Description

Components

BIOS Manual for System Boards with Intel® 8 Series / C227 Chipset

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BIOS Manual for System Boards with Intel® 8 Series / C227 Chipset

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
Event Logs:	Configuration and display of the event log
Boot:	Configuration of the start-up sequence
Save & Exit:	Save and quit

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 43.

↳ 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 66).

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

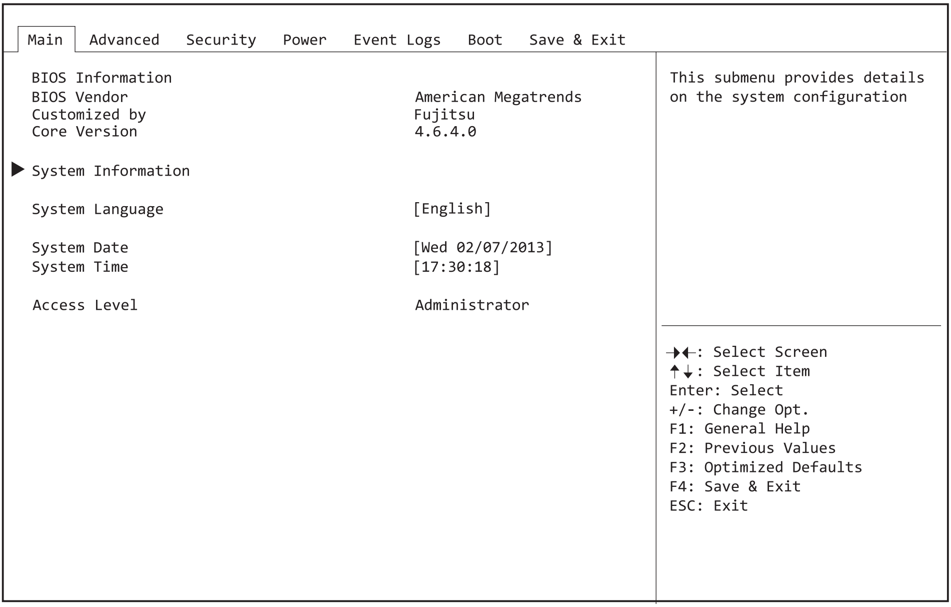
► Select the *Save & Exit* menu from the menu bar to end *BIOS Setup*.

↳ 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   Event Logs   Boot   Save & Exit

   BIOS Information                                      This submenu provides details
   BIOS Vendor                  American Megatrends      on the system configuration
   Customized by                Fujitsu
   Core Version                 4.6.4.0

 ▶ System Information

   System Language              [English]

   System Date                  [Wed 02/07/2013]
   System Time                  [17:30:18]

   Access Level                 Administrator
                                                         →←: 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 *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

This submenu contains descriptions of the system configuration. Some parameters are only available optionally.

Board and Firmware Details

Shows the current information on the installed system board and firmware.

BIOS Revision Shows the current BIOS version.

Build Date and Time Shows the date and time of the formation of the current BIOS.

Board Shows information about the current system board.

Ident Number Shows the identification number of the system.

UUID Shows the 16-byte long Universal Unique ID, also known as the Globally Unique Identifier (GUID).

Network Controller Details

Shows the 6-byte long MAC address (Media Access Control) of the LAN controller.

Processor Details

Processor Type Shows the CPU designation.

CPU / Patch ID Shows the CPU ID and the current Patch ID.

Processor Speed Shows the speed of the processor core.

Cache Counts & Sizes Shows detailed information about the cache.

Active Package, Core & Thread Count (maximum) Shows the number of active and maximum available CPU packages, cores and threads.

Memory Details

Shows details of the memory quantities.

Memory Size / Frequency Shows the total memory in Megabytes and the memory frequency in MHz.

DIMM n Shows the memory size in Megabytes for the corresponding memory slot.

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.

