SIEMENS

SIMATIC

Industrial PC
BIOS Description

Operating Manual

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Legal information

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⚠ WARNING

indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ CAUTION

indicates that minor personal injury can result if proper precautions are not taken.

NOTICE

indicates that property damage can result if proper precautions are not taken.

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Preface

This Operating Manual contains all the information you need to use the BIOS in your SIMATIC IPC and SIMATIC Field programming device.

It is intended both for programming and testing personnel who commission the device and connect it with an automation system, as well as for service and maintenance personnel who install add-ons or carry out fault/error analyses.

Basic knowledge required

A solid background in personal computers and Microsoft operating systems is required to understand this manual. General knowledge in the field automation control engineering is recommended.

Conventions

The following abbreviations of product labels are used in this Operating Manual:

Generic term	Product label
IPC6x7	SIMATIC IPC627D, IPC677D, IPC647D
IPC8x7	SIMATIC IPC827D, IPC847D
IPC4x7	SIMATIC IPC427D, IPC477D
IPC2x7	SIMATIC IPC227D, IPC277D, IPC227E, IPC277E
Field programming device	Field PG M4, Field PG M5
Rack PC	SIMATIC IPC647D, IPC847D
Box PC	SIMATIC IPC627D, IPC827D, IPC427D, IPC227D, IPC277E
Panel PC	SIMATIC IPC677D, IPC477D, IPC277D, IPC277E

In this Operating Manual the abbreviation "PC" or the term "device" are used instead of the product label.

Scope and history

The following editions of the Operating Manual have been released:

Version	Comments
02/2014	First edition created with the following BIOS versions: • Rack PC: V19.01.01 • Box PC: V19.02.01 and V19.02.02 • Panel PC: V19.02.01 and V19.02.02
05/2016	Second edition, created with the following BIOS versions: • Rack PC: V19.01.06 • Panel PC: V19.02.05 • Box PC: V19.02.05 • Field PG M5: V22.01.01

Note

Information on the BIOS version

The "Main" menu contains information on the BIOS version of your device.

See also

BIOS Setup settings (Page 40)

Table of contents

Overview

1

Parameterize your device in the BIOS Setup.

BIOS Setup program

The BIOS Setup program, or BIOS Setup for short, is located, together with the setup parameters, in a FLASH block on the motherboard.

Change the setup parameters of the device in the BIOS Setup, e.g. system time or boot sequence.

Changing the device configuration

Your device configuration is preset for operating with the included software. You should only change the default setup parameters if technical modifications to your device require different parameters.

NOTICE
Malfunctions can occur with running software CPU If a BIOS update of the PC is performed while SIMATIC software controller, a SIMATIC WinAC for example, is running, the software CPU can malfunction, resulting in communication interruptions or failures, for example. Other actions that put a heavy load on the PC hardware, for example, running hardware tests such as benchmarks, can result in malfunctions of the software CPU. Do not run a BIOS update or other actions that would put a heavy load on the hardware during operation of a software CPU. Switch the software CPU to "STOP" before you run a BIOS update or perform other critical actions.

Note

Documentation

BIOS Setup is described for all devices and device configurations. Some BIOS submenus or Setup parameters may not be included, depending on your order. The interface of your BIOS Setup can deviate from the figures in this document.

You can find a detailed description of the BIOS on the Support website under Entry ID 92189178 (http://support.automation.siemens.com/WW/view/en/92189178).

Opening the BIOS selection menu

2

Procedure

1. Switch on the device or restart the device.
2. Immediately after switching on the device, press the "Esc" button and keep it pressed.

Note

The following message appears briefly after the device is switched on:

```
Press ESC for boot options
```

The BIOS selection setup appears:

The number of buttons in the BIOS selection setup depends on your device version.

The following buttons are available:

Buttons	Function
Continue	Exit selection menu, continue start sequence
Boot Manager	Specify the boot media from which to start, for example: • Hard disk drive • CD-ROM drive • USB device
Device Management	Start device manager for UEFI boot media

Buttons	Function
Boot From File	Boot Maintenance Manager: • Boot Options: Set boot order • Driver Options: Configure drivers • Console Options: Configure connected input device • Boot from File: Start from an ".EFI" file • Reset System: Restoring factory settings
Secure Boot Option [1]	Configuration settings to start the device in Secure Boot mode. The only software modules loaded are those that are known to be safe for the BIOS or the operating system.
SCU	Setup Configuration Utility: The BIOS Setup
BIOS Update	Update BIOS from USB memory stick
MEBx [2]	Intel Management Engine BIOS Extension from Active Management Technology Support (AMT)

[1] Available as of Windows 8, if supported by device

[2] Only if the hardware supports AMT

BIOS Setup (SCU) 3

3.1 Starting BIOS Setup

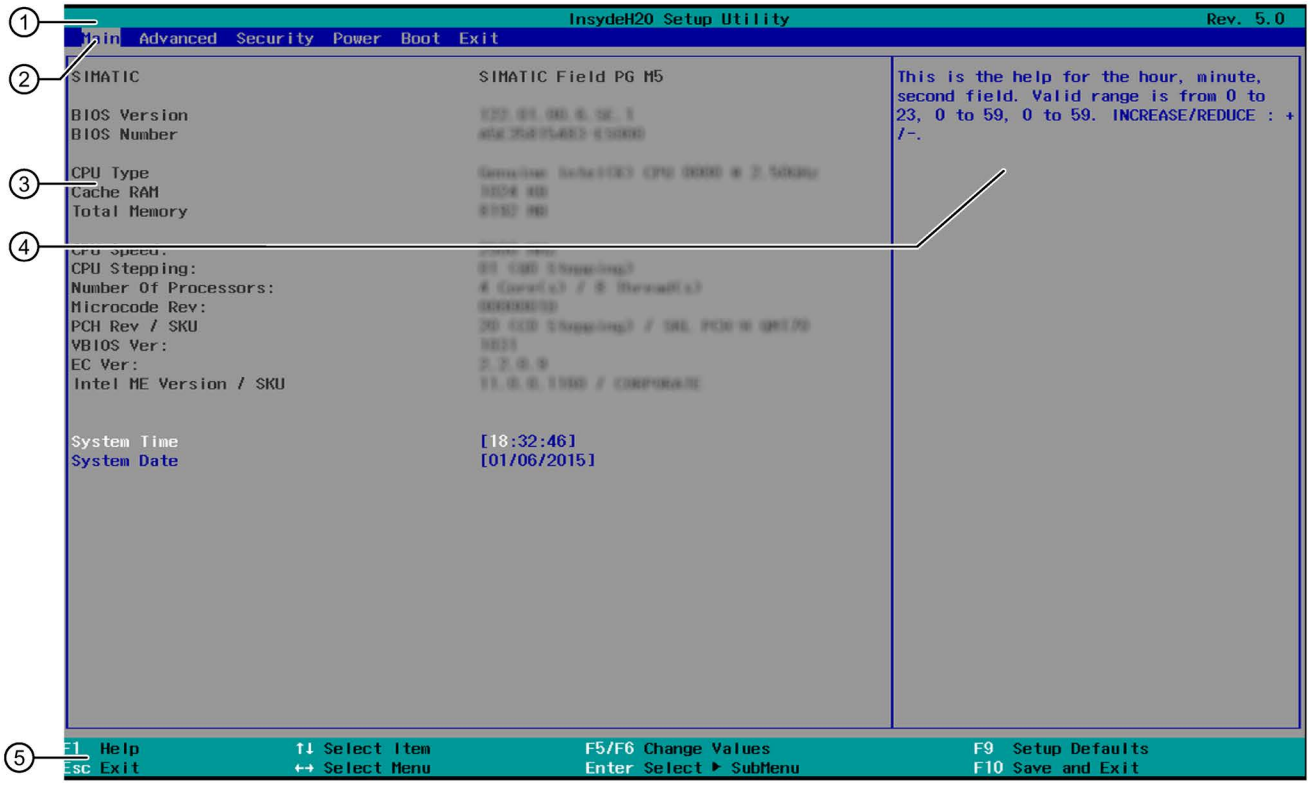
1. Open the BIOS selection setup.
2. Click the "SCU" button.

3.2 Structure of the BIOS Setup menu

The individual setup parameters are distributed between different menus and submenus. Not all menus are included in each supplied device configuration. The following table shows the menus.

Menu	Meaning
Main	Display system information, for example, BIOS version, processor and memory
Advanced	Configure hardware using different submenus
Security	Security functions, e.g., setting a password
Power	Specify power management of CPU and the device
Boot	Determine boot options, e.g., boot order
Exit	Save and exit (see Exit menu)

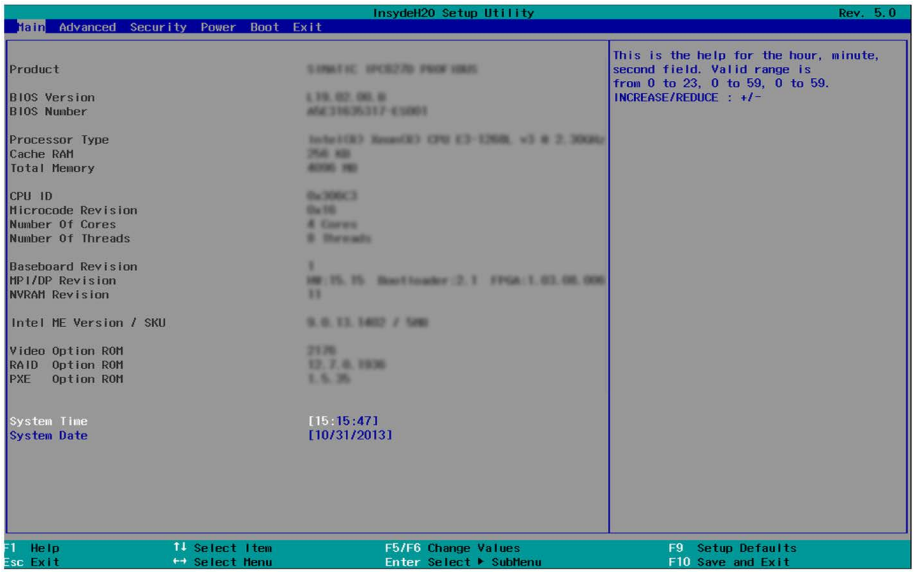
The menus always have the same structure. The figure below shows an example for the "Main" menu. Device-specific information is shown blurred.



①	Header	The current version of the selected BIOS Setup is displayed in the header.
②	Menu bar	Switch between the various menus "Main", "Advanced", etc. in the menu bar at the top.
③	Settings, submenus and device-specific information	Information about your device is displayed in the center left-hand area; here you can edit settings which are partly in submenus.
④	Help area	Short help texts on the currently selected setup parameters are displayed in the center right-hand area.
⑤	Key assignment	The key assignment for navigation in the BIOS Setup is found in the footer.

3.3 Main menu

The "Main" menu shows the most important parameters that identify your device. You can set the date and time The following figure shows an example for the "Main" menu.



Parameter	Meaning
System Time	Current time of the device. Format: "Hour/Minute/Second".
System Date	Current date of the device. "Month/Day/Year".

You can use the <Enter> key to move within a format, for example, from hour to minute. You can use the [+] and [-] keys to set the desired values for the date and time.

