Operating Instructions Edition 05/2006



Industrial PC
Rack PC 840 V2

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Industrial PC
SIMATIC Rack PC 840 V2

Operating Instructions

Edition 05/2006
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Safety Guidelines

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.



Danger

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



Warning

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



Caution

with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.

Caution

without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.

Notice

indicates that an unintended result or situation can occur if the corresponding information is not taken into account.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The device/system may only be set up and used in conjunction with this documentation. Commissioning and operation of a device/system may only be performed by **qualified personnel**. Within the context of the safety notes in this documentation qualified persons are defined as persons who are authorized to commission, ground and label devices, systems and circuits in accordance with established safety practices and standards.

Prescribed Usage

Note the following:



Warning

This device may only be used for the applications described in the catalog or the technical description and only in connection with devices or components from other manufacturers which have been approved or recommended by Siemens. Correct, reliable operation of the product requires proper transport, storage, positioning and assembly as well as careful operation and maintenance.

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We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Postfach 48 48
90437 NÜRNBERG
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Introduction

1

Purpose of this documentation

These operating instructions contains all the information you need for commissioning and using the SIMATIC Rack PC 840 V2.

It is aimed at both programmers and testers who are commissioning the device themselves and are combining the device with other units (automation systems, programming devices), as well as service and maintenance technicians installing expansions or undertaking fault analysis.

Scope of this documentation

This documentation applies to all supplied variants of the SIMATIC Rack PC 840 V2 and describes the delivery status as of May 2006.

Classification in the information landscape

The operating instructions are available on the supplied "Documentation and Drivers" CD.

For supplementary instructions on how to handle the software, please refer to the corresponding manuals.

Conventions

The abbreviation Rack PC or device is also used within this documentation for the product name SIMATIC Rack PC 840 V2.

History

The following releases of the operating instructions have previously been published:

Edition	Comment
12/2003	First Edition
04/2004	What is new? • SCSI System • DVD burner • Assigning an exclusive interrupt • Advanced Menu: USB Boot • Maximum possible memory expansion changed
10/2005	• PCI SATA RAID Controller, in combination with a SATA hard drive • SATA swap frames (in connection with SATA RAID controllers)
05/2006	• Failure recovery • Capacity of the SATA hard drives • Change to the heat sink mounting • Power supply with autorange supply voltage input

1.1 Guideline to the operating instructions

Contents format	Contents
Contents	Organization of the documentation, including the index of pages and chapters
Introduction	Purpose, layout and description of the important topics.
Safety information	Refers to all the valid safety-related aspects which are derived from statutory regulations and should be adhered to when installing, commissioning and operating the product/system.
Description	Fields of application, the features and the structure of the product/system
Application Planning	Aspects of storage, transport, environmental and EMC conditions to be considered in the preparatory stage
Installation	Product installation options and installation instructions
Connecting	Options of connecting the product and connection instructions
Commissioning	Commissioning the product/system.
Integration	Options of integrating the product into existing or planned system environments/networks
Functions	Monitoring and display functions
Expansions / Configuration	Procedure for expansion devices (memory, modules, drives)
Maintenance and service	Replacement of hardware components, restoring and setup of the operating system, installation of drivers and software
Troubleshooting	Problems, cause, remedy
Technical Data	General specifications in compliance with relevant standards and current/voltage values
Dimensional drawings	Dimensions of the device and of modules
Detailed descriptions	Structure, function and features of the vital components, allocation of system resources and use of the BIOS Setup
Appendix	Guidelines and certifications, service and support, notes on retrofitting
ESD Guidelines	General ESD guidelines.

Safety information

2

2.1 General safety instructions



Caution

Please observe the safety instructions on the back of the cover sheet of this documentation. You should not expand your device unless you have read the relevant safety instructions.

This device is compliant with the relevant safety measures to IEC, EN, VDE, UL, and CSA. If you have questions about the validity of the installation in the planned environment, please contact your service representative.

Repairs

Only authorized personnel are permitted to repair the device.



Warning

Unauthorized opening and improper repairs can cause considerable damage to property or danger for the user.

System expansions

Only install system expansion devices designed for this device. The installation of other expansions can damage the system and violate the radio-interference suppression regulations. Contact your technical support team or where you purchased your PC to find out which system expansion devices may safely be installed.

Caution

If you install or exchange system expansions and damage your device, the warranty becomes void.

Battery

This device is equipped with a Lithium battery. Batteries may only be replaced by qualified personnel.

Caution

There is the risk of an explosion if the battery is not replaced as directed. Replace only with the same type or with an equivalent type recommended by the manufacturer. Dispose of used batteries in accordance with local regulations.

Warning

Risk of explosion and release of harmful substances!

Therefore, do not throw Lithium batteries into an open fire, do not solder or open the cell body, do not short-circuit or reverse polarity, do not heat up above 100° C, dispose of in accordance with regulations and protect against direct exposure to sunlight, moisture and condensation.

ESD guidelines

Modules containing electrostatic sensitive devices (ESDs) can be identified by the following label:



Strictly follow the guidelines mentioned below when handling modules which are sensitive to ESD:

- Always discharge your body´s static electricity before handling modules which are sensitive to ESD (for example, by touching a grounded object).
- All devices and tools must be free of static charge.
- Always pull the mains connector and disconnect the battery before you install or remove modules which are sensitive to ESD.
- Handle modules fitted with ESDs by their edges only.
- Do not touch any wiring posts or conductors on modules containing ESDs.

Description

3

3.1 Overview

SIMATIC Rack PC 840 V2 is an industrial PC in 19" rack format (4HU) with excellent industrial functionality.

- High expandability
- Rugged
- High product continuity



Figure 3-1 Rack PC 840 V2

3.2 Areas of application

SIMATIC Rack PC 840 V2 offers a high-performance and highly flexible 19" rack PC platform to machine, plant and control cabinet engineering for use in a machine-oriented industrial environment:

- Measuring, control and closed loop control of process and machine data, for example, ultrasonic measurement technology in the automotive industry, gear test benches
- Visualization of production sequences, such as in paper processing or conveying technology
- Image processing and editing in the course of quality control, e.g. inspection of the surface of optical lenses
- Data logging and data management, e.g. on motor test benches in the automotive industry, tire manufacturing

The SIMATIC Rack PC 840 V2 is certified to CE for industrial applications.

3.3 Highlights

Highlights of the SIMATIC Rack PC 840 V2

Highly compatible with industrial standards:

- High operational vibration and shock resistance
- High operational temperature range
- High service friendliness
- Distinct diagnostic features

High industrial functionality:

- Integrated PROFIBUS DP / MPI interface (optional)
- ISA and PCI slots
- High flexibility and expandability of components

High investment security:

- High continuity of the component / design
- Guaranteed spare parts availability for at least 5 years

High system availability:

- SIMATIC PC DiagMonitor – PC diagnostics / message software via OPC/SNMP/LAN
- SIMATIC PC/PG Image Creator – data imaging software
- RAID1 – redundant data saving on two hard disks protects against data loss

3.4 Function

- Integrated and configurable monitoring functions (program execution (watchdog), internal enclosure temperature, fan speed)
- Enhanced diagnostic / messaging via Ethernet, E-mail, SMS, and for direct input in SIMATIC software via OPC (optional via SIMATIC PC DiagMonitor):
  - Operating hours counter
  - Hard disk status
  - System status (heartbeat)
  - Automatic logging of all messages by means of log file
  - Options of central monitoring of networked SIMATIC PCs
- RAID1 for automatic data mirroring on two hard disks

3.5 Features

General features	
Design	• 19” rack, 4 HE • Robust installation enclosure, all metal • Prepared for mounting telescopic rails • Horizontal installation is possible • Lockable front cover as access protection
Enclosure	• Dust protection by means of overpressure ventilation using bearing seated front fan through filter • Case cover can be opened and front fan can be replaced without special tools • Card retainer for reliable operation of PC modules under vibration and shock conditions
Drive bays	• Front: 3 x 5.25" and 2 x 3.5" • Internal: 2 x 3.5" (in the optional vibration-damping drive bracket)
Slots for expansion cards	• 5x PCI long • 2x PCI/ISA (shared) long • 3x ISA long max. 10 modules simultaneously
Video	Pro Savage 8 AGP 4x 8 to 32 MB used in RAM CRT: -up to 1280x1024 at 100 Hz / 32-bit color resolution -up to 1600 x1200 at 60 Hz / 16-bit color resolution
Interfaces	
PROFIBUS/MPI (12 Mbps)	12 Mbps (isolated potential, compatible to CP 5611); optional

General features	
Ethernet	10/100 Mbps (RJ45)
USB	1 x front, 2 x back; (high-current)
Serial	COM1 (V.24), COM2 (V.24)
Parallel	LPT1
VGA	1 x
Keyboard	PS/2
Mouse	PS/2
Power supply	120/230 V AC, Autorange; with buffering for short power outages in accordance with NAMUR: max. 20 ms at 0.85 nominal voltage

Monitoring functions	
Temperature	• Overshoot/undershoot of permissible operating temperature • Messages can be evaluated by the application program.
Fan	Speed monitoring
Watchdog	• Monitoring of program execution • Monitoring time can be parameterized in software • Restart can be parameterized in the event of a fault • Messages can be evaluated by the application program.
Status LEDs	• POWER (internal power supply unit, PC switched On) • HARDDISK (access to hard disk) • MPI (PROFIBUS/MPI interface) • WATCHDOG (Watchdog function/error display) • TEMP (temperature status) • ETHERNET (Ethernet status, "heartbeat") • FAN (Speed monitoring

Standard versions	
Processor	Intel Pentium 4 2.4 GHz, 533 FSB
Main memory expansion	DDR266 SDRAM (PC2100) 3 slots, up to 2 GB
Hard disk	
Floppy drive	1,44 MB, installation in front drive bay
Hard disk drives	40 GB EIDE, 3.5"
Operating system	without

Optional accessories	
Processor	• Intel Celeron 2.0 GHz, 400 FSB • Intel Pentium 4 Mobile 2.2 GHz, 400 FSB • Intel Pentium 4 2.8 GHz, 533 FSB
Main memory expansion	Up to 2 GB
PROFIBUS/MPI	12 Mbps (isolated potential, compatible to CP 5611)
Hard disk	
DVD-ROM	Read: DVD-ROM Single layer 16x Dual Layer 8x DVD-Video 4x DVD+R/RW, DVD-R/RW 8x DVD-RAM 2x CD-ROM, CD-R 32x DAE 48x CD-DA, Video CD 20x CD-RW 20x
DVD ROM/CD RW	Read: DVD-ROM Single Layer 16x, Dual Layer 8x DVD-R/-RW/+R/+RW 8x DVD-Video 16x CD-ROM 52x CD-R/RW 40x DAE 48x Write: CD-R 52x, CD-RW 40x (alternative DVD-ROM)
DVD burner	Read: DVD-ROM Single Layer16x, Dual Layer 12x DVD-R/+R Single Layer16x Dual Layer 7x DVD-RW/+RW 13x DVD-Video Single Layer 16x Dual Layer 12x CD-ROM/CD-R Read 48x CD-RW Read 40x DAE Read 40x Write: DVD+R 16x DVD+RW 8x DVD-R 16x DVD-RW 6x DVD+R9 (DL) 8x DVD-R DL 8x CD-R 48x CD-RW 32x

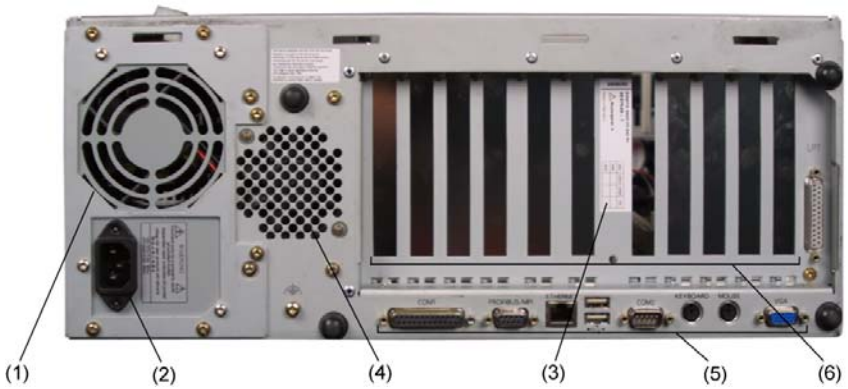
Optional accessories	
Hard disk drives	Installation in the rear drive slot • 40 GB EIDE, 3.5" • 80 GB EIDE, 3.5" • 2 x 80 GB EIDE; 3.5" • 36 GB SCSI • 72 GB SCSI (from 06/2006) • RAID1, 2x 80 GB EIDE; 3.5" (mirroring) in combination with Windows NT • SATA-RAID1, 120 GB SATA (from 06/2006); 3.5" (mirrored drives). In combination with all configurations other than Windows NT
	Installation in the front drive bay • 40 GB EIDE; 3.5", in swap frame • 80 GB EIDE; 3.5" • 80 GB EIDE; 3.5", in swap frame • 2 x 80 GB EIDE; 3.5" • 2 x 80 GB EIDE; 3.5", in swap frame • RAID1, 2x 80 GB EIDE; 3.5" (mirrored disks) In combination with Windows NT • RAID1, 2 x 80 GB EIDE; 3.5" (mirrored drives) in swap frame. In combination with Windows NT • SATA-RAID1, 120 GB SATA (from 06/2006); 3.5" (mirrored drives). In combination with all configurations other than Windows NT • SATA-RAID1, 120 GB SATA (from 06/2006); 3.5" (mirrored drives) in swap frames. In combination with all configurations other than Windows NT
Operating system	Preinstalled / supplied on Restore DVD • MS-DOS 6.22 English • Windows NT German/English Not in combination with SATA RAID1 • Windows 2000 Professional MUI* • Windows XP Professional MUI* *MUI: **M**ulti language **U**ser **I**nterface; 5 languages (German, English, French, Spanish, Italian)

Optional expansions	
SIMATIC PC DiagMonitor SW	Software tool for monitoring local and remote SIMATIC PCs: • Watchdog • Temperature • Fan speed • Hard disk monitoring (SMART) • System / Ethernet monitoring (Heart Beat)
SIMATIC PC Image Creator SW	Software tool for saving data locally

3.6 Design

3.6.1 External structure

Front view of the device	Pos	Description
	(1)	Front door with lock, provides protection against dirt and unauthorized access. Keep the door closed during normal operation.
	(2)	USB port
	(3)	Reset button
	(4)	Status displays
	(5)	On/off button
	(6)	Option of installing a floppy disk drive
	(7)	Option for installing DVD-ROM, DVD-ROM/ CD-RW drives, DVD burners and removable racks for hard disks
	(8)	Front panel with openings for ventilating the device (filter mat and fan are positioned behind the front panel). Check the filter mat regularly for soiling and, if appropriate, replace it.

Rear view of the device	Pos	Description
	(1)	Fan / power supply unit
	(2)	Power supply connection
	(3)	Rating plate (may also be mounted on the inside of the front panel door)
	(4)	Drive cooling fan at the rear (optional)
	(5)	Connecting elements
	(6)	Expansion slots

3.6.2 Operator Controls

Operator controls On/Off button and Reset button	Pos	Description
	(1)	Reset button The reset button can be actuated with a pin or an opened up paper clip, for example. The button signal triggers a hardware reset. The PC performs a restart (cold start).
	(2)	On/off button For switching the device on or off

Caution

Data may be lost when the PC performs a hardware reset.

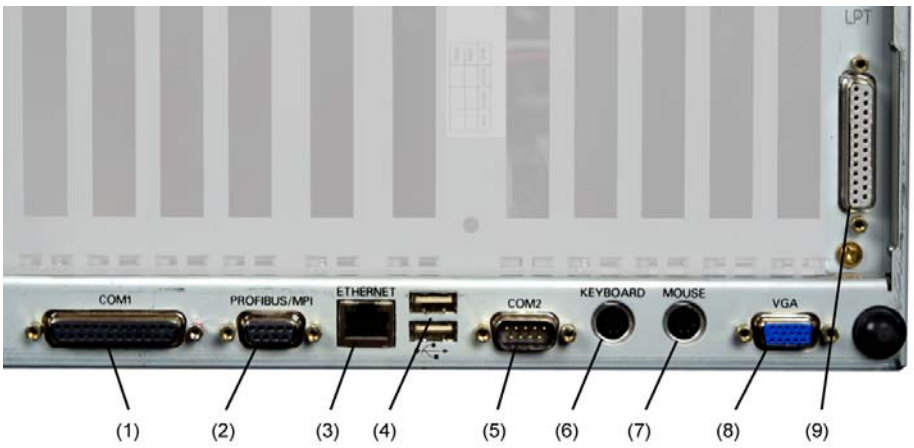
Warning

The on/off button signal does not switch off power to the PC!

3.6.3 Connecting elements

Interfaces

Layout of the interfaces on the rear of the device



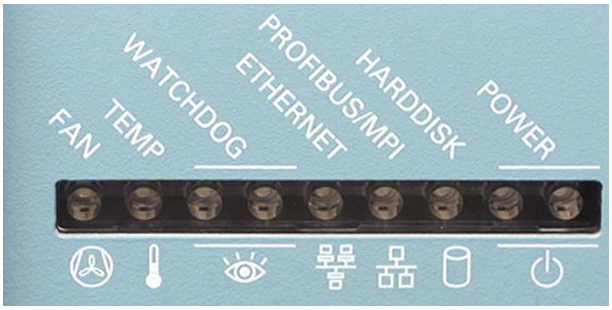
Pos	Designation	Description
(1)	COM 1	Serial port 1 (V.24), 25-pin sub D socket
(2)	PROFIBUS/MPI	MPI interface (RS485, electrically isolated), optional 9-pin sub D socket
(3)	ETHERNET	RJ 45 Ethernet connection 10/100 Mbps
(4)	USB	USB-device connectors. Bottom USB port 1, top USB port 2.
(5)	COM2	Serial port (V.24), 9-pin sub D plug
(6)	KEYBOARD	Connection for a PS/2 keyboard
(7)	MOUSE	Connection for a PS/2 mouse
(8)	VGA	Connection for VGA monitor
(9)	LPT1	Parallel interface, 25-pin

Power supply

Position of the IEC power connector	Description
	IEC power connector for the AC power supply to the device. The allowable supply voltage is 120 V AC or 230 V AC

3.6.4 Status displays

Status displays



Display	Meaning	LEDs	Description
FAN	CPU fan status (available only with active SOM or DiagMonitor software)	OFF RED	- Fan speed OK - CPU not started (see error dialog) - Fan speed too low (see error dialog)
TEMP	Internal temperature monitoring	OFF RED	- Internal temperature OK - Internal temperature is critical (see error dialog)
WATCHDOG	WATCHDOG Status display	OFF GREEN RED	- WATCHDOG disabled - WATCHDOG monitoring enabled - Time-out (see error dialog)
ETHERNET	ETHERNET status display	OFF GREEN	- not connected - no data transfer - data transfer
PROFIBUS / MPI	Display of the communication status to the S7 or PROFIBUS	OFF GREEN	- not connected - no data transfer - data transfer
HARDDISK	Display for hard disk access	OFF GREEN	- No access - Access
POWER	PC status display	OFF YELLOW GREEN	- Disconnected from mains - Standby (hibernate) - PC in operation

Application Planning

4

4.1 Transport

Despite the device's rugged design, its internal components are sensitive to severe vibrations or shock. You must therefore protect the PC from severe mechanical stress when transporting it.

You should always use the **original packaging** for shipping and transporting the device.

Caution

Risk of damage to the device!

When transporting the PC in cold weather, it may be submitted to extreme variations in temperature. In this situation, ensure that no moisture (condensation) develops on or inside the device.

If condensation develops, wait at least 12 hours before switching on the device.

4.2 Unpacking and checking the delivery unit

Unpacking the device

Note the following points when you unpack the unit

- It is advisable not to dispose of the original packing material. Keep it in case you have to transport the unit again.
- Please keep the documentation in a safe place. It is required for initial commissioning and is part of the device.
- Check the delivery unit for any visible transport damage.
- Verify that the shipment contains the complete unit and your separately ordered accessories. Please inform your local dealer of any disagreements or transport damages.

Noting the device identification data

The device can be identified uniquely with the help of these numbers in case of repairs or theft.

Enter the following data in the table below:

- Serial number: The serial number (S VP) is located on the type plate either on the rear panel of the device or on the inside of the front door.

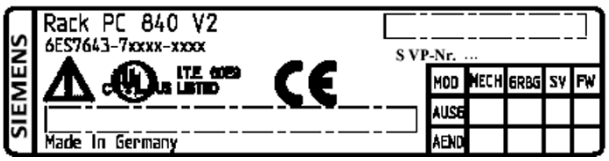


Figure 4-1 Type plate

- Order number of the device
- Ethernet address: You find the Ethernet address of the device in your BIOS Setup **(F2 function key)** , under **Info > (F1 function key) > LAN Address**.
- Microsoft Windows "Product Key" from the "Certificate of Authenticity" (COA). The COA label is found on the inside of the front door.
  You may need the Product Key in case you reinstall the operating system.



Figure 4-2 COA label

Serial number	S VP ...
Order No.	6ES ...
Microsoft Windows Product Key	
Ethernet address	

4.3 Ambient and environmental conditions

When you plan your project, you should make allowances for:

- Note the climatic and mechanical environmental conditions specified in the specifications provided by your operating manual.
- Avoid extreme ambient conditions as far as possible. Protect your PC from dust, moisture, and heat.
- Keep the PC out of direct sunlight.
- Mount the PC as safely as possible to prevent danger (for example, of falling over).
- The device satisfies protection class IP 41 on the front panel. In areas where splashing is likely, ensure that the device's installation opening is splash-proofed.
- The area around the ventilation slots must be at least 50 mm, in order that the PC is sufficiently ventilated.
- Do not cover the device's vent slots.
- The device fulfils the requirements for a fire enclosure according to EN 60950-1. It can be installed without additional fire protection.



Warning

If these requirements are not adhered to when installing the system, the approvals according to UL 60950-1, EN 60950-1 are voided and there will is a danger of overheating and a hazard for personnel!

Installation

5

5.1 Installing the device

Possible areas of installation

The device may be installed in control desks, switching cabinets and 19`` rack systems.

Possible mounting methods

Options of mounting the device

- Mounting with cabinet brackets
- Installing with telescopic rails
  When telescopic rails are used, the devices can be completely removed from the cabinet or rack.
  Refer to the sections "Technical data of the telescopic rails" and "Dimensional drawing for the use of telescopic rails" for more detailed information.

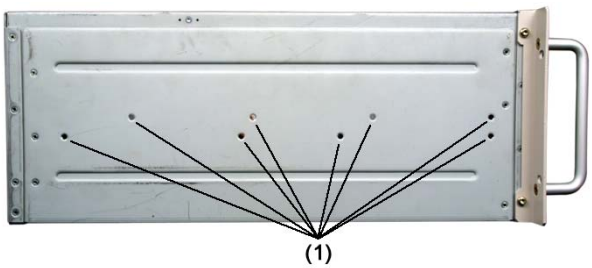


Figure 5-1 Position of the mounting holes for angle brackets or telescopic rails

Caution

The mounting screws of the telescopic rails may not protrude more than 5 mm into the enclosure.

Caution

Danger of bodily harm!

It is not permitted to mount the device only on the 19" brackets of the front panel.

Caution

Remove the bonded stands when mounting the device on telescopic rails. Restricted technical specifications for drives in the front drive bay apply for this type of installation. For details, refer to the technical data or retrofitting instructions.

Connecting

6

6.1 Connecting peripherals

Note before connecting

Notice

Connect only I/O modules approved for industrial applications to EN 61000-6-2:2001.

Note

Hot-plug I/O modules (USB) may be connected while the PC is in operation.

Caution

I/O devices not capable of hot-plugging may only be connected after the device has been disconnected from the power supply.

Caution

Strictly adhere to the specifications for I/O modules.

6.2 Connecting the device to power

To be noted before you connect the device

Note

The autorange-power-supply is designed for 120/230/240 V AC power networks. The setting of the voltage range takes place automatically.



Warning

Do not connect or disconnect power and data cables during thunderstorms.



Warning

The device is designed for operation on grounded power supply networks (TN systems to VDE 0100, part 300, or IEC 60364-3).

Operation on ungrounded or impedance-grounded power networks (IT networks) is prohibited.



Warning

The permitted nominal voltage of the device must conform with local mains voltage.



Caution

The mains connector must be disconnected to fully isolate the device from mains. Ensure easy access to this area.

A master mains disconnect switch must be installed if the device is mounted in a switch cabinet. Always ensure free and easy access to the power inlet on the device or that the safety power outlet of the building installation is freely accessible and located close to the device.

Localized information

Outside of the USA and Canada, operation on a 230 V power supply:

This device is equipped with a safety-tested power cord which may only be connected to a grounded shockproof power outlet. If you choose not to use this cable, you must use a flexible cable of the following type: Min 18 AWG conductor cross-section and 15-A / 250-V shockproof connector. The cable set must be compliant with the safety regulations and stipulated IDs of the country where the system is to be installed.

For the USA and Canada:

For the United States and Canada, a CSA or UL-listed power cord must be used.

The connector must be compliant with NEMA 5-15.

120 V AC power supply
To be used is a flexible power cord approved to UL and with CSA label, and which has the following features: Type SJT with three leads, min. 18 AWG conductor cross-section, max. 4.5 m long and parallel grounding plug 15 A, min. 125 V.

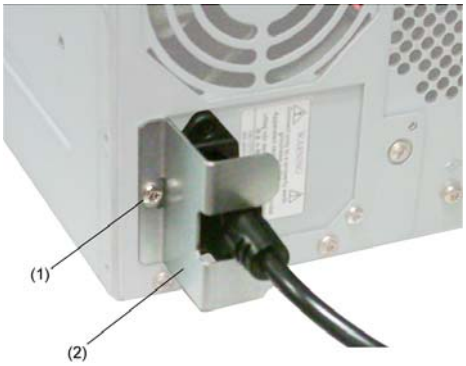
240 V supply voltage
Use a flexible power cord with UL approval and with CSA label, and with the following features: Type SJT with three leads, min. 18 AWG conductor cross-section, max. 4.5 m long and tandem grounding plug 15 A, min. 250 V.

Connecting

Steps for connecting the device to mains		
1	Connect the IEC connector	
2	Connect the power cord to the mains outlet and switch on the mains isolation switch (if this exists). The yellow power LED (standby) on the front panel of the PC lights up.	

Secure the power plug

You can secure the power plug in order to avoid unintentional disconnection of the power cord.

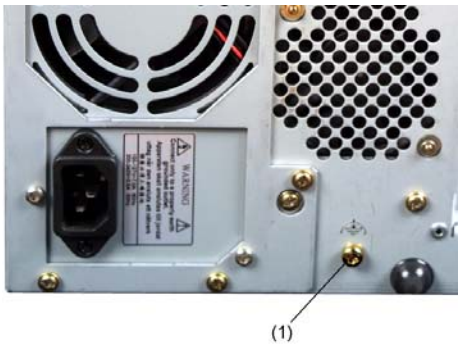
Steps for securing the power plug		
1	Remove the lower left fastening screw (1) on the power supply module.	
2	Screw power plug clamp (2) to the power supply module	

Warning

If the power plug is secured with a clamp, the power outlet must be freely accessible to allow the device to be easily removed from the mains.

6.3 Equipotential bonding

A low-impedance earth connection ensures that interference signals generated by external power supply cables, signal cables or cables to the I/O modules are safely discharged to earth.

Equipotential bonding terminal	
The equipotential bonding terminal (1) on the device (large surface, large-area contact) must be connected with the central grounding busbar of the cabinet or plant in which the PC is to be installed. The minimum conductor cross-section may not be less than 5 mm^2.	

Commissioning

7

7.1 Requirements for commissioning

- Before you switch on the device, you should verify that the peripherals are connected, i.e. the keyboard, mouse, monitor and the power supply.
- The operating system of your device is preinstalled on the hard disk.

Caution

Risk of damage to the device!

Make sufficient allowances for the device to acquire room temperature before you put it into use. If condensation develops, wait at least 12 hours before switching on the device.

7.2 Initial Commissioning - Initial Startup

The Rack PC operating system is automatically set up the **first** time you switch on the device. Procedure:

1. Press the on/off button. The green power LED lights up. The PC performs a POST. During the self-test, this message appears:

```
Press <F2> to enter SETUP
```

2. Wait until this message is cleared, then follow the instructions on the screen.

3. Type in the Product Key as required. You can find this key on the "Certificate of Authentication", in the "Product Key" line.

Notice

The PC may not be switched off when you run setup.

Do not change the default BIOS settings, otherwise the operating system setup may become corrupted.

4. Automatic restart

After you have entered all necessary information, and after the operating system setup is completed, the PC is automatically restarted and displays the user interface of the relevant operating system.

From now on, after you switch on the PC, the user interface of the operating system is automatically opened when the startup routine is completed.

Switch off the device

Note

On a Windows platform, always shut down the PC by clicking **Start > Close**.

Press the on/off button behind the front panel door. The green power LED is switched off. Disconnect the mains connector to isolate the device from mains.

7.3 Notes on operation

7.3.1 DVD-ROM/CD-RW

The DVD-ROM/CD-RW drive is an optional feature. Recording methods supported by the disk drive: Disc at once, Track at once, Session at once, Packet writing, whereby Disc at once und Track at once are recommended due to their compatibility to other CD drives. DVD-ROM, CD-ROM, CD-R and Video CDs can be read.

Burner/DVD player software

To utilize the full functionality of our DVD-ROM/CD-RW drive, you need to install additional software (burning or DVD player software). This software is included on the CD supplied with the device. Insert the CD in the drive, run setup and follow the instructions on the screen.

Notice

When first starting the burner software, no data carriers should be inserted in the drive. This is because data carriers with errors can interrupt the automatic hard drive recognition. This makes it impossible to correctly display the possible burner functions.

Information on burning CD-Rs/CD-RWs

Caution

Data may be corrupted when burning CD-R or CD-RW!

Burning is permissible only in an undisturbed environment, i.e. shock and vibration stress must be avoided. Because of heavy fluctuation in the quality of CD-Rs, data may be corrupted in a burning session, even if no error message is initially displayed. The written data can only be verified by comparing these with the source. To be on the safe side, data should be verified after every burning session.