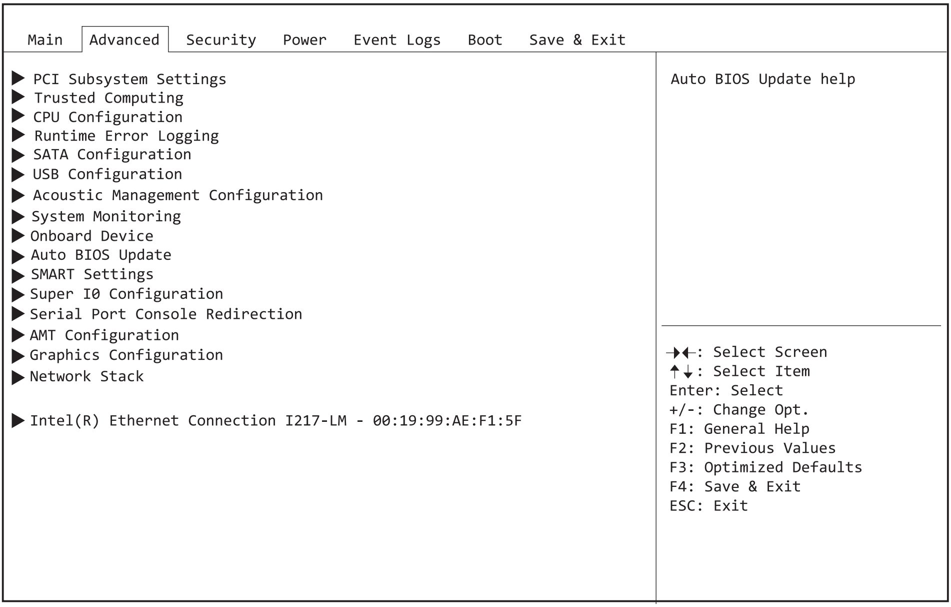
Access Level

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  Event Logs  Boot  Save & Exit

