Description

Components

BIOS manual
D3288/D3348/D3358

FUJITSU

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Published by / Contact address in EU
Fujitsu Technology Solutions
Mies-van-der-Rohe-Straße 8
80807 Munich, Germany

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BIOS manual D3288/D3348/D3358

Manual

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Contents

Introduction

BIOS Setup provides settings for system functions and the hardware configuration for the system.

Any changes you make to the settings take effect as soon as you save the settings and quit *BIOS Setup*.

The individual menus in *BIOS Setup* provide settings for the following areas:

Main:	System functions
Advanced:	Advanced system configuration
Security:	Security functions
Power:	Energy saving functions
IPMI Mgmt:	IPMI management
Boot:	Configuration of the start-up sequence
Save & Exit:	Save and quit

i

The setting options depend on the hardware configuration of your system.

Some menus and certain settings may therefore not be available in *BIOS Setup* on your system, or the menus may be in a different place, depending on the *BIOS revision*.

Notational conventions

⚠	Pay particular attention to texts marked with this symbol. Failure to observe this warning endangers your health, destroys the system, or may lead to loss of data. The warranty will be invalidated if the system becomes defective through failure to take notice of this warning.
ℹ	Indicates important information which is required to use the system properly.
▶	Indicates an activity that must be performed.
↳	Indicates a result.
`This font`	Indicates data entered using the keyboard in a program dialogue or command line, e.g. your password ((**`Name123`**) or a command used to start a program (**`start.exe`**).
`This font`	Indicates information that is displayed on the screen by a program, e.g.: `Installation is complete!`.
This font	Indicates • terms and texts used in a software interface, e.g.: Click on *Save*. • names of programs or files, e.g. *Windows* or *setup.exe*.
"This font"	Indicates • cross-references to another section, e.g. "Safety information" • cross-references to an external source, e.g. a web address: For more information, go to "http://www.fujitsu.com/fts/" • names of CDs, DVDs and titles or designations for other materials, e.g.: "CD/DVD Drivers & Utilities" or "Safety" manual.
Abc	Indicates a key on the keyboard, e.g: F10.

Navigating BIOS Setup

Open BIOS Setup

► Switch on the system.

↳ Wait until the screen output appears.

► Press function key F2.

► If the system is password protected, you must now enter the password and confirm with the Enter key. You will find details on password assignment under "Password Description", Page 45.

↳ The BIOS Setup Main menu will be displayed on the screen.

► To display system-specific information, select *System Information* and press the Enter key.

↳ The BIOS release information will be displayed:

- The revision of the BIOS (e.g. R1.3.0)

  Under "Board" you will find the system board number (e.g. D3062-A11)

  With the aid of the system board number you can locate the correct technical manual for the system board on the "Drivers & Utilities" CD/DVD. Alternatively you can also use it to download the corresponding BIOS update file from the Internet (see "BIOS Update", Page 73).

If you want to open the Boot Menu immediately

> i You can use this function if you do not wish to boot your system from the drive which is given as the first setting under *Boot Option Priorities* in the *Boot* menu.

► Start the system and wait until screen output appears.

► Press the function key F12.

↳ On the screen, the boot options are shown as a popup window. You can now select the drive from which you wish to boot the operating system. The selection options are the same as the possible settings given under *Boot Option Priorities* in the *Boot* submenu.

► Use the ↑ and ↓ cursor keys to select which drive you want to boot the operating system from now and confirm your choice with the Enter key.

> i Your selection is only valid for the current system boot. At the next system boot, the settings in the *Boot* menu are valid again.

► If you want to start the BIOS Setup, use the cursor keys ↑ or ↓ to select the *Enter Setup* entry and confirm your selection with the Enter key.

► If you want perform basic tests of the CPU, working memory and hard disks, use the cursor keys ↑ or ↓ to select the *Diagnostic Program* entry and confirm your selection with the Enter key.

If you wish to boot immediately from LAN

► Press the function key F11 if you wish to boot directly via LAN and not from the drive which is given as the first position under *Boot Option Priorities* in the *Boot* menu.

Navigating BIOS Setup

← or → cursor keys	Select menu from menu bar
↑ or ↓ cursor keys	Select field - selected field is highlighted
Enter or ESC	Open submenu (marked by ►) Enter and leave ESC
+ or - keys (numeric keypad)	Change entry for field
F3 function key	Set default entries for all menus
F2 function key	Reset entries that were in use when *BIOS Setup* was opened.

Exiting BIOS Setup

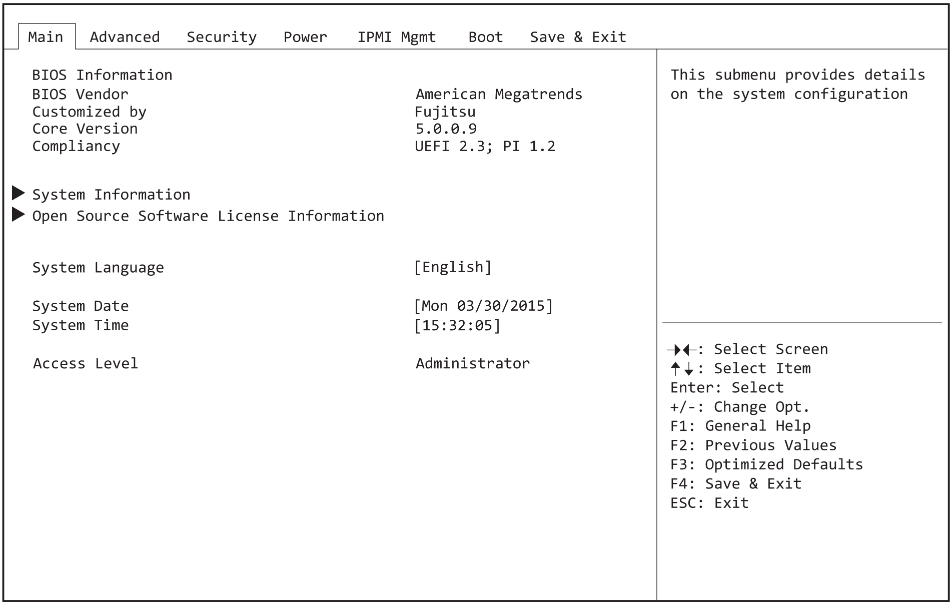
► Select the *Save & Exit* menu from the menu bar to end *BIOS Setup*.

↳ You can then decide whether you want to save the changed settings.

► Select the required option.

► Press the Enter key.

Main Menu – System functions



```
 Main   Advanced   Security   Power   IPMI Mgmt   Boot   Save & Exit

  BIOS Information                                  This submenu provides details
  BIOS Vendor                 American Megatrends   on the system configuration
  Customized by               Fujitsu
  Core Version                5.0.0.9
  Compliancy                  UEFI 2.3; PI 1.2

▶ System Information
▶ Open Source Software License Information

  System Language             [English]

  System Date                 [Mon 03/30/2015]
  System Time                 [15:32:05]
                                                    →←: Select Screen
  Access Level                Administrator         ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit
```

Example showing the *Main* menu

The *Main Menu* is entered, to determine the basic system configuration and to provide an overview. Some of the parameters are only available under certain conditions.

System Information

The *System Information* submenu gives you an overview of the system configuration. This includes information about the CPU, memory and LAN configuration.

Open source software license information

This submenu provides the licence information for the open source software that is used in this system board.

System Language

Specifies the language used in the *BIOS Setup*.

System Date / System Time

Shows the currently set date / the currently set time of the system. The date has the format "Day of the week, month/day/year". The time has the format "hours/minutes/seconds".
If you wish to change the currently set date / the currently set time, enter the new date in the field *System Date* and the new time in the field *System Time*. Use the tab key to switch the cursor between the *System Time* and *System Date* fields.

If the system date & time fields are often set incorrectly when starting the computer, the lithium battery is possibly discharged and must be changed. The procedure for changing the lithium battery is described in the system board manual.

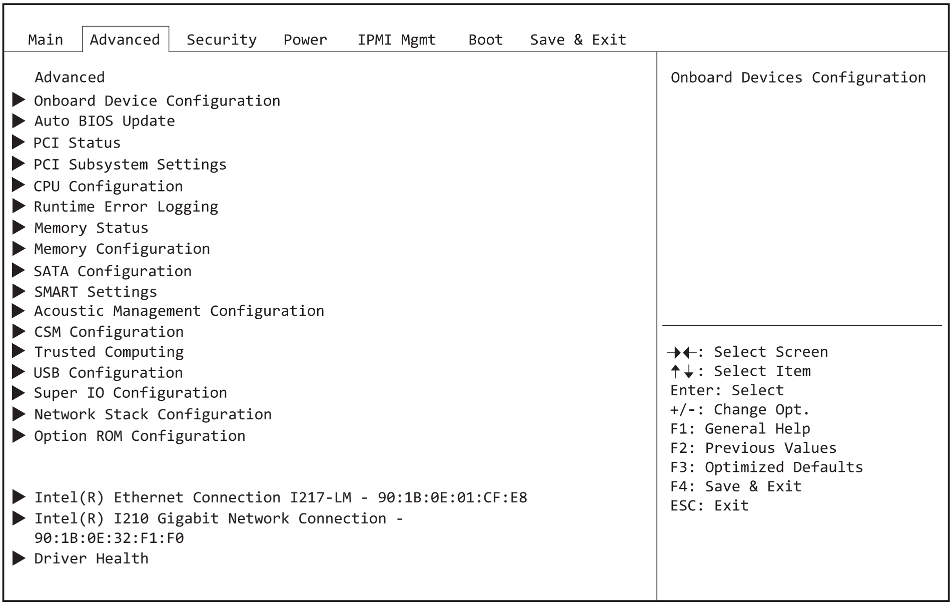
Access Level

Shows the current access level in *BIOS Setup*. If the system is not protected by a password, or an administrator password has been allocated, the access level is Administrator. If administrator and user passwords are allocated, the access level depends on the password entered.

Advanced Menu – Advanced system configuration

The advanced functions which are available to the system are configured in this menu for the advanced system configuration.

Only change the default settings if required for a special purpose. Incorrect settings can cause malfunctions.



```
  Main  Advanced  Security  Power  IPMI Mgmt  Boot  Save & Exit

   Advanced                                                  Onboard Devices Configuration
 ▶ Onboard Device Configuration
 ▶ Auto BIOS Update
 ▶ PCI Status
 ▶ PCI Subsystem Settings
 ▶ CPU Configuration
 ▶ Runtime Error Logging
 ▶ Memory Status
 ▶ Memory Configuration
 ▶ SATA Configuration
 ▶ SMART Settings
 ▶ Acoustic Management Configuration
 ▶ CSM Configuration
 ▶ Trusted Computing                                         →←: Select Screen
 ▶ USB Configuration                                         ↑↓: Select Item
 ▶ Super IO Configuration                                    Enter: Select
 ▶ Network Stack Configuration                               +/-: Change Opt.
 ▶ Option ROM Configuration                                  F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
 ▶ Intel(R) Ethernet Connection I217-LM - 90:1B:0E:01:CF:E8  F4: Save & Exit
 ▶ Intel(R) I210 Gigabit Network Connection -                ESC: Exit
   90:1B:0E:32:F1:F0
 ▶ Driver Health
```

Example showing the *Advanced* menu

Erase Disk

Erase Disk is a firmware incorporated in Fujitsu Technology Solutions (*UEFI: Unified Extensible Firmware Interface*), to delete all the data from SATA hard disk(s).

This function allows all the data on internal or external SATA hard disks connected via the eSATA connection to be irretrievably deleted, before disposal of the hard disks or the complete computer system. The function can also be used if hard disks need to be completely deleted, for example before installing a new operating system.

i The application can only be selected and run if an administrator/supervisor password has been assigned (*BIOS Setup* -> *Security Menu*).

i To delete hard disks in a RAID system, the mode of the RAID controller must be changed, e.g. to *IDE Mode* or *AHCI Mode* in the *SATA Configuration* submenu of the *Advanced* menu.