Restrictions under Microsoft Windows NT

DVD-ROM/CD-RW drive restrictions under Windows NT:

- no DMA mode
- write-at-once is not possible with CD-RW (packet writing per instant drive)

7.3.2 DVD burner

The DVD burner drive is an optional feature. Recording methods supported by the disk drive: Disc-at-once, Track-at-once, Session-at-once, Packet writing. CD-R, CD-RW, DVD+R, DVD-R, DVD-RW and DVD+RW and dual layer media can be used.

Burner software

To utilize the full functionality of the DVD burner, you need to install additional software (burner software). This software is included on the CD supplied with the device. Insert the CD in the drive, run setup and follow the instructions on the screen.

Notice

When first starting the burner software, no data carriers should be inserted in the drive. This is because data carriers with errors can interrupt the automatic hard drive recognition. This makes it impossible to correctly display the possible burner functions.

Notes on burning optical data carriers

Caution

Danger of data errors when burning data carriers!

Burning is permissible only in an undisturbed environment, i.e. shock and vibration stress must be avoided. Because of heavy fluctuation in the quality of CD-Rs, data may be corrupted in a burning session, even if no error message is initially displayed. The written data can only be verified by comparing these with the source. To be on the safe side, data should be verified after every burning session.

7.3.3 Removable hard disks

7.3.3.1 Change the PATA hard disk



Caution

You may not hot-swap the hard disk because the removable disk racks do not support this feature.

You may only cold-swap the hard disk in the removable disk rack, i.e. when the computer is switched off.

How to remove the hard disk drive:

1. Set the key switch into the vertical position.
2. Push up the bezel of the hard disk cartridge.
3. Remove the hard disk cartridge.

Notes on operation

Notice

To ensure reliable operation of the devices in a removable disk rack, you need to interlock the hard disk cartridge with the disk rack.

The interlock is not an electrical switch used to protect the electronic circuit when you remove the hard disk.

7.3.3.2 Change the SATA hard disk

The SATA swap frames can be "HOT swapped". This means that, in connection with the SATA RAID controller, you can change a defective hard disk during operation.

Requirement

The system is configured as RAID1.

The hard disk was reported as faulty. You have to open the device to establish the correct assignment of the swap frame to the channel reported as faulty.

How to remove the hard disk drive:

1. Establish which hard disk drive of the RAID controller was reported as faulty (hard disk drive to channel 1 or 2)
2. Follow the cable in the computer in order to get to the right swap frame.
3. Set the key switch into the vertical position (Off position).
4. Push up the bezel of the hard disk cartridge.
5. Remove the hard disk cartridge.

7.3.4 RAID system

Two types of RAID controllers are available:

- PATA RAID Controller of the type Promise FastTrack 100 TX2 for EIDE (PATA) drives. As of October, 2005, this controller will only be delivered in connection with Windows NT.
- SATA RAID Controller of the type Promise FastTrack TX 2300 for SATA drives.

This is a RAID1 system configuration (mirroring with two hard disks). The hard disk drive are operated as master on separate channels of the RAID controller. This enables the system to continue to operate on one bus even when there is a problem with a cable and therefore increases the availability of the system.

The RAID controller is installed on slot 5 of the bus module.

Note

Information about the operation of the RAID system can be found in the Promise user manual on the included SIMATIC PC – Documentation and Drivers CD.

Functions for RAID system management

The preinstalled software of the RAID system offers enhanced functions for using and managing the RAID system.
PATA RAID Software is started via "Start > Programs > Promise Array Management > Remote Monitoring Utility".
SATA-RAID Software is started via "Start > Programs > Promise Array Management > Local PAM".

Access to the RAID is protected by user password. Factory setting:

- User: *administrator*
- Password: *ipc.*

Notice

The security functions of the RAID system are effective without launching the software. The RAID status is always indicated in the Windows status bar.

In the event of an error, a hard disk can be duplicated by means of the RAID Controller BIOS or on the operating system level. It may take several hours to synchronize a new disk in the background, depending on the size of the hard disk and on the system load.

The redundant system state RAID 1 is reached again only after synchronization is completed.

7.3.5 SCSI System

Alternatively to systems with ATA drives, the system can be equipped with a SCSI Ultra160 controller.

A controller of the type Adaptec AHA 29160 is installed.

The SCSI controller is installed on slot 5 of the bus module.

Note

Information about the operation of the SCSI system can be found in the SCSI user manual on the included SIMATIC PC – Documentation and Drivers CD.

Integration

8

8.1 Integration

The following options are available for the integration of the device in existing or planned system environments/networks:

Ethernet

The integrated Ethernet port (10/100 Mbps) can be used for communication and for data exchange with automation devices such as SIMATIC S7.
To this purpose you require the software package “SOFTNET S7”.

PROFIBUS / MPI

The optional potentially isolated Profibus interface (12 Mbps) can be used to interconnect distributed field devices or to carry out coupling to the SIMATIC S7.

To couple the device to an S7 PLC, you need the software package “SOFTNET for PROFIBUS”.

Further information

For further information, refer to the catalog and to the online ordering system of Siemens A&D.

Internet address: http://www.mall.automation.siemens.com

Functions

9

9.1 Overview

The following individual functions are implemented:

- Temperature monitoring and over/under temperature indication
- Watchdog
- Fan monitoring

Messages can be output from the monitoring modules to the applications.

The SOM software (Safecard On Motherboard) and DiagMonitor software on CD (optional) are available for this.

The DiagMonitor software CD contains the monitoring software, the software for the stations to be monitored, and a library for creating user-specific applications.

The description of the driver and SOM program are available on the CD "Documentation and Drivers" under **Drivers & Updates\<device>\...**

9.2 Temperature monitoring/display

Temperature monitoring

The temperature is recorded by means of three thermocouples. One thermocouple monitors the processor temperature, the second the temperature in the area near the processor module, and the third the temperature in the area of the disk drives.

The flashing Temp LED indicates that the device is being operated at its limits.

When the temperature is out of the range of one of the three set temperature thresholds, the following error reactions are triggered:

Response	Option
The Temp LED switches to red	None
Device and CPU fans accelerate to maximum speed.	None
SOM or DiagMonitor- software is activated	None

The temperature error is retained until the temperatures have fallen below the thresholds and are reset by one of the following measures:

- Acknowledgement of the error message by means of the SOM program
- Restart of the device.

9.3 Watchdog (WD)

Function

The watchdog monitors the program execution and reports a program crash to the user by means of various reactions.

After POWER ON of the PC, or after a HW RESET (cold restart), the watchdog is in idle state, i.e. a reaction of the WD will not be triggered and the Watchdog LED is switched off. The Watchdog LED is lit green when the watchdog is enabled (by executing the driver or the SOM program).

WD reactions

If the WD is not triggered again within the set time (by driver or SOM program), the following reactions are initiated:

Response	Option
The Watchdog LED switches from green to red	None
Trigger a PC reset	Configurable
SOM or DiagMonitor- software is activated	None

WD monitoring times TWD

The TWD are adjustable in increments of one second in a range from 3 to 255 seconds.

Note

If the watchdog time is changed after the watchdog was enabled (i.e., while the watchdog is running), the watchdog is retriggered!

9.4 Fan monitoring

The function monitors operation of the front and processor fans. When a fan fails, the following reactions are triggered:

Response	Option
The Temp LED switches to red	None
The Fan LED switches to red	None
SOM or DiagMonitor- software is activated	None

The temperature error is retained until the cause of the fan failure has been rectified and the error is reset in one of the following ways:

- Acknowledgement of the error message by the SOM program.
- Restart of the device.

The flashing Temp LED indicates that the device is being operated at its limits. Please check whether the permissible ambient temperature has been exceeded, or whether the filter is soiled.

9.5 Safecard on Motherboard (SOM)

This application is used to monitor PC hardware (temperature, watchdog and fans) and to display the current measured values. A GUI is used to configure the application and also to activate the temperature monitoring watchdog function and fan monitoring function.

Your SIMATIC PC is equipped with three thermocouples, which are automatically detected by the application.

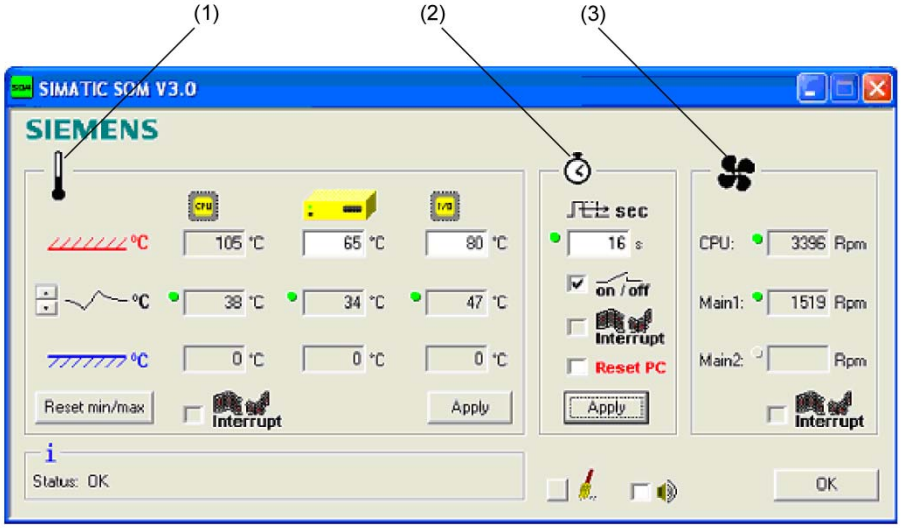


Figure 9-1 Safecard On Motherboard with three thermocouples

1	Temperature range:	Here the current temperature and limit values are shown. You can toggle the temperature display mode to indicate either the current temperature, or the min./max. values measured since the start of the application.
2	Watchdog area:	Here, you can configure the watchdog function in your monitoring application. You can specify the watchdog time, activate a PC reset and activate / deactivate the watchdog.
3	Fan area:	You can read the current fan speed in this area.

The description of the driver and SOM program are available on the CD "Documentation and Drivers" under **Drivers & Updates\<device>\...**

From the CD, run **Install.bat** and follow the instructions on your screen.

Expansions and configuration

10

10.1 Open the device

Caution

Work on the open device may only be carried out by authorized and qualified personnel. Within the warranty time, you are only allowed to install expansions for memory and expansion card modules.



Caution

The device contains electronic components which may be destroyed by electrostatic charge.

You therefore need to take precautionary measures before you open the device. Refer to the (ESD) directives for handling components which are sensitive to electrostatic charge.

Tools

All mechanical installation tasks on the device can be carried out with TORX T8, Torx T10 and TORX T15 screwdrivers.

Preparation

Disconnect the device from mains.

Open the device

Steps for opening the device		
1	Open the front panel door.	
2	Remove the lid screw (you can also remove the lid screw without using a tool.)	
3	Slide the lid back to the mechanical stop (approx. 1 cm)	
4	Lift up the lid and remove it	

10.2 Memory expansion

10.2.1 Installing memory modules

Memory expansion options

The motherboard is equipped with 3 slots for memory modules. 184 pin DDR266 RAM chips (PC2100), unbuffered, no ECC. This allows you to expand the memory capacity of your Rack PC to a maximum of 2 GB. Either one, two or three modules can be installed.

Combination	Slot X3	Slot X4	Slot X5	Maximum expansion
1	128/256/512MB/1GB			1 GB
2	128/256/512MB/1GB	128/256/512MB/1GB		2 GB
3	128/256MB	128/246MB	128/256/512MB/1GB	1.5 GB

Note

The modules can be installed in any slot. If 2x 512 MB or 2x 1GB oder 1x 512 MB plus 1x 1GB modules are installed, no further module is allowed to be installed, irrespective of the memory.

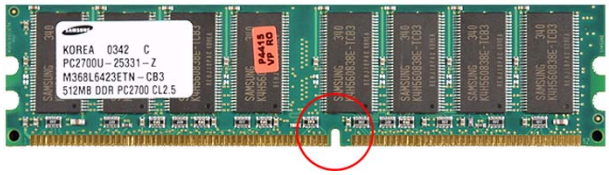
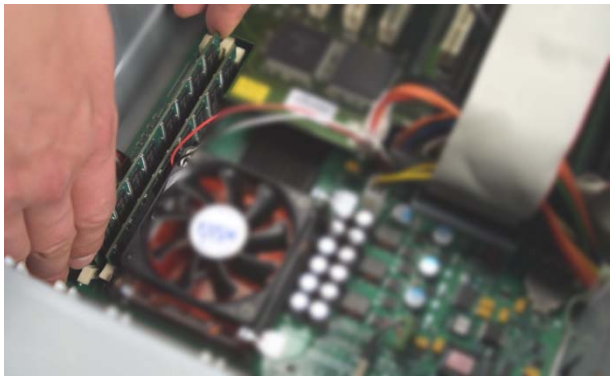
Preparation

Disconnect the device from mains and unplug all cables.

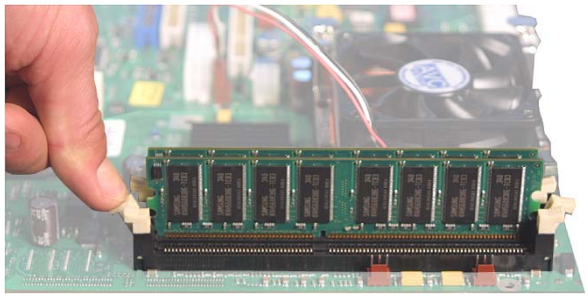
Caution

The electronic components on the PCBS are highly sensitive to electrostatic discharge. It is therefore vital to take precautionary measures when handling these components. Refer to the directives for handling components which are sensitive to electrostatic charge.

Installing a Memory Module

How to install a memory module		
1	Open the device.	
2	Note the recess (reversal protection) on the connector side of the RAM module.	
3	Push the module carefully into the slot until the interlocks engage	
4	Close the device.	

Removing a Memory Module

How to remove a memory module		
1	Open the device.	
2	Open the left and right interlocks	
3	Pull the memory module out of the slot	
4	Close the device.	

Display of the current memory configuration

A new memory module is automatically detected. The allocation of the ”base memory and extended memory” is automatically displayed when you switch on the device..

10.3 Installing PCI / AT format PCBs

10.3.1 Notes on the modules

Notes on module specifications

The device is designed for use with modules conforming to AT/PCI specifications. PCI modules with 5 V and 3.3 V supply voltage can be operated. The permitted dimensions of the modules are found in the dimensional drawings section.

Note about long PCI modules

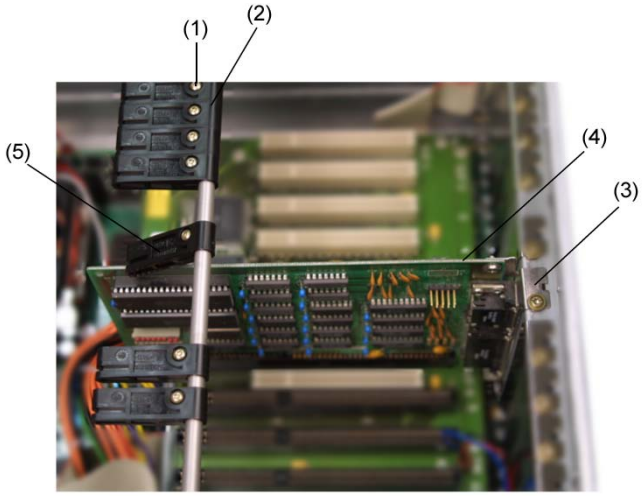
Before long PCI modules can be inserted into the guide rails, they must be fitted with an extender (this should be supplied with the long PCI board).

10.3.2 Installing an expansion module

Preparation

Disconnect the device from mains.

Installing expansion modules

How to install an expansion module (PCI / AT format):		
1	Open the device.	
2	Removing module bracket (1)	
3	Remove the relevant steel slot cover (2).	
4	Insert the expansion module (3) into the relevant slot.	
5	Screw down the steel slot cover (2) for the expansion module.	
6	Insert the module bracket again.	
7	Loosen free module bracket (4), mount and screw down on the expansion module	
8	Close the device.	

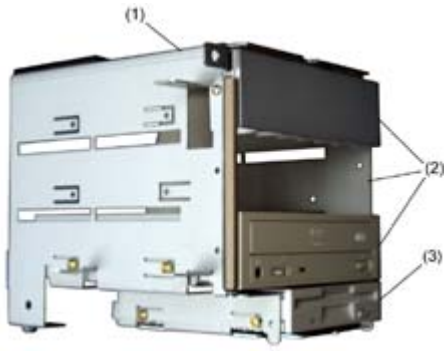
Notes on the allocation of resources

Due to the number of functions on the motherboard, there are no reserved interrupts for PCI modules. If the new expansion module requires exclusive resources, you have to disable the functions on the motherboard. For information on allocated resources, refer to the system resources section. For information on how to disable motherboard functions, refer to the BIOS Setup. Information on the assignment of PCI IRQs to the PCI slots is found in the "Advanced Menu" or "Bus Board" section.

PCI graphics modules with an expansion ROM of up to 48 kB can be used.

10.4 Installing disk drives

10.4.1 Options of installing disk drives

In the front drive bay	Pos	Description
	(1)	Front drive bay
	(2)	5.25" mounting bays for DVD/CD drives or hard disk drive (removable drive rack or permanent installation with 3.5" adapter)
	(3)	Floppy Disk 3.5"(FD) The drive can also be mounted to the three lateral fastening mounts of the drive bay.

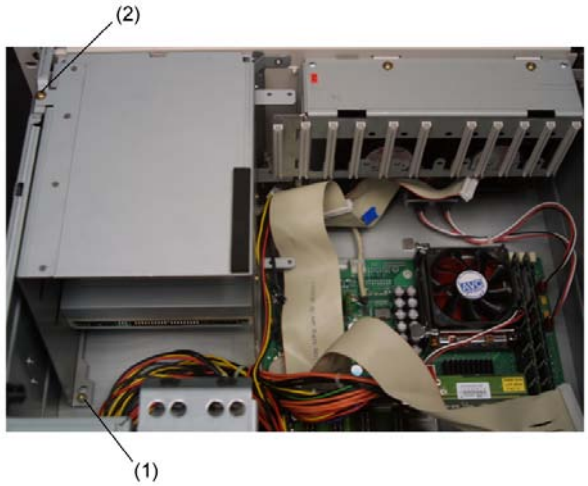
In the rear disk drive bay	Pos	Description
	(1)	Rear disk drive bay
	(2)	Two 3.5" mounting bays for hard disk drives (with shock and vibration damping)

10.4.2 Installation and removal of disk drives in the front drive bay

Preparations

1. Unplug the device from mains and disconnect all cables.
2. Open the device.

Remove the front drive bay

How to remove the front drive bay		
1	Loosen mounting screw (1); remove mounting screw (2)	
2	Disconnect the power cable and the data cable from the installed disk drives.	
3	Lift the drive bay out of the device until you can access the connecting cables of the floppy disk drive. Disconnect these cables	
4	Carefully remove the drive bay from the device	

Disk drive or removable disk rack installation

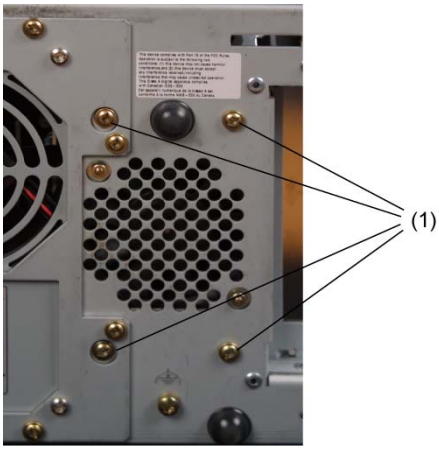
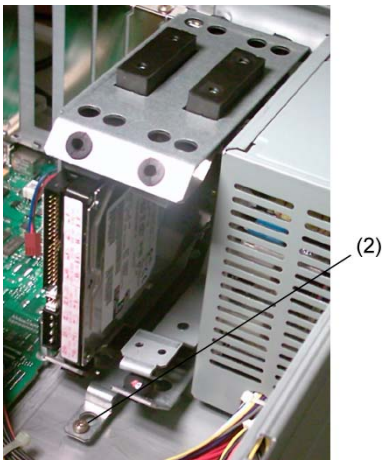
Steps for installing a disk drive		
1	Slide the disk drive into the bay from the front	
2	Mount the disk drive into the drive bay using four screws	
3	Reinstall the drive bay	
4	Connect the power and data cables to the disk drive.	

10.4.3 Installation and removal of disk drives in the rear drive bay

Preparations

1. Unplug the device from mains and disconnect all cables.
2. Open the device.

Remove the the rear bay

How to remove the rear drive bay		
1	Remove the module bracket	
2	Remove the four screws (1)	
3	Remove the screw (2) in the interior of the enclosure	
4	Disconnect the power cable and the data cable from the installed disk drives	
5	Remove the drive bay from the cubicle	

Installing a disk drive

Steps for installing a disk drive		
1	Slide the disk drive into the bay from the front	
2	Mount the disk drive into the drive bay using four screws	
3	Reinstall the drive bay	
4	Connect the power and data cables to the disk drive.	

Maintenance and service

11

11.1 Removing and installing hardware components

Carrying out repairs

Only authorized personnel are permitted to repair the device.



Warning

Unauthorized opening and improper repairs on the device may result in substantial damage to equipment or endanger the user.

- Before you open the device, always disconnect the power plug.
- Install only system upgrades designated for this computer. If you install other upgrades, you may damage the system or violate the safety requirements and regulations for radio frequency interference suppression. Contact your technical support team or your sales outlet to find out which system upgrades are suitable for installation.

If you install or exchange system upgrades and damage your device, the warranty becomes void.

Notice

Note the ESB instructions.

Limitation of Liability

All technical data and licenses apply only to upgrades approved by SIEMENS.

No liability can be accepted for impairment of functions caused by the use of third-party devices or components.

Tools

All mechanical installation tasks on the device can be carried out with Torx T10 and TORX T15 screwdrivers as well as a side-cutter.

11.1.1 Replacing the backup battery

To be noted before you replace the battery

Caution

Risk of damage!

The lithium battery may only be replaced with an identical battery or with a type recommended by the manufacturer (Order No.: A5E00047601).

Disposal

Caution

Depleted batteries must be disposed of in accordance with local regulations.

Preparation

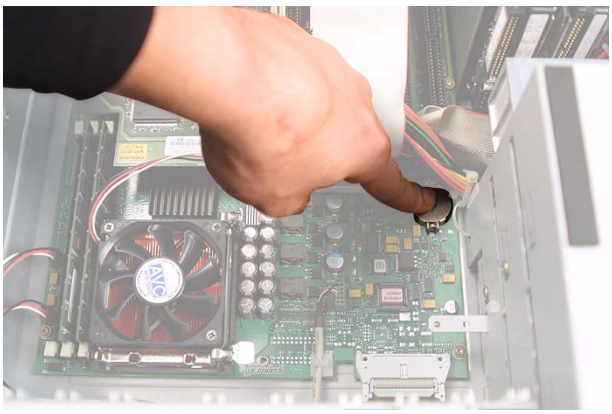
Note

The configuration data of the device are deleted when the battery is replaced.

1. Note down the current settings of the BIOS Setup.
   A list in which you can note down this information is found in the BIOS manual
2. Disconnect the device from mains and unplug all cables.

Replacing the battery

Proceed as follows:

Steps for replacing the battery		
1.	Open the device.	
2.	Pull the battery out of the socket	
3.	Push the battery into the socket under slight pressure	
4.	Close the device.	

Reconfiguring the BIOS Setup

When a battery is exchanged, the configuration data of the device is lost and must be reentered in the BIOS setup.

11.1.2 Removing the power supply module

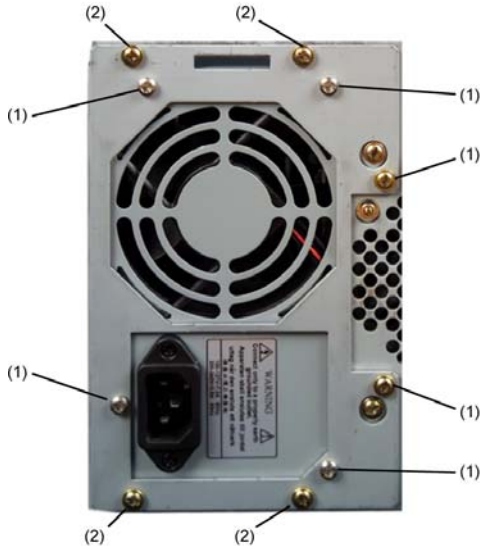
Warning

Only qualified personnel is authorized to exchange the power supply module.

Preparations

1. Disconnect the device from mains and unplug all cables.
2. Open the device.

Removing the power supply module

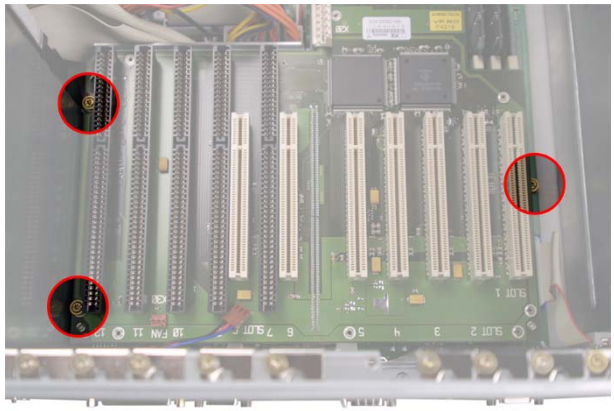
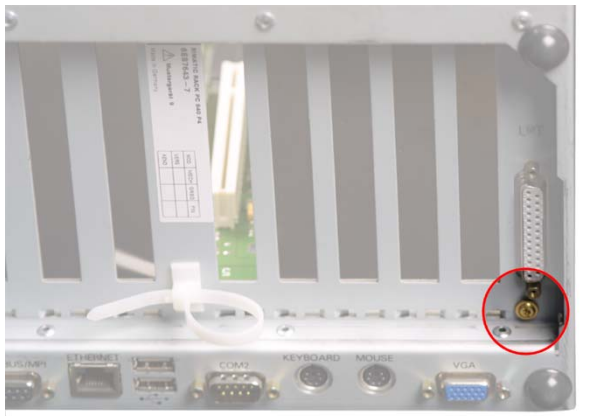
How to remove the power supply module		
1.	Disconnect the power cables from the disk drives, motherboard and bus board	
2.	Remove the tie-wraps holding the power cables in the housing.	
3.	Remove the mounting screws (TORX T10) (2).	
4.	Lift the power supply module out of the enclosure until you can access the power cable of the floppy disk drive.	
5.	Disconnect this power cable from the floppy disk drive.	
6.	Remove the screws (1) on the steel bracket.	

11.1.3 Removing the bus board

Preparation

1. Disconnect the device from mains and unplug all cables.
2. Open the device.

Removing the bus board

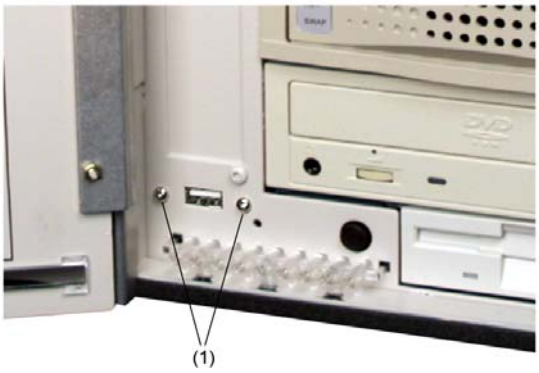
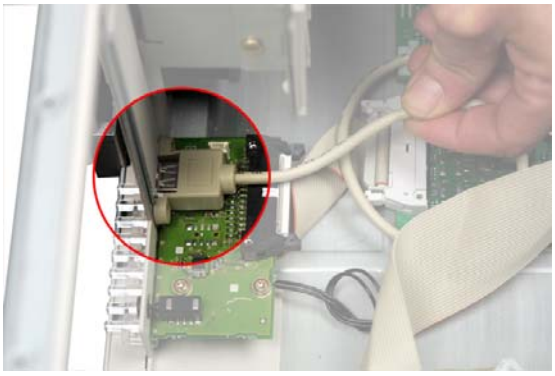
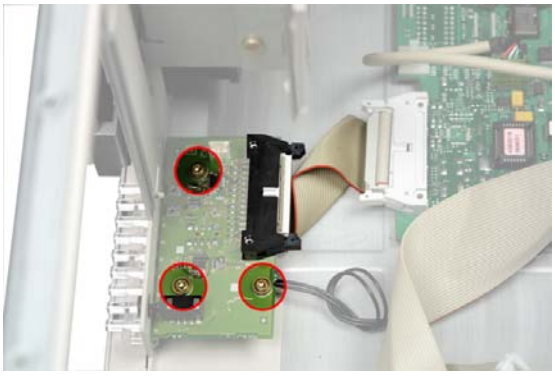
How to remove the bus board		
1.	Remove all modules from their slots	
2.	Disconnect all connectors from the bus board.	
3.	Remove the three screws holding the bus board	
4.	Remove the one screw on the outside of the cubicle rear wall.	
5.	Remove the bus board from the motherboard.	