▶ PCI Subsystem Settings                                  Auto BIOS Update help
▶ Trusted Computing
▶ CPU Configuration
▶ Runtime Error Logging
▶ SATA Configuration
▶ USB Configuration
▶ Acoustic Management Configuration
▶ System Monitoring
▶ Onboard Device
▶ Auto BIOS Update
▶ SMART Settings
▶ Super IO Configuration
▶ Serial Port Console Redirection
▶ AMT Configuration                                       →←: Select Screen
▶ Graphics Configuration                                  ↑↓: Select Item
▶ Network Stack                                           Enter: Select
                                                          +/-: Change Opt.
▶ Intel(R) Ethernet Connection I217-LM - 00:19:99:AE:F1:5F F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit
```

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.

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

Please note that data on solid state drives (SSD) cannot be deleted with total certainty.

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.

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.

ℹ 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)

ℹ 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.

ℹ 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.

ℹ 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.

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.

Auto Configure maximum energy saving. Set the Low Power Mode of the PCI Express connections to L0s (uni-directional) or L1 (bi-directional).

Force L0s Limit the Low Power Mode of the PCI Express connections to L0s (uni-directional). Compromise between compatibility and energy saving.

i The latency (delay) for PCI Express devices can increase if ASPM is not disabled. Even if ASPM is generally enabled by this selection, it is only then enabled for a particular connection if the corresponding PCI Express adapter card or the corresponding Onboard Controller also supports this. Various adapter cards do not support this function correctly, which can lead to an unpredictable system behaviour.

Slot n Link Speed

Allows the maximum possible link speed to be limited for individual PCIe slots.

Auto The card in the slot is operated at the maximum possible link speed.

GEN1 The maximum possible link speed will be limited to GEN1 (2,5 GT/s).

GEN2 The maximum possible link speed will be limited to GEN2 (5 GT/s).

GEN3 If supported by the slot.
The maximum possible link speed is limited to GEN3 (8 GT/s).

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.

CPU Configuration

Opens the *CPU Configuration* submenu.

Socket n CPU Information

The submenu opens to show information about the CPU in socket n.

Processor Type	Shows the CPU type.
CPU Signature	Shows the CPU ID.
Microcode Patch	Shows the CPU Micropatch ID.
Max CPU Speed	Shows the maximum speed of the processor core without turbo mode.
Min CPU Speed	Shows the minimum speed of the processor core.
Processor Cores	Shows the maximum number of available CPU cores.
Intel HT Technology	Shows whether Intel® Hyper Threading Technology is supported by the CPU.
Intel VT-x Technology	Shows whether Intel® VT-x (Virtualisation Technology) is supported by the CPU.
Intel SMX Technology	Shows whether Intel® SMX (Safer Mode Extensions) is supported by the CPU.
EIST Technology	Shows if EIST (Enhanced Intel SpeedStep® Technology) is supported by the CPU.
CPU C3 state	Shows if the C3 state is supported by the CPU.
CPU C6 state	Shows if the C6 state is supported by the CPU.
CPU C7 state	Shows if the C7 state is supported by the CPU.
L1 Data Cache	Shows the memory size of the L1 Data Cache.
L1 Code Cache	Shows the memory size of the L1 instruction cache.
L2 Cache	Shows the memory size of the L2 cache.
L3 Cache	Shows the memory size of the L3 cache.

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.

All 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.

Execute Disable Bit

Makes it possible to prevent the execution of programs in certain areas of memory (anti-virus protection). The function is only effective if it is also supported by the operating system.
The eXecute Disable bit (XD bit) is also called the NX bit (No eXecute).

Enabled Allows the operating system to switch on the Execute Disable function.

Disabled Prevents the operating system from switching on the eXecute Disable function.

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.

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.

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.

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.

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

CPU C3 Report

Passes the processor C3 state to the OSPM as ACPI-C3 state, if this is supported by the particular legacy operating system being used.

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

CPU C6 Report

Passes the processor C6 status as ACPI-C3 status 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.

CPU C7 Report

Passes the processor C7/C7s state to the OSPM as ACPI-C3 state, to enable Processor Deep Power Down Technology.

Disabled	CPU C7 is not passed as ACPI-C3 status to the OSPM.
CPU C7	CPU C7 is passed as ACPI-C3 status to the OSPM.
CPU C7s	CPU C7s is passed to the OPSM as ACPI-C3 state.

Package C State demotion

This stipulates that the processor, with excessively frequent requests for deep C-states, only takes up shallower C-states, thus increasing energy efficiency.

Disabled The processor takes up the requested C-state.

Enabled With excessively frequent requests, the processor only takes up shallower C-states.

Package C State undemotion

This stipulates that the processor, with a falling frequency of requests for deep C-states, takes up the requested C-state again, thus increasing energy efficiency.

Disabled With a falling frequency of requests for deep C-states, shallower C-states are still taken up.

Enabled With a falling frequency of requests for deep C-states, the requested C-state is taken up again.

Runtime Error Logging

ECC Memory Error Logging

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

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

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

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

PCI Error Logging

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

Enabled PCI errors will be entered in the SMBIOS event log.

SATA Configuration

Opens the SATA configuration submenu.

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.

Aggressive LPM Support

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

Specifies whether the SATA PORT n is available.

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

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.

Graphics Configuration

Opens the submenu for configuring the graphics controller on the system board.

Primary Display

Specifies the image source during the Power On Self Test (POST).

Auto If the display adapter is inserted, this is used as the image source during the POST. Otherwise, the graphics device (IGD) integrated in the system board is used.

IGD The Integrated Graphics Device (IGD) on the system board serves as the only image source during the POST.

PEG If the PCI Express display adapter is inserted, this is used as the image source during the POST. Otherwise the IGD is used.

PCI If the PCI display adapter is inserted, this is used as the image source during the POST. Otherwise the IGD is used.

Internal Graphics

Use this option if you wish to use a PCI or PEG card as the primary image source and the graphics controller on the system board (IGD - Integrated Graphics Device) as the secondary image source.

Auto If a PCI or PEG card is used as the first image source, the IGD is disabled and is not available to the operating system.

Disabled If it is not used as the first image source, the IGD is disabled and is not available to the operating system.