Proceed as follows to delete data from SATA hard disks:

► Call up the *BIOS Setup* with the administrator/supervisor password.

► To start the application, select *Erase Disk* (*BIOS Setup* -> *Advanced* or *BIOS Setup* -> *Security*) and set *Start after Reboot*.

► Then select *Save Changes and Exit* in the menu *Save & Exit* / *Exit* to initiate a reboot and Erase Disk.

i As a result of the reboot, the *Erase Disk* menu is started. You have the option of interrupting the process during the user selection.

► After the application starts, the administrator/supervisor password must be entered for security reasons.

↳ A dialogue field appears in which a particular, several or all the hard disks can be selected for deletion - this depends on the number of hard disks in your system.

► Select the hard disk(s) to be deleted.

↳ The selected hard disk(s) will be deleted individually.

Erase Disk offers four deletion options, from "fast" (with one deletion pass) to "very secure" (with 35 deletion passes). Depending on the algorithm chosen, the process can take between ~10 seconds and ~10 minutes per GB:

- *Zero Pattern* (1 pass)
- *German BSI/VSITR* (7 passes)
- *DoD 5220.22-M ECE* (7 passes)
- *Guttmann* (35 passes)

You can find further information on the deletion algorithms here:

- "https://www.bsi.bund.de/cln_174/DE/Publikationen/publikationen_node.html"
- "http://www.usaid.gov/policy/ads/500/d522022m.pdf"
- "http://www.cs.auckland.ac.nz/~pgut001/pubs/secure_del.html"

► Select the hard disk deletion algorithm which you wish to use.

The complete deletion process can be copied as an audit-compliant log onto an external USB drive, which must be formatted as FAT32. Just connect an external USB drive.

► Select whether a status report should be written to the USB stick.

The user can select the following tasks which are run by the system after the deletion process:

- *Reset administrator and user password*
- *Load BIOS setup defaults*
- *Shutdown the computer*
- *Exit Erase Disk with no additional options upon completion*

► Select the function which you require.

↳ The deletion process starts.

Disabled	Erase Disk will NOT be started after the next reboot.
Start after Reboot	Erase Disk will be started after the next reboot.

Onboard Device Configuration

Opens the submenu to configure devices on the system board. Some of them are only available under certain conditions.

LAN 1 Controller

Specifies whether the LAN 1 controller is available.

Disabled	The LAN 1 controller is not available.
Enabled	The LAN 1 controller is available.

LAN 2 Controller

Specifies whether the LAN 2 controller is available.

Disabled The LAN 2 controller is not available.

Enabled The LAN 2 controller is available.

Azalia HD Audio

Only for versions D3348 and D3358.

Allows the onboard Azalia HD (High Definition) audio controller to be enabled.

Disabled The onboard audio controller is disabled.

Enabled The onboard audio controller is enabled.

Auto BIOS Update

With Auto BIOS Update it is possible to check a Fujitsu server automatically to see if there is a new BIOS version for the system. For the update, no operating system or external storage medium is required.

To be able to use this function, the computer must have access to the Internet over a network. Access to the Internet must take place via a gateway and a DHCP server must be present in the network for the allocation of IP addresses.

Please also note the terms of use, which are included as an Annex to the BIOS manual or can be found on the Internet at "tou.ts.fujitsu.com".

Terms of Use

In order to be able to use the *Auto BIOS Update* function, you must accept the terms of use, which are included as an Annex to the BIOS manual or can be found on the Internet at "tou.ts.fujitsu.com".

Decline The Terms of Use were not accepted. The *Auto BIOS Update* function cannot be used.

Accept The Terms of Use were accepted. The *Auto BIOS Update* function can be used.

FLASH Write Support must be enabled before the *Auto BIOS Update* function can be used.

Automatic BIOS update

Defines how frequently BIOS updates are searched for on the Fujitsu server. If the automatic BIOS update function is *disabled*, it is possible under *Manually check for update* to search for BIOS updates at the next system boot.

Disabled	BIOS updates are not automatically searched for.
Daily	BIOS updates are searched for daily.
Weekly	BIOS updates are searched for once per week.
Monthly	BIOS updates are searched for once per month.
Quarterly	BIOS updates are searched for once every three months.

Update Server address

Shows the address of the TFTP server on which BIOS updates are searched for.

The preset Fujitsu Update Server can be reached at the address "webdownloads.ts.fujitsu.com". With the fee-based advanced version of *Auto BIOS Update*, there is the option to use one's own TFTP server. Either a domain name or a direct IPv4 address of the desired update server can be entered.

i The name resolution of a domain name occurs at first via the DNS server configured through DHCP. If no DNS server is configured or the DNS server cannot be reached, name resolution is attempted through the Google DNS server via IP address 8.8.8.8. The Neustar DNS service at IP address 156.154.70.1 is used as a second fallback.

Silent update

Defines if the BIOS update, if a new BIOS version is available, is executed automatically without an input request and only a notification is displayed.

Disabled	It is possible to execute the BIOS update immediately, to skip it with this system boot or to ignore the new BIOS version.
Enabled	The BIOS update is executed automatically without an input request.

Manually check for update

Defines if a BIOS update is searched for during the next system reboot.

i This function is automatically reset to *disabled* after a search has been performed.

Disabled	No BIOS update is searched for at the next system reboot.
Enabled	A BIOS update is searched for at the next system reboot.

PCI Status

This submenu shows the current state of the expansion cards in the slots.

PCI Slot n

Shows the current state of the expansion card in this slot.

Failed	A fault was identified for this slot. The expansion card in this slot possibly has a problem.
Enabled	No faults were reported for this slot. The expansion card in this slot can be used without limitation.
Empty	There is no expansion card in this slot.

PCI Subsystem Settings

PCI Common Settings

PERR# Generation

Specifies whether PERR# (PCI parity errors) are created.

Disabled	PCI parity errors will not be created.
Enabled	PCI parity errors will be created.

SERR# Generation

Specifies whether SERR# (PCI system errors) will be created.

Disabled	PCI system errors will not be created.
Enabled	PCI system errors will be created.

PCI Express Link Register Settings

ASPM Support

Configure Active State Power Management (ASPM) to gradually reduce the power consumption of the PCI Express Link and thus save energy. Even if ASPM is generally enabled by this selection, it is only then invoked for a particular connection if the corresponding PCI Express adapter card or the corresponding Onboard Controller also supports this.

Disabled ASPM is disabled. The power consumption for PCI Express connections is not reduced. Best compatibility.

L1 Only Limit the Low Power Mode of the PCI Express connections to L1 (bi-directional).

The latency (delay) for PCI Express devices can increase if ASPM is not disabled. Various adapter cards do not support this function correctly, which can lead to an unpredictable behaviour of the system.

Above 4G Decoding

Defines whether memory resources can be assigned to PCI devices above the 4GB address limit. The selection depends on the operating system and the adapter cards.

Disabled Only memory resources below the 4GB address limit are assigned to the PCI devices.

This selection must be made for 32-bit operating systems, but is also supported by 64-bit operating systems.

Enabled Memory resources above the 4GB address limit can be assigned to PCI devices if they have 64-bit address decoding.

This option is only supported by 64-bit operating systems.

This selection can be necessary if the integrated PCI Express devices (e.g. co-processor adapter cards) have a large memory requirement that cannot fit into the address space below 4 GB.

PCI address decoding is limited to the 4GB address limit for 32-bit operating systems, even if the available PCI devices support 64-bit address decoding.

Memory Hole Size

The total memory size below the 4GB address limit can be selected here. This total memory also includes allocated memory resources which are requested by PCI devices. The DRAM address space which is replaced by the total memory is allocated again to the area above the 4 GB address limit and can still be used.

2GB The total memory has a size of 2 GB. The remaining 2 GB address space below the 4 GB address limit is available for DRAM.

3GB The total memory has a size of 3 GB. The remaining 1 GB address space below the 4 GB address limit is available for DRAM. Normally, this selection is only used for 32 bit operating systems and PCI adapter cards which demand a very large PCI address space.

DMI control

Selects the speed of the connection between the CPU and the chipset. Low speed leads to low power consumption but also less system performance.

GEN1 The bus connection between the CPU and the chipset is set to a speed of 2.5 GT/s.

GEN2 The bus connection between the CPU and the chipset is set to a speed of 5.5 GT/s.

CPU Configuration

Opens the *CPU Configuration* submenu. Some of the parameters are only available under certain conditions.

Hyper-threading

Hyper-threading technology allows a single physical processor to appear as several logical processors. With this technology, the operating system can better utilise the internal processor resources, which leads to an increase in performance. The advantages of this technology can only be used by an operating system that supports ACPI. This setting has no effect on operating systems without ACPI support.

Disabled An ACPI operating system can only use the first logical processor of the physical processor. This setting should therefore only be chosen if the operating system does not support hyper-threading technology.

Enabled An ACPI operating system can use all the logical processors of the physical processor.

Active Processor Cores

On processors which contain multiple processor cores, the number of active processor cores can be limited. Inactive processor cores will not be used and are hidden from the operating system.

0 All available processor cores are active and can be used.

1..n Only the selected number of processor cores is active. The other processor cores are disabled.

The choice made here allows possible problems with certain software packages or system licences to be solved.

Limit CPUID Maximum

Specifies the number of CPUID functions which can be called from the processor. Some operating systems cannot process new CPUID commands which support more than three functions. This parameter should be enabled for these operating systems.

Disabled All CPUID functions are supported.

Enabled For reasons of compatibility with the operating system, only a reduced number of CPUID functions is supported by the processor.

Hardware Prefetcher

If this function is enabled, an automatic prefetch of the memory content anticipated to be needed occurs when the memory bus is inactive. If the content is loaded from the cache and not from the memory, the latency is reduced. This particularly applies to applications with linear data access.

With this parameter you can make performance settings for non-standard applications. For standard applications, we recommend that the default settings are maintained.

Disabled Deactivates the hardware prefetcher of the CPU.

Enabled Activates the hardware prefetcher of the CPU.

Adjacent Cache Line Prefetcher

Available if the processor offers a mechanism by which an adjacent 64-byte cache line can also be loaded during each cache request. The number of hits in the cache increases as a result in the case of applications with high spatial locality.

> With this parameter you can make performance settings for non-standard applications. For standard applications, we recommend that the default settings are maintained.

Disabled The processor loads the requested cache line.

Enabled The processor loads the requested cache line and the adjacent cache line.

DCU (Data Cache Unit) Streamer Prefetcher

With this option, data content which will probably be needed is automatically pre-loaded into the L1 data cache when the memory bus is inactive. Because content is called from cache instead of from memory, the latency is reduced, especially for applications with linear data access.

> You can use this parameter to change the performance settings for non-standard applications. We recommend that the default settings are kept for standard applications.

Enabled Enables the DCU Streamer Prefetcher function of the CPU.

Disabled Disables the DCU Streamer Prefetcher function of the CPU.

DCU Ip (Instruction pointer-based) Prefetcher

Performance increases can be expected if code is used sequentially and in contiguous storage.

> You can use this parameter to change the performance settings for non-standard applications. We recommend that the default settings are kept for standard applications.

Enabled Enables the *DCU Streamer Prefetcher* function of the CPU.

Disabled Disables the *DCU Streamer Prefetcher* function of the CPU.

Intel Virtualization Technology

Used to support the visualisation of platform hardware and multiple software environments. Based on Virtual Machine Extensions (VMX), to support the application of multiple software environments under the use of virtual computers. The virtualisation technology enhances the processor support for virtualisation purposes on the over 16 bit and 32 bit protected modes and on the Intel® Extended Memory 64 Technology (EM64T) mode.

In active mode, a Virtual Machine Monitor (VMM) can use the additional performance features of the Vanderpool Technology Hardware.