3.4 Advanced menu

In the "Advanced" menu, you can configure advanced system functions that are located in submenus. The following figure shows examples for the "Advanced" menu.

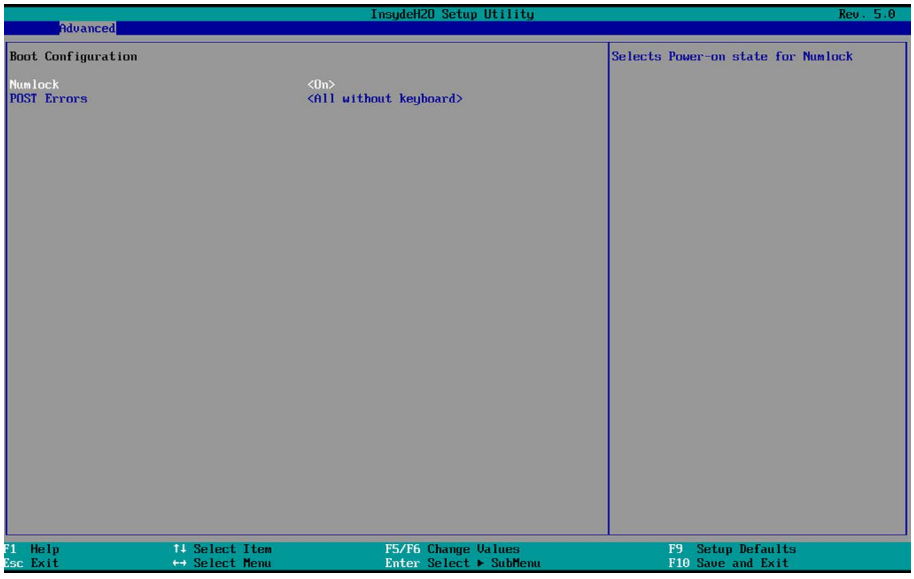
Overview of submenus

The following table shows all submenus of the "Advanced" menu and in which devices they are available.

Name	Meaning	IPC6x7 IPC8x7	IPC4x7	IPC2x7	Field programming device
Boot Configuration	Basic display and input options during startup	x	x	x	x
Peripheral Configuration	Configuration of components on the motherboard	x	x	x	x
SATA Configuration	Configuration of SATA / IDE interfaces	x	x	x	x
Fan Control Configuration	Configuration of the fan	x			
Video Configuration	Configuration of the graphics interface	x	x	x	
USB Configuration	Configuration of the USB ports	x	x	x	x
Chipset Configuration	Advanced chipset configuration	x	x	Miscellaneous Configuration	
Active Management Technology Support	Configuration of the AMT functionality	x	x		x
PCI Express (Slot) Configuration	Configuration of the PCI Express expansion slots	x	x		

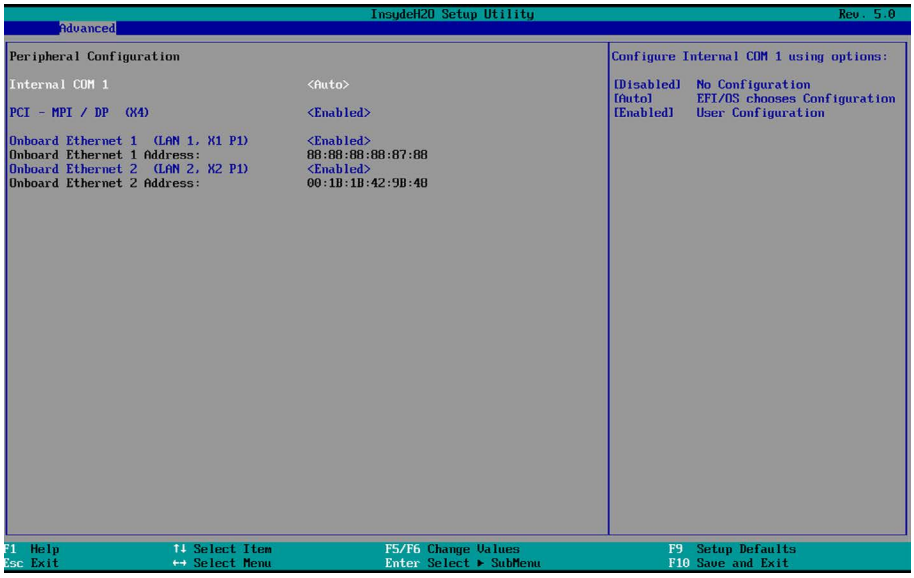
HPET: With some devices you find the Setup parameter "HPET" here, which is however described in the Section "Advanced menu", submenu "Chipset Configuration", "HPET Support".

"Boot Configuration" submenu



Parameter	Meaning	
Numlock	Switches the numeric keypad to the right of the keyboard on (On) or off (Off = navigation) after the device has started.	
POST Errors	Specification of the boot reaction if errors occur during the self-test.	
	Never halt on errors	Continue the booting process when errors occur.
	Halt on all errors	Cancel the booting process when any errors occur.
	All without keyboard	Cancel the booting process if errors occur, except for keyboard errors.
	All without kb/smart	Cancel the booting process if errors occur, except for keyboard errors and for S.M.A.R.T errors (Self-Monitoring, Analysis and Reporting Technology), which can occur with SSD, HDD, CFAST storage media.

"Peripheral Configuration" submenu



Parameter	Meaning	
Internal COM 1	Enabled	Enables the serial port. You can then set the I/O base address and the interrupt.
	Disabled	Disables the serial port. This releases the resources it used.
	Auto	Automatically configures the serial port. BIOS switches on the serial interface port. Re-configuration allocates the resources in the operating system.
The following Setup parameters are visible if ""Internal COM 1"" is enabled.		
• Base I/O Address [6]	2E8, 2F8, 3E8, 3F8	The I/O base address is pre-assigned and also recommended.
• Interrupt [6]	IRQ3, IRQ4	The interrupt is pre-assigned and also recommended.
• Transceiver Mode [1 6]	Transceiver Loopback	Mode for testing the hardware.
	RS232	Non-isolated connection for short distances in interference-free environment.
	RS485 Half Duplex	Isolated connection for environment with EMC load.
	RS485/422 Full Duplex	Isolated connection for environment with EMC load, transmitting and receiving at the same time.
Internal COM 2 [2]	Enabled	Enables the serial port. You can then set the I/O base address and the interrupt.
	Disabled	Disables the serial port. This releases the resources it used.
	Auto [1]	Automatically configures the serial port. BIOS switches on the serial interface port. Re-configuration allocates the resources in the operating system.

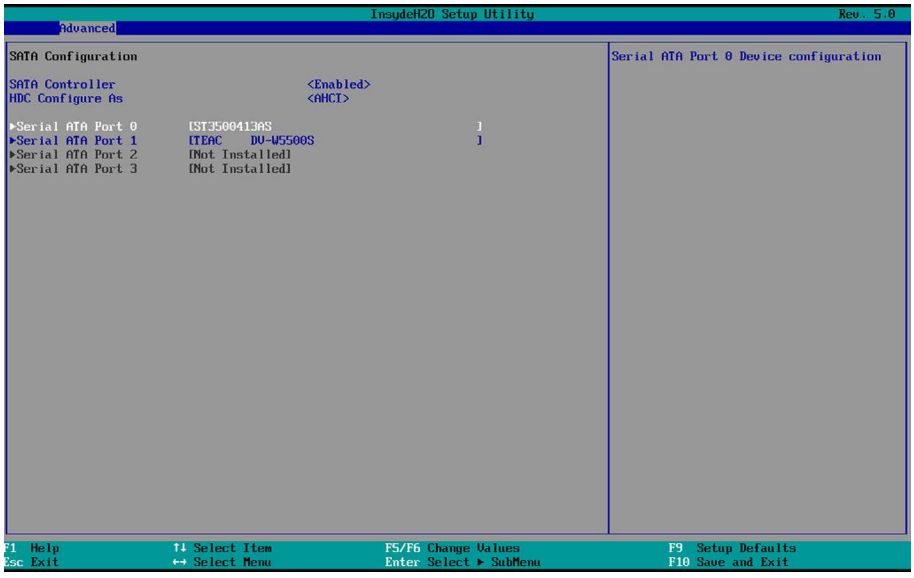
Parameter	Meaning	
The following Setup parameters are visible if "Internal COM 2" is enabled.		
• Base I/O Address	2E8, 2F8, 3E8, 3F8	The I/O base address is pre-assigned and also recommended.
• Interrupt	IRQ3, IRQ4	The interrupt is pre-assigned and also recommended.
• Transceiver Mode [1]	Transceiver Loopback	Mode for testing the hardware.
	RS232	Non-isolated connection for short distances in interference-free environment.
	RS485 Half Duplex	Isolated connection for environment with EMC load.
	RS485/422 Full Duplex	Isolated connection for environment with EMC load, transmitting and receiving at the same time.
Internal LPT [4]	Enabled	Enables the parallel port. You can then set the I/O base address, interrupt, mode and DMA channel.
	Disabled	Disables the parallel port. This releases the resources it used.
	Auto	Automatically configures the parallel port. BIOS switches on the parallel interface. Re-configuration allocates the resources in the operating system. Re-configuration also sets the mode.
The following Setup parameters are visible if "Internal LPT" is enabled.		
• Base I/O Address	278, 378	The I/O base address is pre-assigned and also recommended.
• Interrupt	IRQ7	The interrupt is pre-assigned and also recommended.
• Mode	Sets the data transfer mode.	
	Output Only	Data output only.
	EPP	Enhanced Parallel Port: Fast transfer mode of up to 2 Mbps for devices that are not printers, sending and receiving of data. The peripheral device must support EPP.
	ECP	Enhanced Capability Port: Fast transfer mode of up to 2.4 Mbps for printers and scanners, sending and receiving of data. The peripheral device must support ECP. The DMA channel is set with Plug&Play.
	Bi-directional	Data transfer in both directions for PS/2 compatible devices.
• DMA Channel	DMA 1, DMA 2, DMA 3	Sets the DMA channel of the parallel port.