Enabled If the IGD is not used as the primary image source, it can be used for operation with several monitors after the POST.

IGD Memory

Configures the size of the main memory used for the graphics controller on the system board (Integrated Graphics Drive - IGD).

32M...1024M The set value specifies the size of the shared memory available to the integrated graphics in megabytes.

DVMT/Fixed Memory

Specifies the size of the system memory reserved for the graphics.

128MB 128 MB of the system memory is reserved for the graphics.

256MB 256 MB of the system memory is reserved for the graphics.

Maximum The size of the system memory reserved for the graphics is assigned dynamically in order to achieve an optimum balance between graphics performance and system performance.

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.

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.

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.

USB Transfer Time-Out

If USB devices are not detected during the POST, it is possible to increase the waiting time so that slower USB devices can also be detected.

1..5..20 sec	Waiting time setting for USB devices in seconds.

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.

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.

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 Monitoring

Controller Revision

Shows the version of the system monitoring controller.

Firmware Version

Shows the firmware version of the system monitoring controller.

Chassis Type

Displays the current chassis type.

TCV Version

Shows the TCV version (Temperature Characteristics Values).

Fan Control

Controls the speed of the fan. The preset mode can be changed depending on the system configuration and the applications used. If the system is fully configured with all available expansions/upgrades, then silent mode is not recommended.

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.

Disabled All fans are operated at maximum speed.

Fan Control

Specifies whether the fan speed will be adjusted automatically.

Enabled The fan speed is adjusted automatically.

Disabled The fan speed is not adjusted automatically. All fans are operated at maximum speed.

Onboard Device Configuration

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

LAN controller

Specifies whether the LAN controller on the system board is available.

Enabled The LAN controller on the system board is available.

Disabled The LAN Controller on the system board is not available.

Audio Configuration

Azalia HD Audio

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.

Azalia internal HDMI codec

Specifies whether audio output via HDMI (High Definition Multimedia Interface) or DisplayPort Monitor is available.

Disabled Audio output via HDMI or DisplayPort Monitor is not available.

Enabled Audio output via HDMI or DisplayPort Monitor is available.

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.

Please note the Annex to the BIOS manual, as well as the Terms of Use 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 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.

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.

Server IP address

Shows the IP address of the Fujitsu server on which BIOS updates are being searched for.

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.

Super IO Configuration

Super IO Chip

Shows information about the Super IO Chip.

Serial Port 0 Configuration

Opens the submenu to configure the serial port 0 (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.

Serial Port 1 Configuration

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

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.

Parallel Port Configuration

Opens the submenu to configure the parallel port (LPT).

Parallel Port

Specifies whether the parallel port is available.

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

Device Settings

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

Device Mode

Specifies whether the parallel port should be used as an input/output port or just as an output port. The ECP and EPP transfer modes permit higher transfer speeds of 2 or 2.4 Mbyte/sec. These modes can however only be used on devices which also support these modes. In addition, for EPP the I/O address of the parallel port must be set to 378 h or 278 h.

Standard Parallel Port Mode	The standard mode will be used for the parallel port.
EPP Mode	Fast transfer mode (up to 2 MByte/sec), data output and data reception are possible. The mode requires a peripheral device which supports the EPP (Enhanced Parallel Port) mode.
ECP Mode	Fast transfer mode (up to 2.4 MByte/sec), data output and data reception are possible. The mode requires a peripheral device which supports the ECP (Extended Capability Port) mode. The necessary DMA channel is determined by the system.
EPP Mode & ECP Mode	Both transfer modes are available.

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.

Serial Port Console Redirection

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 COM1)

Specifies the data exchange process of the host and remote system via the COM0 and COM1 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.

VT-UTF8 Combo Key Support

Specifies whether VT-UTF8 combination key support for ANSI/VT100 terminals is available.

Disabled VT-UTF8 combination key support is not available.

Enabled The VT-UTF8 combination key support is available.

Recorder Mode

Specifies whether only text will be sent. This is used to capture terminal data.

Disabled Recorder mode is not available.

Enabled Recorder mode is available.

Resolution 100x31

Indicates whether enhanced terminal resolution is available.

Disabled Enhanced terminal resolution is not available.

Enabled Enhanced terminal resolution is available.

Legacy OS Redirection Resolution

Specifies the number of lines and columns for the legacy OS redirection.

80x24 Resolution 80x24 is used.

80x25 Resolution 80x25 is used.

Serial Port for Out-of-Band Management / Windows Emergency Management Services (EMS)

Microsoft Windows Emergency Management Services (EMS) makes it possible to remotely manage a Windows Server operating system.

Console Redirection (for Out of Band Management / EMS)

Specifies whether a serial port for Out-of-Band Management / Windows Emergency Management Services (EMS) is available.

Disabled	EMS is not available.
Enabled	EMS is available.

Console Redirection Settings (for Out of Band Management / EMS)

Out-of-Band Mgmt Port

Assigns a serial port for Out-of-Band Management.

COM0 (Disabled)	Port COM0 will be used for Out-of-Band Management
COM1 (Pci Dev0, Func0) (Disabled)	Port COM1 will be used for Out-of-Band Management.

Terminal Type

Specifies the type of terminal.

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

i 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

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

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.
Software Xon/Xoff	The interface transfer control is undertaken by the software.

Data Bits

Shows the number of data bits used to communicate with the host.

Parity

Specifies the use of parity bits for communication with the host.

Stop Bits

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

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.

PXE boot wait time

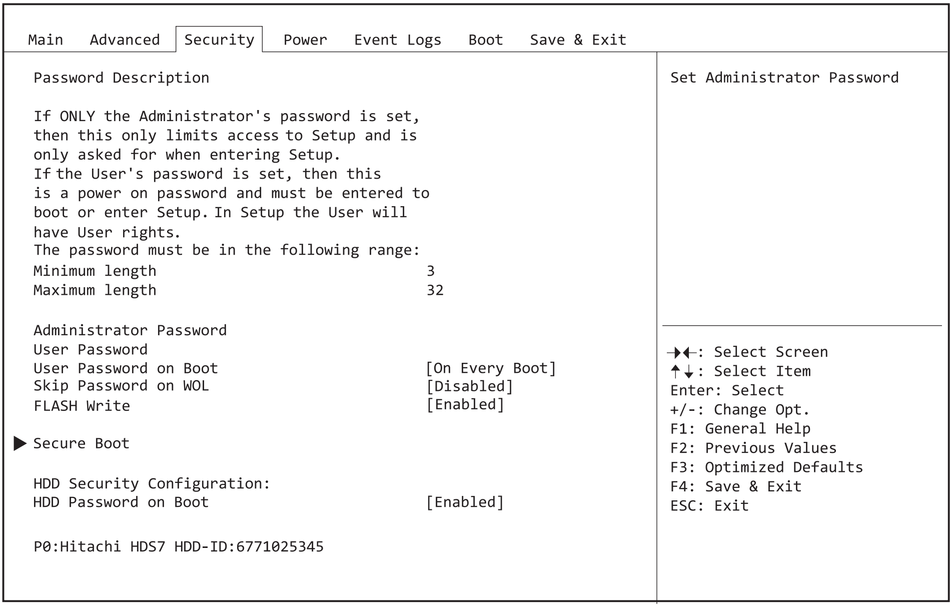
Defines the waiting time in which the PXE Boot can be cancelled by pressing the ESC key.

[0..5] sec	Waiting time until cancellation of PXE boot.

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   Event Logs   Boot   Save & Exit

   Password Description                                        Set Administrator Password

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

   P0:Hitachi HDS7 HDD-ID:6771025345
```