Disabled A Virtual Machine Monitor (VMM) cannot use the additional performance features of the hardware.

Enabled A VMM can use the additional performance features of the hardware.

VT-d

VT-d (Intel Virtualization Technology for Directed I/O) is a hardware support for the common use of I/O devices by several virtual machines. VMM systems (Virtual Machine Monitor) can use VT-d to manage various virtual machines which access the same physical I/O device.

Disabled VT-d is disabled and is not available for the VMMs.

Enabled VT-d is available for the VMMs.

Intel TXT Support

Enables Trusted Execution Technology (TXT) support. Intel® TXT is available if the CPU in use supports Secure Mode Extensions (SMX), and both Virtualization Technology (VT) and VT-d are enabled in the CPU submenu.

Intel TXT Support must be disabled before BIOS Update of the system is started.

Disabled TXT is disabled.

Enabled TXT is enabled.

Power Technology

Configures the CPU power management functions.

Disabled The CPU power management functions are disabled.

Energy Efficient The CPU power management functions are optimised for energy efficiency.

Custom Further setting options are available for the CPU power management configuration.

Enhanced SpeedStep

Specifies the voltage and frequency of the processor. EIST (Enhanced Intel SpeedStep® Technology) is an energy-saving function.

The processor voltage is adapted to the particular system requirements which are needed at any one time. A reduction in the clock frequency causes the system to require less energy.

Disabled Enhanced SpeedStep functionality is disabled.

Enabled Enhanced SpeedStep functionality is enabled.

Turbo Mode

The processor may work faster than the specified frequency when the operating system requires the maximum performance state (P0). This function is also known as Intel® Turbo Boost Technology.

Disabled Turbo Mode is disabled.

Enabled Turbo Mode is enabled.

Override OS Energy Performance

Prevents the OS overwriting the energy efficiency settings from Setup.

Disabled Override OS Energy Performance is disabled.

Enabled Override OS Energy Performance is enabled.

Energy Performance

Energy efficiency specifications for the processor on non-legacy operating systems. The processor receives the instruction to adapt energy consumption and performance.

Performance Optimisation with respect to performance, where required at the cost of energy efficiency.

Balanced Performance Optimisation with respect to performance, with good energy efficiency.

Balanced Energy Optimisation with respect to energy efficiency, with good performance.

Energy Efficient Optimisation with respect to energy efficiency, where required at the cost of performance.

Depending on the selected energy options, where required the operating system selects a mode other than that selected in the Setup.

CPU C1E Support

If this is supported by the operating system, the processor will be stopped if possible, to save power.

Disabled	The C1E power state function is not available.
Enabled	The C1E power state function is available.

CPU C3 Report

Passes the processor C3 state to the Operating System Power Management (OSPM) as ACPI-C2 state, if this is supported by the particular operating system being used.

Disabled	OSPM does not show CPU C3 as ACPI-C2 state.
Enabled	OSPM shows CPU C3 as ACPI-C2 state.

CPU C6 Report

Passes the processor C6 state as ACPI-C3 state to the OSPM, to enable Processor Deep Power Down Technology.

Disabled	CPU C6 is not passed as ACPI-C3 status to the OSPM.
Enabled	CPU C6 is passed as ACPI-C3 status to the OSPM.

Package C State limit

Allows the C state limit of the processor to be configured.

C0	The C state limit is C0.
C2	The C state limit is C2.
C6	The C state limit is C6.
C6 Retention	The C state limit is C6 Retention.

QPI Link Frequency Select

Creates the connection between the processors. QPI links can operate at different speeds, depending on the processors. These parameters control the speed of the QPI links in your system.

Auto	The BIOS determines the maximum speed depending on the processors in your system.

► If you wish to set the speed of the QPI links manually, select another value, provided this is supported by your system.

Uncore Frequency Override

Specifies whether the uncore frequency of the CPU can be changed to increase the I/O performance.

Disabled The processor controls the frequency autonomously in a predefined range to save power.

Enabled The frequency is always set to its predefined maximum. This can result in higher power consumption.

Runtime Error Logging

ECC Memory Error Logging

Specifies whether ECC memory errors will be recognised and entered in the event log.

Enabled Both single-bit memory errors and multi-bit memory errors will be entered in the event log.

Multi-bit Errors Only Only multi-bit memory errors will be entered in the event log.

Disabled No memory errors will be entered in the event log.

PCI Error Logging

Specifies whether PCI errors will be entered in the event log.

i To be able to recognise PCI errors, the creation of PERR# (PCI parity errors) or SERR# (PCI system errors) must be enabled in advance in the menu *PCI Subsystem Settings*.

Disabled No PCI errors will be entered in the event log.

Enabled PCI errors will be entered in the event log.

Memory Status

Memory modules can be marked as faulty in this submenu. Faulty memory modules are no longer used when the system is rebooted, provided at least one error-free bank is available. The memory capacity is reduced accordingly.

DIMM xx

Shows the current status of the memory modules.

Enabled The system uses the memory module.

Disabled The memory module will not be used by the system. It was manually disabled.

Failed The memory module will not be used by the system. It was automatically disabled by the system after a memory error. If you have replaced a defective memory module, you must reset the entry to *Enabled*.

Empty There is no memory module present.

Memory Configuration

Opens the *Memory configuration* submenu.

NUMA

NUMA (Non-Uniform Memory Access) is a memory architecture for multiprocessor systems. Each processor has its own local memory, but can also access the local memory of other processors (shared memory). Access to the local memory is faster than the access to the shared memories.

Disabled The whole system memory is divided into many small, interleaved areas of local and shared memory. Use this option if the operating system does not support NUMA.

Enabled The whole system memory is divided into fewer, larger, non-interleaved areas of local and shared memory. On an ACPI operating system which supports NUMA, this will achieve the best results with respect to performance.

DDR Performance

The memory modules can operate at various speeds (frequencies).

The performance increases with higher speeds, on the other hand the energy-saving increases with lower speeds. The possible memory speeds are determined by the particular memory module configuration.

Energy optimized Lowest possible speed, to save energy.

Performance optimized Highest possible speed, for the best performance.

SATA Configuration

Opens the SATA configuration submenu.

SATA Controller Configuration

SATA Controller

Specifies whether the SATA controller is available.

Disabled The SATA controller is not available.

Enabled The SATA controller is available.

SATA Mode

Specifies in which mode the SATA ports will be operated.

IDE	The SATA port is operated in IDE Mode.
AHCI	The SATA port is operated in AHCI Mode.
RAID (if available)	The SATA port is operated in RAID Mode.

To be able to start the RAID Setup during POST, the option *Quiet Boot* must be set to *Disabled*.

Aggressive Link Power Management

In AHCI mode, makes it possible to allow Aggressive Link Power Management (ALPM) to save energy.

Disabled	ALPM is disabled.
Enabled	ALPM is enabled.

sSATA Controller Configuration

sSATA Controller

Specifies whether the sSATA controller is available.

Disabled	The sSATA controller is not available.
Enabled	The sSATA controller is available.

sSATA Mode

Specifies in which mode the sSATA ports should be operated.

IDE	The sSATA port is operated in IDE Mode.
AHCI	The sSATA port is operated in AHCI Mode.
RAID (if available)	The sSATA port is operated in RAID Mode.

To be able to start the RAID Setup during POST, the option *Quiet Boot* must be set to *Disabled*.

Aggressive Link Power Management

In AHCI mode, makes it possible to allow Aggressive Link Power Management (ALPM) to save energy.

Disabled	ALPM is disabled.
Enabled	ALPM is enabled.

SATA Port n

Indicates whether the SATA port is available, (*Not Installed*) or which drive is connected to the SATA port.

Port n

Specifies whether the SATA port is available.

Disabled	The SATA port n is not available
Enabled	The SATA port is available.

Staggered Spin-up

Reduces the electrical load during boot up of systems with multiple SATA devices. The SATA devices run one after the other at the request of the HOST controller.

Disabled	Staggered Spin-up is disabled.
Enabled	Staggered Spin-up is enabled.

External SATA Port

Specifies whether the port will be operated internally as SATA or externally as eSATA.

Disabled	The port will be used internally as SATA.
Enabled	The port will be used as external SATA (eSATA).

Hot Plug

Specifies whether hot plug support of the port is enabled.

Disabled	The hot plug support of the port is disabled.
Enabled	The hot plug support of the port is enabled.

SMART Settings

Opens the submenu for enabling the hard disk self test.

SMART Self Test

Specifies whether the SMART (Self Monitoring, Analysis and Reporting Technology, S.M.A.R.T.) self test is enabled for all hard disks during the POST.

Enabled	The SMART self test is enabled during the POST.
Disabled	The SMART self test is disabled during the POST.

Acoustic Management Configuration

Open the submenu to set the noise level of hard disks or optical drives.

Acoustic Management

Specifies whether the functionality for setting the noise level of hard disks or optical drives (Automatic Acoustic Management) is available.

Disabled Automatic Acoustic Management is not available.

Enabled Automatic Acoustic Management is available.

Acoustic Mode

Specifies the noise level of the hard disk or the optical drive. The noise level of the drive is reduced by decreasing its rotational speed. This function must be supported by the drive.

If the functionality for setting the noise level (*Automatic Acoustic Management*) is disabled, the *Acoustic Mode* is *Not Available*. If the functionality for setting the noise level (*Automatic Acoustic Management*) is *enabled*, but is not supported by the connected SATA device, then *Acoustic Mode* is automatically set to *Not supported*.

Bypass The drive is operated with its preset speed of rotation.

Quiet The drive is operated with the slowest possible speed of rotation. The drive is operated with lower noise and limited performance.

Medium Performance The drive is operated with a medium speed of rotation. The drive is operated with reduced noise and slightly reduced performance.

High Performance The drive is operated at slightly less than the highest possible speed of rotation.

Max Performance The drive is operated at the highest possible speed of rotation.

CSM Configuration

Opens the submenu for configuring the Compatibility Support Module (CSM).

This submenu is only available if *Secure Boot Control* is disabled under *Setup –> Security –> Secure Boot Configuration*.

Launch CSM

Specifies whether the Compatibility Support Module (CSM) is executed. A legacy operating system can only be booted if the CSM has been loaded.

Enabled The CSM is executed so that a legacy or UEFI operating system can be booted.

Disabled The CSM is not executed so that a only a UEFI operating system can be booted.

Boot Option Filter

Specifies the drives from which booting can be carried out.

UEFI and Legacy Booting is possible both from drives with UEFI OS and from drives with Legacy OS.

Legacy only Booting is only possible from drives with Legacy OS.

UEFI only Booting is only possible from drives with UEFI OS.

Launch PXE OpROM Policy

Specifies which PXE option ROM is booted. For the PXE boot, both the normal (Legacy) PXE boot and a UEFI PXE boot are available.

Do not launch No option ROMs are booted.

UEFI only Only UEFI option ROMs are booted.

Legacy only Only Legacy option ROMs are booted.

Launch Storage OpROM Policy

Specifies which Storage option ROM is booted.

Do not launch No Storage option ROMs are booted.

UEFI only Only UEFI Storage option ROMs are booted.

Legacy only Only Legacy Storage option ROMs are booted.

Launch Video OpROM Policy

Specifies which Video option ROM is booted.

UEFI only Only UEFI Video option ROMs are booted.

Legacy only Only Legacy Video option ROMs are booted.

Other PCI Device ROM Priority

Specifies which option ROM is booted for devices other than the network, mass memory or video.

UEFI OpROM Only UEFI option ROMs are booted.

Legacy OpROM Only Legacy option ROMs are booted.

TPM (Trusted Platform Module) Computing

Opens the submenu for enabling TPM and changing the TPM settings. If this setup menu is available, the system board contains a security and encryption chip (TPM - Trusted Platform Module) which complies with TCG specification 1.2. This chip allows security-related data (passwords, etc.) to be stored securely. The use of TPM is standardised and is specified by the Trusted Computing Group (TCG).