Parameter	Meaning	
CAN [2]	Enabled	Enables the CAN interface. You can then set I/O base address and interrupt.
	Disabled	Disables the CAN interface. This releases the resources it used.
	Auto	Automatically configures the CAN Bus port. BIOS switches on the CAN Bus port. Re-configuration allocates the resources in the operating system. Re-configuration also sets the mode.
The following Setup parameters are visible if "CAN" is enabled.		
• Base I/O Address	5000, 5400, 5800, 5C00	The I/O base address is pre-assigned and also recommended.
• Interrupt	IRQ5, IRQ7, IRQ10	The interrupt is pre-assigned and also recommended.
Onboard PROFINET (X3 P1, X3 P2, X3 P3) [2] PROFINET	Enables (Enabled) or disables (Disabled) the PROFINET port on the motherboard.	
The following Setup parameter is visible if "Onboard PROFINET" is enabled:		
• MAC Address Layer 2 • MAC Address PROFINET	MAC and PROFINET address.	
PCI – MPI / DP [2]	Enables (Enabled) or disables (Disabled) of the MPI/DP or PROFINET port on the motherboard.	
Audio [3] Azalia	Enabled	Enables the onboard Azalia HD (High Definition) audio controller.
	Auto	Automatically detects the audio codec.
	Disabled	Disables the onboard Azalia HD (High Definition) audio controller.
Azalia internal HDMI codec	Enables (Enabled) or disables (Disabled) the audio Codec of the Intel onboard sound card.	
Onboard Ethernet 1 (LAN 1, X1 P1)	Enables (Enabled) or disables (Disabled) the Ethernet 1 port on the motherboard. The Ethernet address is displayed below this.	
Onboard Ethernet 1 Address [7]	Displays the specific MAC address of the Ethernet 1 port	
Onboard Ethernet 2 (LAN 2, X2 P1)	Enables (Enabled) or disables (Disabled) the Ethernet 2 port on the motherboard. The Ethernet address is displayed below this.	
Onboard Ethernet 2 Address	Displays the specific MAC address of the Ethernet 2 port	

Parameter	Meaning	
WLAN [5]	Enabled	The WLAN transceiver is always switched on after the power-up.
	Last State	After the power-up the WLAN transceiver again assumes the status it had before the last shut-down.
	Disabled	The WLAN transceiver is always switched off after the power-up.
Cardbus + SD-Card [5]	The storage device is switched on (Enabled) or switched off (Disabled).	
Touchpad [5]	The touchpad is switched on (Enabled) or switched off (Disabled).	

1 Only with IPC2x7
2 Depending on the ordered device configuration
3 Only available if an Azalia HD audio controller is installed.
4 Only with IPC6x7 and IPC8x7
5 Only with Field programming device
6 Not with Field programming device
7 Only if approved

"SATA / IDE Configuration" submenu



Parameter	Meaning	
SATA Controller	Enables (Enabled) or disables (Disabled) the SATA port. The names of the controllers are displayed below this.	
HDC Configure As Chipset SATA Mode	IDE	The connected serial ATA hard disks are used as parallel ATA data media.
	AHCI	The SATA ports are operated in the Advanced Host Controller Interface mode (AHCI). Features such as "Native Command Queuing" (NCQ) are then supported, if NCQ-compliant hard disks are installed. The operating system and the drivers must also support AHCI mode.
	RAID [1]	The SATA ports are operated as a Redundant Array of Independent Disks system (RAID). At least two identical serial ATA hard disks must be connected.
SATA Port # Device Type [2]	Hard Disk Drive	The driver is informed about the disk type of hard disk (HDD). The display in the device manager and the timing are adjusted.
	Solid State Drive	The driver is informed about the disk type SDD. The display in the device manager and the timing are adjusted.
SATA Port # HotPlug [2]	Enables (Enabled) or disables (Disabled) the HotPlug function. With the HotPlug function, external SATA drives can be plugged or uplugged during operation (eSATA socket).	
Serial ATA Port #	If the SATA port no. # is occupied with a drive, its type is displayed, otherwise "Not Installed". If no drive is connection the parameter is grayed out.	

1 Depending on the ordered device configuration
2 Only with IPC4x7

NOTICE

Data loss

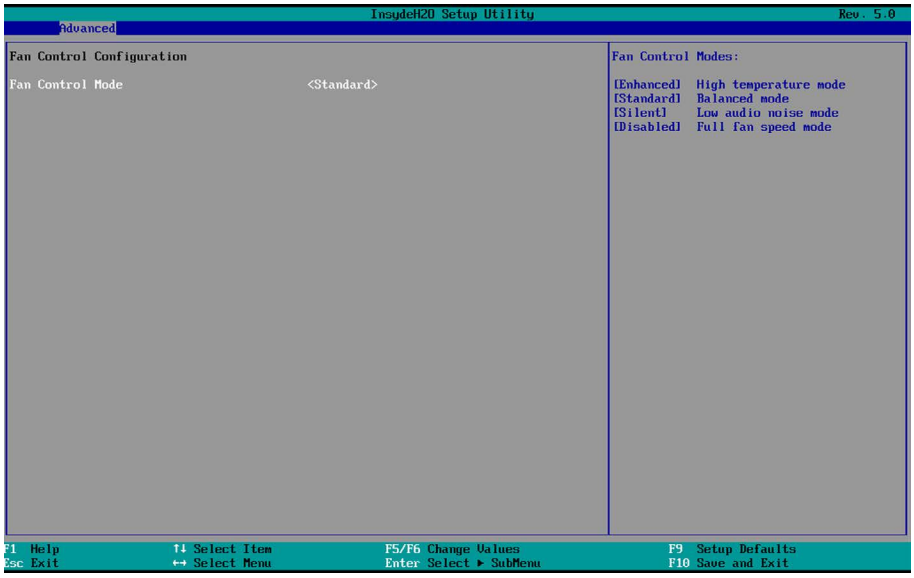
RAID array information can be deleted on the disks when switching from "RAID" to "AHCI" or "IDE".

This will result in a malfunction of the device or system.

Note

"RAID" may not be selected in conjunction with the SAS hardware RAID controller.

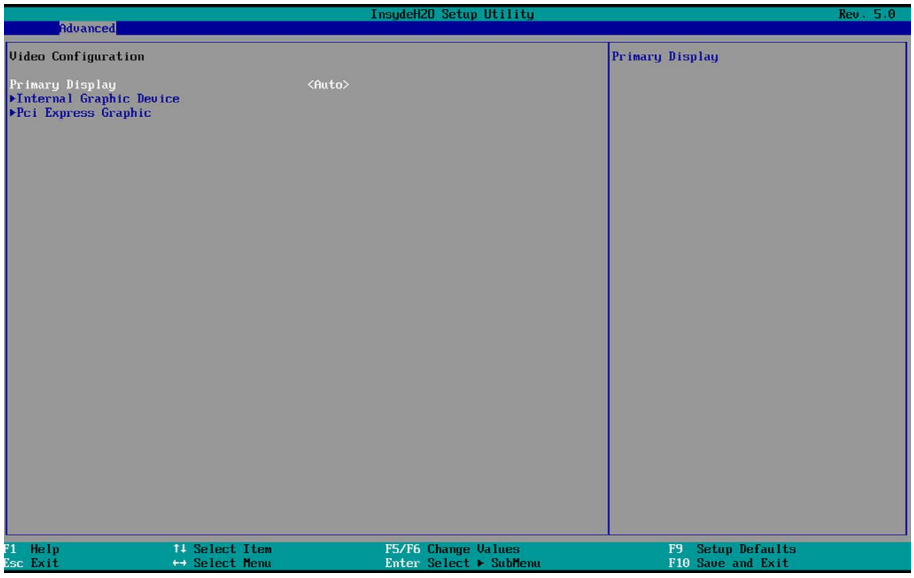
"Fan Control Configuration" [1] submenu



Parameter	Meaning	
Fan Control Mode [1]	Enhanced	The fan speed is automatically increased to maintain the CPU performance. Suitable for high temperatures.
	Standard	The fan speed is automatically adjusted. Cooling and CPU power are balanced in this case.
	Silent	The processor speed is automatically adjusted to the temperature before the fan speed is adjusted. The fans are quieter, but the CPU performance decreases as well.
	Disabled	The fan control is switched off. The fans always run at full speed.

[1] Depending on the ordered device configuration

"Video Configuration" submenu

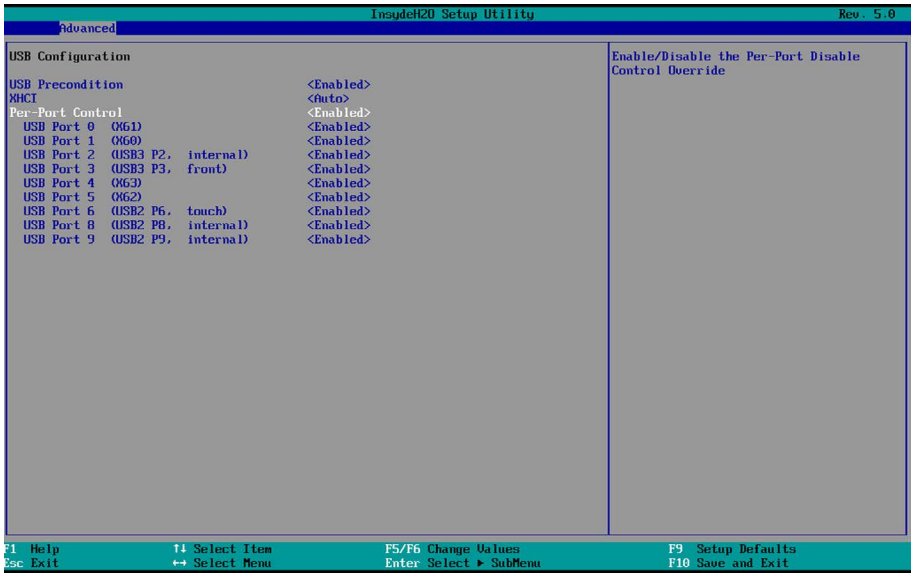


Parameter	Meaning	
Primary Display [1] [2]	Selection of the video interface for the boot messages during the self-test. The following values are dependent on the existing hardware.	
	Auto	An installed graphics card is automatically detected. Messages are then output to the graphics card. If no graphics card is installed, the messages are sent to the internal onboard graphics (IGFX).
	IGFX IGD	Messages are output only to the internal onboard graphics (IGFX) or "Internal Intel Graphic" (IGD).
	PEG	If a PEG graphics card is installed, messages are output to the PEG graphics card. If not installed, to the integrated onboard graphics (IGFX).
	PCI(e)	If a PCI(e) graphics card is installed, message are output to the PCI(e) graphics card. If not installed, to the integrated onboard graphics (IGFX).
IGD Boot Type	Refer to submenu "Internal Graphic Device".	
"Internal Graphic Device" submenu		
IGD - Aperture Size [1]	128 MB, 256 MB, 512 MB	Maximum size of the main memory area that is reserved for the graphics and that the operating system can use as video memory.

Parameter	Meaning	
IGD - DVMT Size [1]	128 MB, 256 MB, MAX	Maximum size of the dynamic memory area which can be used for the graphics (Intel Dynamic Video Memory Technology DVMT). If a software application requires graphics, more memory can be requested as graphics memory. If the software application closes, the graphics memory is released and made available again to the operating system.
IGD - Boot Type IGD - Boot Type 2	Selection of the graphics adapter that is used during booting.	
	VBIOS Default	The video specified by the VIDEO BIOS is used.
	Auto [2]	The device-specific video BIOS standards are used.
	VGA	VGA video is used.
	DVI	DVI video is used.
	DPP (X71) [1] DP Port A [2]	DisplayPort video is used.
	DPP (X72) Display Port [3] DP Port B [2]	DisplayPort video is used.
	HDMI Port B [2]	Not relevant
	Internal Display [4]	The internal video is used.
"Pci Express Graphic" submenu		
Slot0/PEG0 - Gen X [1 3] Slot1/PEG1 - Gen X [1 3] Slot2/PEG2 - Gen X [1 3]	Limits the maximum link speed of a PCIe slot.	
	Auto	Maximum possible link speed.
	Gen1	The link speed is limited to GEN 1 (250 Mbps).
	Gen2	The link speed is limited to GEN 2 (500 Mbps).
	Gen3	The link speed is limited to GEN 3 (985 Mbps).