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.

i

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.

i

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.

i

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.

Cabinet Monitoring

Specifies whether opening of the casing should be monitored.

Disabled The system continues to operate normally even if the casing has been opened.

Enabled If the casing has been opened, then the boot process is suspended until the BIOS Setup is called. If the BIOS Setup is protected with a password, then this must be entered. An SMBIOS event log entry will be generated.

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.

Smartcard SystemLock

With SystemLock (Smartcard Pre-boot Authentication - PBA), the PC can only be started with an initialised Smartcard and personal identification number (PIN). Smartcard and PIN are already checked during system booting in the BIOS, i.e. before the operating system is booted.

The OS application SystemLock Manager is used to initialise the Smartcard(s). Systems without the menu item *Smart Card System Lock* do not support the SystemLock function.

Settings in the *Smartcard SystemLock* menu can only be changed with an Admin Smartcard.

If the Smartcard is defective or unavailable, the user can get authorisation for a boot process either from the local administrator or from the Fujitsu Service Desk.

Uninstall SystemLock

Uninstalls the *Smartcard Security* function.

To reinstall SystemLock it will be necessary to reinitialise your Smartcards.

No	Smartcard Security is not uninstalled.
Yes	Smartcard Security is disabled during the next boot process.

Single Sign On

The *Single Sign On* function allows the BIOS to communicate with a different application during logon to the operating system, in order to determine the Smartcard access rights.

Disabled	Single Sign On is not available.
Enabled	Single Sign On is available.

Smartcard & PIN

Determines whether an authorised Smartcard is needed for access to the system.

Always Required	An authorised Smartcard is needed to access the system.
Ignore on WOL	If the Wakeup On LAN function is enabled, the Smartcard Security function is bypassed.

Unblock Smartcard

To assign a new PIN if the PIN is not known or the Smartcard is blocked.

⚠ The Smartcard becomes blocked after 3 incorrect attempts to enter the PIN, and it will be blocked permanently after 10 incorrect attempts to enter the PUK. Please note that the default PIN and PUK for a new Smartcard is always 12345678. This PIN/PUK must be changed for security reasons.

Prohibited No new PIN can be assigned.

Allowed A new PIN can be assigned.

Secure Boot

Opens the submenu for configuring Secure Boot.

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

Secure Boot indicates whether the Secure Boot function is active.

Disabled Secure Boot is not active.

Enabled Secure Boot is active.

Secure Boot Control

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

ℹ 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, 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, DBX) in the system are deleted.

Install All Factory Default Keys

All keys and signature databases (PK, KEK, DB, DBX) in the system are reset to the default values. This menu option is only available when the PK is deleted.

Platform Key (PK)

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.