11.1.4 Removing the Operator Panel

Preparation

1. Disconnect the device from mains and unplug all cables.
2. Open the device.

Removing the Operator Panel

How to remove the operator panel		
1.	USB socket remove the screws (2x TORX) from the front panel of the device (1)	
2.	Remove the USB socket from the inside of the front panel	
3.	Disconnect connector X44 from the OP and remove the three screws	

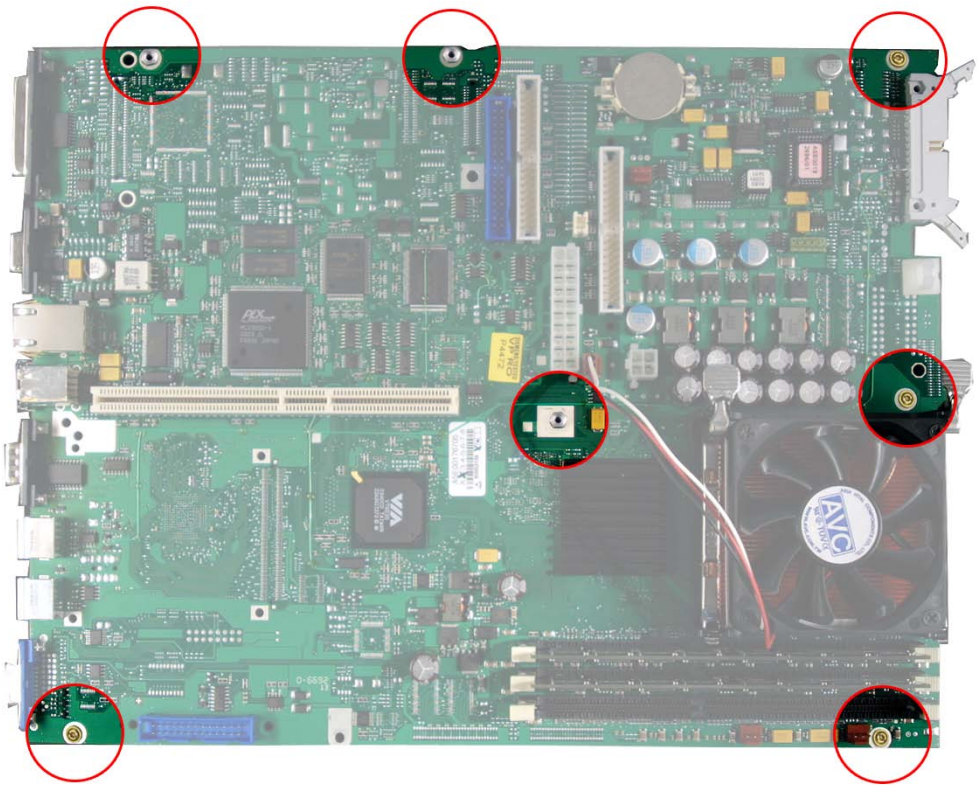
11.1.5 Removing the motherboard

Preparation

1. Disconnect the device from mains and unplug all cables.
2. Open the device.

Removing the motherboard

How to remove the motherboard	
1.	Remove all modules from their slots.
2.	Removing the bus board
3.	Disconnect all cables off the motherboard, noting down their assignment while doing so.
4.	Remove the four screws and three hexagonal bolts from the motherboard.



5.	Remove the eight hexagonal bolts at the interfaces.



The motherboard is supplied as spare part without processor, memory modules and bus board.

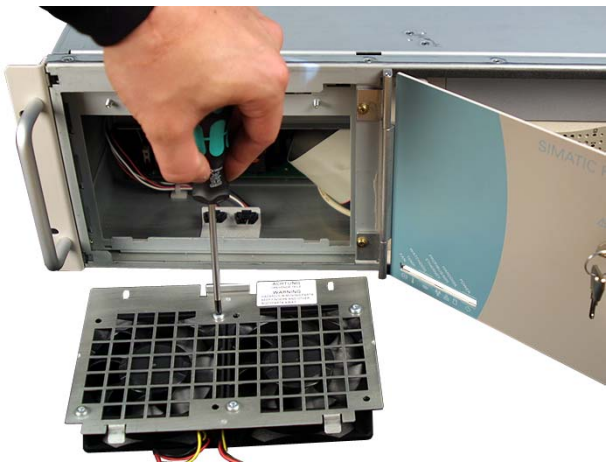
11.1.6 Removing the equipment fan or changing the filter

Preparation for removing the equipment fan

Unplug the device from mains.

Filter change, removing the fan

How to remove the fan		
1.	Front panel door by approx. 45° in order to be able to remove the front panel surround	
2.	Front panel remove and change filter if necessary (only filters of the same type are allowed to be used)	
3.	Loosen both knurled nuts of the fan bracket	

How to remove the fan		
4.	Remove the fan bracket from the cubicle	
5.	Remove both fan connectors	
6.	Remove all fan screws and remove the fan from the bracket	

Installing the fan

Notice

Always install a fan of the same type!

Caution

Ensure that the arrow on the fan points away from the fan bracket.

Fan mounting position	
The figure shows the correct fan mounting position. Note the direction of the arrow!	

11.1.7 Processor replacement

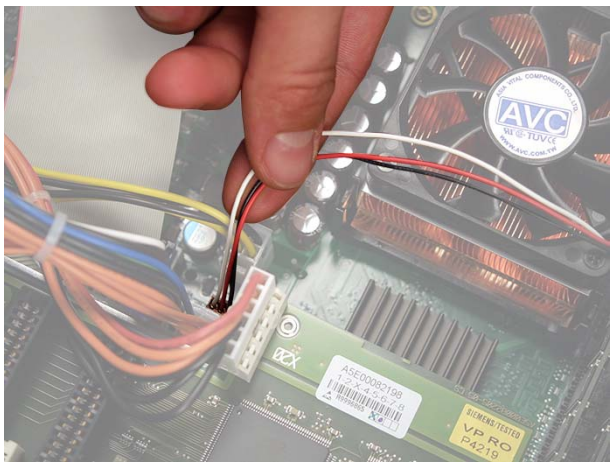
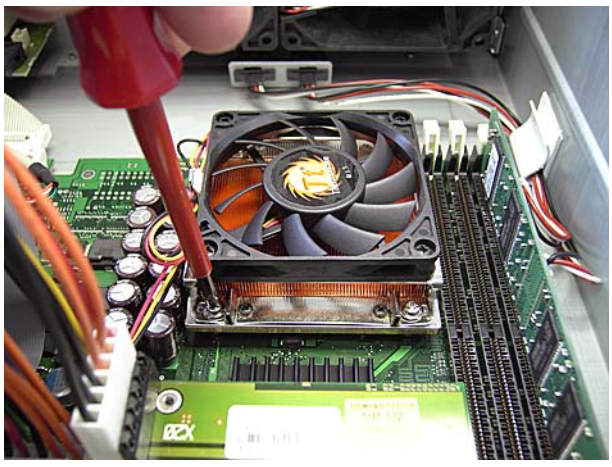
Caution

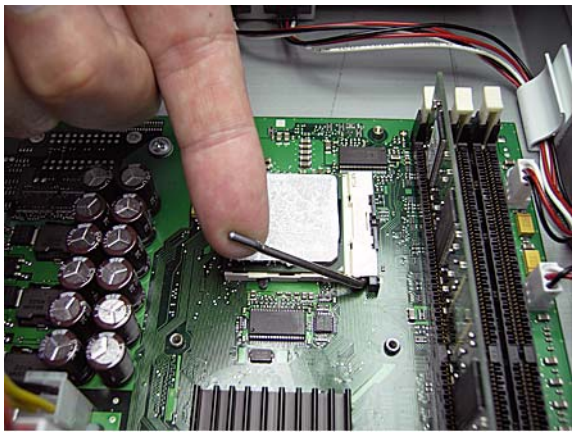
The processor replacement may only be carried out by authorized qualified personnel.

Preparation

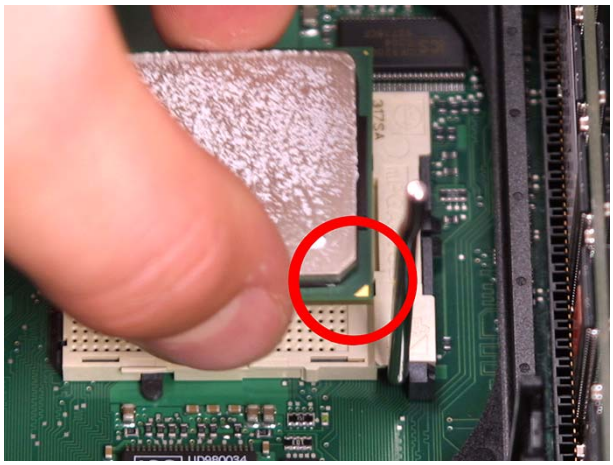
1. Unplug the device from mains.
2. Open the device.

Removing the processor

How to remove the processor		
1.	Disconnecting the processor fan connector	
2.	Unscrew the four screws on the processor heat sink and remove heat sink	

How to remove the processor		
4.	Opening the processor latch	
5.	Removing the processor	

Installing the processor

How to install the processor		
1.	Inserting the processor	

Notice

When inserting the processor, ensure that the notches on the processor align with the socket.

2.	Apply some heat-conductive paste to the processor	

Caution

The processor may overheat when the system is in operation!

The heat-conductive paste must be applied very evenly as a thin film!

3.	Place heat sink on	
4.	Fix the heat sink into position with the four screws: Screw the screws into position diagonally and tighten evenly, in order to avoid tilting.	
5.	Plug in the fan cable	

11.2 Reinstalling the software

11.2.1 General installation procedure

In case of software errors, you can reinstall your software using the Recovery CD, the Documentation and Drivers CD or the Restore DVD.

Recovery CD:

Contains the tools for setting up hard disk drives and the operating system.

Documentation and Drivers CD:

Contains the documentation and the hardware drivers.

Restore DVD:

Contains a hard disk image file with the original software (operating system with installed hardware drivers).

11.2.2 Restoring the software to factory state using the Restore CD

You can restore the software to the original factory state using the Restore CD (not included in all package variants). The DVD contains the necessary images and tools for transferring the factory software to the hard disk of your device. You can restore the entire hard disk with drive C: (system) and drive D: or only drive C:. at the command line input. This allows you to retain any user data on drive D.

Retrieving an authorization or license key from the hard disk

- Check if you can retrieve your authorization or license key from the hard disk and perform the procedure described below if this is possible.
- If it is not possible to perform a backup, contact the Customer Support Hotline. There you can obtain information necessary for your software authorization.

Caution

With the option "Restore system partition only", all data on drive C: (System) will be deleted. All data, user settings and all authorizations or license keys on drive C: will be lost in the process! All data on drive C: of your hard disk will be deleted. Setup formats the hard disk partition and reinstalls the original factory software.

When you select the "Restore entire hard disk" option, ALL the data, user settings and authorizations or license keys will be lost on the hard disk.

Restoring the factory state

To restore the factory state, proceed as follows:

- Insert the Restore DVD in your drive and reboot the device. When the BIOS message appears, press

<F2> to enter SETUP or <ESC> to display the boot menu

- . After initialization, a "Boot Menu" is displayed.
- Select "CD-ROM Drive" with the cursor keys.
- Now follow the instructions on the screen.

Caution

All existing **data, programs, user settings** and **authorizations or license keys will be deleted** from the hard disk and therefore lost.

For information on the functions, refer to the README.TXT file on the Restore DVD.

11.2.3 Partitioning the hard disk

11.2.3.1 Setting up the partitions under Windows 2000/XP Professional

After you have installed a new hard disk, or if partitions are faulty, or when you wish to change the partitioning on your hard disk, you need to set up new partitions on the hard disk.

Caution

When you delete or create partitions or logical DOS partitions, you lose all data on the hard disk. All partitions on the hard disk will be deleted.

Factory setup of the hard disk with Windows 2000 and Windows XP:

- One partition with a FAT32 file system
- One partition with a NTFS file system

To restore the partition to its factory state, proceed as follows:

Primary partition, FAT 32 files system

1. To boot from the Recovery CD, when the BIOS message appears press:

<F2> to enter SETUP or <ESC> to display the boot menu

the ESC key. After initialization, a Boot Menu screen is displayed for selecting the boot device.

2. Select

CD-ROM drive

3. From the ”Microsoft Windows 98 Startup Menu” screen form, select

2. Boot for FDISK, FORMAT or Windows 2000 Setup

or

2. Boot for FDISK, FORMAT or Windows XP Professional Setup

4. Select

A:\>FDisk

the Microsoft Windows 98 hard disk configuration program (A: In the screen form, select support for large disks.

Do you wish to enable large disk support (Y/N)...?

[Y] for yes.

5. Create a primary DOS partition with at least 4090 MB. When prompted

Do you want to use the maximum memory size available for the primary DOS partition and do you want to activate this partition?

enter [N] for ”No” a and set the partition size to 10245 MB, for example.

6. To format the partition from the Recovery CD as described earlier in steps 1 to 3, restart the computer, the select

A:\>Format C:

(A: is the CD drive).

to format .

Caution

All the data of the relevant partition will be lost during formatting.

Setting up an extended FAT 32 partition

In order to create an extended partition, restart from the Recovery CD as described earlier in steps 1 to 4.

Create an extended DOS partition with the remaining capacity of the hard disk.

The FAT 32 files system can be converted to a NTFS files system under Windows 2000/XP with the

Format

function (total data loss), or by entering the command

CONVERT D: /FS:NTFS

without data loss.

11.2.3.2 Setting up the partitions under Windows NT

After you have installed a new hard disk, or if partitions are faulty, or when you wish to change the partitioning on your hard disk, you need to set up new partitions on the hard disk.

Caution

By deleting or creating partitions or logical DOS partitions, all saved data are lost on the hard disk. All partitions on the hard disk will be deleted.

Factory setup of the hard disk with Windows NT includes:

- One partition with a FAT16 file system
- One partition with a NTFS file system

To restore the partitions to factory state, proceed as follows:

Primary partition

1. To boot from the Recovery CD, when the BIOS message appears press:

<F2> to enter SETUP or <ESC> to display the boot menu

the ESC key. After initialization, a boot menu selection screen is displayed.

2. Select

CD-ROM drive

3. From the ”Microsoft Windows 98 Startup Menu” screen form, select

2. Boot for FDISK, FORMAT or Windows NT Setup

4. Select

```
A:\>FDisk
```

the Microsoft Windows 98 hard disk configuration program (A: is the CD drive).

5. In the select form, select support for large disks to set up the FAT16 partition.

```
Activate support (Y/N)...?
```

[N] for no.

6. Create a primary DOS partition with 2045 MB for a FAT16 file system. When prompted

```
Do you want to use the maximum available space for the primary DOS partition and activate this partition?
```

answer with [Y] for Yes.

7. Format the primary DOS partition by booting from the Recovery CD, as described above in steps 1 to 3. The run “Format” to . At the prompt, enter:

```
A:\>Format C:
```

8. The formatting of the NTFS partitions is performed by the setup program of Windows NT. Run Windows NT Setup.

Caution

All the data of the relevant partition will be lost during formatting.

11.2.4 Installing Microsoft Windows operating systems

11.2.4.1 Installation from the Recovery CD for Microsoft Windows NT

This CD contains encrypted data that can only be transferred to a SIMATIC PC.

The data can be copied using the program OEMSETUP.EXE on the CD-ROM or after booting from the CD with the Recovery function.

After the required data have been copied to the hard disk, you can run Windows NT Setup to install the operating system.

Information for systems with PATA-RAID or SCSI controllers

In case of systems with RAID controllers or SCSI controllers these have to be made known to the operating system.

1. During the booting phase, press the F6 key and follow the instructions on the screen. During the installation phases that follow, you are prompted several times for a floppy disk containing the missing drivers of the module. These are contained on the supplied "Documentation and Drivers" CD in the directory Drivers\RAID\Promise\TX100 or Drivers\SCSI\U160.
2. Copy the corresponding driver to an empty floppy disk.

Note

Please also observe the information in den electronic manuals of the controllers. These are available on the included "Documentation and Drivers" CD.

Windows NT Setup sequence

If a Windows operating system is already installed or if the PC has been started with a user boot disk, the transfer of the data can be performed with the program OEMSETUP.EXE. To do this, start the program OEMSETUP.EXE on the recovery CD and continue the sequence beginning with point 5.

If you have not installed an operating system yet, proceed as follows:

1. Insert the Recovery CD into the CD drive and reboot the system.

2. To boot from the CD, when the BIOS message appears press:

<F2> to enter SETUP or <ESC> to display the boot menu

the ESC key. After initialization, a boot menu selection screen is displayed.

3. Select

CD-ROM drive

4. From the ”Microsoft Windows 98 Startup Menu” screen form, select

1. Boot for CD Recovery

If your hard disk is not set up yet, select

2. Boot for FDISK, FORMAT or Windows Setup

5. Confirm the

SIEMENS End User License Agreement

by pressing F8. Press ESC to decline the agreement and to abort setup.

6. In the next screen form, select which components you want to copy from the CD to your hard disk. Minimum requirement for your Windows NT installation or setup is a copy of the "I386" folder.

7. Select the destination drive for data transfer. The selected drive is not the installation drive for Windows. Windows Setup requires approximately 300 MB of free hard disk space on your Windows installation drive.

Note

Drive C: is the default destination for the data transfer (Recovery).

Please note that drive C: must provide approximately 300 MB of free hard disk space after the selected recovery data have been copied.

8. Acknowledge the end message.

9. Run Windows Setup with

<<DRIVE>>:\I386\Winnt.exe

<<DRIVE>> is the destination drive to which the Recovery were copied.

For information on Windows NT Setup, refer to the SUPPORT\BOOKS\ folder on your Recovery CD.

Note

If you want to become an expert user of Microsoft Windows NT Workstation, see the "Windows NT Workstation Technical Reference, Version 4.0 (not included in the package). It contains specific information for system administrators who are responsible for installing, managing, and integrating Windows NT Workstation in a network or multiuser environment.

11.2.4.2 Installation from the Recovery CD for Microsoft Windows 2000

This CD contains encrypted data that can only be transferred to a SIMATIC PC.

The data can be copied using the program OEMSETUP.EXE on the CD-ROM or after booting from the CD with the Recovery function.

After the required data have been copied to the hard disk, you can run Windows 2000 Setup to install the operating system.

Notes for systems with SATA-Raid controller

In case of systems with RAID controllers these have to be made known to the operating system.

1. During the booting phase, press the F6 key and follow the instructions on the screen. During the installation phases that follow, you are prompted several times for a floppy disk containing the missing drivers of the module. These are contained on the supplied "Documentation and Drivers" CD in the directory Drivers\RAID\Promise\TX2300
2. Copy the corresponding driver to an empty floppy disk.

Note

Please also observe the information in den electronic manuals of the controllers. These are available on the included "Documentation and Drivers" CD.

Windows 2000 Setup sequence

If a Windows operating system is already installed or if the PC has been started with a user boot disk, the transfer of the data can be performed with the program OEMSETUP.EXE. To do this, start the program OEMSETUP.EXE from the root directory of the recovery CD and continue the sequence beginning with point 5.

If you have not installed an operating system yet, proceed as follows:

1. Insert the Recovery CD into the CD drive and reboot the system.

2. To boot from the CD, when the BIOS message appears press:

<F2> to enter SETUP or <ESC> to display the boot menu

the ESC key. After initialization, a Boot Menu screen is displayed for selecting the boot device.

3. Select

CD-ROM drive

4. From the ”Microsoft Windows 98 Startup Menu” screen form, select

1. Boot for CD Recovery

If your hard disk is not set up yet, select

2. Boot for FDISK, FORMAT or Windows Setup

5. Confirm the

SIEMENS End User License Agreement

by pressing F8. Press ESC to decline the agreement and to abort setup.

6. In the next screen form, select which components you want to copy from the CD to your hard disk. Minimum requirement for your Windows 2000 installation or setup is a copy of the "I386" folder.

7. Select the destination drive for data transfer. The selected drive is not the installation drive for Windows. Windows Setup requires approximately 500 MB of free hard disk space on your Windows installation drive.

Note

Drive C: is the default destination for the data transfer (Recovery).

Please note that drive C: must provide approximately 500 MB of free hard disk space after the selected recovery data have been copied.

8. Acknowledge the end message.

9. Run Windows Setup with

<<DRIVE>>:\I386\Winnt.exe

<<DRIVE**>>** is the destination drive to which the Recovery were copied.

10. Now follow the instructions on the screen.

Setting up the language selection for Windows 2000

The **M**ultilanguage **U**ser **I**nterface (MUI) allows you to set up the Windows 2000 menus and dialogs for additional languages.

To install the MUI, start

"MUI-german"

on your Recovery CD to run MUISETUP.EXE. Follow the instructions on the screen to install the required languages.

To set the required languages for the Windows 2000 menus, dialogs and keyboard layout, select:

Start > Settings > Control Panel > Regional Options > General tab, **Setting for the current user** field and **Language settings for the system** field and the **Keyboard layout** field in the **Input Locales** tab.

In addition to the menu and dialog language settings, you also need to set the default language by selecting **Set Default...** from the **Regional Options** dialog box.

The default language setting of your Windows 2000 installation is English and a US keyboard layout. To change to another language and keyboard layout, open the Control Panel and select:

Start > Settings > Control Panel > Regional Options >General tab, **Setting for current user** field and **Language settings for the system** field and the **Input language** field in the **Input Locales** tab.

11.2.4.3 Installation from the Recovery CD for Microsoft Windows XP

This CD contains encrypted data that can only be transferred to a SIMATIC PC.

The data can be copied using the program OEMSETUP.EXE on the CD-ROM or after booting from the CD with the Recovery function.

After the required data have been copied to the hard disk, you can run Windows XP professional Setup to install the operating system.

Notes for systems with SATA-Raid controller

In case of systems with RAID controllers these have to be made known to the operating system.

1. During the booting phase, press the F6 key and follow the instructions on the screen. During the installation phases that follow, you are prompted several times for a floppy disk containing the missing drivers of the module. These are contained on the supplied "Documentation and Drivers" CD in the directory Drivers\RAID\Promise\TX2300
2. Copy the corresponding driver to an empty floppy disk.

Note

Please also observe the information in den electronic manuals of the controllers. These are available on the included "Documentation and Drivers" CD.

Windows XP Professional Setup sequence

If a Windows operating system is already installed or if the PC has been started with a user boot disk, the transfer of the data can be performed with the program OEMSETUP.EXE. To do this, start the program OEMSETUP.EXE from the root directory of the recovery CD and continue the sequence beginning with point 5.

If you have not installed an operating system yet, proceed as follows:

1. Insert the Recovery CD into the CD drive and reboot the system.

2. To boot from the CD, when the BIOS message appears press:

<F2> to enter SETUP or <ESC> to display the boot menu

the ESC key. After initialization, a Boot Menu screen is displayed for selecting the boot device.

3. Select

CD-ROM drive

4. From the ”Microsoft Windows 98 Startup Menu” screen form, select

1. Boot for CD Recovery

If your hard disk is not set up yet, select

2. Boot for FDISK, FORMAT or Windows Setup

5. Confirm the

SIEMENS End User License Agreement

by pressing F8. Press ESC to decline the agreement and to abort setup.

6. In the next screen form, select which components you want to copy from the CD to your hard disk. Minimum requirement for your Windows XP installation or setup is a copy of the "I386" folder.

7. Select the destination drive for data transfer. The selected drive is not the installation drive for Windows. Windows Setup requires approximately 1500 MB of free hard disk space on your Windows installation drive.

Note

Drive C: is the default destination for the data transfer (Recovery).

Please note that drive C: must provide approximately 1500 MB of free hard disk space after the selected recovery data have been copied.

8. Confirm the end message.

9. Run Windows Setup with

<<DRIVE>>:\I386\Winnt.bat

<<DRIVE**>>** is the destination drive to which the Recovery were copied.

10. Now follow the instructions on the screen.

Setting up the language selection for Windows XP Professional

The **M**ultilanguage **U**ser **I**nterface (MUI) allows you to set up the Windows XP Professional menus and dialogs for additional languages.

To install the MUI, start

"MUI-german"

or “MUI Windows XP” in root folder of your Recovery CD to run MUISETUP.EXE. Follow the instructions on the screen to install the required languages.

Default language of your Windows XP MUI installation is English and a US keyboard layout. You can change the language in the Control Panel with the dialog

Start > Control Panel > Date & Time, **Language, and Regional Options > Add other languages**, **Languages** tab, **Language used in menus and dialogs** field. For the **Date**, **Time**, **Language**, and **Regional Options**, set the default as **non-Unicode programs** under **Advanced** in addition to the language for menus and dialogs.

11.2.5 Installing drivers and software

Notice

Before you install new drivers or updates for MUI operating systems, the regional settings for menus and dialogs and the default language must be reset to US English.

Install the drivers and software from the included "Documentation and Drivers". Procedure:

1. Place the CD in the CD ROM drive.
2. Run *START*.
3. Navigate to the driver list (language-, OS- and device-specific.)
4. Install the relevant driver according to the specifications in the driver list.

Notice

For new Windows 2000 / XP installations, the chipset driver must be installed before you install any other drivers.

When you install Windows NT, you need to install the Windows NT Service Pack before you install any other drivers. The Service Pack must be reinstalled after a driver installation.

11.2.6 Installing the Raid Controller driver

The procedure for installing the RAID controller drivers can be found in the PROMISE user manual on the supplied "Documentation and Drivers" CD.

Notes on Windows NT (only in connection with PATA-RAID Controller)

When you install Windows NT, select the WinNT Promise FastTrack 100 TX2/TX4 (tm) Controller from the list.

ATAPI.SYS must be enabled when you reinstall Windows NT, in order

to enable CD-ROM/CD-RW operation.

To do so, change the start mode to restart in the Control Panel > Devices > ATAPI. Restart the computer.

Notes on Windows 2000/XP

PATA-RAID Controller installieren
During the installation of Windows 2000 / XP, you need to select the Win2000 Promise FastTrack 100 TX2/TX4 (tm) Controller or WinXP Promise FastTrack 100 TX2/TX4 (tm) Controller from the list.

SATA-RAID Controller installieren
During the installation of Windows 2000 / XP, you need to select the Win2000 Promise FastTrack TX 2300 Controller or WinXP Promise FastTrack TX2300 (tm) Controller from the list.

11.2.7 Installing the RAID Controller software

The procedure for installing the software can be found in the PROMISE user manual on the supplied "Documentation and Drivers" CD.

Notes on Windows NT (only in connection with PATA-RAID Controller)

When you install Windows NT, select FastTrak from the list.

ATAPI.SYS must be enabled when you reinstall Windows NT, in order

to enable CD-ROM/CD-RW operation.

To do so, change the start mode to restart in the Control Panel > Devices > ATAPI. Restart the computer.

Notes on Windows 2000/XP

When you install Windows 2000/XP, select FastTrak from the list.

11.2.8 Installing the SCSI Controller software

The procedure for installation can be found in the "Installation_Instructions_Win98_WinNT" on the supplied "Documentation and Drivers" CD.

New installation of the software at Windows NT

In case of new installations of the software, you have to install a driver for older operating systems such as Windows NT.

The driver is available in the directory \Drivers\SCSI\U160 on the included "Documentation and Drivers" CD.

11.2.9 Installing burner/DVD software

The supplied CD provides information about installation of the burner/DVD software.

Alarm, error and system messages

12

12.1 Boot error messages

During startup (the boot process), the BIOS first performs a **P**ower **O**n **S**elf **T**est (POST) and checks whether certain functional units of the PC are operating error-free. When an error occurs within this phase, the BIOS outputs a tone sequence (beep code) based on the current test result. The boot sequence is interrupted immediately if fatal errors occur.

If the POST does not return an error, the BIOS initializes and tests further functional units. In this startup phase, the graphics controller is initialized and any error messages are output to the screen.

The following lists the error messages from the system BIOS. For information on error messages output by the operating system or programs, refer to the corresponding manuals.

On-screen error messages

On-screen error message	Meaning / suggestions
Address conflict	Plug and Play problem. Contact your technical support team.
Combination not supported	Plug and Play problem. Contact your technical support team.
IO device IRQ conflict	Plug and Play problem. Contact your technical support team.
Invalid System Configuration Data	Plug and Play Problem • Set the RESET CONFIGURATION DATA option in the "Advanced" menu of Setup. • Contact your technical support team.
Allocation Error for ...	Plug and Play problem • Please undo the last hardware change. • Contact your technical support team.
System battery is dead. Replace and run SETUP	The battery on the CPU module is defective or dead. Contact your technical support team.
System CMOS checksum bad Run SETUP	Call up SETUP, adjust settings and save. If this message appears during each startup, contact your technical support team.
Failure Fixed Disk	Error accessing the hard drive. Check the SETUP settings. Contact your technical support team.
Keyboard error	Check whether the keyboard is properly connected.
Key seizure	Check whether a key on the keyboard has seized.

On-screen error message	Meaning / suggestions
System RAM Failed at offset:	Memory error. Contact your technical support team.
Shadow RAM Failed at offset:	Memory error. Contact your technical support team.
Extended RAM Failed at offset:	Memory error. Contact your technical support team.
Failing Bits:	Memory error. Contact your technical support team.
Operating system not found	Possible causes: • No operating system present • Wrong drive addressed (disk in drive A/B) • Incorrect active boot partition • Wrong boot drive settings in SETUP • Hard disk is not connected / defective
Previous boot incomplete Default configuration used	Abort of the previous BOOT procedure, for example, due to a power failure. Adjust the settings in SETUP.
System cache error Cache disabled	Error in the CPU's cache module. Contact your technical support team.
Monitor type does not match CMOS Run SETUP	The monitor does not match the SETUP entries. Adapt the SETUP entries to the monitor.
System time-out	Hardware error. Contact your technical support team.
Real-time clock error	Clock chip error. Contact your technical support team.
Keyboard controller error	Keyboard error. Contact your technical support team.

12.2 BIOS POST codes

The following section lists the POST codes relevant to users in the sequence in which they occur: Contact Customer Support for all other POST codes.

Display (hex)	Meaning	Description	Remedy
16H	TP_CHECKSUM	BIOS checksum test	Service event
28H	TP_SIZE_RAM	Determine DRAM size	Replace memory modules
2AH	TP_ZERO_BASE	Set base RAM 64KB to 0	Replace memory modules
2CH	TP_ADDR_TEST	Check address busses	Replace memory modules
2EH	TP_BASERAML	BaseRam Low	Replace memory modules
30H	TP_BASERAMH	BaseRam High	Replace memory modules
38H	TP_SYS_SHADOW	BIOS is copied to DRAM	Replace memory modules
3AH	TP_CACHE_AUTO	Determine CPU cache	Exchange CPU
22H	TP_8742-TEST	Test keyboard controller	Check if keyboard is connected or defective
3CH	TP_ADV_CS_CONFIG	Configure the advanced chip set	Test by switching off the hardware components in Setup
49H	TP_PCI_INIT	Initialize the PCI interface	Test by switching off the hardware components in Setup or removing installed expansion modules from the bus module
55H	TP_USB_INIT	Activation of the USB hardware	Removal of USB devices
4AH	TP_VIDEO	Initialize the video interface	
5CH	TP_MEMORY_TEST	Test of the system memory	Replace memory modules
60H	TP_EXT_MEMORY	Test of the complete memory	Replace memory modules
62H	TP_EXT_ADDR	Test of the address busses	Replace memory modules
90H	TP_FDISK	Initialization and test of the hard disk hardware	Disconnect hard disk, replace if necessary
95H	TP_CD	Initialization and test of the CD hardware	Disconnect CD ROM, replace if necessary
98H	TP_ROM_SCAN	Search for BIOS expansions	Test by switching off the hardware components in Setup or removing installed expansion modules from the bus module
BCH	TP_PARITY	Test of the memory modules	Replace memory modules
00H		BIOS Power On Self Test completed. Loading operating system	

Special codes

The following special code are provided in addition to the listed beep codes:

- **3x short** Press INSERT key at system start:
  If an external graphics card on the bus board is not detected, you can try to activate it by pressing the INSERT key.
  The "INSERT" key activates special enumerations for activating a PCI-VGA card.
- **1x long 8x short** Error reading the MPI system information:
  Please contact Customer Support.
- **4x short** MPI firmware updated:
  This can occur following a BIOS update.
- **2x short** Error in checksum test of the BIOS:
  This can occur following a battery replacement or when the battery is empty.