1 Only with IPC6x7 and IPC8x7
2 Only with IPC2x7
3 Only with IPC4x7
4 Only with Box PC or Panel PC

"USB Configuration" submenu

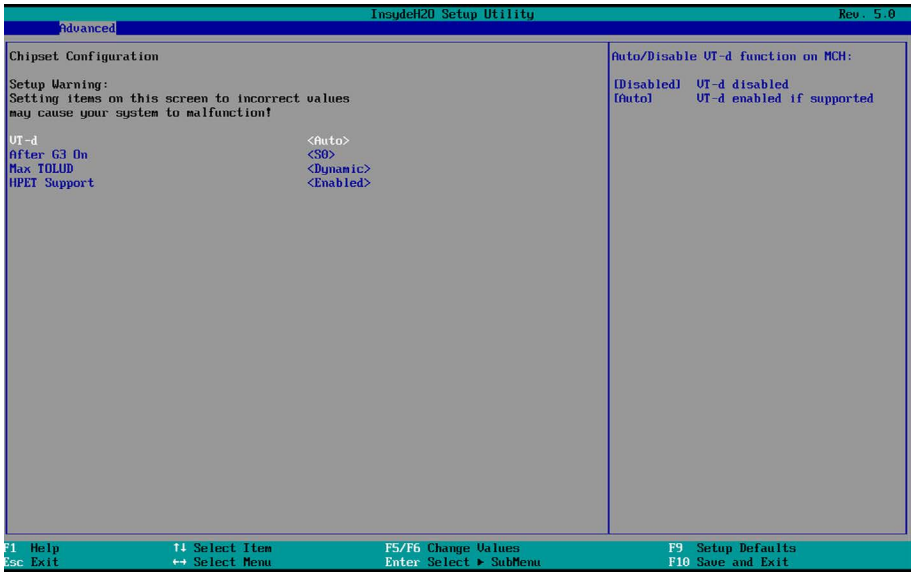


Parameter	Meaning	
USB BIOS Support	Disabled [1]	Switches the support of USB keyboard, mouse and storage media on (Enabled) or off (Disabled) in UEFI and DOS environments.
	Enabled	
	UEFI Only	USB keyboard, mouse and storage media are only supported in UEFI environments.
USB Precondition	Optimize USB enumeration (connection process) and reduce connection time (Enabled) or do not optimize (Disabled).	
XHCI Pre-Boot Driver	Switches on (Enabled) or switches off (Disabled) compatibility mode of the USB3 host controller for operating systems that do not support USB3.	
XHCI xHCI Mode	Disabled	USB 3.0 support is switched off.
	Enabled	USB 3.0 support is switched on.
	Auto	During the BIOS boot stage, USB 2.0 support only. After the operating system has started, an OS-specific USB 3.0 driver takes over the control.
	Smart Auto	During the BIOS boot stage, only USB 2.0 is supported. USB 3.0 support becomes available during the subsequent warm restart, after the OS-specific USB 3.0 driver has re-configured the XHCI controller.
The following Setup parameter is visible if "xHCI Mode"" is Enabled or Auto:		
• HS Port Switch # [2]	If activated (Enabled), a USB 3 port can be forced into the high-speed mode (USB 2.0).	

Parameter	Meaning
Per-Port Control	The USB ports cannot be individually disabled (Disabled): All ports are enabled by default. If Per-Port Control is enable (Enabled), the list of USB ports is shown: Individual ports cannot be separately enabled or disabled. The enable status of all ports is saved and appears each time if Per-Port Control is enabled.
The following Setup parameters depend on the hardware configuration of your device and are visible if "Per-Port Control" is enabled:	
• USB Port 0	Enable (Enabled) or disable (Disabled) USB port. Applies only to IPC277E: USB Port 2 is visible depending on the ordered device configuration. If USB Port 2 (USB hub) is disabled, Port 5 (Front/MutliTouch), Port 6 (Single Touch) and Port 7 (Internal) are disabled.
• USB Port 1	
• USB Port 2	
• USB Port 3	
• USB Port 4	
• USB Port 5	
• USB Port 6	
• USB Port 7	
• USB Port 8	
• USB Port 9	
• USB Port 10 [3]	
• USB Port 11 [3]	

1 Only with Field programming device
2 Only with IPC4x7
3 Only with IPC647 and IPC847

"Chipset Configuration (Miscellaneous)" submenu

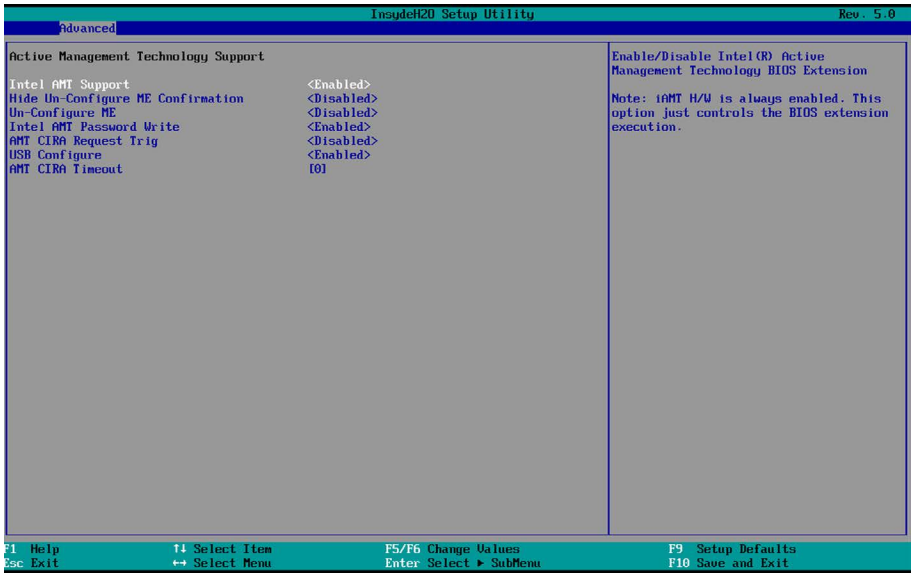


Parameter	Meaning	
VT-d [1] [2] [3]	Disabled	Disable hardware support for the sharing I/O devices with multiple virtual machines.
	Auto [1] Enabled [2] [3]	If Intel Virtualization Technology for Directed I/O (VT-d) is supported, this feature is enabled: VMM (Virtual Machine Monitor) systems can then use VT-d to manage multiple virtual machines that access the same physical I/O device.
The following Setup parameters are visible if "VT-d" is enabled:		
• Interrupt Remapping [2] [3]	The virtualization software has (Enabled) or does not have (Disabled) direct access to interrupts.	
• Pass-Through DMA [2] [3]	The virtualization software has (Enabled) or does not have (Disabled) direct access to DMA channels.	
After G3 On [1]	Specifies the device reaction to voltage failure and voltage recovery.	
	S0	After voltage failure and subsequent voltage restoration, the device switches on automatically.
	S5	After voltage failure and subsequent voltage restoration, the device remains switched off.
	Last State	If the device is switched on when the power fails, the device will switch back on when the power returns. Otherwise, the device remains switched off.
DeepSx Power Policies [4]	If enabled (Enabled), the devices switches itself to idle state, a mode with the lowest power consumption.	
	Disabled	Disable DeepSx-Modes (deep sleep).
	Enabled in S5	Enable DeepSx-Modes for operating state S5.
	Enabled in S4-S5	Enable DeepSx-Modes for operating states S4 and S5.
Max TOLUD [1]	1 to 3.25 GB in 0.25 increments	Maximum value of TOLUD (Top of Low Usable DRAM).
HPET Support	The high-precision timer (High Precision Event Timer) for multimedia is always active and can be used (Enabled) or switched of [5] (Disabled [5]).	
PCI MMIO [3]	1 GB 1.25 GB 1.5 GB 2 GB	When enabled (Enabled), the memory management of the operating system is notified that a memory area of the selected size must be keep free, e.g., for I/O cards.

1 Only with IPC6x7 and IPC8x7
2 Only with IPC4x7
3 Only with Field programming device
4 Only with IPC647 and IPC847
5 Only with the latest generation, e.g. not with Field PG M5

"Active Management Technology Support" submenu

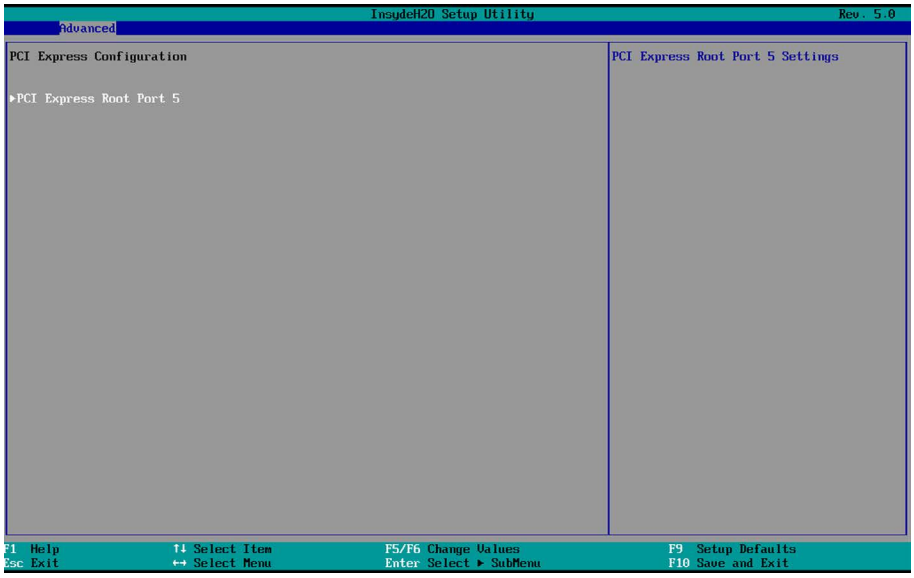
You can configure a part of AMT in the "Advanced Menu > Active Management Technology Support" menu. You can find additional configuration options for AMT in the MEBx (see "AMT Setup").



Entry	Meaning	
Intel AMT Support	Enable (Enabled) and disable (Disabled) the BIOS support MEBx for Intel Active Management Technology (AMT).	
Intel AMT Setup Prompt	Enable and disable the boot interruption <Ctrl+P> to call up the MEBx configuration page.	
Hide Un-Configure ME Confirmation	Enable (Enabled) and disable (Disabled) the confirmation prompt when you reset with Un-Configure.	
MEBx Selection Screen	Enable (Enabled) and disable (Disabled) the menu item "MEBx" (AMT Setup) in the BIOS selection setup.	
Un-Configure ME	When enabled (Enabled), you can reset all the values of MEBX to their default.	
Intel AMT Password Write [1]	The password can either be written (Enabled) or cannot be written (Disabled).	
AMT Wait Timer	Enables (Enabled) and disables (Disabled) a time delay.	
AMT CIRA Request Trig	Enable (Enabled) or disable (Disabled) CIRA (Client Initiated Remote Access, "Fast Call For Help"). CIRA allows AMT maintenance event if the AMT PC is not in the intranet.	
USB Configure	Enable (Enabled) or disable (Disabled) the USB configuration (Provisioning).	
AMT CIRA Timeout/Timer	Numbers from 0 to 100	CIRA timeout for connecting to MPS (Manageability Presence Server).