Set new PK

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

Delete PK

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

Key Exchange Key Database (KEK)

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.

Set new KEK

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

Delete KEK

Deletes the Key Exchange Key Database (KEK)

Append Var to 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 Signature Database (DB)

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

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

Set new DB

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

Delete DB

Deletes the Authorized Signature Database (DB).

Append Var to DB

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

Forbidden Signature Database (DBX)

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

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

Set new DBX

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

Delete DBX

Deletes the Forbidden Signature Database (DB).

Append Var to DBX

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

Save Secure Boot Keys

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

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.

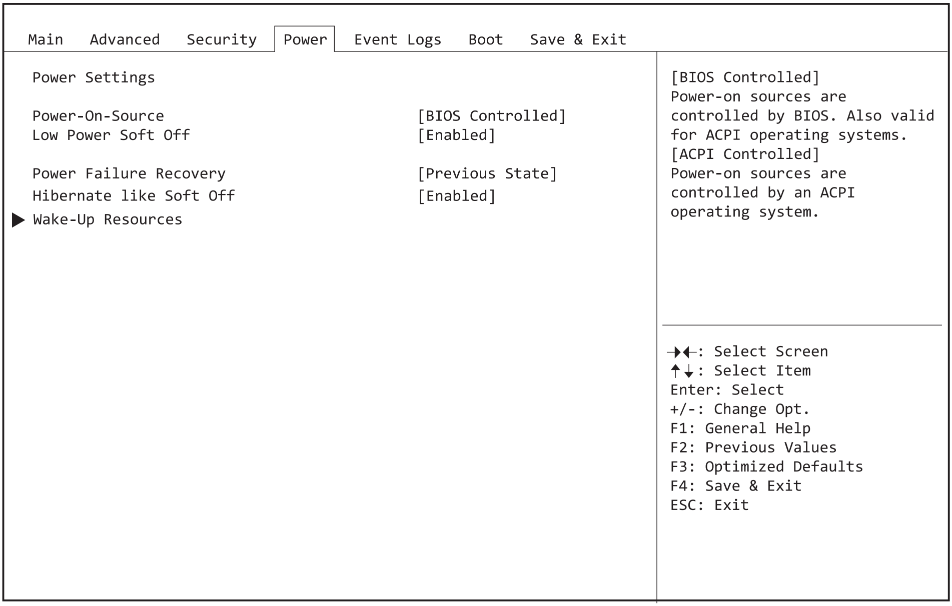
i

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.