Troubleshooting

13

13.1 General problems

This chapter provides you with tips on how to localize and troubleshoot frequently occurring problems.

Problem	Possible causes	To correct or avoid error
The device is not operational	There is no power supply to the device.	• Check the power supply, the network cable and the power plug. • Check if the On/Off switch is in the correct position.
	Device is being operated outside the specified ambient. conditions	• Check the ambient conditions. • After transport in cold weather, wait approximately 12 hours before switching on the device.
The external monitor remains dark.	The monitor is switched off.	Switch on the monitor.
	The monitor is in "power save" mode.	Press any key on the keyboard.
	The brightness button has been set to dark.	Increase the screen brightness. For detailed information, refer to the monitor operating instructions.
	The power cord or the monitor cable is not connected.	• Check whether the power cord has been properly connected to the monitor and to the system unit or to the grounded shockproof outlet. • Check whether the monitor cable has been properly connected to the system unit and to the monitor.
		If the monitor screen still remains dark after you have performed these checks, please contact your technical support team.
The mouse pointer does not appear on the screen.	The mouse driver is not loaded.	1. Check whether the mouse driver is properly installed and present when you start the application program.
	The mouse is not connected.	Check whether the mouse lead is connected to the system unit. If you are using an adapter or extension for the mouse lead, check the connectors. Should the mouse cursor still not be visible on-screen after completing these checks and measures, contact technical support.
Wrong time and/or date on the PC.		1. Press <F2> within the boot sequence to open the BIOS Setup. 2. Set the time and date in the setup menu.
Although the BIOS setting is OK, the time and data are still wrong.	The backup battery is dead.	In this case, please contact your technical support team.

Problem	Possible causes	To correct or avoid error
USB device not responding.	The USB ports are disabled in your BIOS.	Use a different USB port or enable the port.
	USB 2.0 device connected but USB 2.0 is disabled.	Enable USB 2.0.
	Operating system does not support the USB port.	Enable USB Legacy Support for the mouse and keyboard. For all other devices you need USB drivers for the specific operating system.
DVD: The front loader does not open.	The device is switched off or the open/close button is disabled by a software application.	Emergency removal of the data medium: 1. Switching off the device 2. Insert a pointed object, a pin for example, or an opened paper clip into the emergency extraction opening of the drive. Apply slight pressure to the contact until the front loader opens. 3. Pull the loader further out.

13.2 Problems when Using Modules of Third-party Manufacturers

Problem	Possible causes	To correct or avoid error
The PC crashes during startup	• I/O addresses are assigned twice. • Hardware interrupts and/or DMA channels are assigned twice. • Signal frequencies or signal levels are incorrect. • Connector assignments deviate. • “Reset Configuration” in BIOS SETUP has not been carried out.	Check your computer configuration: • If the computer configuration corresponds with factory state, please contact your technical support team. • If the computer configuration has changed, restore the original factory settings. Remove all third-party modules, then restart the PC. If the error no longer occurs, the third-party module was the cause of the fault. Replace this module with a Siemens module or contact the module supplier. • Force a “Reset Configuration” using the BIOS setup.
		If the PC still crashes, contact your technical support team.
	• If the performance of the external 24 V power supply is insufficient	• use a larger power supply.

Technical data

14

14.1 General specifications

General technical data	
Order number	6ES7643-7... (for details, refer to the ordering documentation)
Dimensions	430.4x177.4x444.4 (WxHxD in mm). Detailed dimensional specifications are found in the "Dimensional drawings" section.
Weight	min. 16 kg, max. 23 kg
Supply voltage (U_N)	100-127 V or 200-240 V (85-135 V or 180-264 V) autorange
Line voltage frequency	50 – 60 Hz
Transient voltage interruption	min. 20 ms (at 93 / 187 V AC) (max. 10 events per hour; recovery time min 1 s)
Power consumption (at 210 W secondary power)	320 W (efficiency approx. 65%)
Current output (AC)	+5 V/30 A +3.3 V/28 A permitted accumulated power is 180 W +12 V/15 A -12 V/0.8 A –5 V/0.3 A +5 Vaux/2 A Max. accumulated power of all voltages is 210 W
Noise emission	< 55 dB(A) to DIN 45635
Degree of protection	IP 41 front, IP 20 rear
Safety	
Protection class	Protection class I according to IEC 61140
Safety regulations	EN 60950-1, UL60950-1, CSA C22.2 No 60950-00
Electro-magnetic compatibility (EMV)	
Emitted interference (AC)	EN 55022 Class A, FCC class A EN 61000-3-2 Class D, EN 61000-3-3
Noise immunity: Mains borne disturbance variables on supply lines	± 2 kV, (according to IEC 61000-4-4; Burst) ± 1 kV; (according to IEC 61000-4-5; Surge symm) ± 2 kV; (according to IEC 61000-4-5; Surge asymm)
Noise immunity on signal lines	± 1 kV;(to IEC 61000-4-4; Burst; length < 10 m) ± 2 kV; (to IEC 61000-4-4; Burst; length > 30 m) ± 2 kV; (to IEC 61000-4-5:1995; length > 30 m)
Immunity to discharges of static electricity	± 6 kV contact discharge; (according to IEC 61000-4-2) ± 8 kV air discharge; (according to IEC 61000-4-2)

General technical data	
Immunity to RF interference	10 V/m, 80-1000 MHz, 80% AM (according to IEC 61000-4-3) 10 V/m 900 MHz and 1.89 GHz, 50% c.d.f. (according to IEC 61000-4-3) 10 V 9 KHz-80 MHz (according to IEC 61000-4-6)
Magnetic field	30 A/m, 50 Hz/60 Hz; (according to IEC 61000-4-8)
Climatic conditions	
Temperature	Tested to DIN EN 60068-2-2:1994, DIN EN 60068-2-1, DIN EN 60068-2-14,
-in operation	+ 5°C to + 50°C, no DVD/CD–RW operation, mobile CPU power dissipation up to 30 W see the notes on retrofitting + 5°C to + 45°C, no DVD/CD-RW operation, CPU power dissipation up to 60 W + 5°C to + 35°C, no restriction
-storage/transport	– 20 °C to +60 °C
-gradient	Max. 10°C/h no dewing in operation, 20°C/h storage
Relative humidity	Tested to DIN EN 60068-2-78, DIN IEC 60068-2-30
-in operation	5 % to 80 % at 25 °C (no dewing)
-storage/transport	5 % to 95 % at 25 °C (no dewing)
Mech. ambient conditions	
Vibration operation [1, 3] Storage/Transport	Tested to DIN EN 60068-2-6, 10 cycles 10 – 58 Hz 0.0375 mm, 58 to 500 Hz: 5 m/s^2 5 to 9 Hz: 3.5 mm, 9 to 500 Hz: 9.8 m/s^2
Shock resistance -Operation [2, 3] -Storage/Transport	tested to DIN EN 60068-2-27, DIN EN 60068-2-29/1000 shocks per axis 50 m/s^2, 30 ms, 250 m/s^2, 6 ms,
Characteristics	
Quality assurance	according to ISO 9001
Motherboard	
Processor	Intel Pentium 4 / Celeron (structure: mPGA478)
Main memory	3 slots, max. 2 GB DDR266 (PC2100)
Memory expansion	128 MB, up to 2 GB (configuration refer to order documents)
Free expansion slots	7 PCI 5 ISA, max. 10 modules simultaneously
Maximum permissible current consumption per ISA slot	5 V/ 5 A, 12 V/ 0.3 A, -5 V/ 0.05 A, -12 V/ 0.05 A
Max. admissible power consumption per PCI slot	5 V/ 5 A or 3.3 V/ 7 A, 12 V/ 0.5 A, -12 V/ 0.05 A
Max. permissible power loss per ISA/PCI slot	the accumulated power dissipation (all voltages) may not exceed 25 W
Max. accumulated power dissipation of all slots	Accumulated power of 80 W may not be exceeded.
Chipset	VIA P4N266 A
RAM	max. 2 GB DDR266 SDRAM, unbuffered, no ECC

General technical data	
PCI/AGP	PCI V2.2, AGP 4x on Chip
ATA	max. 4 ATA 100 drives
Disk drives (for configuration details, refer to the order documentation)	
Floppy drive	3.5" (1.44 MB)
Hard disk drive	3.5” EIDE, UDMA33/66/100, 40/80 GB 3.5" SATA, UDMA150, 80 GB 3.5" SCSI, Ultra 160, 36 GB
DVD-ROM	5.25” EIDE, UDMA33 Read: DVD-ROM Single layer 16x Dual Layer 8x DVD-Video 4x DVD+R/RW, DVD-R/RW 8x DVD-RAM 2x CD-ROM, CD-R 32x DAE 48x CD-DA, Video CD 20x CD-RW 20x
DVD ROM/CD RW	5.25” EIDE, UDMA33 Read: DVD-ROM Single Layer 16x, Dual Layer 8x DVD-R/-RW/+R/+RW 8x DVD-Video 16x CD-ROM 52x CD-R/RW 40x DAE 48x Write: CD-R 52x, CD-RW 40x
DVD burner	5.25" EIDE Read: DVD-ROM Single Layer16x, Dual Layer 12x DVD-R/+R Single Layer16x Dual Layer 7x DVD-RW/+RW 13x DVD-Video Single Layer 16x Dual Layer 12x CD-ROM/CD-R Read 48x CD-RW Read 40x DAE Read 40x Write: DVD+R 16x DVD+RW 8x DVD-R 16x DVD-RW 6x DVD+R9 (DL) 8x

General technical data	
	DVD-R DL 8x CD-R 48x CD-RW 32x
Video	
Video controller	ProSavage8 AGP 4x
Video memory	occupies 8 to 32 MB in main memory
Resolutions/frequencies/colors	up to 1280x1024 at 100 Hz / 32-bit colors up to 1600x1200 at 60 Hz / 16-bit colors
Interfaces	
COM1	Serial port 1 (V.24), 25-pin D–Sub socket, with gender changer 25-pin D–Sub connector
COM2	Serial port 2 (V.24), 9-pin D sub connector
LPT1	Parallel port (Standard, EPP and ECP mode) Connection for parallel port printer
VGA	Connection for external monitor
Keyboard	PS/2 keyboard connection
Mouse	PS/2 mouse port
USB 2.0 rear panel of the device USB 2.0 front panel of the device	2x USB 2.0 devices (500 mA high current, high speed up to 480 MB/s) 1x USB 2.0 devices (500 mA high current, high speed up to 480 MB/s)
PROFIBUS[4]	9-pin D–Sub socket, CP5611-compatible, 9.6 kbps to 12 Mbps, configurable with software, isolated RS485 (SELV circuit)
Ethernet	Ethernet port (RJ45)
Status displays (LEDs)	
	POWER HARDDISK ETHERNET PROFIBUS FAN TEMP WATCHDOG FD access DVD-ROM, DVD/CD-RW, DVD burner access
Approvals	
CE	Industrial area (noise emission to EN 61000-6-4: 2001; interference resistance to EN 61000-6-2: 2001)
ULus	60950-1
cUL	60950-1

* Isolated within the safety extra-low voltage circuit (SELV)

1 Restrictions for drives in the front drive bay: When operating with stands, the following values 10 to 58 Hz must not be exceeded: 0.019 mm, 58 to 500 Hz: 3 m/s^2. Devices mounted on telescopic rails may not be exposed to mechanical stress.

2 Restrictions for drives in the front drive bay: When operating with stands, the values of 30 m/s^2 may not be exceeded. Devices mounted on telescopic rails may not be exposed to mechanical stress.

[3] When using a CD-RW drive, the device should always be free of mechanical disturbances while burning.

[4] Optional product feature.

14.2 Power requirements of components (maximum values)

Standard system

Components	Voltage					
	+5 V	+3.3 V	+12 V	-5 V	-12 V	5 Vaux
Motherboard	3 A	1 A	0.2 A		0.03 A	0.3 A
Desktop processor with fan	0 A	0 A	7 A			
Mobile processor with fan	0 A	0 A	3.5 A			
Floppy disk drive [1]	0.25 A					
Hard disk drive EIDE / SATA [1]	0,5 A		0.7 A			
Hard disk drive SCSI [1]	1 A		1.2 A			
DVD-ROM [1]	0.9 A		0.8 A			
DVD-ROM/CD-RW[1]	0.9 A		0.8 A			
DVD burner	1.1 A		1.4 A			
RAID controller [1]	0,5 A					
SCSI Controller [1]	0.6 A					
Ethernet Controller [1]	0.3 A					
Fan 1 front			0,5 A			
Fan 2 front			0,5 A			
Fan 3 rear [1]			0.1 A			
Single lines of current (max. permissible)	30 A [2]	28 A [2]	15 A	0,5 A	0,5 A	1.5 A
Total power consumption, permissible	210 W					
Efficiency of the power supply	approx. 65 %					

[1] based on the selected device configuration
[2] The permitted max. accumulated power of the + 5 V and + 3.3 V supply is 180 W.

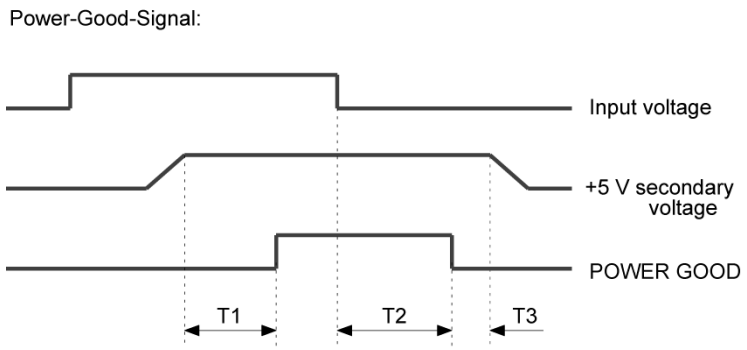
14.3 AC voltage supply

Output voltage

Voltage	Max. current	Voltage stability
+ 12 V	15 A	+/- 5 %
-12 V	0.8 A	+/- 10 %
+ 5 V	30 A [1]	+/- 5 %
-5 V	0,5 A	+/- 5 %
+ 3.3 V	28 A [1]	+/- 5 %
+ 5 V aux	2 A	+/- 5 %

[1] The max. permitted accumulated power of the +5 V and + 3.3 V is 180 W.

Power Good Signal



T1:	preset time	100 ... 500 ms
T2:	hold-up time	20 ms minimum
T3:	save time	1 ms mimimum

Figure 14-1 Timing profile of the Power Good Signal

14.4 Technical data of the telescopic rails

Ultimate load per pair	Minimum 30 kg
Full extraction length	Minimum 470 mm
Rail thickness	Maximum 9.7 mm
Fixing screws	M5 x 6 mm

15 Dimensional Drawings

15.1 Dimensional Drawing of the Device

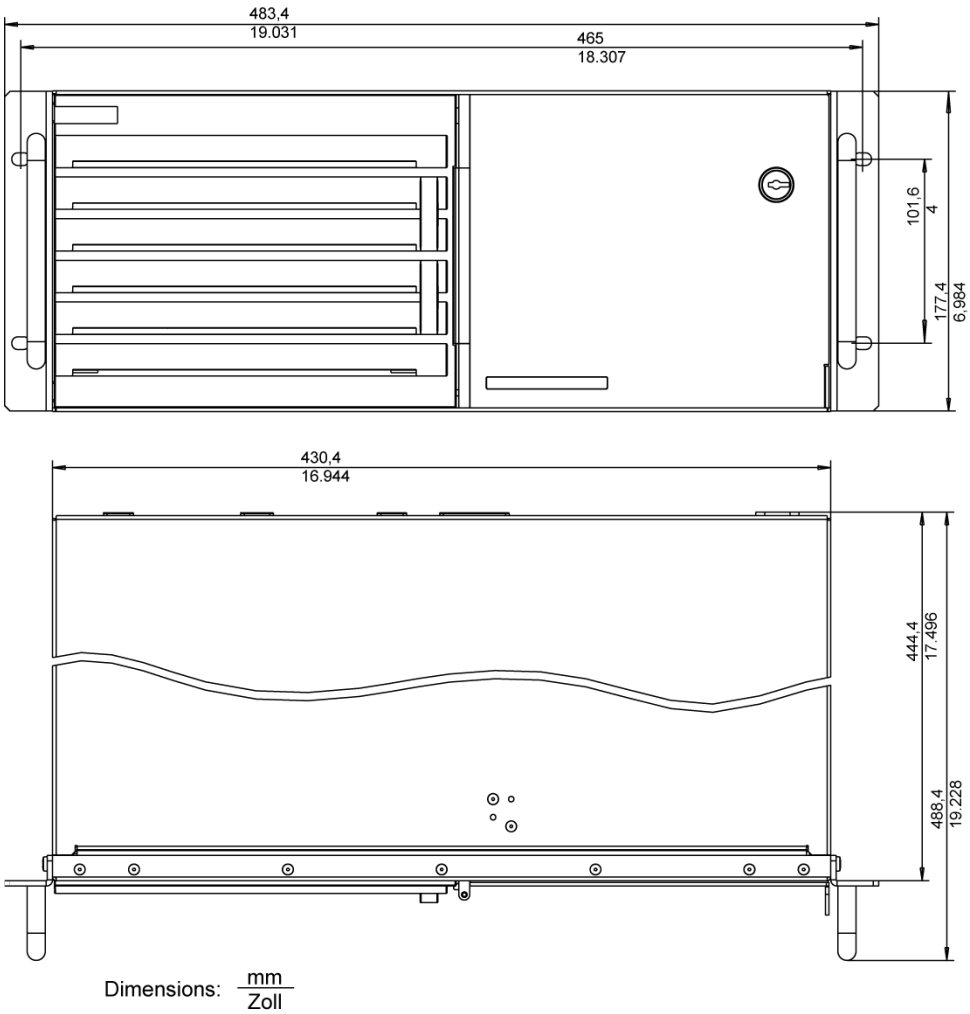


Figure 15-1 Dimension drawing

15.2 Dimensional drawing for the use of telescopic rails

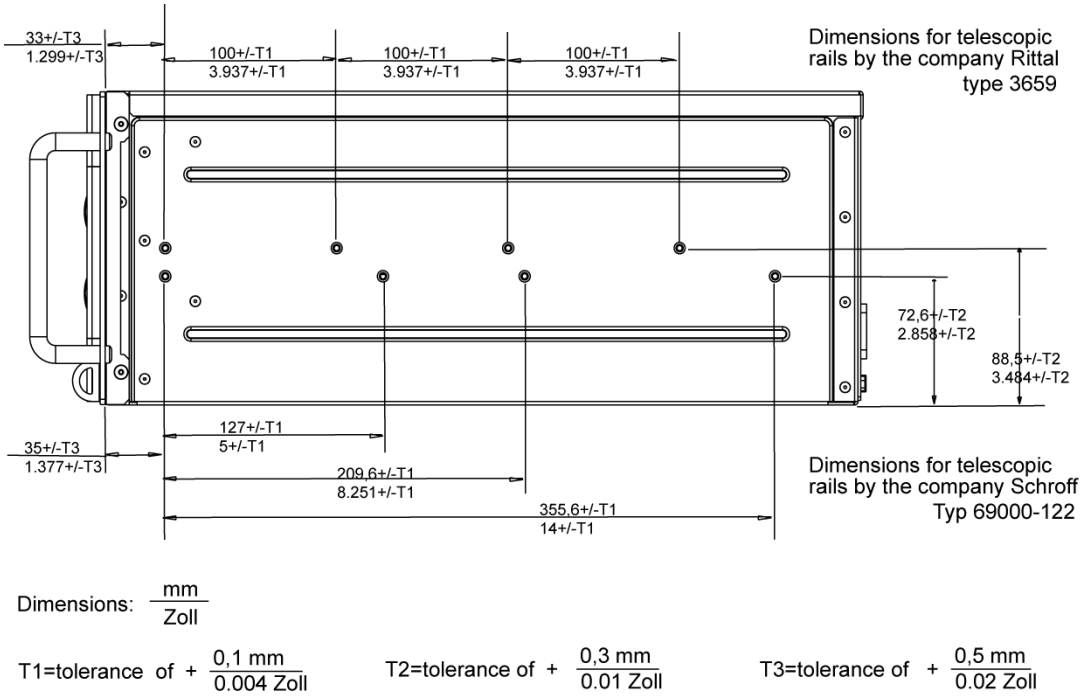


Figure 15-2 Dimensional drawing for the use of telescopic rails

15.3 Dimensional drawings for the installation of expansion modules

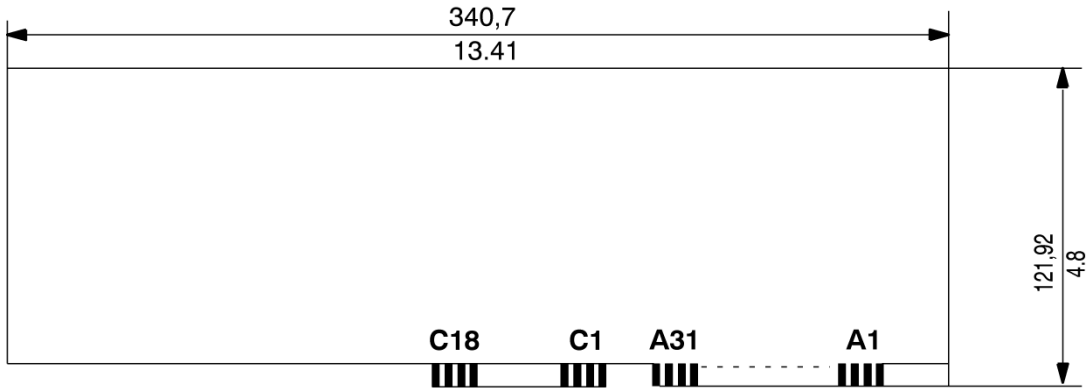


Figure 15-3 AT module

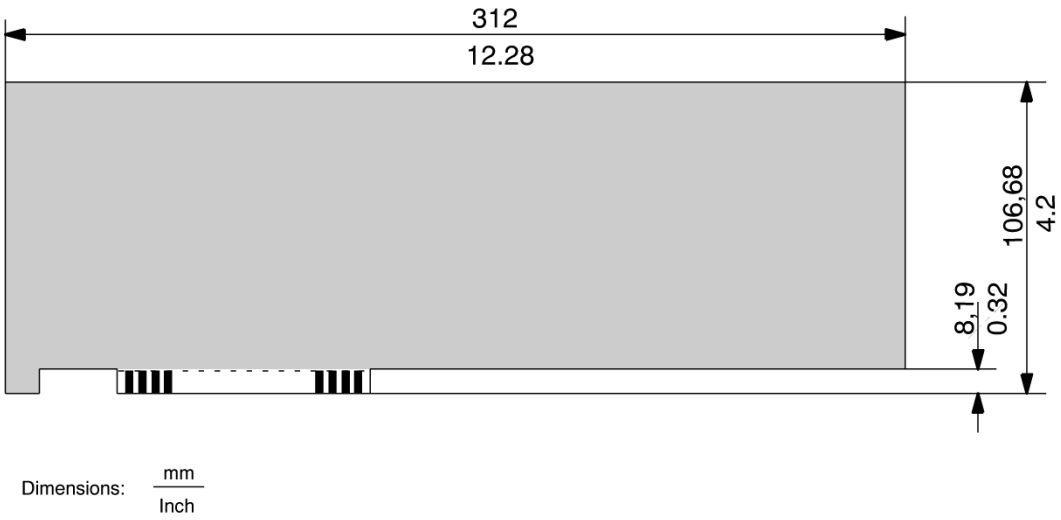


Figure 15-4 Long format PCI module

Detailed descriptions

16

16.1 Motherboard

16.1.1 Structure and functions of the motherboard

The motherboard consists of the processor and the chipset, three slots for memory modules, internal and external interfaces, the Flash BIOS and the backup battery.

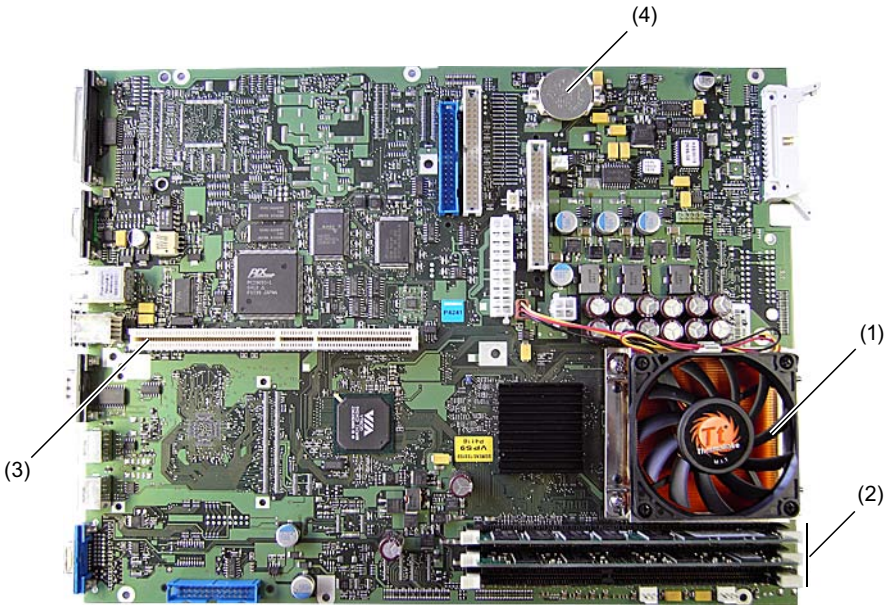


Figure 16-1 Motherboard

(1)	Processor with fan	(3)	Slot for the bus board
(2)	3 slots for memory module	(4)	Backup battery

16.1.2 Technical features of the motherboard

Component / port	Description	Characteristics
Chipset	Single chipset	VIA P4N266A (VT8703A and VT8235)
BIOS	Update by means of software	Phoenix NuBIOS V4, modified by Siemens
CPU	Pentium 4/ Celeron (design FC PGA478)	- Upgradeable - Multimedia support - On-board L2 cache 128 k / 256 k
Memory	3 DIMM module slots, max. 1 GB/DIMM	- Data length = 64 bit - 3.3 V - SDRAM DDR to PC2100 specification - up to 512 MB chip size on the modules - 66/100/133 MHz bus clock [3] - 128 MB to 2 GB/DIMM variable
Graphics	Integrated in chipset	- Compatible with S3 Pro Savage 8-32 MB shared memory - CRT: up to 65535 colors
Hard disk drive [4] [Primary EIDE port]	As master or slave on ATA 33/66/100 mode	- UDMA capable
DVD ROM DVD-ROM/CD-RW	Master on secondary EIDE port	- DMA capable
Floppy [4]	FD- drive port	- 1.44 MB
Keyboard	PS/2 keyboard port	- Standard
Mouse	PS/2 mouse port	- Standard
Serial	COM1/25-pin COM2/9-pin	- V.24
Parallel	Standard, bi-directional, EPP and ECP mode	- 25-pin subminiature connector
PROFIBUS/MPI [2]	Communication port SIMATIC S7	- Potential isolated [1] (CP5611-compatible) - 12 Mbps
USB 2.0	Universal Serial Bus	- three high-current (500 mA) USB 2.0 ports
Ethernet	10BaseT/100 Base-TX (VIA VT8235 + VT6103, VIA Rhine-Family)	- 10/100 Mbps, potentially isolated[1]

[1] Electrically isolated within the safety extra-low voltage circuit (SELV)

[2] Optional product feature

[3] Depends on the CPU type

[4] Depends on the selected device configuration

16.1.3 Position of the ports on the motherboard

Interfaces

The motherboard of the Rack PC contains the following interfaces:

- Ports for connecting external devices
- Ports for internal components (drives, bus boards, etc.)

The figure below shows the location of the internal and external ports on the motherboard.

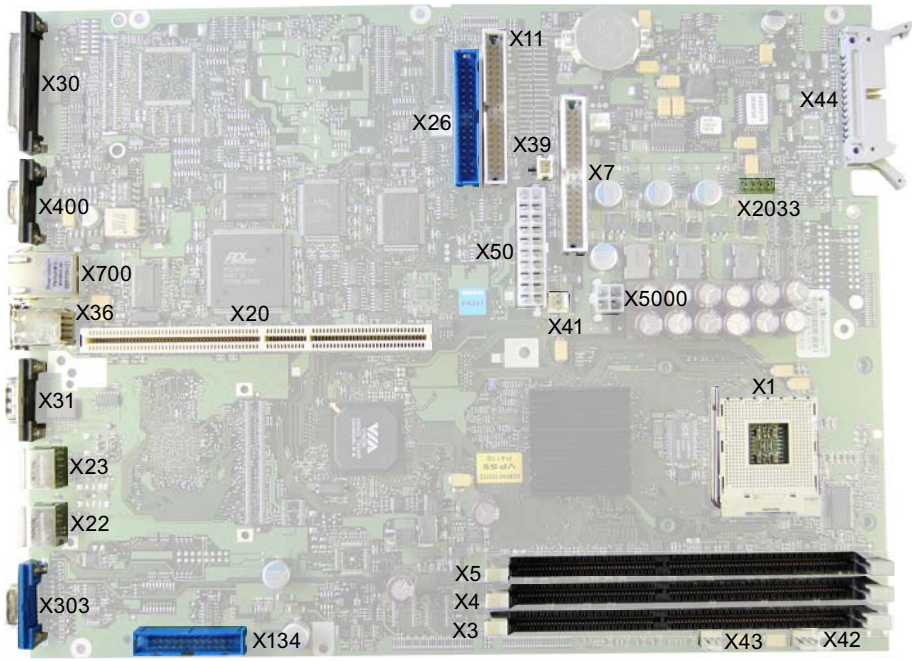


Figure 16-2 Motherboard interfaces

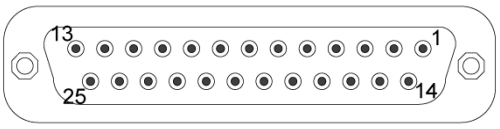
16.1.4 External interfaces

Interface	Position	Connector	Description
COM1	External	X30	25-pin socket, V.24/V.28
COM2	External	X31	9-pin, standard connector
LPT1	External	-	25-pin, standard socket
PS/2 mouse	External	X22	6-pin, miniature DIN socket
PS/2 keyboard	External	X23	6-pin, miniature DIN socket
USB 2.0	External	X36	First and second USB channel, additional third internal USB channel via USB cable to the front panel
PROFIBUS / MPI	External	X400	9-pin, standard socket, potentially isolated port
Ethernet	External	X700	RJ45
VGA	External	X303	15-pin socket

Serial port COM 1, X30

The serial port (COM 1) on the device has the following pinout:

Serial port COM 1 (socket)



Pin No.	Abbreviations	Meaning	Input /Output
1	–	Shield	–
2	TxD (D1)	Serial transmit data	Output
3	RxD (D2)	Serial receive data	Input
4	RTS (S2)	Request to send	Output
5	CTS (M2)	Clear to send	Input
6	DSR (M1)	Ready for operation	Input
7	GND (E2)	Functional ground (reference potential)	–
8	DCD (M5)	Data carrier detect	Input
9	–	–	–
10–17	–	n.c.	–
18	–	–	–
19	–	–	–
20	DTR (S1)	Data terminal ready	Output
21	–	–	–
22	RI (M3)	Incoming call	Input
23–25	–	n.c.	–

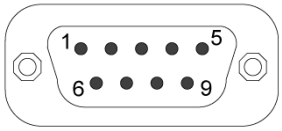
Adapter for COM1

You can convert the COM1 port of the SIMATIC PC family into the usual 25-pin male connector by means of the enclosed adapter (25-pin / 25-pin). For this, you only have to plug the adapter onto the COM1 socket and secure it with the two hexagonal head screws.

