blk1
	PciRoot(0x0)/Pci(0x14, 0x0)/USB(0x11, 0x0)/HD(1, MBR, 0x00DD3D80, 0x3F, 0xEB5FC1)
fs2	:Removable BlockDevice - Alias f25s0 blk2
	PciRoot(0x0)/Pci(0x14, 0x0)/USB(0x12, 0x0)
b1k0	:HardDisk - Alias hd33e0a2 fs0
	PciRoot(0x0)/Pci(0x17, 0x0)/Sata(0x4, 0x0, 0x0)/HD(2, GPT, 0AC3B829-99B0-4FDE-844D-8A10C1D55C6C, 0xFA000, 0x32000)
blk1	:Removable HardDisk - Alias hd25r0b fs1
	PciRoot(0x0)/Pci(0x14, 0x0)/USB(0x11, 0x0)/HD(1, MBR, 0x00DD3D80, 0x3F, 0xEB5FC1)
b1k2	:Removable BlockDevice - Alias f25s0 fs2
	Pc iRoot(0x0)/Pc i (0x14, 0x0)/USB(0x12, 0x0)
b1k3	:HardDisk - Alias (null)
	PciRoot(0x0)/Pci(0x17, 0x0)/Sata(0x4, 0x0, 0x0)/HD(1, GPT, 5796BAEF=EC3F=447F=B4F1=21EB08DC5D57, 0x800, 0xF9800)
blk4	:HardDisk - Alias (null)
	Pc iRoot(0x0)/Pc i(0x17, 0x0)/Sata(0x4, 0x0, 0x0)/HD(3, GPT, 7C8FF3C6-53E8-4CF9-8141-65DF7EF04399, 0x12C000, 0x8000)
b1k5	:HardDisk - Alias (null)
	PciRoot(0x0)/Pci(0x17, 0x0)/Sata(0x4, 0x0, 0x0)/HD(4, GPT, 1AABAECE-BE17-4C27-AF60-E6C69977AC02, 0x134000, 0x3A6E800
bik6	:BlockDevice - Alias (null)
	PciRoot(0x0)/Pci(0x17, 0x0)/Sata(0x4, 0x0, 0x0)
blk7	:Removable BlockDevice - Alias (null)
	Pc iRoot(0x0)/Pc i (0x14, 0x0)/USB(0x11, 0x0)

5. Go to each fsx (x stands for the number) and type Is to view the content of the boot device. If you find an upgrade file, run it.



A. Regulatory Approval Statement



This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Class A: FCC Warning! This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.



Warning:

This is a class A product. If used in a domestic environment, this product may cause undesirable radio interference, in which case the user may be required to take adequate measures to prevent the interference from affecting nearby devices.