[1] No longer visible with IPC6x7 and IPC8x7 as of Version V19.0x.05.

"PCI Express (Slot) Configuration" submenu

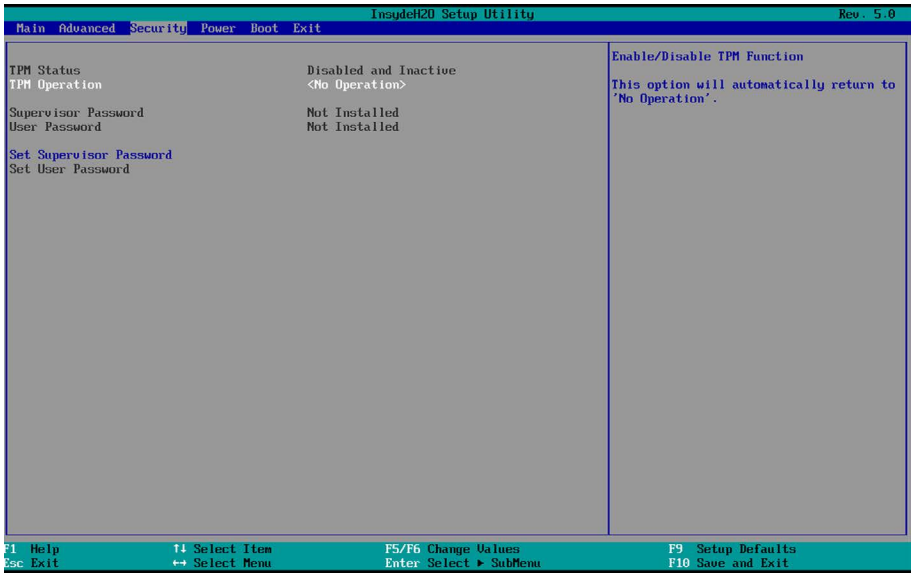


Parameter	Meaning	
PCI Express Root Port 5 PCI Express Root Port 6 [1] PCI Express Root Port 7 [1] PCI Express Root Port 8 [1]	Submenus	
"PCI Express Root Port #" submenu		
PCI Express Root Port #	Enable (Enabled) or disable (Disabled) the respective port for the expansion card.	
The following Setup parameter is visible if the respective "PCI Express Root Port #" is enabled:		
• PCIe Speed	Auto	Automatically determines the optimum speed for the installed PCIe expansion card.
	Gen1	Reduces the speed according to Gen1 specification. Compatibility setting for expansion cards that do not react stably according to specification.
	Gen2	Reduces the speed according to Gen2 specification. Compatibility setting for expansion cards that do not react stably according to specification.

[1] With Rack PC depending on the bus module used

3.5 Security menu

The "Security" menu lets you block access to your device using passwords. The following figure shows an example for the "Security" menu.



Parameter	Meaning	
TPM Status [1]	Disabled and Inactive	Trusted Platform Modul (TPM) is disabled and inactive but can be enabled.
	Enabled and Active	Trusted Platform Module is enabled and active but can be disabled.
TPM Operation [1]	Enables Trusted Platform Module (TPM).	
	No Operation	Trusted Platform Module (TPM) is not in operation.
	Disable and Deactivate	Trusted Platform Module is not available (disabled). Option resets automatically to "No Operation".
	Enable and Activate	Trusted Platform Module is available and enabled.
The following Setup parameter is visible if "TPM Operation" is set to "Enable and Activate".		
• TPM Force Clear [1]	Deletes the initialization of the TPM block.	
Supervisor Password	The general password is set (Installed) or not set (Not Installed).	
User Password	The user password is set (Installed) or not set (Not Installed).	

Parameter	Meaning	
Set Supervisor Password	Set supervisor password for full access to the BIOS Setup. A password prompt appears before the BIOS is opened. This field opens the password input dialog. This can be changed by new entry after correct input of the supervisor password. If you input an empty password (only <Enter> key), the set password is deleted and the password prompt disabled.	
Set User Password	Set a user password to restrict access to the BIOS Setup. A password prompt appears before the BIOS is opened. This field opens the password input dialog. This can be changed by new entry after correct input of the user password. If you input an empty password (only <Enter> key), the set password is deleted and the password prompt disabled.	
The following Setup parameters are visible if "Supervisor Password" is set (Installed).		
• Power-on Password	The password prompt appears either during booting in the self-test (Enabled) or only when you open the BIOS Setup (Disabled). The supervisor or user password must be entered.	
• User Acess Level	View Only	Read access to the BIOS is allowed. The setup parameters cannot be changed.
	Limited	Write access to the BIOS is allowed. Only certain setup parameters can be changed.
	Full	Full access to the BIOS is allowed. All setup parameters, except for the supervisor password, can be changed.
• Option ROM keyboard	Keyboard operation is enabled (Enabled) or disabled (Disabled) while the ROM option is running.	

[1] Only visible with device configuration with Trusted Platform Module (TPM).

NOTICE

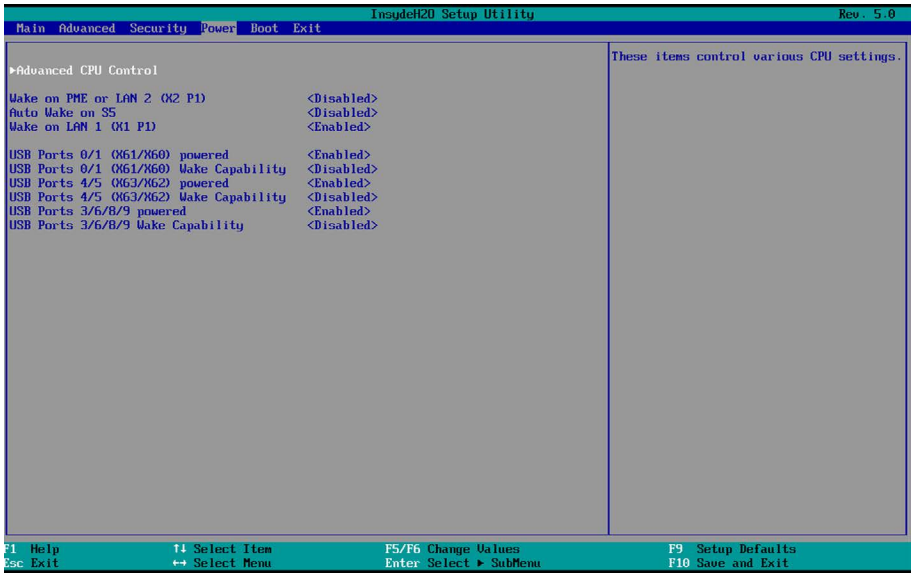
Loss of the supervisor password

If you forget or lose the supervisor password in the Supervisor Password parameter, the device must be returned to the factory at your own cost.

- Write down the supervisor password.
- Store the supervisor password in a safe location and protect it against unauthorized access.

3.6 Power menu

The reaction of the device to a power failure and after wake events is specified in the "Power" menu. The following figure shows an example for the "Power" menu.

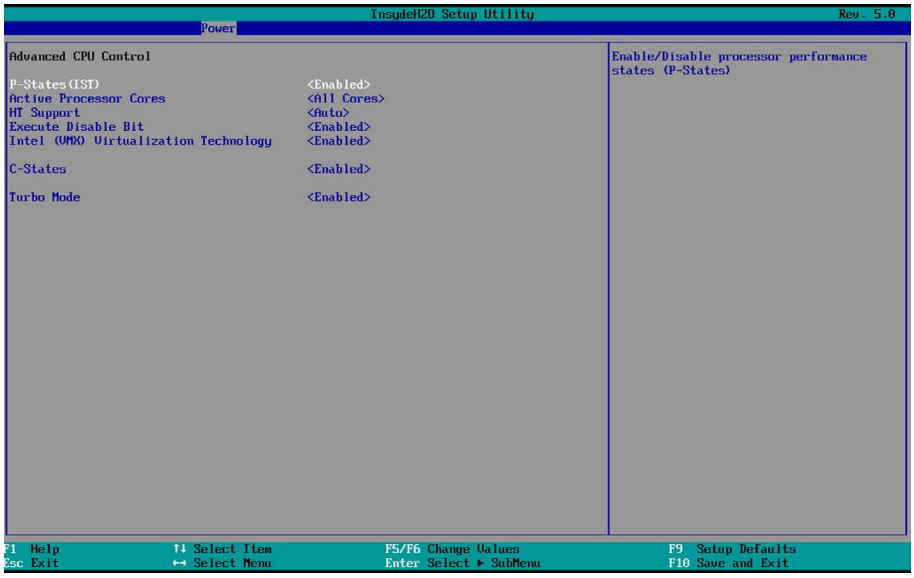


Parameter	Meaning	
DeepSx Power Policies [1]	If enabled (Enabled), the devices switches itself to idle state, a mode with the lowest power consumption. The DeepSx-Modes for the operating states S4 and S5 are switched on for this purpose. Some functions, for example Wake on LAN, that demand an activity from parts of the device, are then no longer possible.	
USB Charger [2]	When enabled (Enabled), a USB port is configured so that it remains enabled when the device is disabled and mobile phones or tables are still loaded.	
Wake on LAN Wake on PME or LAN 2 (X2 P1) [3]	Device switches on (Enabled) when a Power Management Event or an event over LAN occurs, or does not switch on at these events (Disabled).	
Auto Wake on S5 [3]	Disabled	The device does not switch on when it is in the operating state S5.
	By Every Day	The device switches on each day when it is in the operating state S5. Specify the time of day.
	By Day of Month	The device switches on each month when it is in the operating state S5. Specify the time of day and the day.