COM 2 Serial Port (V24/Mouse), X31

The serial port (COM 2) has the following pinout:

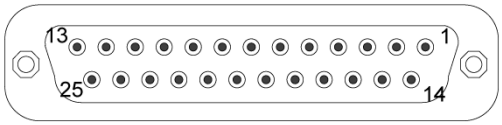
COM 2 Serial Port (V24/Mouse)



Pin No.	Abbreviations	Meaning	Input /Output
1	DCD (M5)	Receiving signal level carrier	Input
2	RxD (D2)	Received data	Input
3	TxD (D1)	Transmitted data	Output
4	DTR (S1)	Data terminal ready	Output
5	GND (E2)	Functional ground (reference potential)	–
6	DSR (M1)	Ready for operation	Input
7	RTS (S2)	Request to send	Output
8	CTS (M2)	Clear to send	Input
9	RI (M3)	Incoming call	Input

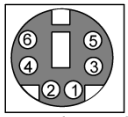
LPT1 parallel port, X134

The parallel port (LPT 1) has the following pinout:

Parallel port LPT1			
			
PinNo.	**Abbreviations**	**Meaning**	**Input /Output**
1	/ Strobe (CLK)	Data message	Output (open collector)
2	Data - Bit 0	Data channel 0	Output (TTL level)
3	Data - Bit 1	Data channel 1	Output (TTL level)
4	Data - Bit 2	Data channel 2	Output (TTL level)
5	Data - Bit 3	Data channel 3	Output (TTL level)
6	Data - Bit 4	Data channel 4	Output (TTL level)
7	Data - Bit 5	Data channel 5	Output (TTL level)
8	Data - Bit 6	Data channel 6	Output (TTL level)
9	Data - Bit 7	Data channel 7	Output (TTL level)
10	/ACK	Data acknowledge	Input (4.7 kΩ pull up)
11	BUSY	Not ready	Input (4.7 kΩ pull up)
12	PE (PAPER END)	Paper end	Input (4.7 kΩ pull up)
13	SELECT	Device selection	Input (4.7 kΩ pull up)
14	/ AUTO FEED	Automatically new line	Output (open collector)
15	/ ERROR	Device error	Input (4.7 kΩ pull up)
16	/ INIT	Reset / Initialization	Output (open collector)
17	/ SELECT IN	Printer selection	Output (open collector)
18 – 25	GND	Chassis ground	–

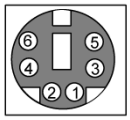
PS/2 mouse port, X22

Pin assignment of the port:

PS/2, X22	Pin No.	Abbreviations	Meaning	Input /Output
 View onto the socket	1	DAT	Data channel, mouse	Input/output
	2	–	n.c.	–
	3	GND	Chassis ground	–
	4	P5VFK	+ 5 V (fused)	Output
	5	CLK	Clock channel, mouse	Input/output
	6	–	n.c.	–

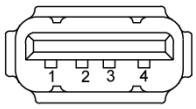
PS/2 keyboard port, X23

Pin assignment of the port:

PS/2, X23	Pin No.	Abbreviations	Meaning	Input /Output
 View onto the socket	1	DAT	Data channel, keyboard	Input/output
	2	–	n.c.	–
	3	GND	Chassis ground	–
	4	P5VFK	+ 5 V (fused)	Output
	5	CLK	Clock channel, keyboard	Input/output
	6	–	n.c.	–

USB 2.0 ports, X36

The Universal Serial Bus port has the following pinout:

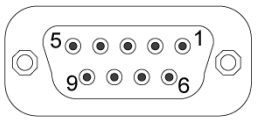
USB 2.0 port			
			
Pin No.	**Abbreviations**	**Meaning**	**Input /Output**
1	VCC	+ 5 V (fused)	Output
2	– Data	Data channel	Input /Output
3	+ Data	Data channel	Input /Output
4	GND	Chassis ground	–

The connectors are of type A.

The ports are rated as high-current USB 2.0 (500 mA).

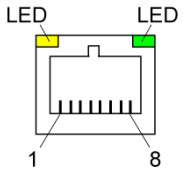
PROFIBUS/MPI interface, X400

The PROFIBUS/MPI socket has the following pinout:

PROFIBUS/MPI interface			
			
PinNo.	**Abbreviations**	**Meaning**	**Input /Output**
1	–	n.c.	–
2	–	n.c.	–
3	LTG_B	Signal line B of MPI module	Input/output
4	RTS_AS	RTSAS, control signal for received data stream. The signal is "1" active when the directly connected PLC is sending.	Input
5	M5EXT	M5EXT return line (GND) of the 5 V power supply. The current load caused by an external consumer connected between P5EXT and M5EXT must not exceed the maximum of 90 mA.	Output
6	P5 EXT	P5EXT power supply (+5 V) of the 5 V power supply. The current load caused by an external consumer connected between P5EXT and M5EXT must not exceed the maximum of 90 mA.	Output
7	–	n.c.	–
8	LTG_A	Signal line A of MPI module	Input/output
9	RTS_PG	RTS output signal of the MPI module. The control signal is "1" when the PG is sending.	Output
Shield		on connector casing	

[1] Optional product feature

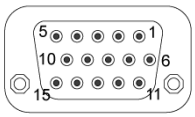
Ethernet RJ45 connection, X700

Ethernet RJ45 connection			
			
PinNo.	**Abbreviations**	**Meaning**	**Input /Output**
1	TD+	Transmitted data	Output
2	TD-	Transmitted data	Output
3	RD+	Received data	Input
4, 5 [1]	SYMR	Internal 75-Ohm terminating resistor	–
6		Received data	Input
7, 8 [1]	SYMT	Internal 75-Ohm terminating resistor	–
S		Shield	–
	LED yellow	Connection	–
	LED green	Activity	–

[1] is not necessary for data transfer

VGA port, X303

The VGA socket has the following pinout:

VGA port			
			
PinNo.	**Abbreviations**	**Meaning**	**Input /Output**
1	R	Red	Output
2	G	Green	Output
3	B	Blue	Output
4	–	n.c.	–
5	GND	Chassis ground	–
6	GND	Chassis ground	–
7	GND	Chassis ground	–
8	GND	Chassis ground	–
9	+ 5 V	+ 5 V (fused)	Output
10	GND	Chassis ground	–
11	–	n.c.	–
12	DDC_DAT	Display Data Channel Data	Input/output
13	EXT_H	Horizontal synchronizing pulse	Output
14	EXT_V	Vertical synchronizing pulse	Output
15	DDC_CLK	Display Data Channel Clock	Input/output

16.1.5 Internal ports

Pin assignment of the internal ports

Interface	Position	Connector	Description
Memory	Internal	X3, X4, X5	3 DIMM sockets, 64-bit
Processor	Internal	X1	Socket for FCPGA mobile processor
Bus expansion	Internal	X20	Socket for extended bus, assigned with ISA and PCI bus signals
Power supply	Internal	X50, X5000	20-pin power connector, 4-pin power connector
Floppy	Internal	X26	Two drives can be installed (82078 compatible) 360 kB, 720 kB, 1.2 MB, 1.44 MB 3F0h–3F7h, 370h–377h, switchable IRQ 6, edge triggered 34-pin, socket for standard floppy disk drive
primary EIDE	(e.g. hard disk drive)	X7	Internal
Secondary EIDE (e.g. CD ROM)	Internal	X11	170h–177h, 1F0h–1F7h, switchable IRQ14, IRQ15, edge triggered 40-pin, 2.54 mm male connector, operation of up to two disk drives
PS connection for CPU fan	Internal	X41	CPU fan power supply, 3-pin male connector
PS connection for equipment fan	Internal	X42, X43	Power supply for equipment fan (controlled), 3-pin, male connector
Connection for SCSI LED	Internal	X39	Input for SCSI drive activity display
Internal USB port	Internal	X2033	Connection for the USB port cable to the front panel of the computer
Front panel port		X44	OP connection

Assignment for SCSI activity connector, X39 Type JST B2B-PH-SM3-TB

Pin No.	Abbreviations	Meaning	Input /Output
1	NC	-	
2	SCSI HD_N	0-V level means that the SCSI port is active	Input

Pin assignment of the internal USB port connector, X2033

Pin No.	Abbreviations	Meaning	Input /Output
1	VCC	+ 5 V (fused)	Output
2	Key	–	–
3	- Data	Data channel	Input /Output
4	Reserved	–	–
5	+ Data	Data channel	Input /Output
6	Reserved		
7	GND	Chassis ground	–
8	Reserved		
9	GND	Chassis ground	–
10	Key	–	–

Note

For detailed information on the pin assignments of the interfaces, please contact Costumer Support or the Repair Center.

16.2 Bus board

16.2.1 Layout and principle of operation

The bus board is designed as a link between the motherboard and the expansion modules. It is mounted by means of four screws.

The bus board has seven PCI slots and five long format ISA slots. Ten expansion modules can be inserted simultaneously according to ISA specification (Rev. 3.1) and PCI specification (Rev. 2.0). All PCI slots are master–capable. The expansion modules are powered via the link between the bus board and the motherboard and via the auxiliary ATX contact directly from the power supply unit.

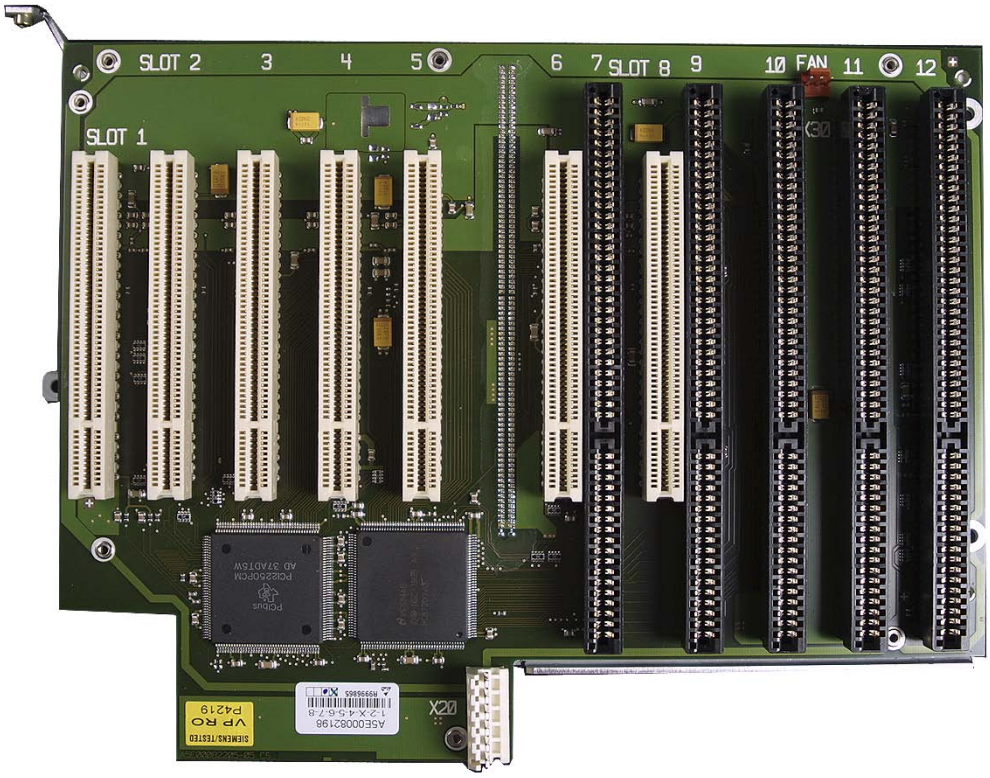


Figure 16-3 Bus board

Assignment of the PCI IRQ channels to the PCI slots.

Rack PC 840 V2	**PCI modules interrupt assignment (PCI IRQ) in:**						
Module interrupt (Pin No.)	Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6	Slot 8
INT – A (A6)	**channel 1**	**channel 2**	**channel 3**	**channel 4**	**channel 1**	**channel 2**	**channel 3**
INT – B (B7)	channel 2	channel 3	channel 4	channel 1	channel 2	channel 3	channel 4
INT – C (A7)	channel 3	channel 4	channel 1	channel 2	channel 3	channel 4	channel 1
INT – D (B8)	channel 4	channel 1	channel 2	channel 3	channel 4	channel 1	channel 2

Bold letters in the table means: Master interrupt of the slot module

16.2.2 Exclusive PCI hardware interrupt

Applications demanding a high-performance interrupt require a high-speed hardware interrupt reaction. The PCI hardware interrupt should be used only by one resource in order to ensure high-speed reaction of the hardware. This can be forced by appropriate setting in the system BIOS.

Setting up a reserved interrupt on the device

A reserved interrupt can only be set and used for PCI Slot 2 or 6 and 4. Further reserved interrupts for use on the slots are not available.

An exclusive interrupt cannot be used on any of the PCI slots in the basic configuration. In order to set up a reserved interrupt, you first need to disable the functions on the motherboard*. This is possible for PCI slots 2 and 4.

In order to set up a reserved interrupt on PCI slot 2 or 6, you need to disable USB Controller B (this is the upper USB port of the motherboard) in the BIOS.

In order to set up a reserved interrupt on PCI slot 4, you need to disable USB 2.0 Controller (all USB ports are now operating in USB 1.1 mode) and, if installed, the PROFIBUS.

* For information on how to disable motherboard functions, refer to the chapter dealing with the BIOS Setup "Advanced Menu".

Assigning a reserved interrupt in the BIOS Setup

With the factory setting of the system BIOS, the interrupts are automatically assigned to the slots.

Depending on the system configuration, several slots may be assigned the same interrupt. Here we refer to interrupt sharing.

In the BIOS Advanced Menu interrupts can be set to reserved and be assigned to the interrupt lines of the slots. Here we refer to a reserved interrupt.

To do so:

To enable the use of a reserved interrupt at **PCI slot 2** or **6**, assign **PCI IRQ Line 2** to the required free interrupt, and **all other** PCI interrupt channels (channels 1, 3, 4) to **another** interrupt.

To enable the use of a reserved interrupt at **PCI slot 4**, assign **PCI IRQ Line 4** the required free interrupt, and **all other** PCI interrupt channels (channels 1, 2, 3) **another** interrupt.

To do this, open the **Advanced** menu of the BIOS setup and then **PCI Configuration.** In this menu you can assign the specific **PCI IRQ channels** to the respective interrupts.

You cannot assign interrupts that are already used by the system.

If a pre-assigned or reserved interrupt is assigned manually, it is indicated with a yellow star. This means it cannot be used.

Interrupts not reserved by the system can be assigned twice.

16.2.3 Pin assignment of the bus board connectors

Pin assignment Auxiliary ATX

Pin No.	Abbreviation	Meaning	Input /Output
1, 2, 3	GND	Chassis ground	
4, 5	+ 3.3 V	+ 3.3 V	
6	+ 5 V	+ 5 V	

FAN connector pinout

Pin No.	Abbreviation	Meaning	Input /Output
1	GND	Chassis ground	-
2	+ 12 V	Power supply	Output
3	NC	-	-

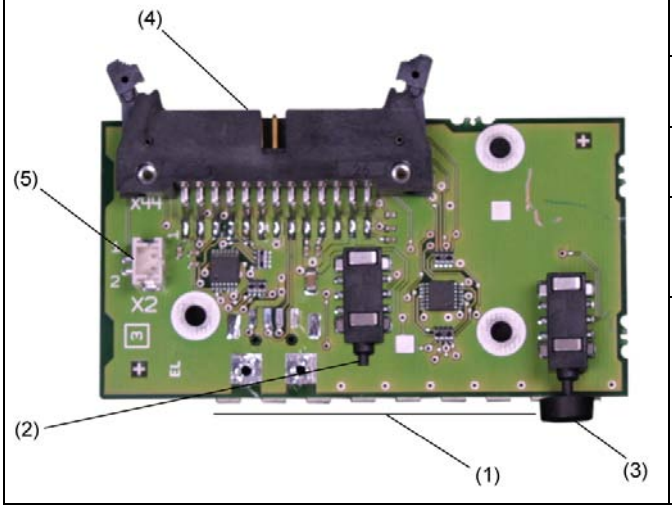
Note

For detailed information on the pin assignments of the interfaces, please contact Costumer Support or the Repair Center.

16.3 Operator panel

16.3.1 Design

The operator panel is connected to the motherboard with a 26-pin connecting cable.

Operator panel	Pos	Description
	(1)	LEDs Single LED green, red, yellow
	(2)	Reset button 1-pin button
	(3)	On/off button 1-pin button
	(4)	26-pin male connector for the connection to the motherboard
	(5)	External reset connector

16.3.2 Pin assignment of the OP connectors

External Reset (X30), type: JST B2B-PH-SM3-TB

Pin No.	Abbreviation	Meaning	Input /Output
1	PWRGood	External reset, (IO low max. 30 mA)	
2	GND	Chassis ground	

The device is reset when pins 1 and 2 (for example, by means of a button) are short-circuited. It remains in this state until the short-circuit is cancelled.

Note

For detailed information on the pin assignments of the interfaces, please contact Costumer Support or the Repair Center.

16.4 System resources

16.4.1 Currently Allocated System Resources

All system resources (hardware addresses, memory configuration, interrupt assignment, DMA channels) are assigned dynamically by the Windows OS, depending on the hardware configuration, drivers, and connected peripheral devices. You can view the current configuration of system resources or possible conflicts with the following operating systems:

Windows NT 4.0	**Start > Programs > Management (General) > Windows NT Diagnosis**
Windows 2000 Professional/ XP Professional	**Start > Run :** In the **Open** dialog, enter *msinfo32*and confirm with **OK**

16.4.2 System resources used by the BIOS/DOS

The following table describes the system resources for the factory state of the device.

16.4.2.1 I/O address allocation

I/O address (hex)		Size (bytes)	Description of the basic function	Possible alternative function
from	up to			
0000	000F	16	DMA controller	
0010	001F	16	Motherboard resources	
0020	0021	2	Programmable interrupt controller	
0022	003F	30	Motherboard resources	
0040	0043	3	System timer	
0044	005F	28	Motherboard resources	
0060	0060	1	Keyboard controller	
0061	0061	1	System loudspeaker	
0063	0063	2	Motherboard resources	
0064	0064	1	Keyboard controller	
0067	006F	9	Motherboard resources	
0070	0075	6	System CMOS/real-time clock	
0076	0080	138	Motherboard resources	
0081	008F	15	DMA controller	
0090	009F	16	Motherboard resources	
00A0	00A1	2	Programmable interrupt controller	

I/O address (hex)				
00A2	00BF	30	Motherboard resources	
00C0	00DF	32	DMA controller	
00E0	00EF	16	Motherboard resources	
00F0	00FE	15	Numeric data processor	
0110	016F	112	Unused	
0170	0177	8	Secondary EIDE channel	
0178	01EF	120	Unused	
01F0	01F7	8	Primary EIDE channel	Switchable in Setup, then free
01F8	01FF	116	Unused	
0200	0273	16	Reserved for game port	
0274	0277	4	ISA PNP Read Data Port	
0279	0279	4	ISA PNP Read Data Port	
027C	02E7	108	Unused	
02E8	02EF	8	Reserved	
02F8	02FF	8	COM2	Switchable in Setup, then free
0300	031F	32	Unused	
0320	032F	16	Unused	
0330	033F	16	Unused	
0340	035F	32	Unused	
0360	0367	8	Unused	
0370	0371	2	SOM	
0372	0375	4	Unused	
0376	0376	1	Secondary EIDE channel	
0378	037F	8	LPT 1	Switchable in Setup, then free
0380	03AF	48	Unused	
03B0	03BB	12	S3 Graphics Pro Savage DDR	
03BC	03BF	4	Reserved	
03C0	03DF	16	S3 Graphics Pro Savage DDR	
03E0	03E7	8	Unused	
03E8	03EF	6	Reserved	
03F0	03F5	6	Standard floppy disk controller	
03F6	03F6	1	Primary EIDE channel	
03F7	03F7	1	Standard floppy disk controller	
03F8	03FF	8	COM1	Switchable in Setup, then free
Dynamic area; resources are managed via Plug and Play				
0400	0777	888	Unused	
0778	077F	8	ECP LPT 1	
0780	0CF7	1400	unused	
0CF8	0CFB	4	PCI configuration index	fixed

I/O address (hex)				
0CFC	0CFF	4	PCI configuration data	fixed
0D00	0EFF	512	Unused	
0F00	0F4F	80	Super IO	
0F50	0FFF	176	Unused	
1000	10FF	256	Internal allocation	
1180	11FF	128	Internal allocation	
1800	187F	128	Internal allocation	
8800	8BFF	1023	SATA RAID Controller	
8C00	FEFF	29288	Unused at SATA-RAID	
8870	8897	39	PATA RAID Controller	
8898	FEFF	30311	Unused at PATA-RAID	
1880	886F	28655	Unused	
FF00	FF0F	16	EIDE bus master register	

16.4.2.2 Interrupt assignments

Interrupt	Description	Comment
IRQ0	Timer output 0	fixed
IRQ1	Keyboard	fixed
IRQ2	Cascaded (IRQ9)	fixed
IRQ3	Serial port 2	2)
IRQ4	Serial port 1	2)
IRQ5	PCI, Plug and Play	1) Priority interrupt for PROFIBUS
IRQ6	FD controller	fixed
IRQ7	Parallel port 1	2)
IRQ8	Real-time clock (RTC)	fixed
IRQ9	PCI, Plug and Play (Redirected IRQ2)	1) 2) Priority interrupt for Ethernet and RAID controller
IRQ10	PCI, Plug and Play	1) 2) Priority interrupt for VGA
IRQ11	Reserved for SOM or ISA modules	2)
IRQ12	PS/2 mouse	2)
IRQ13	Numeric processor	fixed
IRQ14	1. HD controller 1 (primary)	2)
IRQ15	2. HD controller 2 (secondary)	2)

PCI Interrupt Lines	Description	Comment
Channel 1	USB 1.1 controller A	fixed
	Ethernet	2)
Channel 2	USB 1.1 controller B	2)
Channel 3	USB 1.1 controller C	2)
	VGA	fixed
Channel 4	USB 2.0 controllers A, B, C	2)
	PROFIBUS	2) free in version without PROFIBUS

1) PCI boards and the on-board PCI devices require PCI interrupt channels. These interrupt channels are sharable and plug and play compatible. This means several devices can share the same interrupt. The IRQ is assigned automatically. PCI interrupt channels must be derived from the ISA interrupt pool, which means that the PCI modules also use ISA resources. This allocation is done automatically, too. Plug and play incompatible ISA cards can be allocated to a free IRQ by setting the "IRQ Resource Exclusion" of the corresponding interrupt to reserved in the BIOS Setup menu. Refer to the respective ISA module documentation for the respective interrupt to be allocated.

2) These functions can be disabled in the Setup This releases allocated resources.

16.4.2.3 Memory address assignments

PCI VGA modules can be operated with an expansion ROM of a size up to 48 K.

Address		Size	Description of the basic function	Possible alternative function
from	up to			
0000 0000	0007 FFFF	512K	Conventional system memory	
0008 0000	0009 F7FF	127k	Conventional system memory extended	
0009 F800	0009 FFFF	2K	XBDA, extended Bios Data Area	
000A 0000	000A FFFF	64K	VGA graphics refresh memory	Shared SMM for power management
000B 0000	000B 7FFF	32K	Monochrome graphics/text refresh memory	Unused
000B 8000	000B FFFF	32K	VGA graphics/text refresh memory	
000C 0000	000C BFFF	48K	VGA-BIOS expansion	
000C C000	000C FFFF	16K	USB	Always occupied
000D 0000	000E 7FFF	96K 1)	unused (device driver or ISA hardware)	via EMM High DOS Memory
000D 0000	000D 97FF	38K 2)	RAID	
000D 0000	000D 93FF	37K 2)	SATA RAID	
000D 9400	000E 97FF	65K 2)	Unused	
000D 9800	000E 97FF	64K 2)	Unused	
000D 0000	000D 65FF	26K 2)	SCSI	
000D 65FF	000E 97FF	76K 2)	Unused	
000E 8000	000F FFFF	96K 2)	System BIOS	
000E 9800	000F FFFF	96K 2)	System BIOS	
0010 0000	00EF FFFF	14M	System memory	
00F0 0000	00FF FFFF	16M-15M=1M	System memory or memory hole	Via ISA memory setup (memory hole)
0100 0000	7FFF FFFF	Max. 2 GB - 16 MB	System memory, 512 Kbytes of top of memory are reserved for USB.	Depends on memory configuration
7000 0000	FFF7 FFFF		PCI memory address space	For PCI expansion cards
FFF8 0000	FFFF FFFF		Firmware HUB	

16.5 BIOS Setup

16.5.1 Overview

BIOS Setup program

The BIOS SETUP program is stored in the ROM BIOS. Information about the system configuration is stored in the battery-backed RAM of the device.

You can use SETUP to set the hardware configuration (for example, the hard disk type) and define the system properties. You can also use SETUP to set the time-of-day and date.

Changing the device configuration

Your Rack PC device configuration is preset for working with the software supplied with the unit. You should only change the preset values if you have modified your Rack PC in any way, or if a fault occurs when the unit is powered up.

16.5.2 Starting BIOS Setup

Starting BIOS SETUP

Run SETUP as follows:

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

With the default setting of your PC, the display shown below appears following power-on, for example:

```
Phoenix BIOS 4.0 Release 6.0 A5E000xxxxx-ES0x
Copyright 1985-2002 Phoenix Technologies Ltd. All Rights Reserved.
SIMATIC Rack PC 840 V2 Vxx.xx.xx
CPU = Intel® Pentium®4 CPU 2.40 GHz
639K System RAM Passed
127MB Extended RAM Passed
Mouse initialized
Press <F2> to enter SETUP or <ESC> to display the boot menu
```

2. On completion of the POST, the BIOS gives you the opportunity of starting the SETUP program. The following message appears on the screen:

```
Press < F2 > to enter SETUP or <ESC> to show boot menu
```

3. Press the F2 key as long as the BIOS prompt appears on the screen.

16.5.3 BIOS Setup menus

The various menus and submenus are listed on the next pages. You can obtain information on the selected SETUP item from the "item-specific help" part of the respective menu.

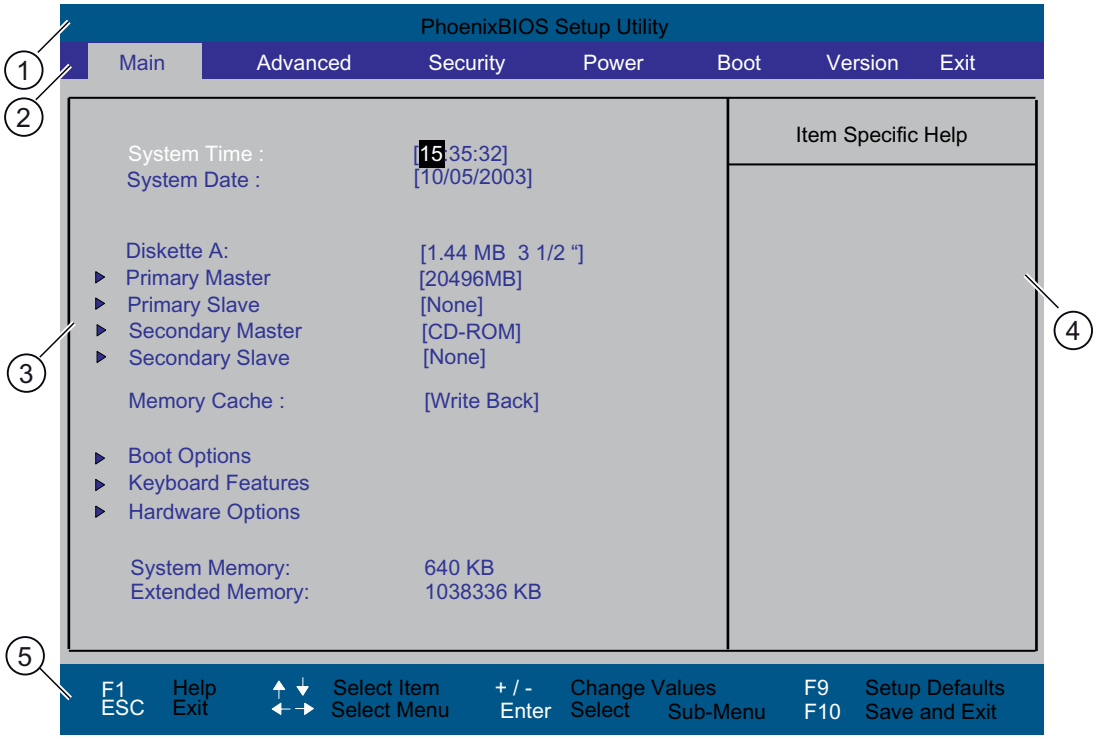


Figure 16-4 BIOS-SETUP Menu (example)

(1) Header	(4) Help view
(2) Menu line	(5) Input line
(3) Selectable submenu	

Menu layout

The screen is divided into four sections. In the top part (2), you can select the menu forms [Main], [Advanced], [Security], [Power], [Boot Sequence], [Version], [Exit]. In the left of the center section (3) you can select various settings or submenus. Brief help texts appear on the right (4) for the currently selected menu entry. The bottom section contains information for operator input.