TPM Support

Specifies whether the TPM (Trusted Platform Module) hardware is available. If the TPM is disabled, the system behaves like any other system without TPM hardware.

Disabled Trusted Platform Module is not available.

Enabled Trusted Platform Module is available.

TPM State

Specifies whether TPM (Trusted Platform Module) can be used by the operating system.

Disabled Trusted Platform Module cannot be used.

Enabled Trusted Platform Module can be used.

Pending TPM operation

Specifies a TPM operation which will be performed during the next boot process.

None No TPM operation will be performed.

Enable Take Ownership The operating system can assume ownership of the TPM.

Disable Take Ownership The operating system cannot assume ownership of the TPM.

TPM Clear TPM is reset to the factory setting. All keys in the TPM will be deleted.

Current TPM Status Information

Shows the current TPM (Trusted Platform Module) status.

TPM SUPPORT OFF Is displayed if the *TPM Support* is disabled.

TPM Enabled Status Indicates whether TPM can be used.

TPM Active Status Indicates whether TPM is enabled.

TPM Owner Status Indicates the TPM owner status.

USB Configuration

USB Devices

Shows the number of available USB devices, USB keyboards, USB mice and USB hubs.

xHCI Mode

Specifies the mode in which USB devices are operated at the USB 3.0 sockets marked in blue.

i If using operating systems that do not support USB 3.0 (e.g. Windows XP), it is recommended that you set xHCI mode to *Disabled*.

Smart Auto Depending on whether or not the operating system used supports USB 3.0 (xHCI mode) or USB 2.0 (EHCI mode), the mode preset by the operating system is automatically used for any subsequent system boots, provided the system was not disconnected from the power supply. For the *Smart Auto* setting, it is recommended that you set the *Low Power Soft Off* setup point to *Disabled*.

Auto During the BIOS POST, USB 3.0 devices work in USB 2.0 mode. Operating systems which support USB 3.0 switch to USB 3.0 during booting of the operating system.

Enabled During the BIOS POST, all USB 3.0 devices are operated in USB 3.0 mode. For operating systems which do not support USB 3.0, these devices are no longer available in the operating system.

Disabled USB 3.0 devices work in USB 2.0 mode both in the BIOS POST and under the operating system.

Legacy USB Support

Specifies whether legacy USB support is available. This function should always be enabled or set to *Auto* so that the operating system can be booted from a USB device if required.

Disabled Legacy USB support is not available. A USB keyboard or USB mouse can only be used if this is supported by the operating system. Booting the operating system from a USB device is not possible.

Enabled Legacy USB support is available. A USB keyboard or USB mouse can also be used if the operating system does not support USB. Booting the operating system from a USB device is possible.

Auto Legacy USB support will be disabled if no USB devices are connected.

i Legacy USB support should be disabled if the operating system supports USB and you do not want to boot the operating system from USB devices.

Mass Storage Devices

List of USB Mass Storage Device(s)

Allows the user to force a particular device emulation. When set to *Auto*, the devices are emulated according to their media format. Optical drives are emulated as "CD ROM" and drives without data media according to the drive type.

Auto	Emulation is chosen depending on the USB device.
Floppy	Force USB floppy emulation.
Hard Disk	Force USB hard disk emulation.
CD-ROM	Force USB CD ROM emulation.

USB Port Security

Opens the *USB Port Security* submenu in order to configure the USB interfaces present on the mainboard.

USB Port Control

Configures the use of the USB ports. Disabled USB ports are only available during the POST, but are no longer available under the operating system.

i During POST, a USB mouse and a USB keyboard are also available if the corresponding USB port is disabled.

Enable all ports	All USB ports are enabled.
Disable all ports	All USB ports are disabled.
Enable front and internal ports	All USB ports on the rear of the device are disabled.
Enable rear and internal ports	All USB ports on the front of the device are disabled.
Enable internal ports only	All external USB ports are disabled.
Enable used ports	All unused USB ports are disabled.

i If *Enable rear and internal ports* is enabled, all the USB ports on the front of the device are also disabled during POST. in this case, it is not possible to call the BIOS Setup using a USB keyboard which is connected to a USB port on the front of the device.

USB Device Control

For the *Enable front and internal ports*, *Enable rear and internal ports* and *Enable used ports* settings, which were made under *USB Port Control*, there are additional options available here.

Enable all devices Those settings made under *USB Port Control* will be used without any limitation.

Enable Keyboard and Mouse only Only USB keyboards and USB mice can be operated at the USB ports enabled under *USB Port Control*. Any ports to which no USB keyboards or USB mice are connected are disabled. Keyboards with an integrated hub result in deactivation of the port.

Enable all devices except mass storage devices/Hubs USB ports on which USB storage devices or USB hubs are connected will be disabled.

System Management

i

Only for versions D3348 and D3358.

System Name

Shows the name of the system.

Firmware Version

Shows the firmware version of the system monitoring controller.

SMCS Version

Shows the SMCS version (Systemboard Management Configuration Settings).

Fan Control

Controls the speed of the fan. The preset mode can be changed depending on the system configuration and the applications used.

Enhanced The fan speed will be increased automatically so that the maximum CPU performance is achieved.

Auto The fan speed is adjusted automatically. A compromise between system temperature and CPU performance.

Full All fans are operated at maximum speed.

Super IO Configuration

Super IO Chip

Shows information about the Super IO Chip.

Serial Port 1 Configuration

Opens the submenu for configuration of the serial port 1 (COMA).

Serial Port

Specifies whether the serial port is available.

Disabled	The serial port is not available.
Enabled	The serial port is available.

Device Settings

Shows the base I/O address and the interrupt used for access to the parallel port.

Change Settings

Specifies which base I/O addresses and which interrupts can be used for the particular serial port by the BIOS or the operating system.

Auto	The base I/O address and the interrupt are automatically assigned.
IO=3F8h; IRQ=4;	The base I/O address 3F8h and the interrupt 4 are permanently assigned.
IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12;	The base I/O address is permanently assigned.
IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12;	
IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12;	
IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;	

The values given in the list are available for the interrupt for automatic selection by the BIOS or the operating system.

i If conflicts with other devices occur, this option should be converted to *Auto*.

Serial Port Console Redirection

Only for versions D3348 and D3358.

The parameters for terminal communication via Serial Port Console Redirection can be shown and set in this submenu. Some parameters are only available under certain conditions.

Console Redirection Settings (for COM0 and COM4)

Specifies the data exchange process of the host and remote system via the COM0 and COM4 ports (iAMT/SOL (Serial overLAN)).

Both systems require identical or compatible settings.

Terminal Type

Specifies the type of terminal.

Permitted values: VT100, VT100+, VT-UTF8, ANSI

The terminal type allocated will be used to transfer data to the host.

Bits per Second

Specifies the transfer rate for communication with the host.

Permitted values: 9600, 19200, 38400, 57600, 115200

The data will be transferred to the host at the transfer rate set.

Data Bits

Shows the number of data bits used for communication with the host.

7	Seven data bits are used for the communication.
8	Eight data bits are used for the communication.

Parity

Specifies the use of parity bits for communication with the host. Parity bits are used for error detection.

None	No parity bits are used. Error detection is not possible.
Even	Parity bit is 0 if the number of ones in the data bit is an even number.
Odd	Parity bit is 0 if the number of ones in the data bit is an odd number.
Mark	Parity bit is always 1.
Space	Parity bit is always 0.

Stop Bits

Shows the number of stop bits used to indicate the end of a serial data packet.

1	One stop bit is used.
2	Two stop bits are used.

Flow Control

This setting determines the transfer control over the interface.

None	The interface is operated without transfer control.
Hardware CTS/RTS	The transfer control is undertaken by the hardware. This mode must also be supported by the cable.

AMT Configuration

Opens the submenu to configure Intel® Active Management Technology.

ME Version

Shows the current AMT/ME version.

Unconfigure AMT/ME

If this option is enabled, an MBEx (Management Engine BIOS eXtension) query occurs at the next reboot to establish whether the AMT/ME configuration should be reset to the default values.

Disabled	Do not change the AMT/ME configuration.
Enabled	Start the reset of the AMT/ME configuration. The option is then automatically reset to *Disabled*.

MEBx Mode

Configure how the MEBx (Management Engine BIOS eXtension) behaves during the reboot.

Normal The message Ctrl + P to open the MEBx Setup will be displayed during the POST.

Enter MEBx Setup The MEBx Setup will be automatically called during the next POST.

IFR Support

Specifies whether an automatic ME firmware update (Intel ® Independent Firmware Recovery (IFR)) can be performed under an operating system via the ME driver.

Disabled The automatic ME firmware update under the OS is not available.

Enabled The automatic ME firmware update under the OS is available.

Network Stack

Specifies whether the UEFI Network Stack is available for network access under UEFI. If the UEFI Network Stack is disabled, UEFI installation via PXE is not possible, for example.

Disabled The UEFI Network Stack is not available.

Enabled The UEFI Network Stack is available.

Ipv4 PXE Support

Specifies whether PXE UEFI Boot via Ipv4 is available for installation of operating systems in UEFI mode.

Disabled PXE UEFI Boot via Ipv4 is not available.

Enabled PXE UEFI Boot via Ipv4 is available.

Ipv6 PXE Support

Specifies whether PXE UEFI Boot via Ipv6 is available for installation of operating systems in UEFI mode.

Disabled PXE UEFI Boot via Ipv6 is not available.

Enabled PXE UEFI Boot via Ipv6 is available.

Option ROM Configuration

Calls the *Option ROM Configuration* submenu.

Launch Slot n OpROM

Specifies whether Option ROMs for expansion cards which are plugged into this slot should be started.

Disabled	Do not start any Option ROMs for expansion cards in this slot.
Enabled	Start Option ROMs for expansion cards in this slot.

UEFI Device Driver Setup

A UEFI device driver can support the interface to UEFI-FW Setup and makes information and menu items available. Available UEFI device drivers are for example Intel® Ethernet Connection I217-LM and Intel® I210 Gigabit.

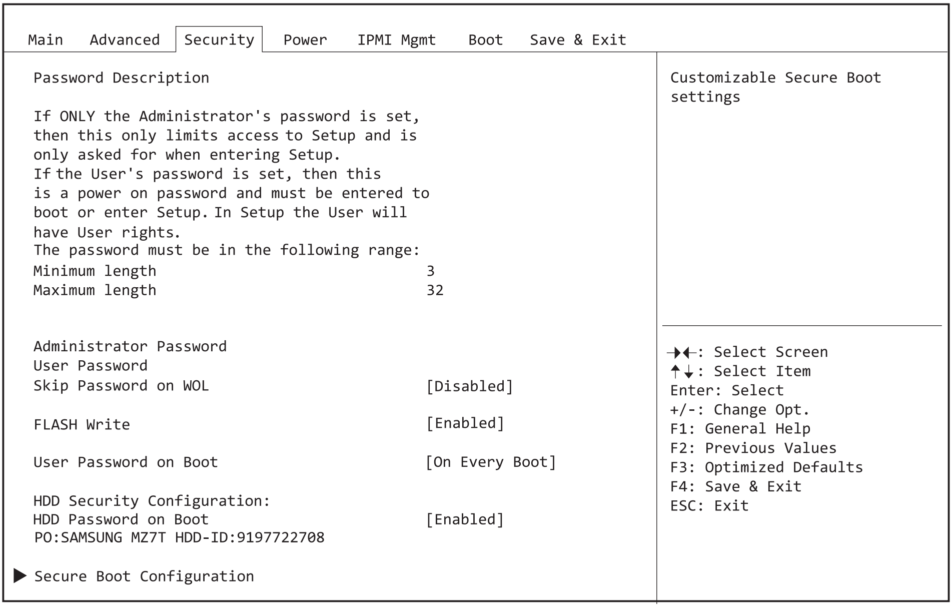
Driver Health

If a UEFI driver of a PCI express device supports the Driver Health protocol, the UEFI firmware can query the status of the devices with the UEFI drivers which they manage. The status of the UEFI drivers which support Driver Health are shown in this menu.