Power Menu – Energy saving functions



```
 Main   Advanced   Security   Power   Event Logs   Boot   Save & Exit

  Power Settings                                        [BIOS Controlled]
                                                        Power-on sources are
  Power-On-Source                [BIOS Controlled]      controlled by BIOS. Also valid
  Low Power Soft Off             [Enabled]              for ACPI operating systems.
                                                        [ACPI Controlled]
  Power Failure Recovery         [Previous State]       Power-on sources are
  Hibernate like Soft Off        [Enabled]              controlled by an ACPI
▶ Wake-Up Resources                                     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

Zero Watt Mode

Specifies whether the power consumption should be reduced to 0 Watts during system shutdown.

When Zero Watt Mode is enabled, remote management of the system is not possible and the system can only be switched on using the power button. The device cannot be switched on using the power button of a USB keyboard or a Wake-on-LAN signal.

Enabled The Zero Watt Mode is enabled. When the system is switched off, the power consumption reduces to 0 Watts. Remote management is not possible.

Scheduled The Zero Watt Mode is enabled except for a certain time period. Remote management is only possible during the specified time period.

Disabled The Zero Watt Mode is not enabled. Remote management is possible.

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

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

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

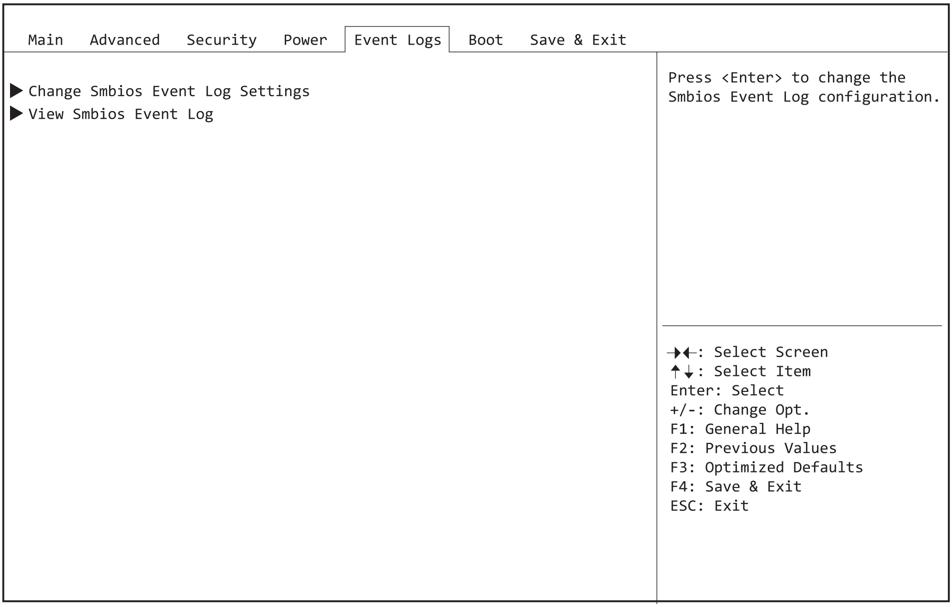
Specifies whether the system can be switched on via the network key of a USB keyboard, if the keyboard supports this function.

i 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*.

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).

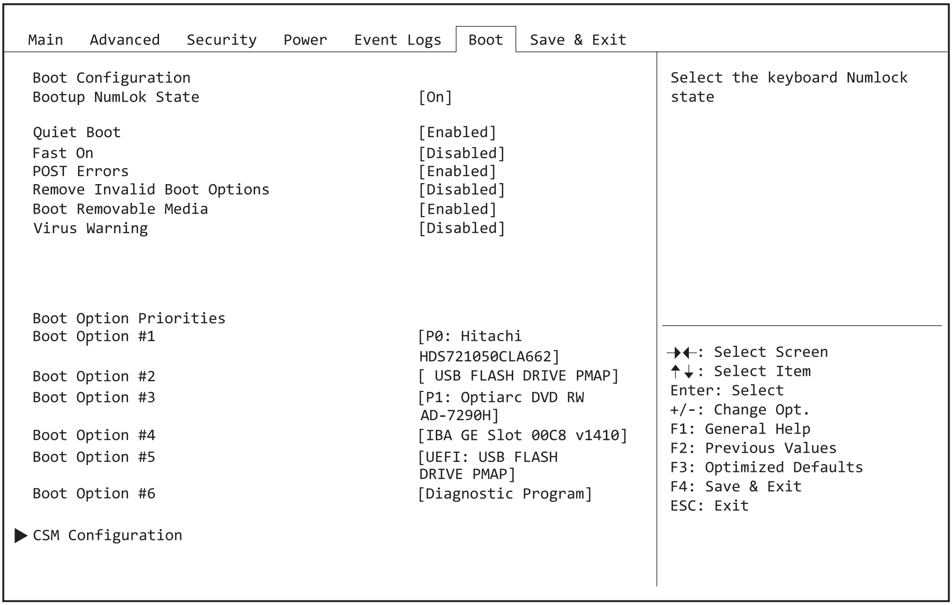
Convert OEM codes

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.

Boot Menu – System boot



```
 Main   Advanced   Security   Power   Event Logs   Boot   Save & Exit

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

  Quiet Boot                         [Enabled]
  Fast On                            [Disabled]
  POST Errors                        [Enabled]
  Remove Invalid Boot Options        [Disabled]
  Boot Removable Media               [Enabled]
  Virus Warning                      [Disabled]