Parameter	Meaning	
The following Setup parameter is visible if "Auto Wake on S5" is set to "By Every Day" or to "By Day of Month".		
• Wake on S5 Time	Format "Hour/Minute/ Second"	Sets the time of day when the device switches on in the operating state S5. You can use the <Enter> key to move within a format, for example, from hour to minute. You can use the <+> and <–> keys to set the desired values for the time.
The following Setup parameter is visible if "Auto Wake on S5" is set to "" or to "By Day of Month".		
• Day of Month	Numbers from 1 to 31	Sets the day of the month when the device switches on in the operating state S5.
Wake on LAN 1 (X1 P1) [3]	The LAN controller of the onboard Ethernet interface can switch the device on (Enabled) or not switch the device on (Disabled).	
PROFINET always On [4] PROFINET port is On	The onboard PROFINET interface of CP1616 is supplied with power in the operating states S4 and S5 (Enabled) or it is not supplied with power (Disabled).	
The following Setup parameter is visible if "PROFINET always On" is enabled.		
• PROFINET Wake Capability [4]	PROFINET can switch the device on in the operating state S4 or S5 (Enabled) or it cannot switch it on (Disabled).	
USB Ports 0/1 (X61/X60) powered [3] USB Ports 4/5 (X63/X62) powered [3] USB Ports 3/6/8/9 powered	When activated (Enabled), the respective USB port is supplied with voltage during operation. When "Wake Capability" is also selected (Enabled), the USB port is supplied with voltage in sleep mode as well.	
The following Setup parameter is visible if "USB Ports # powered" is enabled.		
• USB Port(s) # Wake Capability	The USB port can switch the device on (Enabled) or it cannot switch it on (Disabled). Only if the corresponding parameter "USB Ports # powered" is activated.[5]	

1 Only with Field PG M4
2 Only with Field programming device
3 Only with IPC6x7 and IPC8x7
4 Only visible with ordered device configuration with PROFINET
5 Not with IPC2x7E

"Advanced CPU Control" submenu



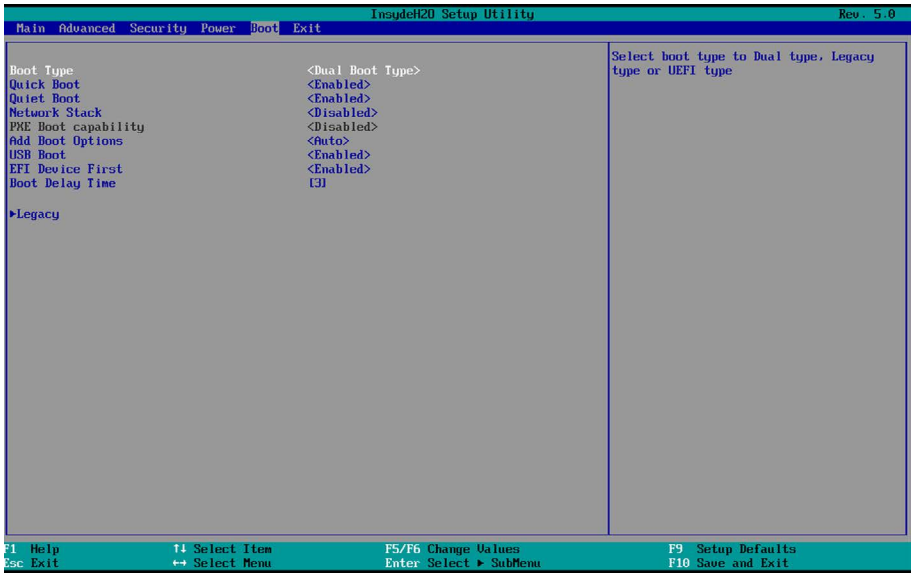
Parameter	Meaning	
AESNI Feature	Enables (Enabled) the Advanced AES Instruction Set of modern CPUs. You can disable this feature (Disabled) to remain compatible with older CPUs or if errors occur.	
AES [1]	When activated (Enabled), the secure encryption method AES (Advanced Encryption Standard) is supported by hardware, which speeds up encryption and decryption.	
P-States (IST)	Enable the performance modes of the processor (Enabled) or lock them (Disabled).	
Active Processor Cores	All Cores	All cores of the processor are active and used.
	1 Core	Number of processor cores used (provided they do not exceed the actual number of cores). The remaining are inactive and are hidden from the operating system. This can resolve certain problems with software.
	2 Cores	
	3 Cores	
HT Support	If possible, use hyperthreading (Auto) or deactivate it fully (Disabled). With Hyper Threading Technology, multiple logical processors are presented to the operating system instead of a single physical processor. This allows the operating system to better distribute tasks and increase the overall processor performance. The operating system must support ACPI. "HT Support" with operating systems that provide no ACPI support.	
Execute Disable Bit [3] Use XD Capability [2]	When activated (Enabled), the operating system can prevent the execution of programs in specific areas of memory for virus protection. The operating system must support the "eXecute Disable-Bit (XD-Bit)" feature. If the entry is not activated (Disabled), the operating system is unable to activate the XD bit function.	

Parameter	Meaning	
Intel (VMX) Virtualization Technology [3] VT Support [1] VTX-2 [1] [2]	Enables the Intel virtualization functionality (Enabled) or locks it (Disabled). When enabled, VMM systems (Virtual-Machine-Monitor) can use the processor support for virtualization purposes (Virtual Machine Extensions VMX) and also utilize the additional features of the Vanderpool Technology hardware (VT) .	
C-States	Enable the energy saving modes of the processor (Enabled) or lock them (Disabled).	
Max C-States	c7 [1], c6 [1], c1 [1]	Prevent the CPU from entering hibernation states that are too deep. The larger the number behind the "c", the deeper the hibernation state, the less the power consumption and the longer it takes for the devices to switch on again from the hibernation state. For example, the setting C6 allows the C states C1, C2 to C6 to be adopted. The possible other C states C7 are prevented.
Turbo Mode [1]	Enabled	Enabling turbo mode (Enabled). When enabled, the processor can use Intel Turbo Boost technology to increase the clock speed when the operating system requests more power. To use the Turbo mode effectively, the performance modes of the "P-States (IST)" processor and energy saving modes of the "C-States" processor must be enabled.
	Disabled	Disabling turbo mode (Disabled).
	Auto [2]	The turbo mode is enabled if its supported by the CPU, otherwise it is not enabled.
Turbo Mode Level [1]	High Performance	The CPU is operated with maximum power. A higher temperature development is taken into account, without regard for the ambient temperature.
	Temperature optimized	When using the device in higher ambient temperatures. As a result, the CPU power consumption is reduced in favor of a higher permissible ambient temperature.

1 Only if supported by the processor
2 Only with IPC2x7E
3 Only with IPC6x7 and IPC8x7

3.7 Boot Menu

In the "Boot" menu, you specify the boot characteristics of the device and determine bootable device components (boot media) and boot order. The following figure shows an example for the "Boot" menu.



Parameter	Meaning	
Boot Type	Dual Boot Type	Both legacy and EFI boot media are listed and approved as boot media.
	Legacy Boot Type	Only legacy boot media are listed and approved as boot media.
	UEFI Boot Type	Only EFI boot media are listed and approved as boot media.
Quick Boot	Enable (Enabled) or disable (Disabled) Quick Boot. If enabled, the device starts faster because BIOS skips various hardware function tests.	
Quiet Boot	During the self-test, the boot logo is displayed (Enabled) or startup information is displayed in text mode (Disabled).	
POST Errors [1]	Refer to section "Advanced-Menü", "Boot Configuration" submenu.	
Network Stack	Specifies whether the UEFI Network Stack is available (Enabled) or not available (Disabled) for network access using UEFI . When Disabled , for example, no UEFI installation is possible via PXE.	

Parameter	Meaning	
PXE Boot capability PXE Boot on Demand PXE Boot PXE Boot to LAN	Activates (Enabled) or deactivates (Disabled) booting for a boot image which can be loaded from the network (PXE Preboot Executable Environment). Only available only if the "Network Stack" parameter is available (Enabled).	
	Disabled	Only UEFI Network Stack is supported: PXE is not supported.
	UEFI:IPv4	Only UEFI boot media that support the Internet Protocol Version 4 are supported as PXE boot media.
	UEFI:IPv6 [2]	Only UEFI boot media that support the Internet Protocol Version 6 are supported as PXE boot media.
	UEFI:IPv4IPv6 [2]	Only UEFI boot media that support the Internet Protocol Versions 4 and 6 are supported as PXE boot media.
	Legacy	Only legacy (non-UEFI) boot media are supported as PXE boot device.
Add Boot Options	First	Newly detected boot media are placed at the top of the boot order.
	Auto	Newly detected boot media are placed automatically in the boot order: e.g. at the top (First) for legacy boot media and based on the device path for UEFI boot media.
	Last	Newly detected boot media are placed at the bottom of the boot order.
USB Boot	Allow (Enabled) or do not allow (Disabled) booting from inserted USB devices.	
EFI Device First	Set boot order of the EFI boot media.	
Boot Delay Time Timeout	Boot delay time in seconds to give the user time to activate the hotkey to access the BIOS.	

[1] Only with IPC4x7 at this position
[2] Not with IPC2x7E

"EFI" submenu

Shows all EFI boot media and the currently valid Windows Boot Manager.

"Legacy" submenu

The "Legacy" submenu shows the connected bootable device components (boot media) and their boot position.

During booting, the boot medium in 1st position (highest boot priority) is used. If this boot medium is not available, the system boots from the next boot device in the list.

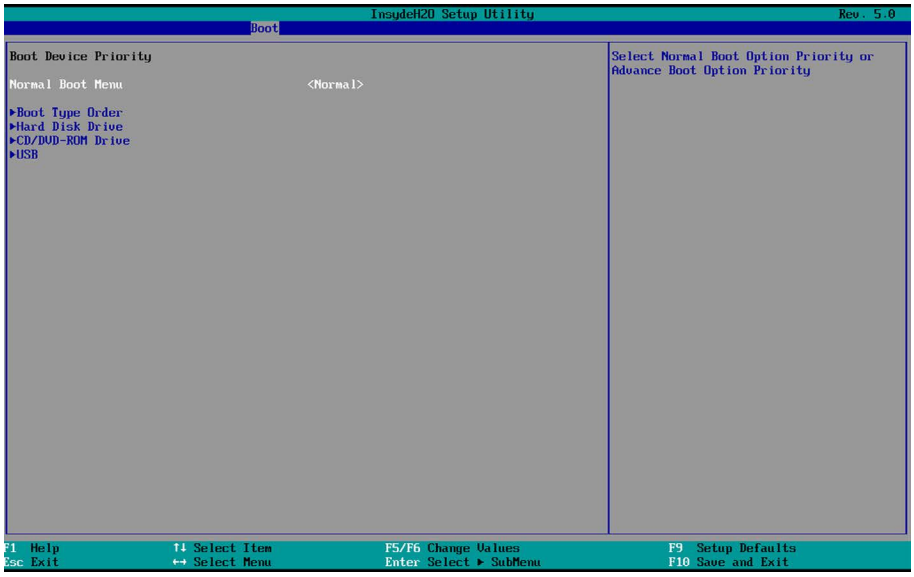
The boot medium with the highest priority is listed in the first line of the respective group of boot media (boot media types).

The boot order is changed as follows:

- Use the <↑> or <↓> keys to select a boot medium.
- Use the <+> or <–> keys to move a boot medium up or down.

Note

The boot manager can be started by pressing the <F12> key during the booting process. You can also start the boot manager with the "Boot Manager" key in the BIOS selection menus. The boot manager displays all available boot media. The system boots from the selected boot medium.