The figures below represent examples of specific device configurations. The screen content changes based on the supplied equipment configuration.

Yellow stars to the left of the interface designation (for example, Internal COM 1) indicate a resource conflict between the interfaces managed by the BIOS. In this case you should select the default settings (F9) or eliminate the conflict.

You can move between the menu forms using the cursor keys [←] left and [→] right.

Menu	Meaning
Main	System functions are set here
Advanced	An extended system configuration can be set here
Security	Security functions are set here, for example, a password.
Power	Power-saving functions can be selected here.
Boot	This is where the boot priority is specified.
Version	Information about the programming device (for example, release status) can be found here.
Exit	Used for terminating and saving.

16.5.4 Main menu

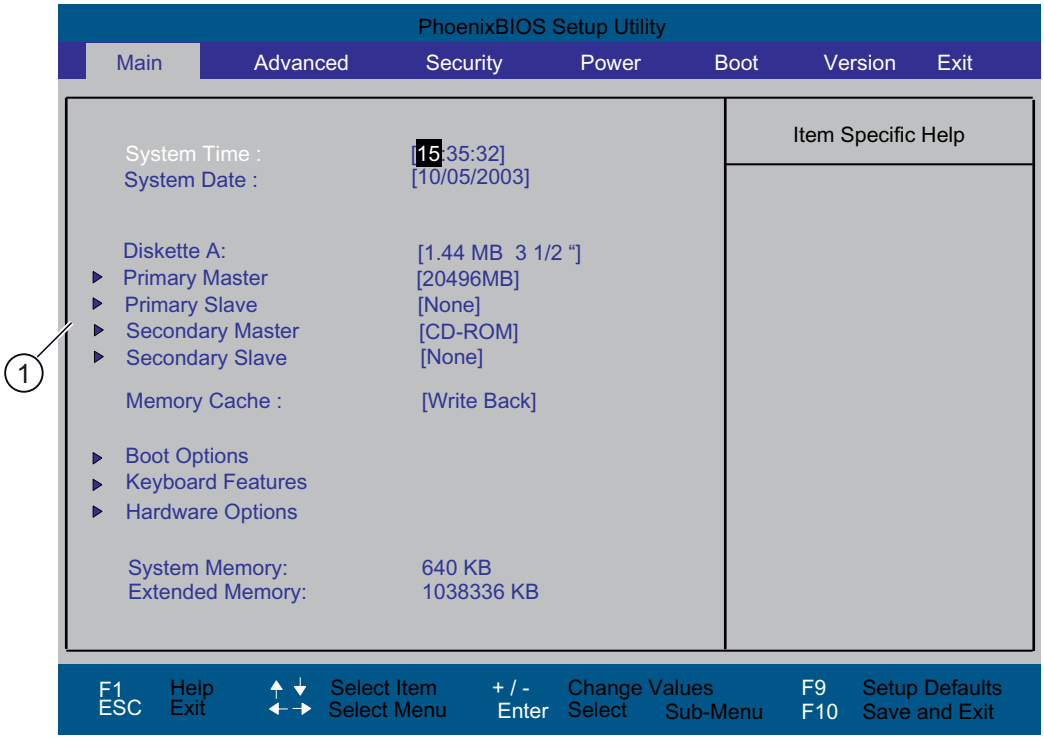


Figure 16-5 SETUP main menu (example)

(1) Selectable submenu

Settings in the main menu

In the main menu, you can move up and down to select the following system configuration boxes by means of the [↑] up and [↓] down cursor keys:

Field	Meaning
System Time	For viewing and setting the current time
System Date	For viewing and setting the current date
Floppy disk A	Type of installed floppy disk drive
Memory Cache	Used for setting the cache options
by submenus	
Primary Master	Type of installed disk drives
Primary Slave	Type of installed disk drives
Secondary Master	Type of installed disk drives
Secondary slave	Type of installed disk drives
Boot options	Used for setting the boot options
Keyboard Features	For setting the keyboard interface (e.g. number lock, typematic rate)
Hardware Options	Used for setting the hardware options

System Time and System Date

System Time and System Date indicate the current values. When the corresponding field has been selected, you can change the values by means of the [+] and [–] keys

Hour: Minute: Second

and for the date

Month/Day/Year

You can move between the entries in the date and time fields (for example, from hour to minute) using the tab key.

Floppy disk A (Floppy disk drive)

The type of floppy disk drive installed in the PC is set here. The following entries are possible:

[Disabled]	if no disk drive is available.
[1.44 MB, 3 1/2"]	Default setting for an installed disk drive A

Primary Master, Primary Slave, Secondary Master, Secondary Slave

The system jumps to the following submenu when you select this type of menu field:

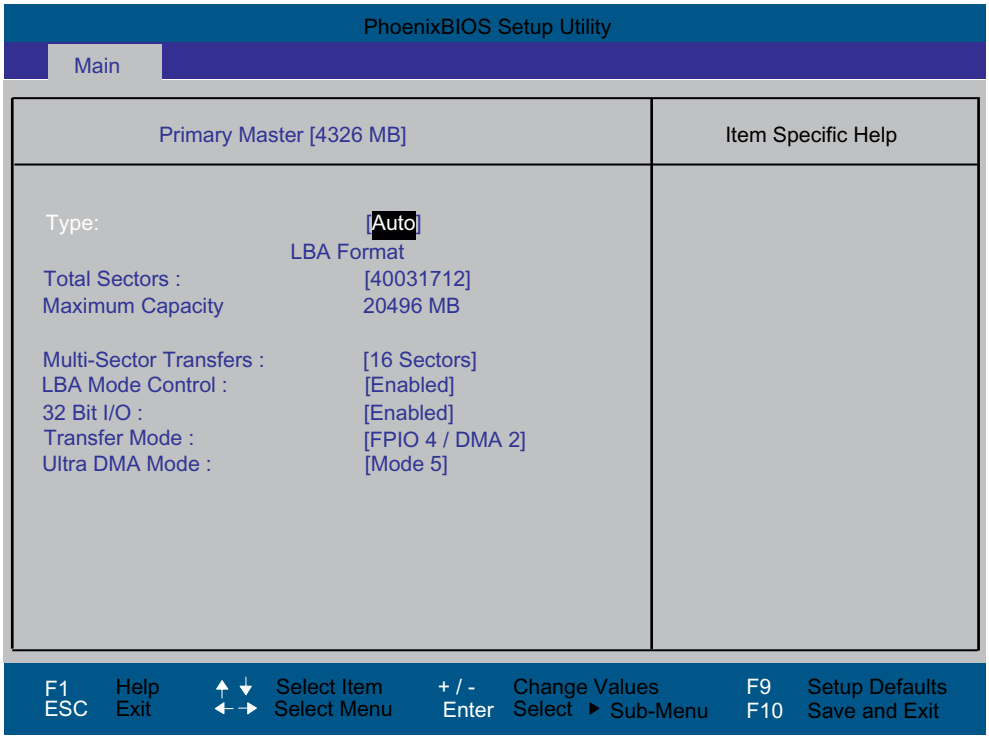


Figure 16-6 Primary Master (Example)

"Type" Field	The selectable parameters given here are generally stored on the corresponding IDE drive. The 'Auto' setting in the 'Type' field means that these values are automatically read from the drive and written to memory **(Auto detect).** If Type is selected for a drive that cannot be detected, a time-out is triggered within approximately 1 minute and the entries remain unchanged. It is a good idea to select "Auto" for the interfaces which have a drive connected to them. Select “User” if you want to define the hard disk drive. You also need to configure the other options, for example, Cylinder, Heads, Sectors/Track, or other properties of the hard disk drive. Select "None" if you have not connected a disk drive. This setting reduces the system waiting time.
Option “Multi-Sector Transfers”	The Multi-Sector Transfers field is used to define the number of sectors that are to be transferred per interrupt. The value is dependant on the drive used and and should only be set with the Type field set to "Auto".
	Disabled 2,4,8,16 sectors
Option "LBA Mode Control"	In LBA Mode Control field (enabled,disabled). When set to “Enabled” hard drive capacities > 528 MB are supported. The value is dependant on the drive used and and should only be set with the Type field set to "Auto".

In the 32-bit IO field	The access type for the drive is determined in the 32 Bit–I/O field	
	Disabled	16-bit accesses
	Enabled	32-bit accesses (default)
Option "Transfer Mode" and "Ultra DMA Mode"	The settings in these fields define the interface data transfer rate. The value is dependant on the drive used and and should only be set with the Type field set to "Auto". You can exit the sub-menu with the ESC key.	

Memory Cache field

If the "Memory Cache" field is selected in the main menu, the following context menu appears:

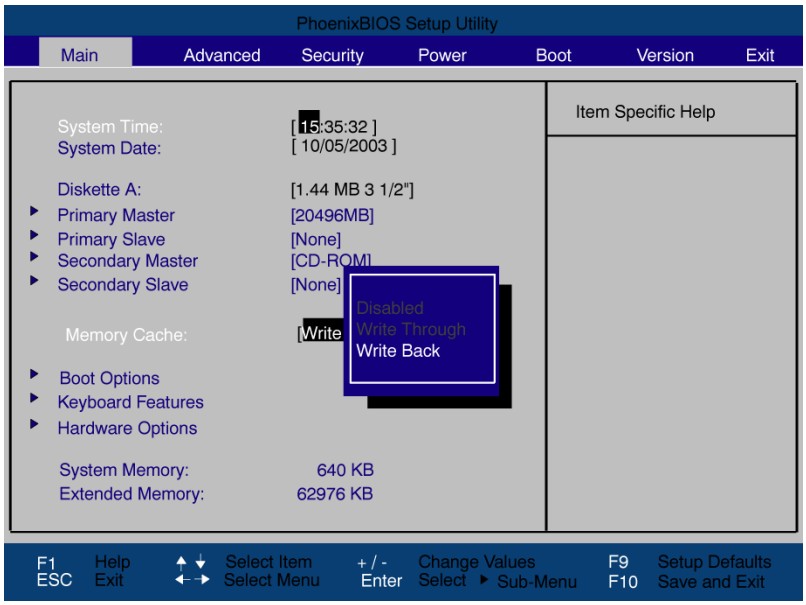


Figure 16-7 "Memory Cache" field

The cache is a high-speed memory buffer between the CPU and memory (DRAM). When the function is enabled, repeated memory accesses are executed in the faster cache, rather than in the main memory. In rare cases it can be necessary to switch off (disable) the cache for some hardware and software, as required program runtimes or pauses may be shortened by the fast cache memory.

[Disabled]	Cache is disabled
[Write Through]	Write access is not concluded until the entry has been made in main memory
[Write Back]	Write access is concluded immediately, the entry in main memory takes place in the background (default)

Boot options field

If the "Boot Options" field is selected in the main menu, the following context menu appears:

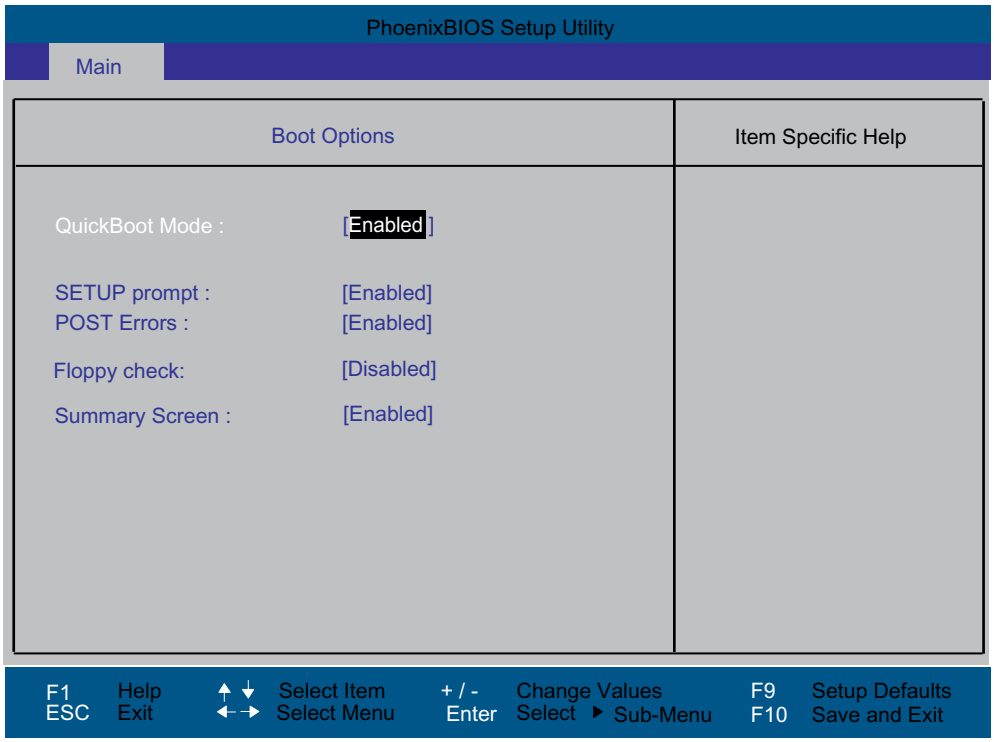


Figure 16-8 "Boot Options" submenu (Example)

Quick Boot Mode	Some hardware tests are skipped to speed up the boot sequence.
SETUP prompt	The message PRESS <F2> to enter Setup is output at the bottom of the screen during the system run-up phase.
POST errors	The boot sequence is stopped if an error is detected; you must press F1 to acknowledge. If "Disabled" is selected, it is not necessary to acknowledge an error, e.g where no keyboard is connected.
Floppy check	The floppy head is stepped inward and then back to its original position during the system run-up phase. This test reinitializes the drive.
Summary screen	The most important system parameters are displayed when the system boot phase completes.

'Enabled' means that the feature is active. 'Disabled' means that the feature is inactive.

Example of a summary screen:

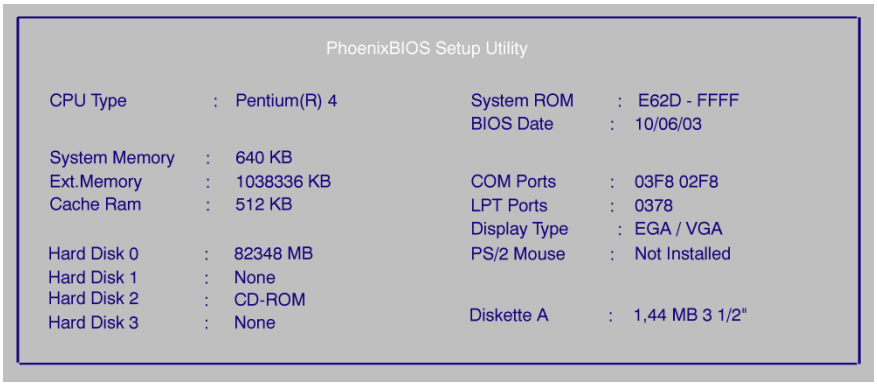


Figure 16-9 Summary screen (example)

The Summary Screen appears when the system boot phase completes.

"Keyboard Features" field

If the "Keyboard Features" field is selected in the main menu, the following context menu appears:

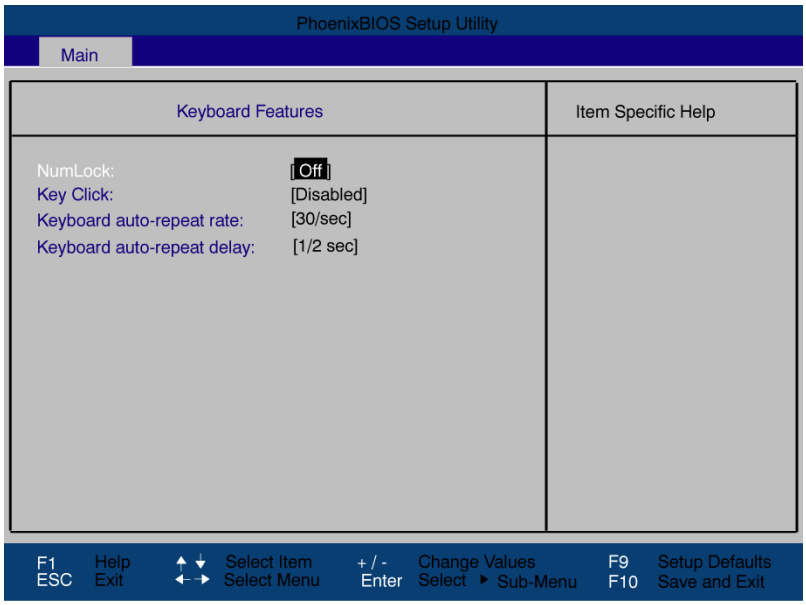


Figure 16-10 "Keyboard features" submenu (example)

Numlock	Switches Numlock on or off following power on. The "Auto" setting maintains the state of the previous power-down.
Key Click	Creates an audible click when a key is pressed.
Keyboard auto–repeat rate	Increase in automatic key repeat rate
Keyboard auto–repeat delay	On-delay of automatic keyboard repeat

"Hardware Options" field

If the "Hardware Options" field is selected in the main menu, the following submenu appears:

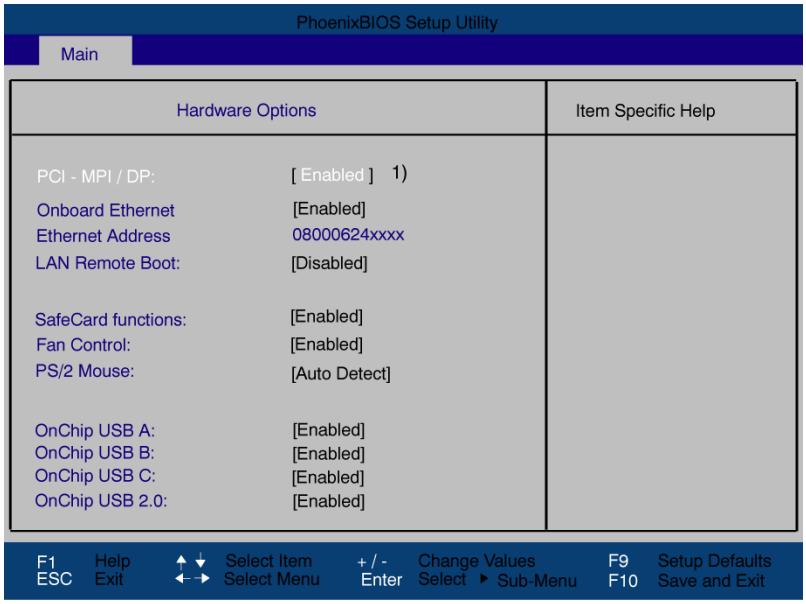


Figure 16-11 "Hardware options" submenu (example)

The parameters of the interfaces present on the motherboard are set here.

Entry	Meaning	
PCI–MPI/DP [1]	Enables the CP5611-compatible MPI/DP interface. The resources are managed by the BIOS PCI Plug and Play mechanism.	
On-board Ethernet	[Enabled]	The Ethernet interface on the motherboard is enabled.
	[Disabled]	The Ethernet interface on the motherboard is disabled.
Ethernet Address	Shows the individual Ethernet address.	

[1)] Optional product feature

Entry	Meaning	
LAN Remote Boot	[Enabled]	Booting via a connected LAN is possible. The respective boot source is displayed as Intel® Boot-Agent in the boot sequence menu.
	[Disabled]	Booting via LAN is not possible.
SafeCard functions	[Enabled]	On-board monitoring functions are enabled.
	[Disabled]	No monitoring functions
	The relevant driver and the application must be started for operation of the monitoring functions.	
Fan control	[Enabled]	The fan speed is controlled based on the temperature.
	[Disabled]	The fan always runs at full speed.

Entry	Meaning	
PS/2 mouse	[Enabled]	The PS/2 port is enabled. This is the default setting at the device, the PS/2 mouse is activated in this setting. IRQ 12 is assigned.
	[Disabled]	The PS/2 port is disabled, IRQ12 is available.
	[Auto Detect]	The system automatically detects the mouse. **Changes to this interface do not come into effect until the PC is switched off and on again.**
On-chip USB A	[Enabled]	The USB 1.1 interfaces on port 0 to 1 are always enabled. OnChip USB A is assigned PCI IRQ channel 1. Only USB port 1, the lower port on the back of the device, is accessible. USB Port 0 is not accessible. USB 1.1 devices are always supported.
OnChip USB B	[Enabled]	The USB 1.1 interfaces on port 2 to 3 are always enabled. OnChip USB B is assigned PCI IRQ channel 2. Only USB port 2, the lower port on the back of the device, is accessible. USB Port 3 is not accessible.
	[Disabled]	USB 1.1 interfaces 2 to 3 are disabled, the resources are available. USB 1.1 devices are not supported.
On-chip USB C	[Enabled]	The USB 1.1 interfaces on port 4 to 5 are always enabled. OnChip USB C is assigned PCI IRQ channel 3. Only USB port 5 is accessible on the front panel of the device. USB 4 is not accessible.
	[Disabled]	USB 1.1 interfaces 4 to 5 are disabled, the resources are available. USB 1.1 devices are not supported.
On-chip USB 2.0	[Enabled]	USB 2.0 is enabled for ports 0 to 5. OnChip USB 2.0 is allocated to PCI IRQ channel 4. Accessible are only the the USB ports 1 and 2 on the top/bottom of the rear panel of the device, or USB 5 on the front panel.
	[Disabled]	The USB interfaces on port 0 to 5 support only USB 1.1 and occupy resources as described earlier.

16.5.5 Advanced Menu

Menu layout

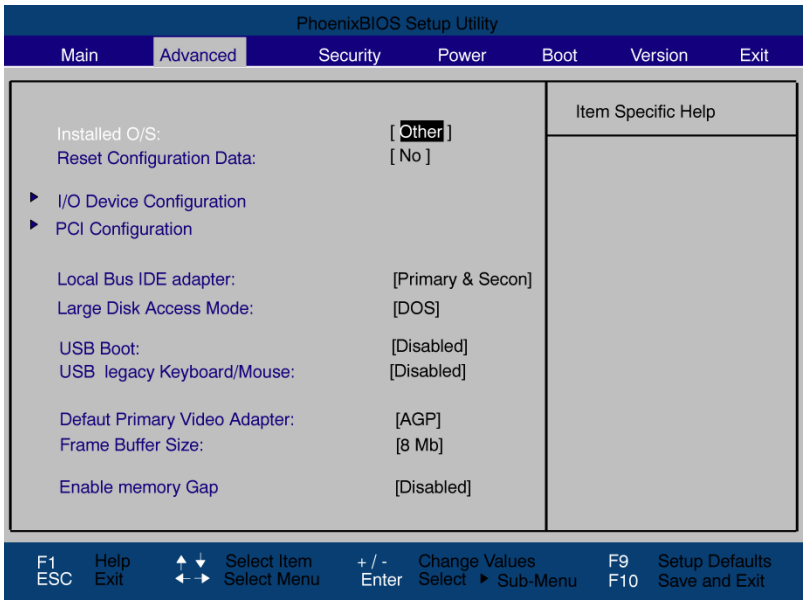


Figure 16-12 "Advanced" menu example

Settings in the Advanced menu

Installed O/S	Plug&Play means that all modules are automatically detected and installed, providing they support Plug&Play functionality.	
	[Other]	BIOS handles the entire Plug&Play capability, default setting.
	[Win2000]	The operating system handles the Plug&Play functions.
	[WinXP]	The operating system handles the Plug&Play functions.
Reset Configuration Data	[Yes]	All installations under Plug&Play are deleted and the configuration is retriggered the next time the system boots. The entry is then reset to [No]. System components that do not support Plug&Play have to be entered manually.
	[No]	The Plug&Play system components are initialized after the next system start.
Local Bus IDE adapter	[Primary] [Secondary]	One IDE interface for max. two drives.
	[Primary & Secondary]	Two IDE interfaces for max. four drives.
	[Disabled]	No local IDE interface.
Large disk access mode	[DOS]	The drive tables are adapted for DOS access operations in accordance with Enhanced IDE.
	[OTHER]	The tables are not adapted.

USB Boot	[Disabled]	It is not possible to boot from USB. USB keyboard and mouse legacy support can be enabled.
	[Enabled]	It is possible to boot from USB.
USB legacy keyboard/mouse	[Disabled]	The USB keyboard and mouse can be used in the BIOS Setup and with operating systems which support the USB interface. DOS and Windows NT cannot be operated.
	[Enabled]	The ISA bus is de-activated. DOS and Windows NT can be operated by means of the USB keyboard. This means that the operation of DOS-based tools such as Image Creator is possible.
Default primary video adapter	[AGP]	BIOS messages are output via the onboard AGP interface.
	[PCI]	BIOS messages are output via installed PCI cards.
Frame Buffer Size	[8 Mb] [16 MB] [32 MB]	The frame buffer size can be adapted to the graphics requirement of your application.
Enable memory gap	[Disabled]	The onboard RAM is fully available.
	[Enabled]	A 1 MB area of the RAM beginning at 15 MB (address F0 0000 - FF FFFF) can be used by auxiliary ISA cards.

"I/O Device Configuration" submenu

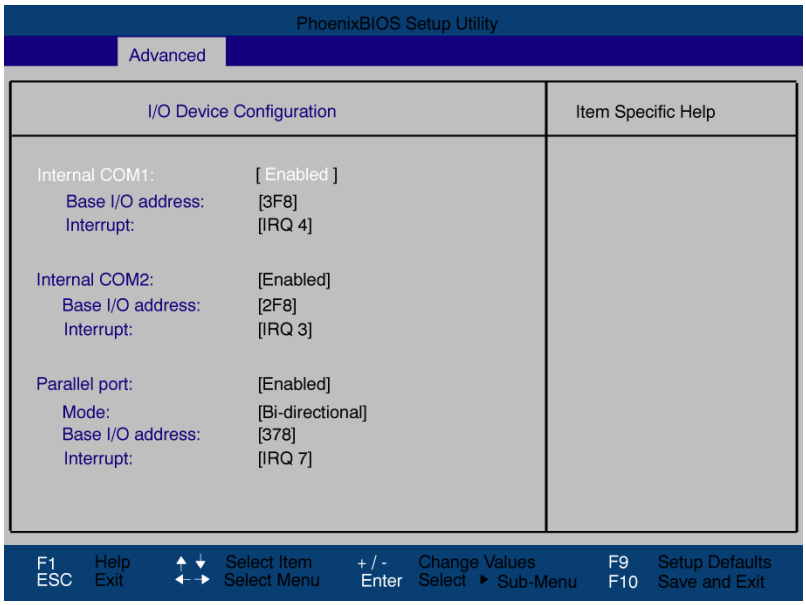


Figure 16-13 "I/O Device Configuration" submenu

The resources used by an interface are released when you disable the interface in question.

The I/O addresses and interrupts are pre-assigned; it is advisable not to change these default assignments.

Internal printer port LPT1

Mode:	Use this setting to set the operating mode of the printer port. Refer to the table below to ensure that the setting matches the output device you connected to the printer port.

Configurable mode	Features
Output Only Standard Parallel Port - unidirectional (SSP)	-Standard setting for 8-bit parallel data transfer to the IEEE1284 specification -Feedback of the output device is only possible via the control channels
Bi-directional Standard Parallel Port - bi-directional	Same as SPP - unidirectional, but: - Feedback of the output device is also possible via 8-bit data channels.
EPP Enhanced Parallel	-High-speed parallel port (data transmission rates between 500 kbps and 2 Mbps are possible) -Hardware handshake -different devices can be addressed
ECP Extended Capability Port	Same as EPP, but: -separate DMA channel -FIFO buffer -Data compression

"PCI Configuration" submenu

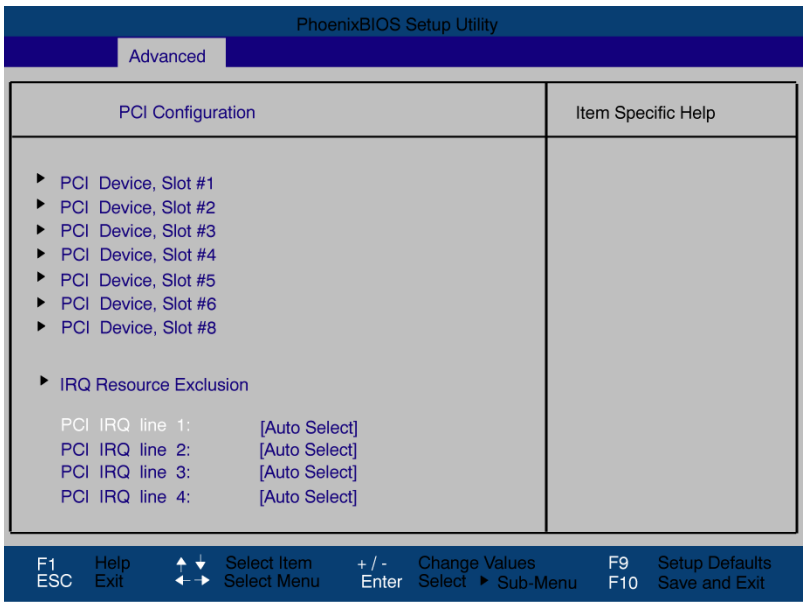


Figure 16-14 PCI Configuration submenu

"PCI Devices" field

If the PCI devices field is selected, the following submenu appears:

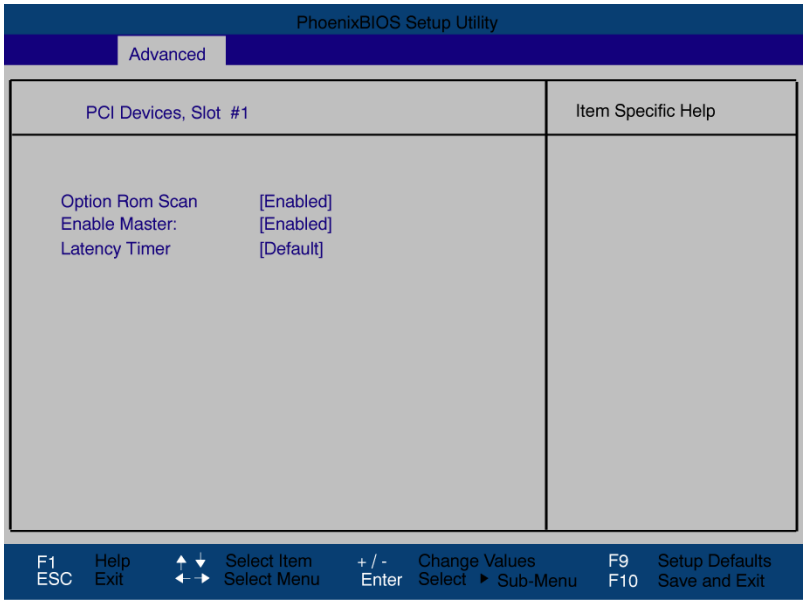


Figure 16-15 PCI Devices submenu, slot #1

ROM scan option:	[Enabled]	The Option ROM of the PCI module (if present) is enabled
	[Disabled]	The ROM option of a PCI module is disabled.
Enable Master	[Enabled]	This slot can be assigned master functions
	[Disabled]	This slot can only operate as a PCI slave.
Latency Timer	[Default]	The number of active PCI clock cycles of the master modules is determined by this module
	[0020H to 00E0H]	With these settings, you set the maximum number of active PCI clock cycles to the selected value.
	You should only use a value different from the default if the module or its application requires it.	