  Boot Option Priorities
  Boot Option #1                     [P0: Hitachi
                                     HDS721050CLA662]     →←: Select Screen
  Boot Option #2                     [ USB FLASH DRIVE PMAP] ↑↓: Select Item
  Boot Option #3                     [P1: Optiarc DVD RW  Enter: Select
                                     AD-7290H]            +/-: Change Opt.
  Boot Option #4                     [IBA GE Slot 00C8 v1410] F1: General Help
  Boot Option #5                     [UEFI: USB FLASH     F2: Previous Values
                                     DRIVE PMAP]          F3: Optimized Defaults
  Boot Option #6                     [Diagnostic Program] F4: Save & Exit
                                                          ESC: Exit
▶ CSM Configuration
```

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.

Fast On

Fast On is intended to reduce the boot time for systems with a fixed configuration. Once a successful boot path has been established, enabling this function allows this boot path to be used for every subsequent boot process. This reduces the boot time, because only the components needed for booting are initialised. If the system configuration is changed, open the BIOS Setup once only to confirm the new configuration.

i Due to the short boot time, it is not usually possible to enter the BIOS Setup by pressing key F2. To enter the BIOS Setup, power up the system with the on/off switch and keep pressing the on/off switch until you hear a beep. The BIOS Setup then opens.

Note that connected devices (e.g. SSD/HDD type & firmware, etc.) can increase the boot time.

To optimise the Fast On function, if possible configure as follows:

- Under First Boot Device, enter the preferred boot medium.
- Disable TPM.
- Disable the SMBIOS Eventlog function.
- Disable parallel and serial ports.

Disabled	When the system is switched on, a complete initialisation is performed.
Enabled	When the system is switched on, initialisation is performed only for the components needed for booting.

USB Support

If this function is disabled, USB devices (including USB keyboard) are only available after booting the operating system.

i It may not be possible to use setup and operating system boot menus if the function is activated. This function remains without impact if the function for entering a user password is enabled with every boot process.

Disabled	USB components are not available before booting the operating system.
Full Initial	USB components are available already before booting the operating system.
Partial Initial	USB components are not available before booting the operating system.

PS2 Devices Support

It may not be possible to use setup and operating system boot menus if the function is disabled. This function remains without impact if the function for entering a user password is enabled with every boot process.

Disabled PS/2 devices are still not available even after booting the operating system.

Enabled PS/2 devices are available.

POST Errors

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

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

Enabled If an error is detected during POST, the boot process is aborted and the system stopped.

Remove Invalid Boot Options

Specifies whether UEFI boot settings for devices which are no longer connected to the system should be removed from the boot options priorities list.

Disabled UEFI boot settings are not removed from the boot options priorities list.

Enabled UEFI boot settings are removed from the boot options priorities list.

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

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*.

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 –> 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.

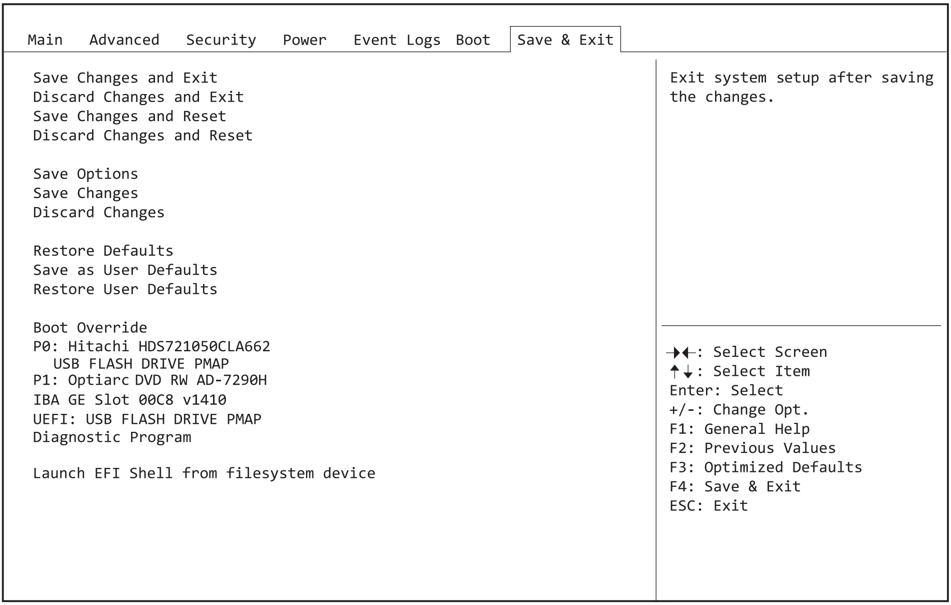
UEFI only	Only UEFI Video option ROMs are booted.
Legacy only	Only Legacy Video option ROMs are booted.

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.

Save & Exit Menu – Finish BIOS Setup



```
  Main   Advanced   Security   Power   Event Logs  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
   P0: Hitachi HDS721050CLA662
     USB FLASH DRIVE PMAP                                 →←: Select Screen
   P1: Optiarc DVD RW AD-7290H                            ↑↓: Select Item
   IBA GE Slot 00C8 v1410                                 Enter: Select
   UEFI: USB FLASH DRIVE PMAP                             +/-: Change Opt.
   Diagnostic Program                                     F1: General Help
                                                          F2: Previous Values
   Launch EFI Shell from filesystem device                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 32) or must first download the necessary files from the Internet.

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 68. 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 32.

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.

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.

i 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.

i 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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