Security Menu – Security Functions

The *Security* menu offers various options for protecting your system and personal data from unauthorised access. Using a sensible combination of these options will help you achieve maximum protection for your system.

The following security settings can be made in this menu. Some of them are only available under certain conditions.



```
 Main   Advanced   Security   Power   IPMI Mgmt   Boot   Save & Exit

   Password Description                                 Customizable Secure Boot
                                                        settings
   If ONLY the Administrator's password is set,
   then this only limits access to Setup and is
   only asked for when entering Setup.
   If the User's password is set, then this
   is a power on password and must be entered to
   boot or enter Setup. In Setup the User will
   have User rights.
   The password must be in the following range:
   Minimum length                      3
   Maximum length                      32


   Administrator Password                               →←: Select Screen
   User Password                                        ↑↓: Select Item
   Skip Password on WOL                [Disabled]       Enter: Select
                                                        +/-: Change Opt.
   FLASH Write                         [Enabled]        F1: General Help
                                                        F2: Previous Values
   User Password on Boot               [On Every Boot]  F3: Optimized Defaults
                                                        F4: Save & Exit
   HDD Security Configuration:                          ESC: Exit
   HDD Password on Boot                [Enabled]
   PO:SAMSUNG MZ7T HDD-ID:9197722708

 ▶ Secure Boot Configuration
```

Password Description

Neither an administrator password nor a user password has been allocated

Opening the BIOS Setup and booting the system are possible without restriction.

Only the administrator password was allocated

If ONLY an administrator password was allocated, only the BIOS Setup is protected. Booting the system can be performed without restriction. When you access the BIOS Setup with an administrator password, the Administrator access level is assigned to you and you have unrestricted access to the BIOS Setup. If you access the BIOS Setup without a password, access to the BIOS Setup is limited because you are only assigned the User access level.

Administrator AND user passwords were allocated

If administrator and user passwords were allocated, the authorisation level in the BIOS Setup depends on the password entered. If you access the BIOS Setup with the administrator password, unlimited access to the BIOS Setup is possible, entry of the user password results in limited access. Booting the system is possible both with the administrator and also with the user password.

If the administrator password is deleted, the user password will also be deleted.

The system will stop after an incorrect password has been entered three times. If this happens, switch off the system and then back on again, and enter the correct password.

Administrator Password

If you press the enter key, a window will open in which you can assign the administrator password. Enter a character string to define the password. If you confirm an empty password field, the password will be deleted.

To call up the complete BIOS Setup, you need the administrator level of access. If an administrator password is allocated, the user password only allows very limited access to the BIOS Setup.

User Password

If you press the enter key, a window will open in which you can assign the user password. Enter a character string to define the password. With the user password, you can prevent unauthorised access to your system.

In order to be able to assign a user password, an administrator password must already have been assigned.

User Password on Boot

Specifies whether a user password must be entered before the boot process.

On Every Boot Entry of a user password is required before every boot process.

Disabled The system starts without requiring the entry of a user password.

If the administrator password and the user password have been assigned and the setting *Disabled* has been chosen for this item, simply press Enter to get USER access to the BIOS Setup. In this case the user password does not have to be entered.

Skip Password on WOL

Specifies whether a user password will be skipped or must be entered during a system boot via Wake on LAN.

Disabled The user password must be entered via using the keyboard during the system boot.

Enabled The user password is deactivated during the system boot with Wake On LAN.

FLASH Write

Supplies the system BIOS with write protection.

Disabled The system BIOS cannot be written. A flash BIOS update is not possible

Enabled The system BIOS can be written. A flash BIOS update is possible.

HDD Security Configuration

HDD Password on Boot

Specifies whether a hard disk user password must be entered during every boot process.

Disabled It is not necessary to enter a hard disk user password during the boot process.

Enabled Entry of a hard disk user password is required during every boot process.

HDD n / HDD-ID

Opens a submenu with information on the hard disk user password.

HDD Password Description

Allows the hard disk user and master passwords to be set, changed and deleted. The hard disk user password must be set up before the Enabled Security setting can be carried out. The hard disk master password can only be changed if you have successfully unlocked it in POST with the hard disk master password.

HDD Password Configuration

Shows the current security status of the hard disk.

Security Supported

Yes is shown here if the device supports use of a hard disk user password. In this case it is possible to assign a password to the hard drive.

Security Enabled

Yes is shown here if either a hard disk user password or a hard disk master password has been assigned to the hard disk.

Security Locked

The hard disk is locked if it was not unlocked with the valid password.

Security Frozen

If *Yes* is displayed, then a hard disk user password cannot be set up, changed or deleted. To change the security frozen status to *No*, the system must have been shut down before the BIOS Setup is called. Only then can a hard disk user password be set up, changed or deleted.

HDD User Password Status

Shows whether a hard disk user password was allocated or not.

HDD Master Password Status

Shows whether a hard disk master password was allocated or not.

Set User Password

The hard disk user password protects the hard disk(s) from unauthorised access. Booting the operating system from the hard disk or accessing the data on the hard disk can only be carried out by those people who know the hard disk user password. The hard disk user password can be up to 32 characters long. The settings become effective immediately and also remain so, regardless of how you later end the BIOS Setup. The hard disk user password is requested during the POST.

i If you press the Enter key, a window will open in which you can assign the hard disk user password. Enter a character string to define the password. If you confirm an empty password field, the password will be deleted.

Set Master Password

If a hard disk user password has been forgotten, it can be deleted using the hard disk master password. This option is only available if an incorrect hard disk user password has been entered three times when the system is booting during POST. The hard disk master password for your hard disk can be obtained from the certificated technical support service, but only if the particular HDD-ID is provided together with a valid proof of purchase.

Secure Boot Configuration

Opens the submenu for configuring Secure Boot.

An authentication process for the firmware version is defined with *Secure Boot Configuration*.

Secure Boot defines the industry standard method by which platform firmware certificates are managed, firmware is authenticated and in which the operating system is integrated in this process.

Secure Boot Configuration is based on the PKI process (Public Key Infrastructure), to authenticate modules before they are allowed to be executed.

Platform Mode

Shows whether the system is in user mode or setup mode.

User In user mode, the Platform Key (PK) is installed. Secure Boot can be enabled or disabled via the *Secure Boot Control* menu option.

Setup In setup mode, the Platform Key (PK) is not installed. Secure Boot is disabled and cannot be enabled via the *Secure Boot Control* menu option.

Secure Boot

Indicates whether the Secure Boot function is active.

Not active Secure Boot is not active.

Active Secure Boot is active.

Secure Boot Control

Specifies whether booting of unsigned boot loaders/UEFI OpROMs is permitted.

The associated signatures are saved in the BIOS or can be reloaded in the *Key Management* submenu.

Disabled All boot loaders / OpROMs (Legacy / UEFI) can be executed.

Enabled Only booting of signed boot loaders/UEFI OpROMs is permitted.

Secure Boot Mode

Specifies whether the Key Management submenu is available.

Default The *Key Management* submenu is not available.

Custom The *Key Management* submenu is available.

Key Management

Submenu for deleting, changing and adding the key and signature databases required for Secure Boot.

Without the installed Platform Key (PK), the system is in setup mode (Secure Boot is disabled). As soon as the PK is installed, the system switches to user mode (Secure Boot can be enabled).

Factory Default Key Provisioning

If the system is in setup mode (no Public Key is installed), it is possible to install the default Secure Boot key and signature databases.

Disabled The available Secure Boot key and signature databases remain unchanged.

Enabled If the PK, KEK, DB, DBT, DBX signature databases are not available, the default Secure Boot key and signature databases will be installed after rebooting the system.

Delete All Secure Boot Variables

Puts the system in setup mode (Secure Boot is disabled). All keys and signature databases (PK, KEK, DB, DBT, DBX) in the system are deleted.

This menu item is only available if *Factory Default Key Provisioning* is set to *Disabled*.

Enroll All Factory Default Keys

All keys and signature databases (PK, KEK, DB, DBT, DBX) in the system are reset to the default values.

This menu item is only available if *Factory Default Key Provisioning* is set to *Disabled*.

Save Secure Boot Keys

Saves the Secure Boot Key and Key Databases to the selected drive.

Platform Key

Shows the current status of the Platform Key (PK).

Installed	The PK is installed. System is in user mode.
Not Installed	The PK is not installed. The system is in setup mode.

Delete PK

Deletes the Platform Key (PK), which puts the system in setup mode and disables Secure Boot.

Set new PK

Sets the Platform Key (PK). After selecting the drive, the corresponding file must be selected in the browser.

Key Exchange Key

Shows the current status of the Key Exchange Key Database (KEK).

Installed	The KEK Database is installed.
Not installed	The KEK Database is not installed.

Delete KEK

Deletes the Key Exchange Key Database (KEK)

Set new KEK

Sets the Key Exchange Key Database (KEK) After selecting the drive, the corresponding file must be selected in the browser.

Append KEK

Adds an entry to the Key Exchange Key Database (KEK). After selecting the drive, the corresponding file must be selected in the browser.

Authorized Signatures

Shows the current status of the Authorized Signature Database (DB).

Installed	The DB is installed.
Not installed	The DB is not installed.

Delete DB

Deletes the Authorized Signature Database (DB).

Set new DB

Sets the Authorized Signature Database (DB). After selecting the drive, the corresponding file must be selected in the browser.

Append DB

Adds an entry to the Authorized Signature Database (DB). After selecting the drive, the corresponding file must be selected in the browser.

Authorized TimeStamps

Shows the current status of the Authorized TimeStamps Database (DBT).

Installed	The DBT is installed.
Not installed	The DBT is not installed.

Delete DBT

Deletes the Authorized Signature Database (DBT).

Set new DBT

Sets the Authorized Signature Database (DBT). After selecting the drive, the corresponding file must be selected in the browser.

Append DBT

Adds an entry to the Authorized Signature Database (DBT). After selecting the drive, the corresponding file must be selected in the browser.

Forbidden Signatures

Shows the current status of the Forbidden Signature Database (DB).

Installed	The DBX is installed.
Not installed	The DBX is not installed.

Delete DBX

Deletes the Forbidden Signature Database (DB).

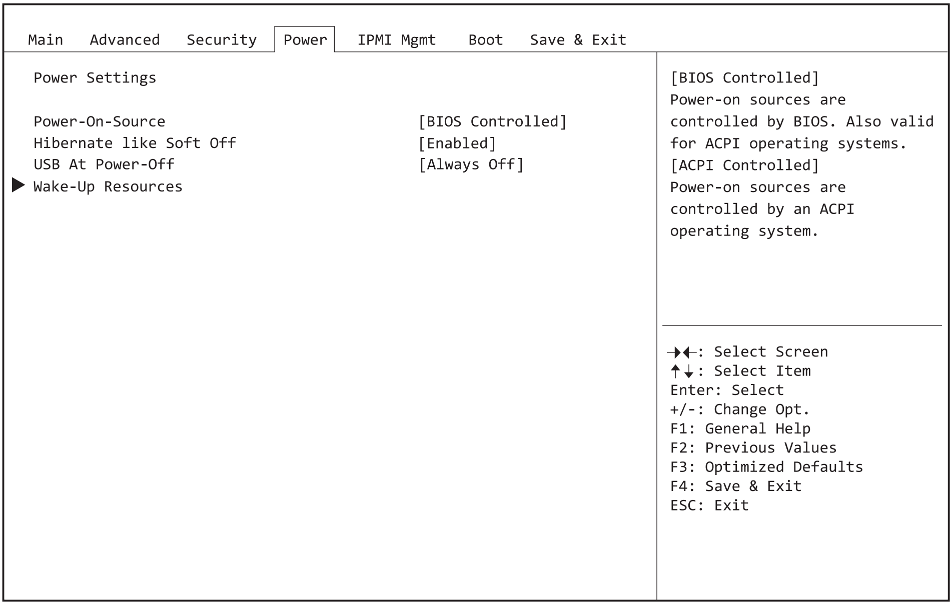
Set new DBX

Sets the Forbidden Signature Database (DB). After selecting the drive, the corresponding file must be selected in the browser.