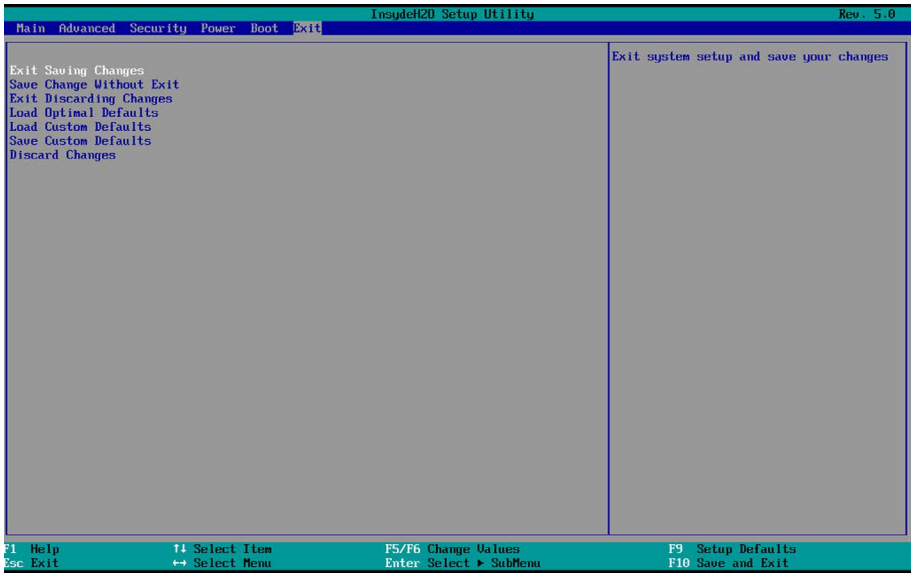
Parameter	Meaning	
Normal Boot Menu	Normal	Boot order according to the type of bootable media. This lists only the types of boot media for which at least one bootable media is available. Example: "CD/DVD-ROM Drive" can be selected as the boot media type if a CD-ROM drive is installed as a boot medium, for example.
	Advance	Custom boot order of all boot media. The boot media and not the boot media types are individually listed. Boot media that are disconnected from the device and reconnected in between boot processes are resorted by BIOS.
	Exclusive [1]	Can only boot from a SATA port which is defined at the "Exclusive SATA Port for Legacy" parameter.
	The following Setup parameter is visible if "Exclusive" is enabled:	
	• Exclusive SATA Port for Legacy	Selection of the SATA port that is used during booting.
Boot Type Order	Submenu [2] for setting the boot sequence of the following boot media types. Default setting: 1. Floppy drive 2. Hard Disk Drive 3. CD/DVD ROM Drive 4. USB 5. Others	
Floppy Drive	Submenu [2] for setting the boot sequence within the group of disk drives.	
Hard Disk Drive	Submenu [2] for setting the boot sequence within the group of hard disk drives.	
CD/DVD-ROM Drive	Submenu [2] for setting the boot sequence within the group of optical drives.	
PCMCIA	Submenu [2] for setting the boot sequence within the PCMCIA group.	
USB	Submenu [2] for setting the boot sequence within the group of USB drives.	
Others	Submenu [2] for setting the boot sequence within the group of yet to be detected boot media, for example, LAN/PXE ports (Remote Boot Devices). PXE: LAN 1/2 Remote Boot: If PXE Boot capability is enabled (see above), these are the PXE boot media for each LAN interface. When selected, booting is via the network/PXE from this LAN port.	

[1] Only with IPC6x7 and IPC8x7 as of version V19.0x.05

[2] Depends on the equipment: The submenu only appears if at least one boot device of this type is available.

3.8 Exit menu

You always exit BIOS Setup in this menu.



Exit Saving Changes	All changes are saved and the system is restarted with the new Setup parameters.
Save Change Without Exit	All changes are saved
Exit Discarding Changes	All changes are discarded and the system is restarted with the old Setup parameters.
Load Optimal Defaults	All setup parameters are reset to the safe default values. **Notice**: The existing Setup parameters are overwritten by this.
Load Custom Defaults	The profile must be loaded with the custom Setup parameters. Requirement: The parameters are saved prior to this with "Save Custom Defaults". **Notice**: All existing Setup parameters are overwritten during loading. • Write down the BIOS Setup settings beforehand • Save the BIOS Setup settings as user-specific profile.
Save Custom Defaults	The currently configured Setup parameters are saved as a custom profile (see also "Load Custom Defaults").
Discard Changes	All changes are discarded.

3.9 BIOS Setup settings

If you have changed any default settings in Setup, you can enter them in the following table. You can then refer to these entries for any future hardware modifications.

Note

Print out the table below and keep the pages in a safe place once you made your entries.

The default setup settings vary depending on the ordered device configuration.

BIOS Setup settings

Main

Setup parameter	IPC6x7 IPC8x7	IPC4x7	IPC2x7	Field programming device
System Time	00:00:00	00:00:00	00:00:00	00:00:00
System Date	MM/DD/YYYY	MM/DD/YYYY	MM/DD/YYYY	MM/DD/YYYY

Advanced > Boot Configuration

Setup parameter "HPET" see submenu "Chipset Configuration", "HPET Support".

Setup parameter	IPC6x7 IPC8x7	IPC4x7	IPC2x7	Field programming device
Numlock	On	On	On	On
POST errors	All without keyboard	All without keyboard	All without keyboard	All without keyboard

Advanced > Peripheral Configuration

Setup parameter	IPC6x7 IPC8x7	IPC4x7	IPC2x7	Field programming device
Internal COM 1	Auto [1]	Auto	Enabled	Enabled
Base I/O address [2]	3F8	3F8	3F8	3F8
Interrupt [2]	IRQ4	IRQ4	IRQ4	IRQ4
Transceiver mode [2]			RS232	
Internal COM 2 [1]	Auto [1]	Auto	Enabled	
Base I/O address [2]	2F8	2F8	2F8	3F8
Interrupt [2]	IRQ3	IRQ3	IRQ3	IRQ4
Transceiver mode [2]			RS232	RS232
Internal LPT	Auto [1]			
Base I/O address [3]	378			
Interrupt [3]	IRQ7			

Setup parameter	IPC6x7 IPC8x7	IPC4x7	IPC2x7	Field programming device
Mode [3]	Bi-directional			
DMA Channel [3]	DMA 1			
CAN [1]		Auto		
Base I/O address [4]		5400		
Interrupt [4]		IRQ5		
Onboard PROFINET [1] PROFINET	Enabled	Enabled		
PCI – MPI / DP [1]	Enabled	Enabled		Enabled
Audio 5	Auto	Enabled		Auto
Azalia internal HDMI codec [5]		Enabled		Enabled
Onboard Ethernet 1 (LAN 1, X1 P1)	Enabled	Enabled	Enabled	Enabled
Onboard Ethernet 2 (LAN 2, X2 P1)	Enabled	Enabled	Enabled	Enabled
WLAN [6]				Last State
Cardbus + SD-Card [6]				Enabled
Touchpad [6]				Enabled

1 Depending on the ordered device configuration
2 Only visible if the associated parameter "Internal COM #" is enabled.
3 Only visible if "Internal LPT" is enabled.
4 Only visible if "CAN" is enabled.
5 Only available if an Azalia HD audio controller is installed.
6 Only with Field programming device

Advanced > SATA / IDE Configuration

Setup parameter	IPC6x7 IPC8x7	IPC4x7	IPC2x7	Field programming device
SATA Controller	Enabled		Enabled	
HDC Configure As Chipset SATA mode	AHCI [1]	AHCI	AHCI	AHCI
SATA Port 0 Device Type		Hard Disk Drive	Hard Disk Drive	
SATA Port 1 Device Type		Hard Disk Drive	Hard Disk Drive	
SATA Port 2 Device Type		Hard Disk Drive	Hard Disk Drive	
SATA Port 2 Hot Plug		Disabled		

1 Depending on the ordered device configuration

Advanced > Fan Control Configuration [1]

Setup parameter	IPC6x7 IPC8x7	IPC4x7	IPC2x7	Field programming device
Fan Control Mode [1]	Standard			

1 Depending on the ordered device configuration

Advanced > Video Configuration

Setup parameter	IPC6x7 IPC8x7	IPC4x7	IPC2x7	Field programming device
Primary Display	Auto		Auto	
IGD - Aperture Size	128 MB			
IGD - DVMT Size	MAX			
IGD boot type	VBIOS default	VBIOS default	Auto	
IGD boot type 2	Disabled	Disabled		
PEG0 - Gen X	Auto	Gen1		
PEG1 - Gen X	Auto	Gen1		
PEG2 - Gen X	Auto	Gen1		

Advanced > USB Configuration

Setup parameter	IPC6x7 IPC8x7	IPC4x7	IPC2x7	Field programming device
USB BIOS Support			Enabled	Enabled
USB Precondition	Enabled	Disabled		
XHCI Pre-Boot Driver		Disabled		Disabled
XHCI, xHCI mode	Auto	Auto	Auto	
HS Port Switch 1		Enabled		
HS Port Switch 2		Enabled		
HS Port Switch 3		Enabled		
HS Port Switch 4		Enabled		
Per-Port Control	Disabled	Disabled	Enabled	
The following parameters depend on the hardware configuration and are only visible if "Per-Port Control" is enabled (Enabled).				
USB Port 0	Enabled	Enabled		
USB Port 1	Enabled	Enabled	Enabled	
USB Port 2	Enabled	Enabled	Enabled	
USB Port 3	Enabled	Enabled	Enabled	
USB Port 4	Enabled	Enabled	Enabled	
USB Port 5	Enabled	Enabled	Enabled	
USB Port 6	Enabled	Enabled	Enabled	
USB Port 7			Enabled	
USB Port 8	Enabled	Enabled		
USB Port 9	Enabled			
USB Port 10 [1]	Enabled			
USB Port 11 [1]	Enabled			

[1] Only with Rack PC

Advanced > Chipset Configuration (Miscellaneous)

Setup parameter	IPC6x7 IPC8x7	IPC4x7	IPC2x7	Field programming device
VT-d	Auto	Enabled		
Interrupt Remapping [1]		Disabled		
Pass-Through DMA [1]		Disabled		
After G3 On	Last state [2], S0 [3]			
DeepSx Power Policies [4]	Disabled			
Max TOLUD	3 GB			
HPET Support	Enabled	Enabled	Enabled	Enabled [5]
PCI MMIO			1 GB	

1 Only visible if "VT-d" is enabled.
2 Only with Rack PC
3 Only with Box PC or Panel PC
4 Only with IPC647 and IPC847
5 Only with Field PG M4

Advanced > Active Management Technology Support

Setup parameter	IPC6x7 IPC8x7	IPC4x7	IPC2x7	Field programming device
Intel AMT Support	Enabled Disabled [1]	Enabled		Disabled
Intel AMT Setup Prompt		Enabled		Enabled
Hide Un-Configure ME Confirmation	Disabled			
MEBx Selection Screen		Disabled		Disabled
Un-Configure ME	Disabled	Disabled		Disabled
Intel AMT Password Write [2]	Enabled	Enabled		Enabled
AMT Wait Timer		0		0
AMT CIRA Request Trig	Disabled	Disabled		Disabled
USB Configure	Enabled Disabled [1]	Enabled		Enabled
Intel AMT SPI Protected		Disabled		Disabled
AMT CIRA Timeout/Timer	0	0		0

1 With IPC647D/IPC847D as of Version V19.01.06 and with IPC627D/IPC677D/IPC827D as of Version V19.02.05.
2 No longer visible with IPC6x7 and IPC8x7 as of Version V19.0x.05.

Advanced > PCI Express Configuration [1]

Setup parameter	IPC6x7 IPC8x7	IPC4x7	IPC2x7	Field programming device
PCI Express Root Port 5	Enabled			
PCIe Speed [2]	Auto			
PCI Express Root Port 6 [1]	Enabled			
PCIe Speed [1 2]	Auto			
PCI Express Root Port 7 [1]	Enabled			
PCIe Speed [1 2]	Auto			
PCI Express Root Port 8 [1]	Enabled			
PCIe Speed [1 2]	Auto			

1 Depending on the ordered device configuration
2 Only visible if the associated parameter "PCI Express Root Port #" is enabled.