"IRQ Resource Exclusion" submenu

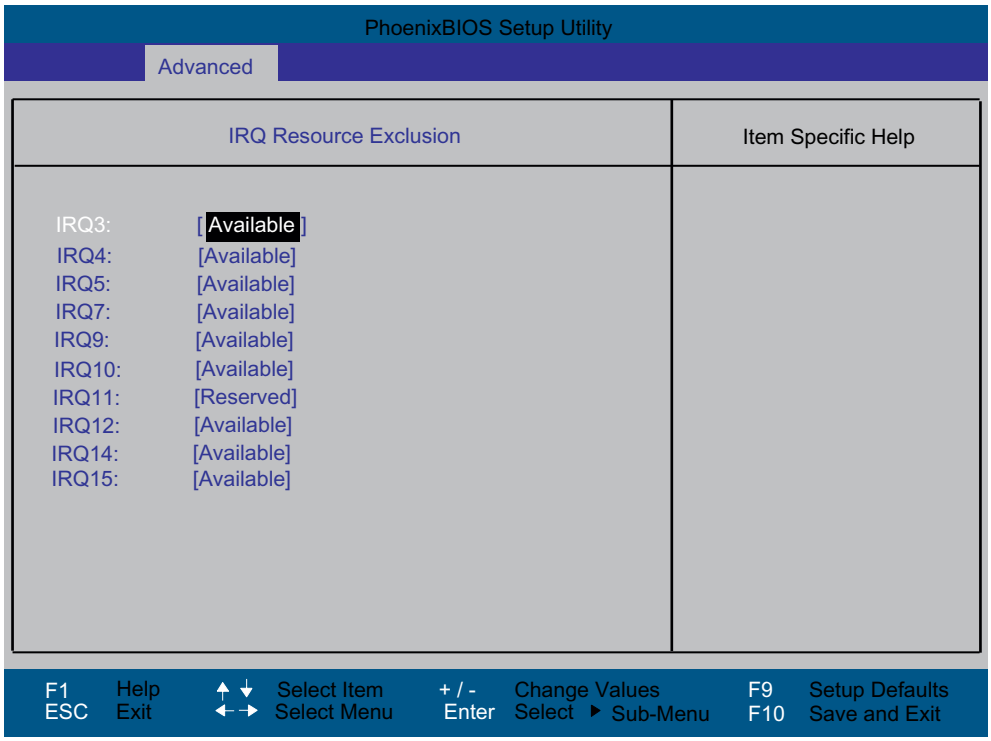


Figure 16-16 "IRQ Resource Exclusion" submenu

Available means that the Plug and Play mechanism in BIOS can allocate the IRQ to Plug and Play submodules or motherboard functions.

Reserved should only be selected if the corresponding interrupt has to be assigned to a non-Plug and Play-capable modules.

"PCI IRQ line" field

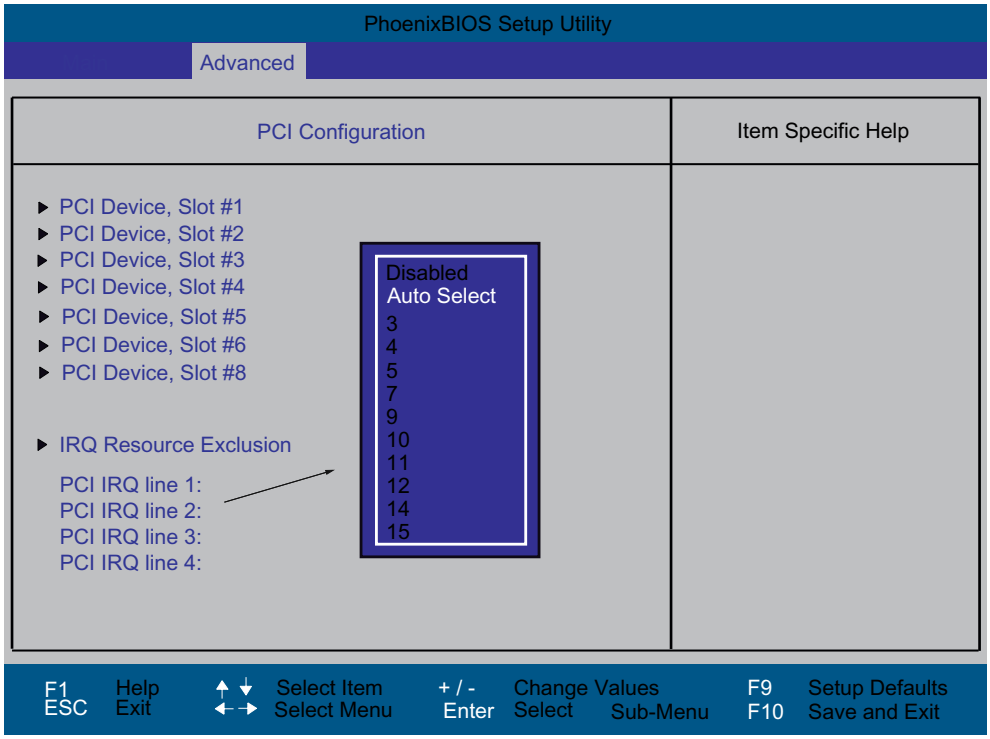


Figure 16-17 The PCI IRQ line field

Disabled	No interrupt possible for the selected PCI IRQ channel
AutoSelect	Plug and Play mechanism in BIOS selects unassigned interrupts and allocates them to the on-board PCI devices.
3 to 15	The selected PCI IRQ channel is assigned permanently to the selected interrupt. You should only select this setting if this is specified in the documentation for your application.

Assignment of the PCI IRQ channels to the PCI slots.

Rack PC 840	**PCI modules interrupt assignment (PCI IRQ) in:**						
Module interrupt (Pin No.)	Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6	Slot 8
INT - A (A6)	**channel 1**	**channel 2**	**channel 3**	**channel 4**	**channel 1**	**channel 2**	**channel 3**
INT - B (B7)	channel 2	channel 3	channel 4	channel 1	channel 2	channel 3	channel 4
INT - C (A7)	channel 3	channel 4	channel 1	channel 2	channel 3	channel 4	channel 1
INT - D (B8)	channel 4	channel 1	channel 2	channel 3	channel 4	channel 1	channel 2

Bold letters indicate the master interrupt of the slot module

16.5.6 Security menu

You can only edit the fields enclosed in square brackets. Two passwords can be assigned to protect your PC from unauthorized use. The Supervisor password can be used to restrict usage of the hard disk.

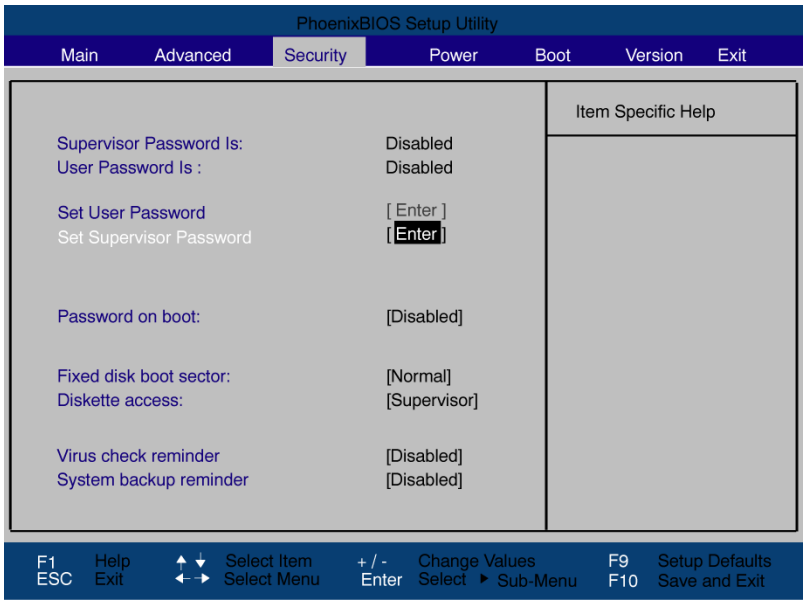


Figure 16-18 Security menu

User Password is	Disabled	The password is disabled.
	Enabled	Certain Setup fields are thus configurable by the user, including the user password.
	The field resets automatically from [Disabled] to [Enabled] when the password is entered.	
Set Supervisor Password	This field opens the dialog box for entering a password. Once it has been entered, the supervisor password can be changed or deleted by pressing ”Return” and thus deactivated.	
Set User Password	This field opens the dialog box for entering a password. Once it has been entered correctly, the user password can be changed or deleted by pressing ”Return” and thus deactivated.	
Password on boot	[Disabled]	No password required for system boot.
	[Enabled]	Supervisor or user password must be entered for system boot.
Fixed disk boot sector	[Normal]	All types of hard-disk access are permitted.
	[Write protect]	the user cannot install an operating system. This is a way of protecting against boot viruses.

Floppy disk drive access	This mode of protection is not enabled unless "Password on boot " is [enabled].	
	[Supervisor]	Diskette access is not possible unless the supervisor password was entered during system boot.
	[User]	Diskette access is not possible unless the user password was entered during system boot. Attention: This function cannot be used under Windows NT/2000, since this operating system does not access the diskette via BIOS routines. Please use the Windows NT/2000/XP system programs for this purpose.
Virus check reminder	Outputs a virus check prompt when booting.	
	[Disabled]	No message during system startup.
	[Daily]	Daily
	[Weekly]	Each Monday
	[Monthly]	Every first of the month
System backup reminder	Outputs a message when booting requesting a system backup.	
	[Disabled]	No message during system startup.
	[Daily]	Daily
	[Weekly]	Each Monday
	[Monthly]	Every first of the month

16.5.7 Power menu

This menu has the following layout.

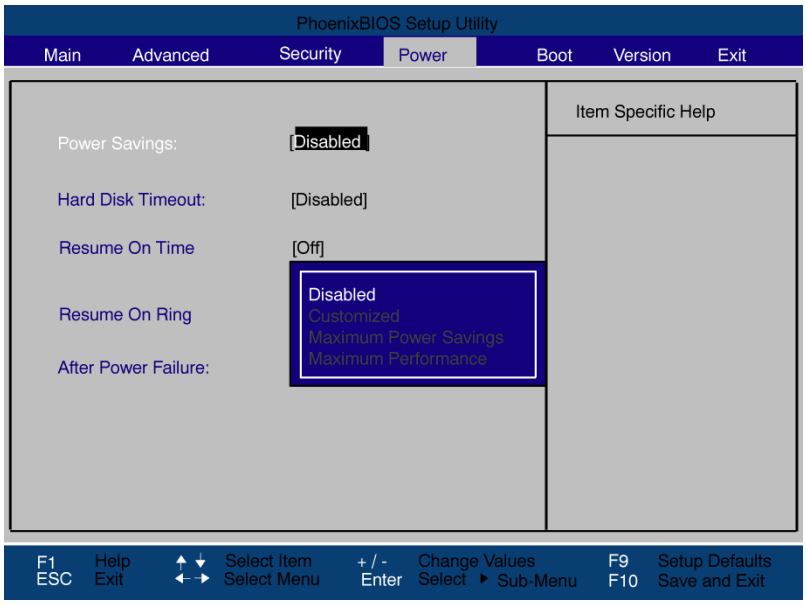


Figure 16-19 Power Menu

The Power menu offers a number of power saver modes for environmentally friendly computing:

Power Savings	[Disabled]	no energy-saving functions
	[Customized, Maximum Power Savings, Maximum Performance]	freely selectable or default values for min./max. energy saving functions. You can set the parameters for Standby Time-out and Fixed Disk Timeout, or they are set automatically to their defaults.
Hard Disk Timeout	[Disabled]	The hard disk is not switched off.
	[6, 8, 10, 15]	Minutes after the last access the hard disk drive is switched off. The next time it is accessed, the hard disk starts spinning again after a brief delay.
Resume On Time	[On]	This function can be used to switch on the device automatically at a time specified at the bottom.
	[Off]	When Off is set, this function is disabled.
Resume Time	Time for automatic restart	
Resume On Ring	[On]	If a COM1 or COM2 ring signal is output, the computer switches itself on.
	[Off]	When Off is set, this function is disabled.
After Power Failure	[Last State]	The device acquires the last state it had before the power failure.
	[Power On]	The device restarts itself automatically after power failure.
	[Stay Off]	The device does not restart itself automatically after power failure.

16.5.8 Boot menu

This menu allows you to assign a priority for the boot devices.

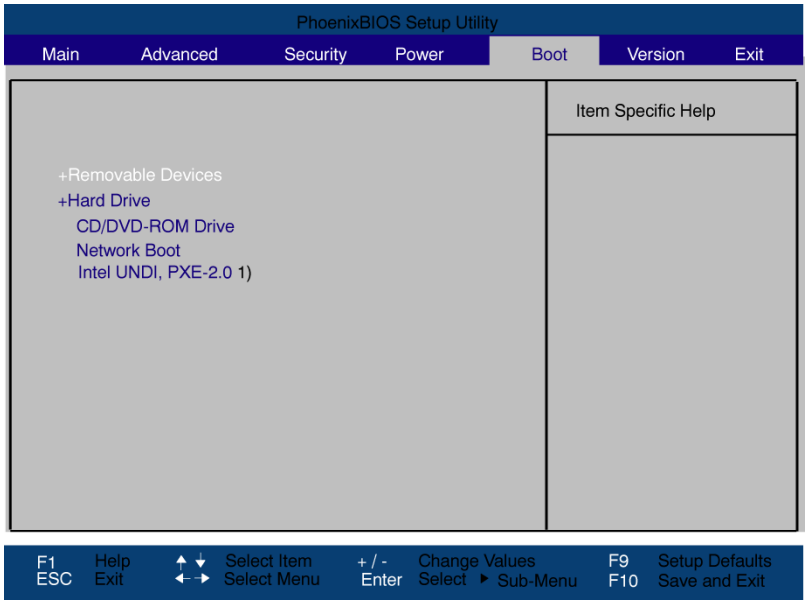


Figure 16-20 Boot Menu

[1)]Intel® UNDI, PXE-2.0 is only displayed if, beforehand, the Wake on LAN boot function has been set to "Enabled" in the hardware options menu.

This menu lists the boot devices in groups. The group with the highest priority is at the top. To change the sequence:

Select the group with the ↑ ↓ keys, move to the desired position with + or -.

Note

During startup the boot drive can be selected using the ESC key.

Groups marked + can contain more than one device. When you select a group marked in this way, press Enter to view the list of devices in the group.

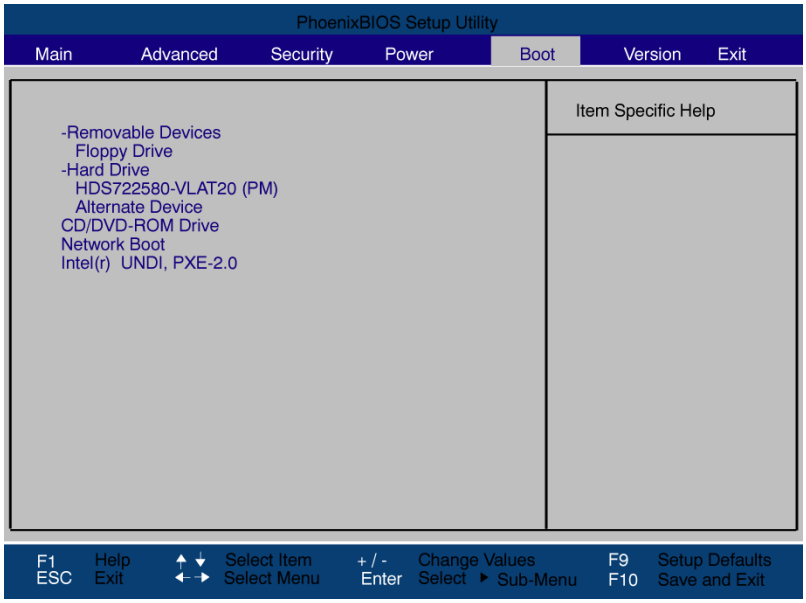


Figure 16-21 Boot menu (example)

This screen shows all possible boot devices. The device taking highest priority is listed in the first line of the relevant group. Here again, you can change the order of appearance as described above.

If a boot device is not available, the next device in the sequence is automatically checked to ascertain whether or not it is bootable.

16.5.9 Version menu

This menu contains the information you will have to quote when you send us technical questions about your system.

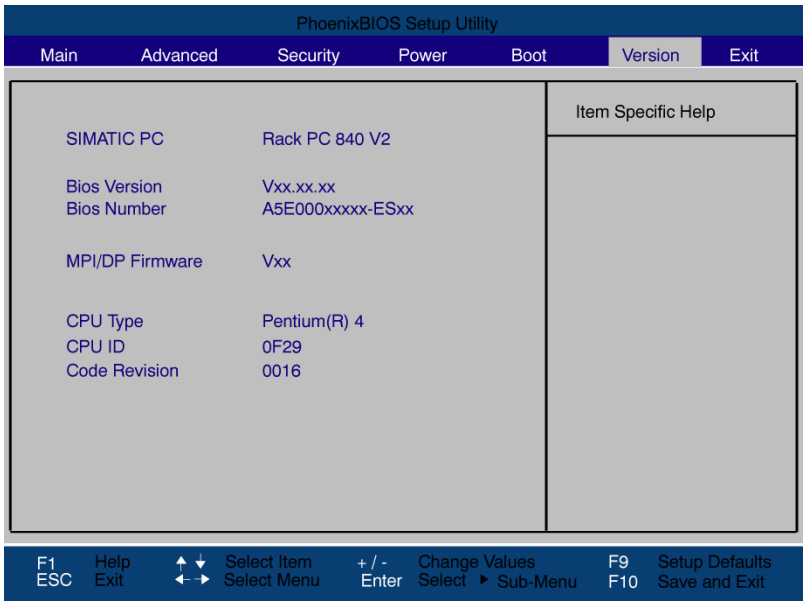


Figure 16-22 Version menu

16.5.10 Exit menu

The setup program is always closed from this menu.



Figure 16-23 Exit menu

Save Changes & Exit	All changes are saved; a system restart is carried out with the new parameters.
Discard Changes & Exit	All changes are discarded and the system performs a restart based on the old parameters.
Get Default Values	All parameters are set to safe values.
Load Previous Values	The last saved values are reloaded.
Save Changes	Save all Setup settings.

16.5.11 Default BIOS Setup entries

Documenting your device configuration

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

Note

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

BIOS setup default settings

System parameters	Defaults	Custom entries
Main		
System Time	hh:mm:ss	
System Date	MM/DD/YYYY	
Floppy disk A	1.44 MB, 3½"	
Primary Master	HDS722580-VLAT20 (PM)	
Primary Slave	None	
Secondary Master	CDROM	
Secondary slave	None	
Memory Cache	Write Back	
Boot options		
Quick Boot Mode	Enabled	
SETUP prompt	Enabled	
POST errors	Enabled	
Floppy check	Disabled	
Summary screen	Enabled	
Keyboard Features		
Num Lock	On	
Key Click	Disabled	
Keyboard auto–repeat rate	30/sec	
Keyboard auto–repeat delay	½ sec	

Hardware Options		
PCI-MPI/DP:	Enabled	
On-board Ethernet	Enabled	
Ethernet address	08000624xxxx	
LAN Remote Boot	Disabled	
SafeCard functions	Enabled	
Fan control	Enabled	
PS/2 mouse	Auto Detect	
On-chip USB A	Enabled	
OnChip USB B	Enabled	
On-chip USB C	Enabled	
On-chip USB 2.0	Enabled	

Advanced		
Installed O/S	Other	
Reset Configuration Data	No	

I/O Device Configuration		
Internal COM1	Enabled	
Internal COM2	Enabled	
Parallel port	Enabled	

PCI configuration		
PCI Device Slot 1		
ROM scan option:	Enabled	
Enable Master	Enabled	
Latency timer	Default	
PCI Device Slot 2		
ROM scan option:	Enabled	
Enable Master	Enabled	
Latency timer	Default	
PCI Device Slot 3		
ROM scan option:	Enabled	
Enable Master	Enabled	
Latency timer	Default	
PCI Device Slot 4		
ROM scan option:	Enabled	
Enable Master	Enabled	
Latency timer	Default	

PCI configuration		
PCI Device Slot 5		
ROM scan option:	Enabled	
Enable Master	Enabled	
Latency timer	Default	
PCI Device Slot 6		
ROM scan option:	Enabled	
Enable Master	Enabled	
Latency timer	Default	
PCI Device Slot 8		
ROM scan option:	Enabled	
Enable Master	Enabled	
Latency timer	Default	
IRQ Resource Exclusion		
IRQ3	Available	
IRQ4	COM1	
IRQ5	Available	
IRQ7	Available	
IRQ9	Available	
IRQ10	Available	
IRQ11	Reserved	
IRQ12	Available	
IRQ14	Available	
IRQ15	Available	
PCI IRQ line 1	Auto Select	
PCI IRQ line 2	Auto Select	
PCI IRQ line 3	Auto Select	
PCI IRQ line 4	Auto Select	
Local Bus IDE adapter	Primary & Secondary	
Large disk access mode	DOS	
USB Boot	Disabled	
USB legacy keyboard/mouse	Disabled	
Default primary video adapter	AGP	
Frame Buffer Size	32 MB	
Enable memory gap	Disabled	

Security		
Supervisor Password Is	Disabled	
User Password is	Disabled	
Set Supervisor Password	Enter	
Set User Password	Enter	
Password on boot	Disabled	

Security		
Fixed disk boot sector	Standard	
Diskette Access	Supervisor	
Virus check reminder	Disabled	
System backup reminder	Disabled	

Power		
Power Savings	Disabled	
Hard disk timeout	Disabled	
Resume On Time	off	
Resume On Ring	off	
After Power Failure	Last State	

Boot		
Removable Devices		
Hard Drive		
CD-ROM Drive		
Network boot		
Intel® UNDI, PXE-2.0		

Version		
SIMATIC	Rack PC 840	
BIOS Version		
BIOS Number		
MPI/DP Firmware		
CPU Type	Pentium®4	
CPU ID		
Code Revision		

Appendix 17

17.1 Guidelines and Declarations

Notes on the CE marking

The following applies to the SIMATIC product described in this documentation:

EMC-guidelines

This product fulfills the requirements for the EC directive ™89/336/EEC Electromagnetic Compatibility", and the following fields of application apply according to this CE label:

Application area	Requirements on	
	Emitted interference	Noise immunity:
Industrial area	EN 61000-6-4: 2001	EN 61000-6-2: 2001

The devices conform with EN 61000-3-2:2000 (harmonics) and EN 61000-3-3:1995 (voltage fluctuations and flicker).

Warning

This is Class A equipment. The equipment may cause radio interference in residential areas; in such cases, the operator can be requested to take reasonable countermeasures.

Low-voltage directive

AC power supply devices comply with the requirements of the EC Directive 73/23/EEC "Low-Voltage Directive." The compliance with this guideline has been tested according to EN 60950-1.

Declaration of conformity

The EC declaration of conformity and the corresponding documentation are made available to authorities in accordance with the EC directives stated above. Your sales representative can provide these on request.

Note equipment mounting directives

The equipment mounting directives and safety instructions detailed in this documentation are to be taken into consideration during commissioning and operation.

Connecting peripherals

The requirements for interference immunity are satisfied when suitable industrial peripherals according to EN 61000-6-2:2001 are connected. Peripheral devices may only be connected via shielded cables.

17.2 Certificates and Approvals

DIN ISO 9001 certificate

The quality assurance system for the entire product process (development, production, and marketing) at Siemens fulfills the requirements of ISO 9001 (corresponds to EN29001: 1987).

This has been certified by DQS (the German society for the certification of quality management systems).

EQ-Net certificate no.: 1323-01

Software License Agreement

The device can be supplied with or without preinstalled software. For devices with preinstalled software, please note the relevant license agreements.

Approvals for the United States, Canada, and Australia

Product safetiy

One of the following markings on a device is indicative of the corresponding approval:	
	Underwriters Laboratories (UL) per UL 60950-1 (I.T.E) or per UL 508 (IND.CONT.EQ)
C	Underwriters Laboratories (UL) according to Canadian standard C22.2 No. 60950-1 (I.T.E) or C22.2 No. 142 (IND.CONT.EQ)
C US	Underwriters Laboratories (UL) according to standard UL 60950-1, Report E11 5352 and Canadian standard C22.2 No. 60950-1 (I.T.E) or UL508 and C22.2 No. 142 (IND.CONT.EQ)
	UL recognition mark
	Canadian Standard Association (CSA) according to the standard C22.2. No. 60950-1 (LR 81690) or C22.2 No. 142 (LR 63533)
NRTL	Canadian Standard Association (CSA) to the American Standard UL 60950-1 (LR 81690), or to the UL 508 (LR 63533)

EMC

USA	
Federal Communications Commission Radio Frequency Interference Statement	This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
Shielded cables	Shielded cables must be used with this equipment to maintain compliance with FCC regulations.
Modifications	Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.
Conditions of operations	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CANADA	
Canadian Notice	This Class A digital apparatus complies with Canadian ICES-003.
Avis Canadian	Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

17.3 Service and support

Additional support

If you have any further questions relating to the products described in this documentation, contact your local representative at the SIEMENS office nearest you.

Find your contact partner at:

http://www.siemens.com/automation/partner

A guide to the technical documentation for the various SIMATIC products and systems is available at:

http://www.siemens.de/simatic-tech-doku-portal

The online catalog and the online ordering system is available at:

http://mall.automation.siemens.com/

Training center

Siemens offers a number of training courses to familiarize you with the SIMATIC automation system. Please contact your regional Training Center, or the central Training Center in D90327 Nuremberg.

Phone: +49 (911) 895-3200.

Internet: http://www.sitrain.com

Technical support

You can reach technical support for all A&D products at:

- Support request form on the web:
  http://www.siemens.de/automation/support-request
- Phone: +49 180 5050 222
- Fax: +49 180 5050 223

Further information about our technical support is available in the Internet at www.siemens.com/automation/service

When you contact the customer support, please have the following information for the technician on hand:

- BIOS version
- Order No. (MLFB) of the device
- Installed additional software
- Installed additional hardware

Service & support on the Internet

In addition to our documentation, we offer our complete knowledge base on the Internet at.

http://www.siemens.com/asis

There you will find:

- The newsletter which provides the latest information on your products
- Relevant documentation for your application which you can access via the search function in our service & support database.
- The current BIOS version
- A forum is available for users and specialists from all over the world to exchange experiences
- Your local Siemens partner for Automation & Drives in our partner database
- Information about on-site service, repairs, spare parts. Lots more is available under ”Services”

You can find the latest information about your device at the following address:

http://support.automation.siemens.com

17.4 Retrofitting instructions

Below you will find a description of the permissible configuration versions of the Rack PC 840 V2
with drives and processors, and the resultant operational conditions.

Approved configuration versions for the temperature range 5 to 35° C

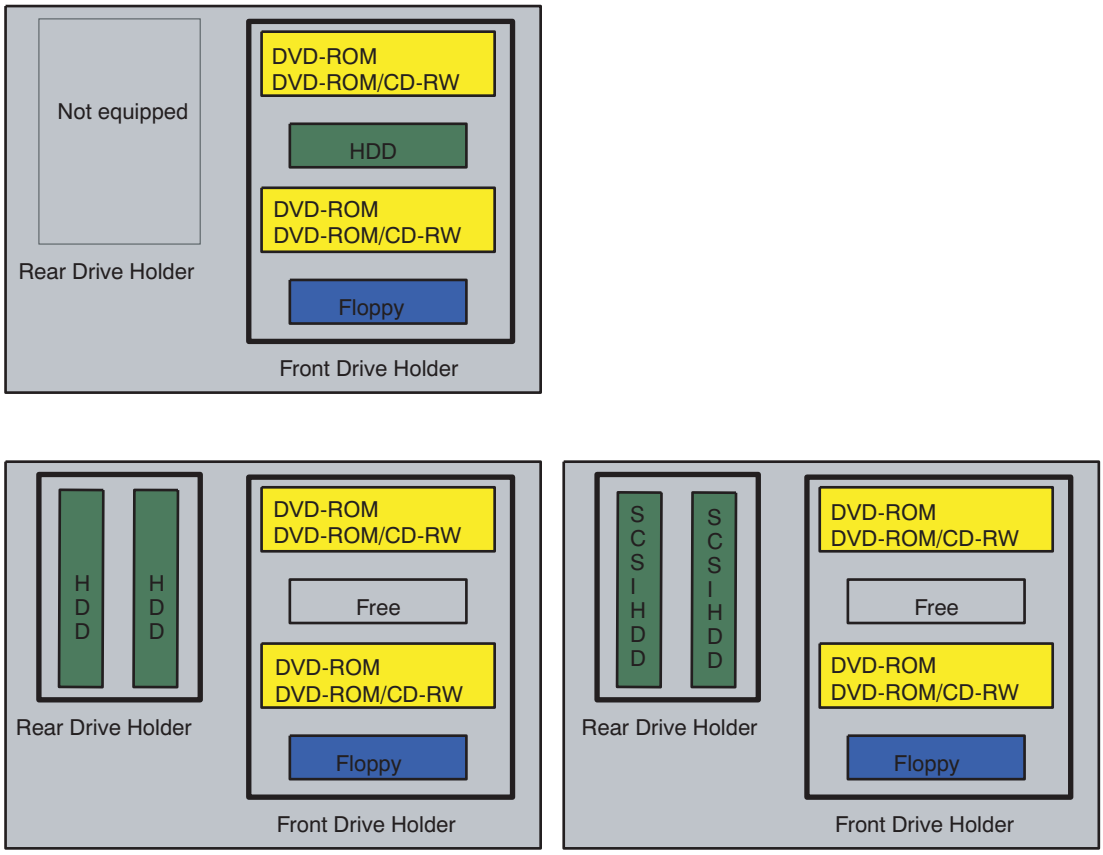


Figure 17-1 For the temperature range 5 to 35° C

Celeron and P4 processors up to 2.8 GHz can be used. The maximum permissible power loss of expansion modules is 80 W.