Append DBX

Adds an entry to the Forbidden Signature Database (DBX). After selecting the drive, the corresponding file must be selected in the browser.

Power Menu – Energy saving functions



```
  Main   Advanced   Security   Power   IPMI Mgmt   Boot   Save & Exit

   Power Settings                                        [BIOS Controlled]
                                                         Power-on sources are
   Power-On-Source               [BIOS Controlled]       controlled by BIOS. Also valid
   Hibernate like Soft Off       [Enabled]               for ACPI operating systems.
   USB At Power-Off              [Always Off]            [ACPI Controlled]
 ▶ Wake-Up Resources                                     Power-on sources are
                                                         controlled by an ACPI
                                                         operating system.

                                                         →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit
```

Example showing the *Power* menu.

Power Settings

Power On Source

Specifies whether the switch-on sources for the system are managed via BIOS or via an ACPI operating system.

BIOS Controlled	The switch-on sources are managed via BIOS.
ACPI Controlled	The switch-on sources are managed via the ACPI operating system.

Low Power Soft Off

Only for versions D3348 and D3358.

Reduces the energy consumption of a system which is switched off.

When Low Power Soft Off is enabled, the system can only be switched on with the power button on the casing. The device cannot be switched on using the power button of a USB keyboard or a Wake-on-LAN signal.

Disabled Low Power Soft Off is disabled.

Enabled Low Power Soft Off is enabled.

Power Failure Recovery – System status after a power failure

Only for versions D3348 and D3358.

Specifies how the system behaves during a reboot following a power failure.

Always Off The system switches on briefly, performs a status check (initialisation), and then switches off.

Always On The system switches on.

Previous State The system switches on briefly, performs a status check, and then returns the mode it was in before the power failure occurred (ON or OFF).

Disabled The system does not switch on.

Hibernate like Soft Off

In order to also reduce the energy consumption in hibernate mode (S4), the system will instead be brought into Low Power Soft Off or Zero Watt mode (S5) when it is switched off. However, the energy consumption will only reduce if Low Power Soft Off or Zero Watt mode is enabled.

Disabled The system will be brought into hibernate mode (S4).

Enabled Instead of going into hibernate mode (S4), the system will be brought into Low Power Soft Off or Zero Watt mode (S5).

USB At Power Off

Enables/disables the power supply for the USB ports. This option is only available if Low Power Soft Off and Zero Watt mode are disabled.

Always off The USB ports are no longer supplied with power after the system is shut down.

Always on The USB ports continue to be supplied with power after the system is shut down.

Wake-Up Resources

> This submenu is only available if neither *Zero-Watt mode* nor *Low Power Soft Off* is enabled.

LAN

Determines whether the system can be switched on via a LAN controller (on the system board or expansion card).

Enabled The system can be switched on via a LAN controller.

Disabled The system cannot be switched on via a LAN controller.

Wake On LAN Boot

Specifies the system behaviour when switched on by means of network signals.

Boot Sequence After being switched on via the LAN, the system boots up according to the device sequence specified in the boot menu.

Force LAN Boot After being switched on via the LAN, the system is booted remotely via the LAN.

Wake Up Timer

The time at which the system should be switched on can be specified here.

Disabled Wake Up Timer is not enabled.

Enabled Wake Up Timer is enabled. The system is switched on at the time specified.

Hour

Specifies the hour of the switch-on time.

Minute

Specifies the minute of the switch-on time.

Second

Specifies the second of the switch-on time.

Wake Up Mode

Specifies whether the system should be switched on daily, on selected week days or only once a month at the specified time.

Daily The system will be switched on daily at the time specified.

Weekly The system is switched on at the specified time on the selected week days.

Monthly The system will be switched on once a month at the time specified.

Wake Up Day

Specifies the day of the month on which the system is to be switched on. Permitted values are 1..31.

USB Keyboard

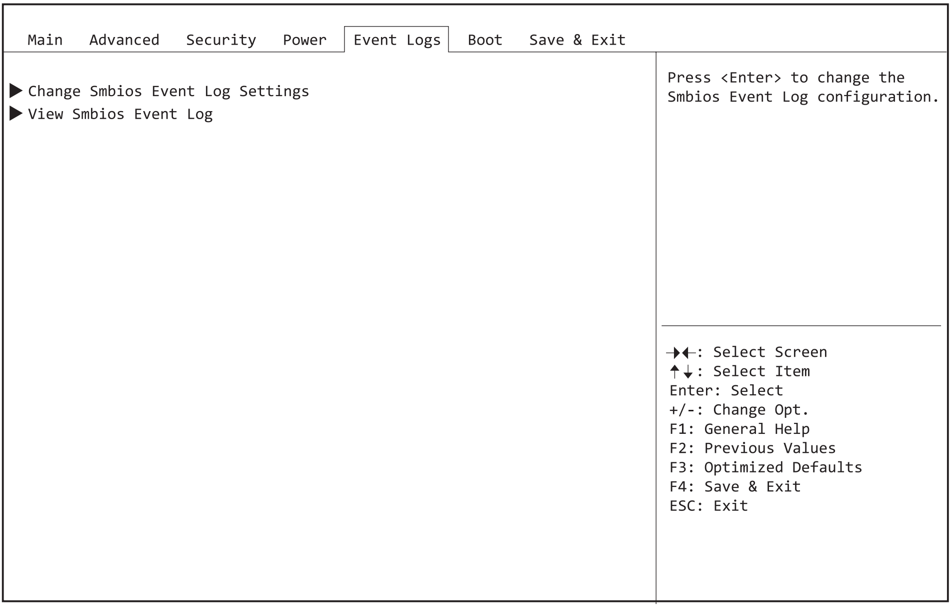
Specifies whether the system can be switched on via the network key of a USB keyboard, if the keyboard supports this function.

Switching on the system via a USB keyboard is only available if *USB At Power-Off* is set to*Always On*.

Disabled The network key of the USB keyboard is disabled.

Enabled The network key of the USB keyboard is enabled.

Event Logs – Configuration and Display of the Event Log



```
▶ Change Smbios Event Log Settings
▶ View Smbios Event Log

Press <Enter> to change the
Smbios Event Log configuration.

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
```

Example showing the *Event Logs*.

Only for versions D3348 and D3358

Change SMBIOS event log settings

SMBIOS Event Log

Specifies whether the SMBIOS event log is enabled.

Disabled	The SMBIOS event log is disabled.
Enabled	The SMBIOS event log is enabled.

Erase Event Log

Specifies whether the SMBIOS event log should be deleted.

No The SMBIOS event log will not be deleted.

Yes, next reset The SMBIOS event Log is deleted once during the next system boot up. Afterwards, this option is automatically reset to *No*.

Yes, every reset The SMBIOS event log is deleted every time the system is booted.

When Log is full

Specifies the course of action to be taken when the SMBIOS event log is full.

Do Nothing When the SMBIOS event log is full, no further entries are added. The SMBIOS event log must first be deleted before new entries can be added.

Erase Immediately When the SMBIOS event log is full, it will be erased immediately. All existing entries will be deleted!

Log System Boot Event

Specifies whether every boot of the system is logged in the SMBIOS event log.

Disabled System boots are not recorded in the SMBIOS event log.

Enabled All system boots are recorded in the SMBIOS event log.

MECI

Multiple Event Count Increment: the number of double events which must occur before the multiple event counter is updated, including the associated log entry. The value is in the range between 1 and 255.

METW

Multiple Event Time Window: the number of minutes which must elapse between double event logs which use a multiple event counter. The value is in the range between 0 to 99 minutes.

Log OEM Codes

Enables or disables the log function of EFI codes as OEM codes (if not already legacy converted).

Convert OEM codes

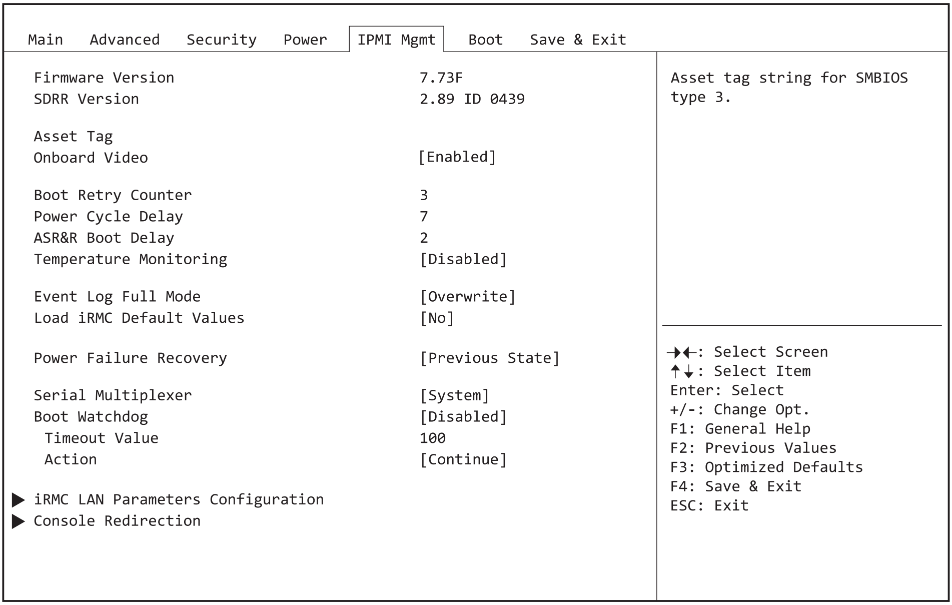
Enabling or disabling the conversion of EFI status codes to standard SMBIOS types (not all may be translated).

View SMBIOS Event Log

Opens the submenu to show all SMBIOS event log entries present.

IPMI Management

The following parameters can be set in this menu. Some of these parameters are only available under certain conditions.



```
 Main   Advanced   Security   Power   IPMI Mgmt   Boot   Save & Exit

   Firmware Version                        7.73F              Asset tag string for SMBIOS
   SDRR Version                            2.89 ID 0439       type 3.

   Asset Tag
   Onboard Video                           [Enabled]

   Boot Retry Counter                      3
   Power Cycle Delay                       7
   ASR&R Boot Delay                        2
   Temperature Monitoring                  [Disabled]

   Event Log Full Mode                     [Overwrite]
   Load iRMC Default Values                [No]

   Power Failure Recovery                  [Previous State]   →←: Select Screen
                                                              ↑↓: Select Item
   Serial Multiplexer                      [System]           Enter: Select
   Boot Watchdog                           [Disabled]         +/-: Change Opt.
    Timeout Value                          100                F1: General Help
    Action                                 [Continue]         F2: Previous Values
                                                              F3: Optimized Defaults
 ▶ iRMC LAN Parameters Configuration                          F4: Save & Exit
 ▶ Console Redirection                                        ESC: Exit
```

Asset tag

Indicates the asset tag field of SMBIOS type 3 (system casing or chassis). To set or change the asset tag, select this setup option and press the enter key. A window will open in which you can type in a new character string or change the current one. The input must be alphanumeric.

Onboard Video

The graphics controller on the system board can be disabled if a graphics card is installed.

Disabled	The graphics controller on the system board is disabled.
Enabled	The graphics controller on the system board is enabled.

Boot Retry Counter: Number of attempts

Specifies the maximum number of attempts that can be made to boot the operating system. Each unsuccessful attempt is ended by a system reboot after the time set under the Boot Watchdog expires. Other critical system errors also result in system reboot and a decrease in the counter reading. After the last attempt, the system will be permanently disabled.