Security

Setup parameter	IPC6x7 IPC8x7	IPC4x7	IPC2x7	Field programming device
TPM Status [1]	Depending on configuration			Disabled and Inactive
TPM Operation [1]	No Operation	No Operation		No Operation
TPM Force Clear [1]	Disabled	Disabled		
Supervisor Password	Not installed	Not installed	Not installed	Not installed
User password	Not installed	Not installed	Not installed	Not installed
Power-on Password [2]	Disabled	Disabled	Disabled	Disabled
User Access Level [2]	Full	Full	Full	Full
Option ROM keyboard [2]	Enabled	Enabled	Enabled	Enabled

1 Depending on the ordered device configuration
2 Only visible if "Supervisor Password" is set (Installed).

Power

Setup parameter	IPC6x7 IPC8x7	IPC4x7	IPC2x7	Field programming device
DeepSx Power Policies [5]				Disabled [5]
USB charger				Disabled
Wake on LAN Wake on PME or LAN 2 (X2 P1)	Disabled	Enabled	Enabled	Enabled
Auto Wake on S5	Disabled			
Wake on S5 Time [1]	00:00:00			
Day of Month [1]	1			
Wake on LAN 1 (X1 P1)	Enabled			
PROFINET always On [2] PROFINET port is On	Disabled	Enabled		
PROFINET Wake Capability [2] [3]	Disabled			
USB Ports 0/1 (X61/X60) powered	Enabled			
USB Ports 0/1 (X61/X60) USB Ports 1/2 Wake Capability [4]	Disabled	Disabled	Disabled	
USB Ports 4/5 (X63/X62) powered	Enabled			
USB Ports 4/5 (X63/X62) USB Ports 3/4 Wake Capability [4]	Disabled	Disabled	Disabled	
USB Ports 3/6/8/9 powered	Enabled			
USB Port 3/6/8/9 USB Port 2/3 Wake Capability [4]	Disabled		Disabled	
USB Port Internal Wake Capability [4]		Disabled		
USB Port Front Wake Capability [4]		Disabled		
USB Ports Touch Wake Capability[4]		Disabled		

1 Only visible if the "Auto Wake on S5" is set accordingly.
2 Depending on the ordered device configuration
3 Only visible if the parameter "PROFINET always On" is enabled.
4 Only visible if the associated parameter "USB Ports # powered" is enabled.
5 Only with Field PG M4

Power > Advanced CPU Control

Setup parameter	IPC6x7 IPC8x7	IPC4x7	IPC2x7	Field programming device
AESNI Feature			Enabled	
AES		Enable	Enabled	
P-States (ACTUAL)	Enabled	Enabled	Enabled	
Active Processor Cores	All Cores			
HT Support	Auto	Auto		
Execute Disable Bit Use XD Capability	Enabled	Enabled	Enabled	
Intel (VMX) Virtualization Technology Volt Support VTX-2	Enabled	Enabled	Enabled	
C-States	Enabled	Enabled	Enabled	
Max C states			C7	
Turbo mode [1]	Enabled	Enabled	Auto	
Turbo Mode Level		High Performance		

[1] Only if supported by the processor

Boot

Setup parameter	IPC6x7 IPC8x7	IPC4x7	IPC2x7	Field programming device
Boot Type	Dual Boot Type	Dual Boot Type	Dual Boot Type	Dual Boot Type
Quick Boot	Enabled	Enabled	Enabled	Enabled
Quiet Boot	Enabled	Enabled	Enabled	Enabled
POST errors	Refer to menu "Advanced", submenu "Boot configuration"			
Network Stack	Disabled	Disabled	Disabled	Disabled
PXE Boot capability	Disabled	Disabled	Disabled	Disabled
Add Boot Options	Auto	Auto	Auto	Auto
USB Boot	Enabled Disabled [1]	Enabled	Enabled	Enabled
EFI Device First	Enabled	Enabled	Enabled	Enabled
Boot Delay Time Timeout	3	3	0	

[1] With IPC647D/IPC847D as of Version V19.01.06 and with IPC627D/IPC677D/IPC827D as of Version V19.02.05.

Boot > Legacy

Setup parameter	IPC6x7 IPC8x7	IPC4x7	IPC2x7	Field programming device
Normal Boot menu	Standard	Standard	Standard	Standard
Boot Type Order	In the order of the following boot media:			
Floppy drive	Depending on configuration		Depending on configuration	
Hard Disk Drive	Depending on configuration	Depending on configuration	Depending on configuration	
CD/DVD ROM Drive	Depending on configuration	Depending on configuration	Depending on configuration	
PCMCIA				
USB	Depending on configuration	Depending on configuration	Depending on configuration	
Others	Depending on configuration	Depending on configuration	Depending on configuration	

Exit

Setup parameter	IPC6x7 IPC8x7	IPC4x7	IPC2x7	Field programming device
Profile:				

AMT Setup (MEBx)

4

4.1 Login and Configuration

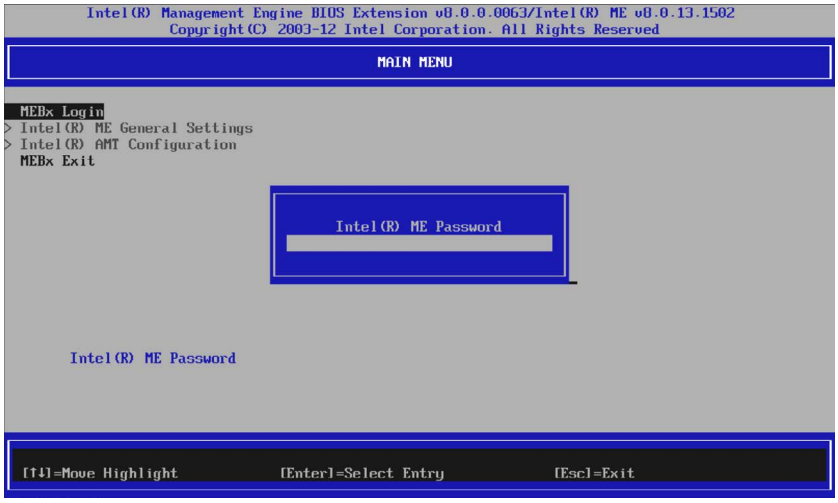
Validity of Advanced, Active Management Technology Support (AMT)

Only devices with Core i5/i7 or Xeon processors feature ATM.

Login in the MEBx

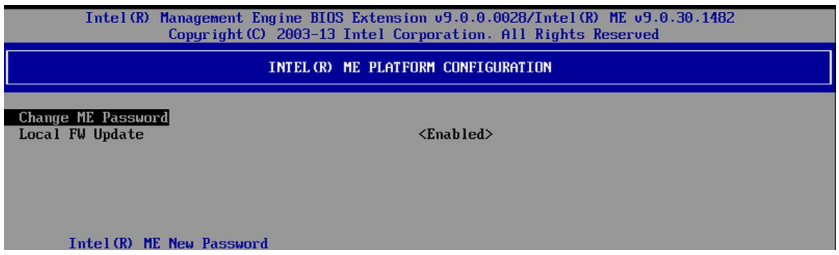
First, log into the MEBx: Select "MEBX" in the BIOS selection menu (see section "Opening the BIOS selection menu").

You will find yourself in the "MAIN" menu, which contains 2 submenus.



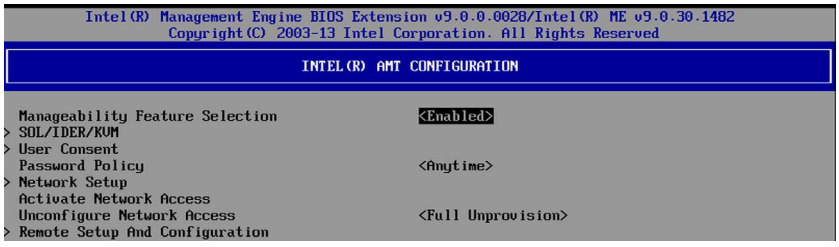
Entry	Meaning
Intel(R) ME General Settings	Opens the submenu with the general ME settings (see "ME General Settings").
Intel(R) AMT Configuration	Opens the submenu for the AMT settings (see "AMT Configuration").
MEBx Exit	Exits the MEBx.

"ME General Settings" submenu



Entry	Meaning
Change ME Password	Used to change the password
Local FW Update	Sets the user rights and the conditions under which ME firmware updates can be transferred.

"AMT Configuration" submenu



Entry	Meaning
Manageability Feature Selection	Enable and disable all AMT features.
SOL/IDER/KVM	Enable and disable the features SOL, IDE redirection, KVM.
User Consent	User consent settings. Forces the following additional security behavior: When a user attempts to establish a KVM connection remotely, a six-figure number is displayed on the AMT PC. The remote user must enter this number on the help desk PC before the KVM connection can be opened.
Password Policy	Password policy that specifies the conditions under which the password can be changed from a remote location.
Network Setup	Network settings, for example DHCP, IP address, host name, domain name.
Activate Network Access	Activates the network interface. This menu entry only exists if the network is not activated.
Unconfigure Network Access	Deactivates the network interface and resets the network settings to their default values.
Remote Setup And Configuration	Displays the current provisioning settings.
Power Control	Specifies the power states S0, S3, S4 of the computer in which the ME is activated.

See also

Intel® Management Engine BIOS Extention (MEBX) User Guides
(https://communities.intel.com/docs/DOC-6112)

BIOS update

5

Check regularly if updates are available for download to your device.

You can find additional information on the Internet at the following address: After Sales Information system (http://www.siemens.com/asis).

Noting down and restoring BIOS Setup settings

NOTICE
Irretrievable loss of data All BIOS Setup settings are deleted after the BIOS update. This can put the system in an undefined state. This may damage the device and the plant. 1. Print out the table in the next section "General BIOS Setup settings". 2. Enter your specific BIOS Setup setting in this table before you run a BIOS update. 3. Start BIOS Setup after the BIOS update. 4. Load the BIOS Setup default settings with <F9> "Setup Defaults". Or use the BIOS Setup command "Load Optimal Defaults" in the "Exit" menu. 5. Make your own Setup settings based on the table you have printed out. 6. Save the BIOS Setup settings with <F10> "Save and Exit".

Performing a BIOS update

NOTICE
Damage to the device If you switch off the device during the update, the BIOS will be incomplete and corrupt. This may result in malfunctions. Leave the device switched on during the update.

If you have purchased a new BIOS update for your device, follow these steps to install the update:

1. Connect the device to the power supply.
2. Copy the update to a USB memory stick.

3. Reset the device (warm or cold restart).

   The following message appears briefly on the display at the end of the self-test:

   ```
   Press ESC for boot options
   ```

4. Press <ESC> to open the BIOS selection menu.
5. Click the "BIOS Update" button.
6. Follow the instructions on the screen.

Reboots

There may be several reboots after a BIOS update. These reboots are initiated by the Management Engine (ME). The reboots are required by the ME to adapt itself to the changes of the BIOS update.

Index