The PATA/SATA drives can be installed permanently in the drive bay or in the swap frame.

Devices equipped with removable racks may not to be exposed to shock during operation.

Approved configuration versions for the temperature range 5 to 40° C

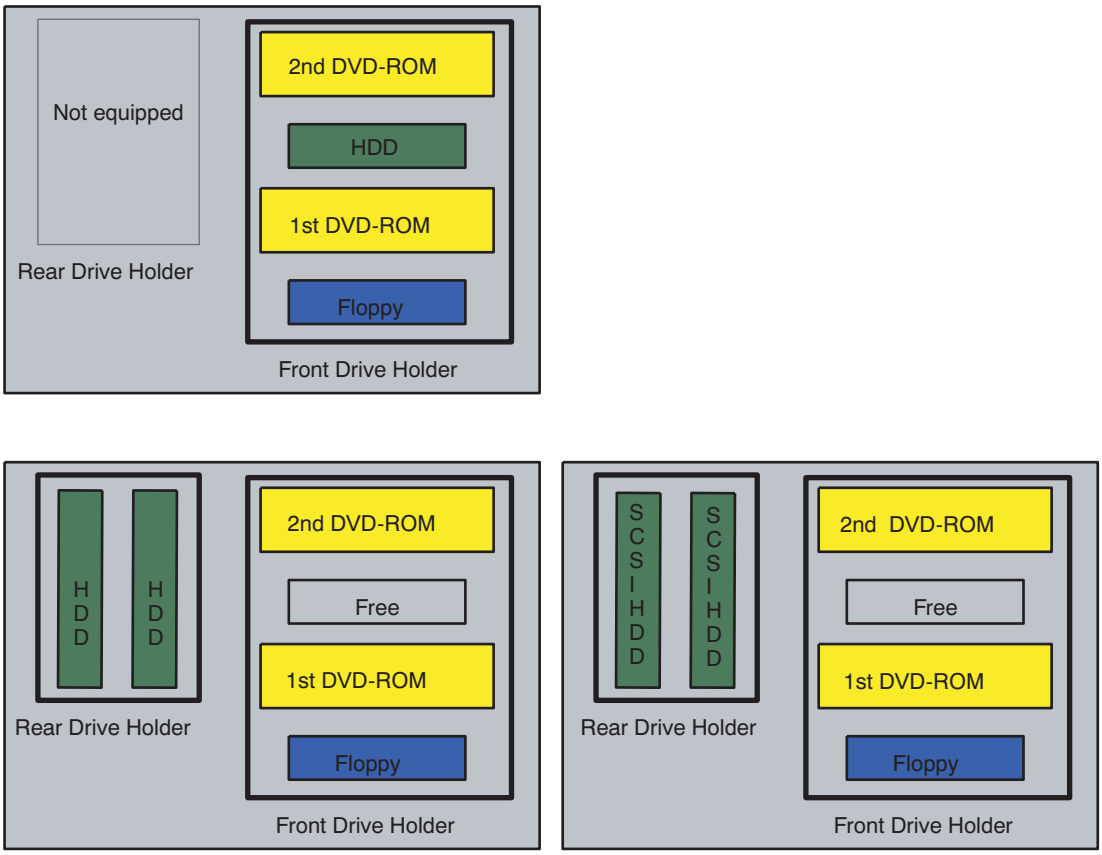


Figure 17-2 Approved configuration versions for the temperature range 5 to 40° C

Celeron and P4 processors up to 2.8 GHz can be used. The maximum permissible power loss of expansion modules is 80 W.

The PATA/SATA drives can be installed permanently in the drive bay or in the swap frame.

Devices equipped with removable racks may not to be exposed to shock during operation.

Approved configuration versions for the temperature range 5 to 45° C

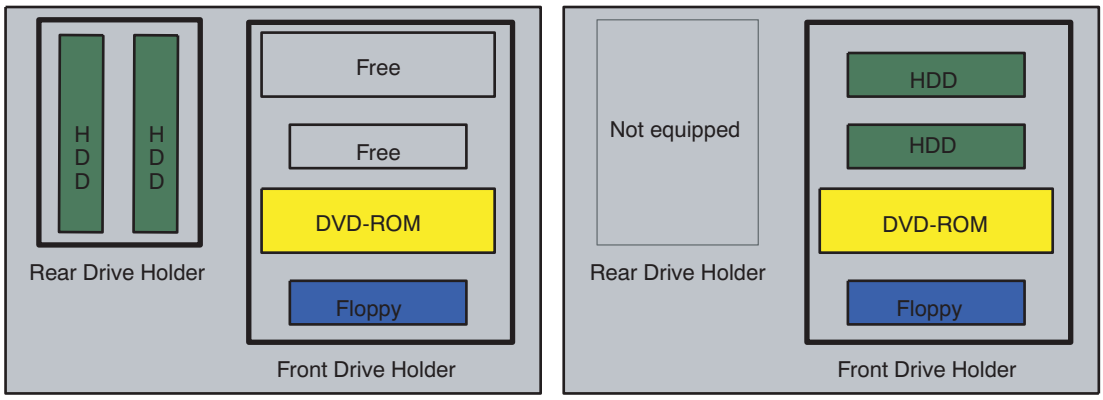


Figure 17-3 Approved configuration versions for the temperature range 5 to 45° C

Celeron and P4 processors up to 2.8 GHz can be used. The maximum permissible power loss of expansion modules is 80 W.

The PATA/SATA drives can be installed permanently in the drive bay or in the swap frame.

Devices equipped with removable racks may not to be exposed to shock during operation.

Approved configuration versions for the temperature range 5 to 50° C

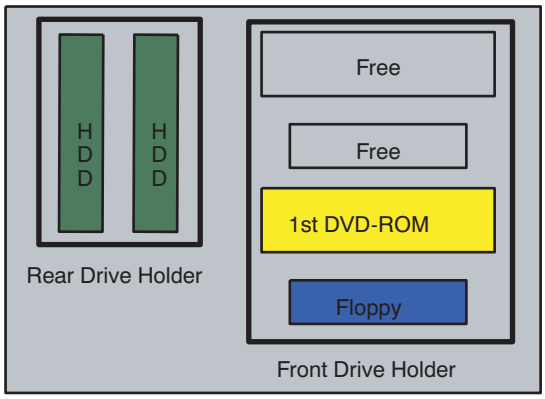


Figure 17-4 Approved configuration versions for the temperature range 5 to 50° C

Mobile processors with 2.2 GHz can be used. The maximum permissible power loss of expansion modules is 30 W. DVD ROM/CD RW and DVD ROM can be installed and operated within the temperature limits as described earlier.

ESD Guidelines

18

18.1 ESD Guidelines

What does ESD mean?

All electronic modules are equipped with highly integrated modules or components. Based on their design, these electronic components are highly sensitive to overvoltage and thus to discharge of static electricity.

The electrostatic sensitive components/modules are commonly referred to as ESD devices. You can also find the commonly used international designation ESD for electrostatic sensitive device.

Electrostatic sensitive modules are identified by the following symbol:



Caution

Electrostatic sensitive devices may be destroyed by voltages and energies that are undetectable to a human. Voltages of this kind occur as soon as a component or an assembly is touched by a person who is not grounded against static electricity. The damage to a module as a result of overvoltage cannot usually be detected immediately. It may only become apparent after a long period of operation.

Electrical charge

Anyone who is not connected to the electrical potential of their surroundings can be electrostatically charged.

The figure below shows the maximum electrostatic voltages that can accumulate in a person who is operating equipment when he/she comes into contact with the materials indicated. These values correspond with specifications to IEC 801-2.

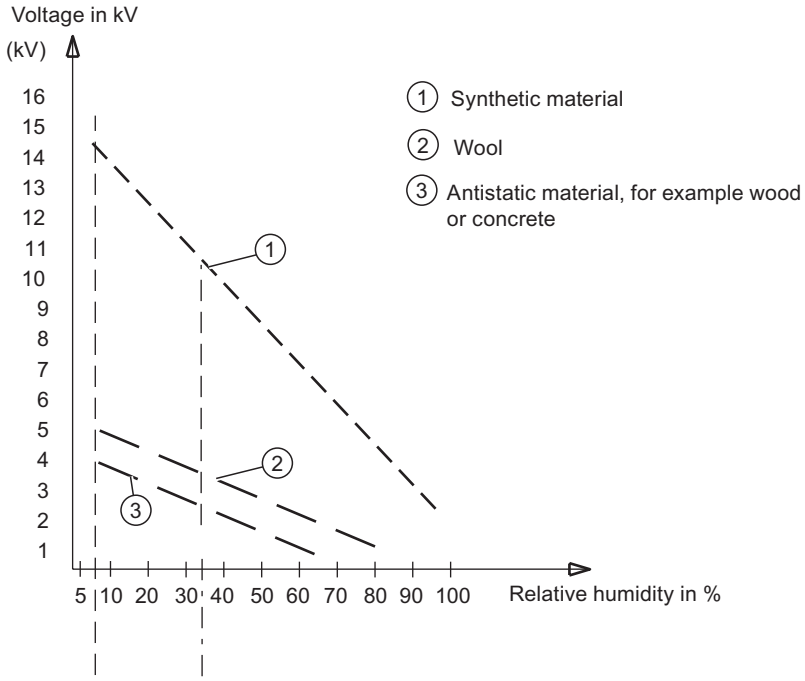


Figure 18-1 Electrostatic voltages on an operator

Basic protective measures against discharge of static electricity

- Ensure good equipotential bonding:
  When handling electrostatic sensitive devices, ensure that your body, the workplace and packaging are grounded. This helps you avoid static charge.
- As a general rule, only touch electrostatic sensitive devices when this is unavoidable (e.g. during maintenance work). When you touch modules, make sure that you do not touch either the pins on the modules or the printed conductors. This prevents any discharge of static electricity to sensitive component and thus avoids damage.

  Discharge electrostatic energy from your body before you perform measurements on a module. To do so, touch a grounded metallic object. Always use grounded measuring instruments.

Abbreviations

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Abbreviation	Term	Meaning
AC	Alternating current	Alternating current
ACPI	Advanced Configuration and Power Interface	
PLC	Automation device	
AGP	Accelerated Graphics Port	High speed bus system
APIC	Advanced Programmable Interrupt Controller	Extended programmable interrupt controler
APM	Advanced Power Management	Tool for monitoring and reducing power consumption of the PC
PLC	Automation system	
AT	Advanced Technology	
ATA	Advanced Technology Attachment	
ATX	AT-Bus-Extended	
AWG	American Wire Gauge	US standard for the cable diameter
BIOS	Basic Input Output System	Basic Input Output System
CAN	Controller Area Network	
CD-ROM	Compact Disc – Read Only Memory	Removable storage medium for large data volumes
CD-RW	Compact Disc – Rewritable	Rewritable CD
CE	Communauté Européenne (CE symbol)	The product is in conformance with all applicable EC directives
CF	Compact Flash	
CGA	Color Graphics Adapter	Standard monitor interface
CLK	Clock pulse	Clock signal for controllers
CMOS	Complementary Metal Oxide Semiconductors	Complementary metal oxide semiconductors
COA	Certificate of authentication	Microsoft Windows Product Key
CoL	Certificate of License	License authorization
COM	Communications Port	Term for the serial interface
CP	Communication Processor	Communication computer
CPU	Central Processing Unit	CPU
CSA	Canadian Standards Association	Canadian organisation for tests and certifications according to own or binational standards (with UL / USA) standards
CTS	Clear To Send	Clear to send

Abbreviation	Term	Meaning
DRAM	Dynamic Random Access Memory	
DC	Direct Current	DC current
DCD	Data Carrier Detect	Data carrier signal detection
DMA	Direct Memory Access	Direct memory access
DOS	Disc Operating System	Operating system without GUI
DP	Decentralized peripherals	
DQS	Deutsche Gesellschaft zur Zertifizierung von Qualitätsmanagement mBH	
DDRAM	Double Data Random Access Memory	Memory chip with high-speed interface
DSR	Data Set Ready	Ready for operation
DTR	Data Terminal Ready	Data terminal is ready
DVD	Digital Versatile Disc	Digital versatile disk
DVI	Digital Visual Interface	Digital display interface
ECC	Error Correction Code	Error correction code
ECP	Extended capability port	Extended parallel port
EGA	Enhanced Graphics Adapter	PC to monitor interface
ESD	Components sensitive to electrostatic charge	
DM	Electronic Manual	
EIDE	Enhanced Integrated Drive Electronics	An enhancement of the IDE standard
EISA	Extended Industry Standard Architecture	Extended ISA standard
EMM	Expanded Memory Manager	Manages memory expansions
EM64T	Extended Memory 64 technology	
EN	European standard	
EPROM / EEPROM	Erasable Programmable Read-Only Memory / Electrically Erasable Programmable Read-Only Memory	Plug-in submodules with EPROM/EEPROM chips
EPP	Enhanced Parallel Port	Bi-directional Centronics interface
ESC	Escape character	Control character
EWF	Enhanced Write Filter	
FAQ	Frequently Asked Questions	FAQs
FAT 32	File Allocation Table 32-bit	32-bit file allocation table
FD	Floppy disk	Disk drive, 3.5"
FSB	Front Side Bus	
GND	Ground	Chassis ground
HD	Hard disk	Hard disk
HDA	High Definition Audio	
HU	Height unit	
HMI	Human Machine Interface	User interface
HT	Hyper-Threading	
HTML	Hyper Text Markup Language	Script language for creating Internet pages.
HTTP	Hypertext Transfer Protocol	Protocol for data transfer on the Internet
Hardware	Hardware	

Abbreviation	Term	Meaning
I/O	Input/Output	Data input/output on computers
IDE	Integrated Device Electronics	
IEC	International Electronical Commission	
IP	Ingress Protection	Degree of protection
IR	Infrared	Infrared
IRDA	Infrared Data Association	Standard for data transfer via IR module
IRQ	Interrupt Request	Interrupt request
ISA	Industry Standard Architecture	Bus for expansion modules
IT	Information Technology	Information technology
LAN	Local Area Network	Computer network that is limited to a local area.
LCD	Liquid Crystal Display	Liquid crystal display
LEDs	Light Emitting Diode	Light emitting diode
LPT	Line Printer	Printer port
LVDS	Low Voltage Differential Signaling	
LW	Disk drive	
MAC	Media access control	Media access control
MC	Memory Card	Memory card in credit card format
MLFB	Machine-readable product designation	
MMC	Micro Memory Card	Memory card with the format 32 x 24.5 mm
MPI	Multipoint-capable interface for programming devices	
MS-DOS	Microsoft Disc Operating System	
MTBF	Mean Time Between Failures	
MUI	Multilanguage User Interface	Language localization in Windows
NA	Not Applicable	
NAMUR	Normenarbeitsgemeinschaft für Mess- und Regelungstechnik in der chemischen Industrie (standardization body for instrumentation and control technology in the chemicals industry)	
NC	Not Connected	Not connected
NCQ	Native Command Queuing	Automatic re-sorting of the file and disk access, for increased performance
NEMA	National Electrical Manufacturers Association	Syndicate of manufacturers of electrical components in the USA
NMI	Non Maskable Interrupt	Interrupt the processor can not reject
NTFS	New Techniques File System	Secure file system for certain versions of Windows (NT, 2000, XP)
OPC	OLE for Process Control	Standardized interface for industrial processes
PATA	Parallel ATA	
PC	Personal computer	
PCI	Peripheral Component Interconnect	High-speed expansion bus
PCMCIA	Personal Computer Memory Card International Association	

Abbreviation	Term	Meaning
PI	Protective Earth	Protective conductor
PG	Programming device	
PIC	Programmable Interrupt Controller	Programmable interrupt controller
POST	Power On Self Test	
PXE	Preboot Execution Environment	Software for running new PCs without hard disk data via the network
RAID	Redundant Array of Independent Disks	Redundant hard disk array
RAM	Random Access Memory	
RI	Ring Input	Incoming call
ROM	Read-Only Memory	
RS 485	Reconciliation Sublayer 485	Bi-directional bus system designed for up to 32 nodes
RTC	Real Time Clock	Real-time clock
RTS	Reliable Transfer Service	Request to send
RxD	Receive Data	Data transfer signal
SATA	Serial ATA	
SCSI	Small Computer System Interface	
SDRAM	Synchronous DRAM	
SELV	Safety Extra Low Voltage	Safety extra low voltage
SMART	Self Monitoring Analysis and Reporting Technology	Hard disk error diagnostics program
SMS	Short Message Service	Short message via telecommunication network
SNMP	Simple Network Management Protocol	Network protocol
SO-DIMM	Small Outline Dual Inline Memory Module	
SOM	SafeCard on Motherboard (SOM)	
SPP	Standard Parallel Port	Synonym for parallel port
SVGA	Super Video Graphics Array	Enhanced VGA standard with at least 256 colors
SVP	Serial number of the device	
SW	Software	
TCO	**T**otal **C**ost of **O**wnership	
TFT	Thin-Film-Transistor	Type of LCD flat-screen
TTY	Tele Type	Asynchronous data transfer
TxD	Transmit Data	Data transfer signal
TWD	Watchdog Time	Watchdog monitoring time
UL	Underwriters Laboratories Inc.	US organisation for tests and certifications according to own or binational standards (with CSA / Canada) standards
UMA	Unified Memory Architecture	
URL	Uniform Resource Locator	Designation of the full address of an Internet page
USB	Universal Serial Bus	
UXGA	Ultra Extended Graphics Array	Graphic standard, maximum resolution 1.600 x 1.200 pixels

Abbreviation	Term	Meaning
V.24		ITU-T standardized recommendation for data transfer via serial ports
VDE	Verein deutscher Elektrotechniker (Union of German Electrical Engineers)	
VGA	Video Graphics Array	Video adapter which meets industrial standard
VRM	Voltage Regulator Module	
W2k	Windows 2000	
WAV	Wave Length Encoding	Loss-free file format for audio data
WD	Watchdog	Program monitoring with error detection and alarming.
WLAN	Wireless LAN	LWireless local area network
WWW	World Wide Web	
XGA	Extended Graphics Array	Graphic standard, maximum resolution 1.024 x 768 pixels

Glossary

ATAPI CD–ROM Drive

AT-Bus **A**ttachment **P**acket **I**nterface (connected to AT bus) CD-ROM drive

Automation device (AG)

The programmable logical controllers (PLC) of the SIMATIC S5 system consist of a central controller, one or more CPUs, and various other modules (e.g. I/O modules).

Automation system (AS)

The programmable logical controllers (PLC) of the SIMATIC S7 system consist of a central controller, one or more CPUs, and various I/O modules.

Backup

Duplicate of a program, data carrier or database, used either for archiving purposes or for the protection of vital and non-replaceable data against loss when the working copy is corrupted. Some applications automatically generate backup copies of data files, and manage both the current and the previous versions on the hard disk.

Baud

Physical unit for the step speed in signal transmission. Defines the number of transferred signal states per second. With only two states, one baud is equivalent to a transmission rate of 1 bps.

BEEP code

If the BIOS detects a boot error, it outputs an audible warning based on the current test result

Boot diskette

A diskette that contains a boot sector and an initial loader for the operating system. This can be used to load the operating system from the disk.

Booting

Start or restart of the computer. During booting the operating system is transferred from the system data carrier to the work memory.

Cache

High-speed access buffer for interim storage (buffering) of requested data.

CE marking

Communauté **E**uropéene The CE symbol confirms the conformance of the product with all applicable EC directives, e.g. the EMC directive.

Chipset

Located on the motherboard, connects the processor with the RAM, the graphic controller, the PCI bus, and the external interfaces.

Cold start

A start sequence, starting when the computer is switched on. The system usually performs some basic hardware checks within the cold start sequence, and then loads the operating system from the hard disk to work memory -> boot

COM interface

The COM interface is a serial V.24 interface. The interface is suitable for asynchronous data transfer.

Configuration files

These are files containing data which define the configuration after restart. Examples of such files are CONFIG.SYS, AUTOEXEC.BAT and the registry files .

Configuration software

The configuration software updates the device configuration when new modules are installed . This is done either by copying the configuration files supplied with the module or by manual configuration using the configuration utility.

Controller

Integrated hardware and software controllers that control the functions of certain internal or peripheral devices (for example, the keyboard controller).

Device configuration

The configuration of a PC or programming device contains information on hardware and device options, such as memory configuration, drive types, monitor, network address, etc. The data are stored in a configuration file and enable the operating system to load the correct device drivers and configure the correct device parameters. . If changes are made to the hardware configuration, the user can change entries in the configuration file using the SETUP program. .

Disc-at-once

With this burning technique, data are written to a CD in a single session, and the CD is then closed. Further write access is then no longer possible.

Drivers

Program parts of the operating system. They adapt user program data to the specific formats required by I/O devices such as hard disk, printers, and monitors.

EMC directive

Directive concerning **E**lectro**m**agnetic **C**ompatibility. Compliance is confirmed by the CE symbol and the EC certificate of conformity.

Energy management

The energy management functions of a modern PC allow individual control over the current consumption of vital computer components (e.g. of the monitor, hard disk and CPU), by restricting their activity based on the current system or component load. Energy management is of particular importance for mobile PCs.

Energy options

The energy options can be used to reduce energy consumption of the computer, while keeping it ready for immediate use. This can be configured in Windows by selecting Settings > Control Panel > Energy options.

ESD guidelines

Directive for using electrostatic sensitive components.

Ethernet

Local network (bus structure) for text and data communication with a transfer rate of 10/100 Mbps.

Formatting

Basic partitioning of memory space on a magnetic data carrier into tracks and segments. Formatting deletes all data on a data carrier. All data carriers must be formatted prior to their first use.

Gender changer

Using the gender changer (25-pin / 25-pin), the COM1/V24/AG interface of the SIMATIC PC family can be converted to the usual 25-pin male connector.

Hard disks

Hard disks represent a form of magnetic disk storage medium (Winchester drives, hard disks) with integrated magnetic disks.

Hot swapping

The SATA interface gives the device's hard drive system hot-swap capability. The prerequisite for this is a RAID1 system, comprising a SATA RAID controller (onboard or as a slot board, and at least two SATA swap frames. The advantage of hot swapping is that defective hard disks can be replaced without the need for rebooting.

Hub

A term in network technology. In a network, a device joining communication lines at a central location, providing a common connection to all devices on the network.

Hyper Threading

HT technology enables the parallel processing of tasks. HT is only effective when all relevant system components, such as processors, operating systems and applications are supported.

Image

This refers to the image, for example, of hard disk partitions saved to a file in order to restore them when necessary.

Intel chip set 915 GM

The chip set organizes the data traffic between the main processor, working memory, cache, slots and other interfaces.

Functions of the 915 GM: Front side bus with 533 MHz, Intel® graphical media accelerator 900, support for up to 2 GB dual-channel DDR2 memories, Intel® High definition audio, Intel® display power-saving technology 2 (Intel® DPST 2)

Interface

see Interface

Interface, multi-point

MPI is the programming interface of SIMATIC S7/M7. Allows central access to programmable modules, text-based displays and OPs. The MPI nodes can intercommunicate.

LAN

Local **A**rea **N**etwork: LAN is a local network that consists of a group of computers and other devices that are distributed across a relatively restricted range and are linked with communication cables. The devices connected to a LAN are called nodes. The purpose of networks is the mutual use of files, printers or other resources.

Legacy USB support

Support of USB devices (e.g. mouse, keyboard) on the USB ports without driver.

License key

The license key represents the electronic license stamp of a license. Siemens provides the license keys for protected software.

License key diskette

The license key diskette contains the authorizations or license keys required to enable protected SIMATIC software.

Low-voltage directive

EC directive for product safety of products operated with low voltage (AC 50V to 1000V, DV 70V to 1500V) that are not governed by other directives. Compliance is confirmed by the CE symbol and the EC certificate of conformity.

LPT interface

The LPT interface (Centronics interface) is a parallel interface that can be used to connect a printer.

Memory card

Memory cards in credit card format. Memory for user programs and parameters, for example, for programmable modules and CPs.

Module

Modules are plug-in units for PLCs, programming devices or PCs. They are available as local modules, expansion modules, interfaces or mass storage (Mass storage module).

Module bracket

The module bracket is used to fasten modules and ensure safe contact and transport. Shocks and vibrations especially affect large, heavy modules. It is therefore recommended to use the module bracket for this type of module. There are also short, compact and light modules on the market. The module bracket was not designed for these modules because the standard fastening is sufficient for them.

Motherboard

The motherboard is the core of the computer. Here, data are processed and stored, and interfaces and device I/Os are controlled and managed.

Operating system

Summarizing term describing all functions for program execution, allocation of system resources to the various user programs, and for controlling and monitoring consistency of the operating mode in cooperation with the hardware (e.g. Windows XP Professional).

Packet writing

The CD-RW is used as a diskette medium. The CD can then be read only by packet–writing compatible software or has to be finalized. Finalization of a CD closes the CD within an ISO9660 shell. You can still write to the CD-RW several times in spite of finalization. Not all CD drives can read packet-written CDs . There are restrictions to using this method in general data transfer.

PATA

An interface for hard disk drives and optical drives with parallel data transfer of up to 100 Mbps.

PC card

Trademark of the Personal Computer Memory Card International Association (PCMCIA). Designation for auxiliary cards that conform with PCMCIA specifications. A PC card that has roughly the size of a credit card can be plugged into a PCMCIA slot. Version 1 specifies cards of Type I with a thickness of 3.3 millimeters, which is conceived mainly for use as external memory. Version 2 of the PCMCIA specification also defines a card Type II with a thickness of 5 mm and a card of the Type III with a thickness of 10.5 mm. Type II cards can realize devices such as modems, fax and network interface cards. Type III cards are equipped with devices that require more space, for example wireless communication modules or rotary storage media (hard disks, for example).

PC/104 / PC/104-Plus

Two bus architectures are especially fashionable today in the industrial world. PC/104 and PC/104-*Plus*. Both are standard in single-board computers of the PC class. The electrical and logical layout of the two bus systems is identical with ISA (PC/104) and PCI (PC/104-*Plus*). Software cannot usually detect a difference between them and normal desktop bus systems. Their advantage is the compact design and the resulting space they save.

PCMCIA

Association consisting of approx. 450 member companies of the computer industry. Their focus is set on providing worldwide standards for miniaturization and flexible use of PC expansion cards, and thus to provide a basic technology to the market.

Pentium M

Intel processor type: The architecture of the processor is designed for mobile computing; the processor features superior performance characteristics for computer applications and enhanced power-saving functions

Pixel

PixElement (picture point). The pixel represents the smallest element that can be reproduced on-screen or on a printer.

POST

Self-test performed by the BIOS after the computer is switched on. Performs a RAM test and a graphic controller test, for example. The system outputs audible signals (beep codes) if the BIOS detects any errors; the relevant message indicating cause of error is output on the screen.

PROFIBUS/MPI

Process **F**ield **Bus** (standard bus system for process applications)

PXE server

A **P**reboot E**x**ecution **E**nvironment server is part of a network environment and can provide software to connected computers even before they boot. This can involve operating system installations or servicing tools, for example.

RAID

Redundant **A**rray of **I**ndependent **D**isks: Data storage system which is used to store data along with the error correction codes (e.g. parity bits) on at least two hard disks, in order to increase system reliability and performance. The hard disk array is controlled by management programs and a hard disk controller for error correction. The RAID system is usually implemented in network servers.

Recovery CD

Contains the tools for setting up the hard disks and the Windows operating system.

Reset

Hardware reset: Reset/restart of the PC using a button/switch.

Restart

Warm start of a computer in operating state without switching off the power supply (Ctrl + Alt + Del)

Restore DVD

The Restore DVD is used to restore the system partition or the entire hard disk to factory state if the system has crashed. The bootable DVD contains all the necessary image files. You can also create a boot disk allowing restoration via the network.

ROM

Read-Only Memory ROM is a read-only memory in which every memory location can be addressed individually. The programs or data are permanently stored and are not lost in the event of a power failure.

SCSI interface

Small Computer System Interface Interface for connecting SCSI devices (e.g. hard disk or optical drives)

Session at once

In session at once, the CD can be written to both with an audio session and a data session. The two sessions are written to at once (as in disc at once).

SETUP (BIOS Setup)

A program in which information about the device configuration (that is, the configuration of the hardware on the PC/PG) is defined. The device configuration of the PC/PG is preset with defaults. Changes must therefore be entered in the SETUP if a memory extension, new modules or a new drive are added to the hardware configuration.

Track-at-once

In track-at-once recording, a CD can be written to in bits in several sessions if the CD was not closed.

Troubleshooting

Error cause, cause analysis, remedy

V.24 interface

The V.24 interface is a standardized interface for data transmission. Printers, modems, and other hardware modules can be connected to a V.24 interface

Warm restart

The restart of a computer after a program was aborted. The operating system is loaded and restarted again. The hot key CTRL+ ALT+ DEL can be used to perform a warm start.

Windows

Microsoft Windows is a multitasking graphical user interface. Windows provides a standard graphical interface based on drop-down menus, windowed regions on the screen, and allows operation with a pointer device such as a mouse.

WLAN

Wireless **LAN** is a local network that transmits data via radio waves, infrared light or another wireless technology. Wireless LAN is mainly used in connection with mobile computers in the office or in factory environments.

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Siemens AG

Automation and Drives
Industrial Automation Systems
Postfach 4848
90437 NUERNBERG
Federal Republic of Germany

www.siemens.com/automation

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