The permitted values are: 0 to 7 possible attempts

► To increase the value, press the [+] button on the number pad. To decrease the value, press the [-] button.

Power Cycle Delay

Specifies the minimum time that must pass until the system can be switched on again after being switched off.

The permitted values are: 0 to 15 seconds.

► To increase the value, press the [+] on the number pad. To decrease the value, press the [-] button.

ASR&R Boot Delay

Specifies the boot delay after shutdown due to a fault (e.g. excessively high temperature). The system is rebooted after the set wait period has expired.

The permitted values are: 1 min to 30 mins

► To increase the value, press the [+] on the number pad. To decrease the value, press the [-] button.

Temperature Monitoring

This field specifies whether the system will be switched off if the ambient temperature or the temperature of a processor exceeds the critical value. This protects against damage to the system or data. If the operating system has an active server management process, this takes over the temperature monitoring function and performs a shutdown if critical temperatures occur.

Depending on the Boot Retry Counter, the system switches itself on again after the period specified under ASR&R Boot Delay. In the meantime the system should have cooled down again.

Disabled	The system does not switch itself off if the temperature exceeds the critical value.
Enabled	The system switches itself off if the temperature exceeds the critical value.

Event Log Full Mode

Specifies whether the System Event Log can be overwritten.

Overwrite If the System Event Log is full, further events overwrite the oldest entries in the System Event Log. More recent events have greater importance than older ones in this case.

Maintain If the System Event Log file is full, no further events are entered. The System Event Log file must be cleared first before additional events can be entered. Older events have greater importance than newer ones in this case.

Load iRMC Default Values

Specifies whether the iRMC Default Values should be loaded.

No No action is taken.

Yes By leaving the BIOS Setup through Save Changes & Exit, the iRMC Default Values are loaded. The BIOS Setup settings that concern the iRMC are not lost by using this option. After loading the iRMC Default Values, they are sent to the iRMC and thus overwrite the corresponding values. The setting will automatically be set on ’No’ after loading the Default Values.

Power Failure Recovery - system status after a power failure

Specifies how the system behaves during a reboot caused by failure of the power supply.

Always Off The system checks its status and then switches itself off.

Previous State The system checks its status and then goes back into the status it was in before the power failure occurred (On or Off).

Always On The system checks its status and then switches itself on. For the planned UPS operation set Always On. Otherwise the workstation may not be turned on at the specified time.

All wake up sources are reconfigured during the short initialisation phase. The system can be re-awakened by LAN etc.

Serial Multiplexer

Specifies whether the serial interface can be used by the system.

System The serial interface can be used by the system or the operating system.

iRMC The serial interface can be used only by the iRMC. The operating system cannot use this serial interface.

Boot Watchdog

Specifies whether the operating system should reboot if the server management system (ServerView Agent) cannot establish a connection to iRMC. After a successful operating system boot and within a set period of time, the ServerView Agent starts to communicate with the iRMC. If the time period is exceeded, the iRMC assumes there is a boot error and can restart the system.

Disabled	The iRMC does not perform a system restart with a Boot Watchdog. If ServerView is not installed, this parameter must be selected to prevent an unintentional restart of the system.
Enabled	The iRMC performs a system restart when there is an O/S boot timeout, because it assumes a boot error.

i

If Enabled is specified, the server may not run properly. The server can for instance automatically shut down or restart, without previously having received an appropriate command.

If you boot the system via the ServerView suite, you must disable the Boot Watchdog, including if ServerView Agent was installed on the system. If this component is enabled during the boot, the server may not run properly. The server can for instance automatically shut down or restart, without previously having received an appropriate command.

When configuring this function, please take note of the instructions in the manuals for the ServerView suite.

Timeout Value

Specifies the time after which a system restart is performed, if this is enabled by Boot Watchdog.

The permitted values are: 1 to 100

1...100	The system is restarted after the set time (minutes) has elapsed.

► To increase the value, press the + on the number pad. To decrease the value, press the - button.

Action – action when time monitoring expires

Determines the action performed after the boot watchdog expires.

Continue	The system continues to run.
Reset	The system restarts.
Power cycle	The system switches off and then on again.

iRMC Lan Parameters Configuration

The following parameters can be set in this menu. However, some of them are only available under certain conditions.

Management LAN

Specifies the status of the LAN interface that can be used by the iRMC.

Disabled	The iRMC LAN interface is disabled.
Enabled	The iRMC LAN interface is enabled.

iRMC MAC Address

Indicates the MAC address of the iRMC. The iRMC MAC address is divided into blocks which are separated from each other by a colon.

Management LAN Speed

Specifies the speed for the Management LAN interface.

Auto	The speed is managed automatically by the LAN Controller.
100 Mbit/s Full Duplex	The maximum speed is 100 Mbit/s. Simultaneous transmission in both directions is possible.
100 Mbit/s Half Duplex	The maximum speed is 100 Mbit/s. Transmission is only possible in one direction at a time.
10 Mbit/s Full Duplex	Fixed speed at 10 Mbit/s. Simultaneous transmission in both directions is possible.
10 Mbit/s Half Duplex	Fixed speed at 10 Mbit/s. Transmission is only possible in one direction at a time.
1000 Mbit/s	The maximum speed is 1000 Mbit/s.

VLAN ID tagging

Enables support of IEEE 802.1q VLAN headers (virtual LAN) for IPMI over IP sessions on IEEE 802.3 Ethernet.

Disabled	Disables support of IEEE 802.1q VLAN headers (virtual LAN) for IPMI over IP sessions on IEEE 802.3 Ethernet.
Enabled	Enables support of IEEE 802.1q VLAN headers (virtual LAN) for IPMI over IP sessions on IEEE 802.3 Ethernet.

VLAN ID

Value with which the VLAN Header is tagged.

The permitted values are: 0 ... 4094

VLAN Priority

Value for the VLAN user priority field to be used.

The permitted values are: 0 ... 7

iRMC IPv4 LAN stack

Configures whether the IPv4 LAN stack is available for the iRMC.

Disabled The IPv4 LAN stack is not available for the iRMC.

Enabled The IPv4 LAN stack is available for the iRMC.

IP Configuration

Specifies whether the DHCP support (Dynamic Host Configuration Protocol) for the iRMC is used. The iRMC can automatically have itself assigned an IP address from a DHCP server in the network via the DHCP (Dynamic Host Configuration Protocol) network protocol.

Use DHCP DHCP support for the iRMC is used. Local IP address, subnet mask and gateway address are requested by the DHCP server.

Use static configuration DHCP support is not used for the iRMC. Local IP address, subnet mask and gateway address must be input manually.

IP Address

Specifies the IP address of the iRMC.

Only numeric characters from 0-255 are permitted.

Subnet Mask

Finds the subnet mask address of the iRMC. Uses the same subnet mask as the operating system.

Only numeric characters from 0-255 are permitted.

Gateway address

Specifies the gateway address of the iRMC.

Only numeric characters from 0-255 are permitted.

iRMC IPv6 LAN Stack

Configures whether the IPv6 LAN stack is available for the iRMC.

Disabled The IPv6 LAN stack is not available for the iRMC.

Enabled The IPv6 LAN stack is available for the iRMC.

Link Local Address

Indicates the IPv6 address. The IP address is divided into blocks which are separated from each other by a colon.

IPv6 Gateway

Shows the IPv6 gateway address. The IP Gateway address is divided into blocks which are separated from each other by a colon.

Console Redirection (CR)

The following parameters can be set in this menu. However, some of them are only available under certain conditions.

Console Redirection

Specifies the transfer rate for communication with the terminal.

Disabled	The terminal interface is disabled.
Serial 1	The terminal uses the first serial interface.

Baud rate

Specifies the transfer rate for communication with the terminal. The setting must be the same on both the terminal and the server.

The permitted values are: 9600, 19.2 K, 38.4 K, 57.6 K, 115.2 K

Data communication with the terminal is performed at the rate set.

Protocol

Indicates the configured console type. This setting must be identical on both the terminal and the server.

The permitted values are: VT100, PC ANSI, VT100+, VT-UTF8

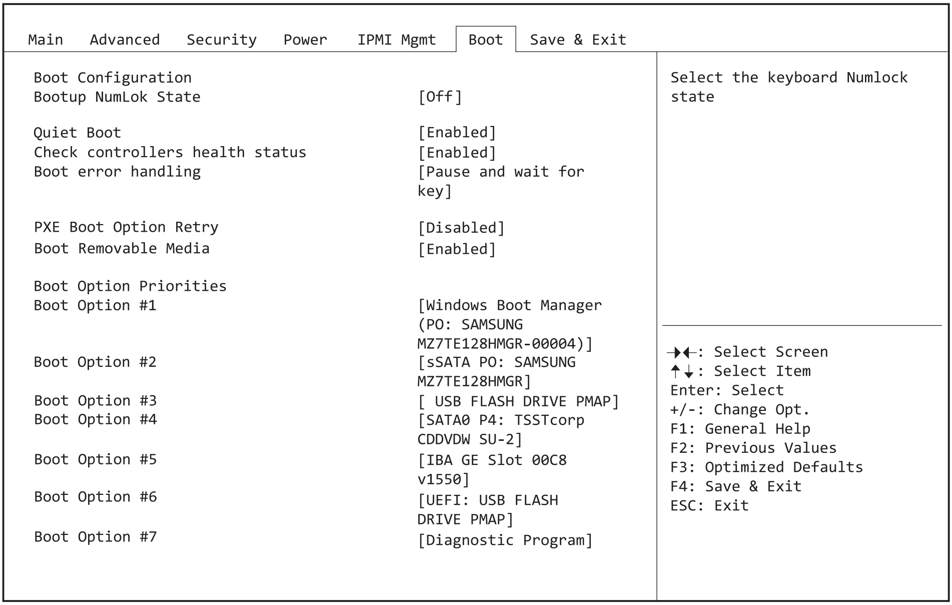
Data communication with the terminal is performed with the configured console.

Flow Control - interface settings

This setting determines how the transfer via the port is controlled. The setting must be the same on both the terminal and the server.

None	The interface is operated without transfer control.
CTS/RTS	The port transfer control is carried out by hardware. This mode must also be supported by the cable.

Boot Menu – System boot



```
 Main   Advanced   Security   Power   IPMI Mgmt   Boot   Save & Exit

 Boot Configuration                                          Select the keyboard Numlock
 Bootup NumLok State                 [Off]                   state

 Quiet Boot                          [Enabled]
 Check controllers health status     [Enabled]
 Boot error handling                 [Pause and wait for
                                     key]

 PXE Boot Option Retry               [Disabled]
 Boot Removable Media                [Enabled]

 Boot Option Priorities
 Boot Option #1                      [Windows Boot Manager
                                     (PO: SAMSUNG
                                     MZ7TE128HMGR-00004)]
 Boot Option #2                      [sSATA PO: SAMSUNG             →←: Select Screen
                                     MZ7TE128HMGR]                  ↑↓: Select Item
 Boot Option #3                      [ USB FLASH DRIVE PMAP]        Enter: Select
 Boot Option #4                      [SATA0 P4: TSSTcorp            +/-: Change Opt.
                                     CDDVDW SU-2]                   F1: General Help
 Boot Option #5                      [IBA GE Slot 00C8              F2: Previous Values
                                     v1550]                         F3: Optimized Defaults
 Boot Option #6                      [UEFI: USB FLASH               F4: Save & Exit
                                     DRIVE PMAP]                    ESC: Exit
 Boot Option #7                      [Diagnostic Program]
```

The sequence of the drives from which booting is to occur can be specified here.

Up to eight drives (can include USB ports, for example) can be listed here.

Boot Configuration

Bootup NumLock State

The setting of the NumLock function after a system boot is provided here. NumLock controls the functionality of the numeric keypad.

On NumLock is enabled, the numeric keypad can be used.

Off NumLock is disabled, the numeric keypad keys can be used to control the cursor.

i

The Num indicator light on your keyboard shows the current boot up NumLock state. The Num key on the keyboard can be used to toggle between ON and OFF.

Quiet Boot

The boot logo is shown on the screen instead of the POST boot up information.

Enabled The boot logo is displayed.

Disabled The POST boot up information is shown on the screen.

Check Controller Health Status

If a UEFI driver option ROM of a PCI Express device supports Controller Health, the UEFI firmware can query the UEFI driver option ROM regarding the status of the devices that it manages.

Disabled The Controller Health Status is not queried by the UEFI FW.

Enabled The UEFI FW queries the Controller Health Status.

PXE Boot Option Retry

NON-EFI boot options based on PXE are repeated without waiting for user input.

Disabled NON-EFI boot options are not repeated without user input.

Enabled NON-EFI boot options are repeated without waiting for user input.

Boot Error Handling

Specifies whether the system boot process is interrupted and the system stopped when an error is detected.

Continue The system boot is not aborted. The error will be ignored, as far as this is possible.

Pause and wait for key If an error is detected during POST, the boot process is interrupted and the system stopped.

Primary Display

Only for versions D3348 and D3358.

Specifies which plug-in graphics card is used as image source during the Power-On Self-Test (POST).

Slot n Select the slot of the plug-in graphics card which should be used as image source during POST.

Boot Removable Media

Specifies whether booting via a removable data storage device such as a USB stick is supported.

Disabled Booting via a removable data storage device is disabled.

Enabled Booting via a removable data storage device is enabled.

Virus Warning

Only for versions D3348 and D3358.

Checks the boot sectors of the hard disks for changes since the last system boot. If the boot sectors have been changed without any apparent reason, a suitable virus detection program should be run.

Disabled The boot sectors will not be checked.

Enabled If the boot sector has been changed since the last system boot (e.g. new operating system or a virus attack), a warning notice is displayed. The warning notice remains on the screen until you confirm the changes by going into BIOS Setup and setting this item to *Confirm* or disable the function.

Confirm Confirm a required change to a boot sector (e.g. new operating system).

Boot option priorities

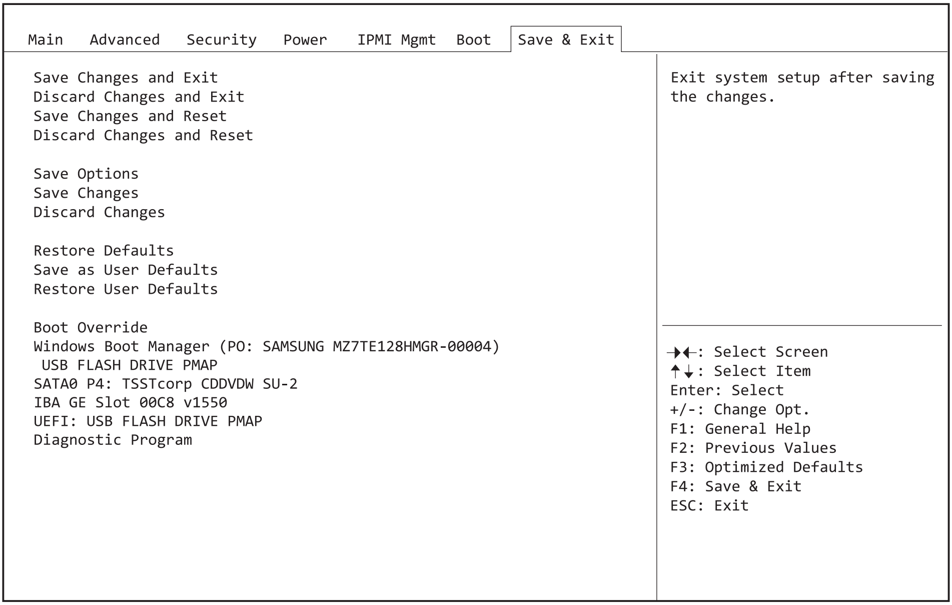
Displays the current boot sequence.

► Use the cursor keys ↑ or ↓ to select the device whose boot sequence you would like to change.

► To increase the priority for the selected device, press the + key. To decrease the priority, press the - key.

► To remove the selected device from the boot sequence, press the Enter key and select *Disabled*.

Save & Exit Menu – Finish BIOS Setup



```
 Main   Advanced   Security   Power   IPMI Mgmt  Boot   Save & Exit

  Save Changes and Exit                                          Exit system setup after saving
  Discard Changes and Exit                                       the changes.
  Save Changes and Reset
  Discard Changes and Reset

  Save Options
  Save Changes
  Discard Changes

  Restore Defaults
  Save as User Defaults
  Restore User Defaults

  Boot Override
  Windows Boot Manager (PO: SAMSUNG MZ7TE128HMGR-00004)          →←: Select Screen
   USB FLASH DRIVE PMAP                                          ↑↓: Select Item
  SATA0 P4: TSSTcorp CDDVDW SU-2                                 Enter: Select
  IBA GE Slot 00C8 v1550                                         +/-: Change Opt.
  UEFI: USB FLASH DRIVE PMAP                                     F1: General Help
  Diagnostic Program                                             F2: Previous Values
                                                                 F3: Optimized Defaults
                                                                 F4: Save & Exit
                                                                 ESC: Exit
```

The *Exit* menu provides options for saving settings and exiting *BIOS Setup*.

Save Changes and Exit

To save the current entries in the menus and exit the BIOS Setup, select *Save Changes and Exit* and then *Yes*. The new settings become effective and POST continues, provided a reboot is not necessary due to a changed option.

Discard Changes and Exit - quit without saving

To discard the changes made since calling up the BIOS Setup or since the last time the function "Save Changes" was called, select *Discard Changes & Exit* and *Yes*. BIOS Setup is terminated and POST continues.

Save Changes and Reset

To save the current entries in the menus and exit BIOS Setup, select *Save Changes and Reset* and *Yes*. The system reboots and the new settings take effect.

Discard Changes and Reset

To discard the changes made since calling up the BIOS Setup or since the last time the function "Save Changes" was called, select *Discard Changes and Reset* and *Yes*. BIOS Setup is closed and the system reboots.

Save Options

Save Changes

To save the changes made so far without leaving BIOS Setup, select *Save Changes* and *Yes*.

Discard Changes

To discard the changes made since calling the BIOS Setup or since the last time the function "Save Changes" was called, but without leaving the BIOS Setup, select *Save Changes* and *Yes*.

Restore Defaults

To reset all the menus of the BIOS setup to the default values, select *Restore Defaults* and *Yes*. If you wish to leave the BIOS Setup with these settings, select *Save Changes and Exit* and *Yes*.

Save as User Defaults

To save the changes made so far as user default settings, select *Save as User Defaults* and *Yes*.

Restore User Defaults

To reset all the menus of the BIOS Setup to the user default settings, select *Restore User Defaults* and *Yes*. If you wish to leave the BIOS Setup with these settings, select *Save Changes and Exit* and *Yes*.

Boot Override

Use the cursor keys ↑ and ↓ to select the drive from which the operating system should be booted. Press the Enter key to start the boot process from the selected drive.

Diagnostic Program

► To perform a basic test of the CPU, working memory and hard disks, select *Diagnostic Program* and press the Enter key.

↳ If a problem occurs during the test, the relevant Error Code and a brief explanation (Diagnostic Result) will be displayed. In addition, the Error Code is entered in the Smbios Event Log.

i

Diagnostic Program can also be called up directly in the Boot Menu by pressing the F12 key in the POST.

BIOS Update

To carry out a *Flash BIOS Update*, you can use the *Auto BIOS Update* function ("Auto BIOS Update", Page 18) or must first download the necessary files from the Internet.

i The BIOS is installed on a flash memory module. If an error occurs during the flash BIOS update procedure, the BIOS image may be destroyed. You can then only recover the BIOS using *BIOS Recovery Update*, see"BIOS Recovery Update", Page 75. If this is not possible, the Flash memory module must be replaced. If this is the case, please contact the Service Desk of Customer Services.

- ► On the Internet, go to "http://www.fujitsu.com/de/support/index.html".
- ► Use *MANUAL PRODUCT SELECTION* to select your device or look for your device under *SELECT PRODUCT USING SERIAL/IDENT NO.* using the serial/ident. no. or the product name.
- ► Click on *Drivers & Downloads* and select your operating system.
- ► Select *Flash BIOS*.
- ► Flash BIOS Update – Desk Flash Instant: For "Flash-BIOS Update under Windows", download the file *Flash-BIOS Update – Desk Flash Instant*.
- ► Admin package – Compressed Flash Files: If you cannot find the operating system which you are using in the selection, select an operating system of your choice and download the file *Admin package – Compressed Flash Files* to "Flash-BIOS Update using a USB stick".
- ► For safety reasons, make a note of the settings in the BIOS Setup before you perform the Flash-BIOS update. Normally, a Flash-BIOS update does not damage the BIOS Setup.

Auto BIOS Update

With *Auto BIOS Update* it is possible to check a Fujitsu server automatically to see if there is a new BIOS version for the system. For the update, no operating system or external storage medium is required. For details on the *Auto BIOS Update* function, see the manual, "Auto BIOS Update", Page 18.

Flash BIOS update under Windows

- ► Start your system and boot Windows.
- ► Open Windows Explorer, then under *Flash-BIOS Update – Desk Flash Instant* select the file which was downloaded and start the Flash-BIOS update with a double-click. Follow the instructions on the screen.

i Administrator rights are necessary to run "Desk Flash Instant".

↳ After the Flash-BIOS Update has terminated successfully, the system will restart automatically and boot up with the new version of BIOS.

Flash BIOS update with a USB stick

► Have a boot-capable USB stick ready.

If your USB stick is not boot-capable, you will find the necessary files for it under *Admin package – Compressed Flash Files* under the item *Installation description* then selecting the item *Further information*. Follow the instructions.

When a boot-capable USB stick is created, all the files on the stick are irretrievably deleted. Please therefore make certain that all files from the USB stick are backed up elsewhere beforehand.

► Unzip the ZIP files which were downloaded under *Admin package – Compressed Flash Files* and copy the files and directories into the root directory of your boot-capable USB stick.

► Restart your system and wait until screen output appears. Press the function key F12 and use the cursor keys ↑ or ↓ to select the boot-capable USB stick.

► Use *cd DOS* to change directory, launch Flash BIOS Update with the command *DosFlash* and follow the further instructions.

↳ After the Flash-BIOS Update has terminated successfully, the system will restart automatically and boot up with the new version of BIOS.

BIOS Recovery Update

- ► Prepare a boot-capable USB stick as described under "Flash BIOS update with a USB stick".
- ► Switch off the system and unplug it from the mains supply.
- ► Open the casing and enable *Recovery* using the jumper / DIP switch on the system board. You will find details on this in the technical manual for the system board.
- ► Connect the prepared USB stick and remove all other bootable USB devices.

If the Admin package on the prepared USB stick does not match the BIOS version of the system (e.g. Admin package for BIOS R1.2.0, but BIOS R1.3.0 is enabled on the system), no screen outputs will be possible in recovery mode. The Recovery Update will be carried out automatically in this case.

During the Recovery Update, a recurring short signal tone will sound. Recovery of the system has succeeded if you hear the repeated signal sequence "short-short-long-long" after a long signal tone. The Recovery process can take a few minutes.

- ► Connect the system to the mains supply again and switch it on.
- ► Use *cd DOS* to change directory, launch BIOS Recovery Update with the command *DosFlash* and follow the further instructions.
- ► After the recovery process has finished, switch off the system and disconnect it from the mains supply.
- ► Remove the USB stick.
- ► For all jumpers / DIP switches which were changed, return them to their original positions and close the casing.
- ► Connect the system to the mains supply again and switch it on.
- ↳ The system will now boot up with the new version of BIOS.
- ► Check the settings in the BIOS Setup. If necessary, configure the settings once again.

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