Panel PC 700

User's Manual

Version: **1.2 Preliminary (January 2006)**

Model No.: **---**

Chapter 1 • General information

1. Manual history

Version	Date	Comment
1.0 Preliminary	March 7, 2005	Changes / new features - First version
1.1 Preliminary	May 31, 2005	Changes / new features - Technical data updated - New dimension diagrams (fan) - Cutout diagrams updated - Mounting chapter updated - Photos updated
1.2 Preliminary	April 3, 2006	Changes / new features - Conductor cross section and AWG changes for the power supply plug. - More detailed definition of standard and 24-hour operation of hard disks 5AC600.HDDI-00 and 5AC600.HDDS-00. - Technical data for SDL cable updated due to new specifications from manufacturer. - Information regarding general tolerance according to DIN ISO 2768 medium added to dimension diagrams. - Safety guidelines revised - IP65 Protection specified in more detail. - Intel 815E CPU boards discontinued. - Additional PCI bus information added. - Voltage information on the PCI slot plug and the compatible PCI cards added. - Display contrast and viewing angle properties added. - Rear view photos of system units 5PC781.1505-00 and 5PC782.1043-00 added. - Installation diagrams and tolerance information revised for the dimensions sections. - The slide-in drives can be used in system units with 1 or 2 PCI slots. - Dimensions corrected in the "Technical data" table for system unit 5PC720.1505-02.

Table 1: Manual history

2. Safety notices

2.1 Intended use

Programmable logic controllers (PLCs, etc.), operating and monitoring devices (industrial PCs, Power Panels, Mobile Panels, etc.) as well as the B&R uninterruptible power supplies have been designed, developed and manufactured for conventional use in industry. They were not designed, developed and manufactured for any use involving serious risks or hazards that could lead to death, injury, serious physical damage, or loss of any kind without the implementation of exceptionally stringent safety precautions. In particular, such risks and hazards include the use of these devices to monitor nuclear reactions in nuclear power plants, as well as flight control systems, flight safety, the control of mass transportation systems, medical life support systems, and the control of weapons systems.

2.2 Policy and procedures

Electronic devices are generally not failsafe. In the event of a failure on the programmable control system, operating or monitoring device, or uninterruptible power supply, the user is responsible for ensuring that other devices that may be connected, e.g. motors, are in a secure state.

Both when using programmable logic controllers and when using operating and monitoring devices as control systems in conjunction with a Soft PLC (e.g. B&R Automation Runtime or comparable products) or a Slot PLC (e.g. B&R LS251 or comparable products), the safety precautions applying to industrial control systems (e.g. the provision of safety devices such as emergency stop circuits, etc.) in accordance with applicable national and international regulations must be observed. The same applies for all other devices connected to the system, such as drives.

All tasks such as installation, commissioning, and service may only be carried out by qualified personnel. Qualified personnel are persons who are familiar with the transport, mounting, installation, commissioning, and operation of the product and who have the appropriate qualifications (e.g. IEC 60364). National accident prevention guidelines must be followed.
The safety guidelines, connection descriptions (rating plate and documentation) and limit values listed in the technical data must be read carefully and must be observed before installation and commissioning.

2.3 Transport and storage

During transport and storage, devices must be protected from excessive stress (mechanical load, temperature, humidity, aggressive atmosphere, etc.).

2.4 Mounting

- Installation must take place according to the documentation using suitable equipment and tools.
- Devices may only be installed without voltage applied and by qualified personnel.
- General safety regulations and nationally applicable accident prevention guidelines must be observed.
- Electrical installation must be carried out according to the relevant guidelines (e.g. line cross section, fuse, protective ground connection).

2.5 Operation

2.5.1 Protection against touching electrical parts

To operate programmable logic controllers, operating and monitoring devices, and uninterruptible power supplies, certain components must carry dangerous voltage levels of over 42 VDC. A life-threatening electrical shock could occur if you come into contact with these parts. This could result in death, severe injury, or material damage.

Before turning on the programmable logic controller, the operational and monitoring devices and the uninterruptible power supply, ensure that the housing is properly grounded (PE rail). The ground connection must be established when testing the operating and monitoring devices or the uninterruptible power supply, even when operating them for only a short time.

Before turning the device on, make sure that all voltage-carrying parts are securely covered. During operation, all covers must remain closed.

2.5.2 Programs, viruses and dangerous programs

The system is subject to a potential danger each time data is exchanged or software is installed using data media (e.g. diskette, CD-ROM, USB memory stick, etc.), a network connection or the Internet. The user is responsible for assessing these dangers, implementing preventative measures such as virus protection programs, firewalls, etc. and obtaining software from reliable sources.

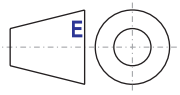
3. Organization of safety notices

The safety notices in this manual are organized as follows:

Safety notice	Description
Danger!	Disregarding the safety regulations and guidelines can be life-threatening.
Caution!	Disregarding the safety regulations and guidelines can result in severe injury or major damage to material.
Warning!	Disregarding the safety regulations and guidelines can result in injury or damage to material.
Information:	Important information for preventing errors.

Table 2: Organization of safety notices

4. Guidelines



European dimension standards apply to all dimension diagrams (e.g. dimension diagrams, etc.).

5. Model numbers

5.1 System units

Model number	Short description	Note
5PC720.1043-00	**Panel PC 720 10.4" VGA T, 0 PCI slots** 10.4" VGA color TFT display with touch screen (resistive); connections for 2 x RS232, 3 x USB 2.0, monitor, 2 x Ethernet 10/100, AC97 sound, PS/2 keyboard/mouse; IP65 protection (front side); 24 VDC. Plug for power supply must be ordered separately (screw clamp: 0TB103.9; cage clamps: 0TB103.91).	
5PC720.1043-01	**Panel PC 720 10.4" VGA T, 2 PCI slots, 1 disk drive slot** 10.4" VGA color TFT display with touch screen (resistive); 1 drive slot; connections for 2 x RS232, 3 x USB 2.0, monitor, 2 x Ethernet 10/100, AC97 sound, PS/2 keyboard/mouse; IP65 protection (front side); 24 VDC. Plug for power supply must be ordered separately (screw clamp: 0TB103.9; cage clamps: 0TB103.91).	
5PC720.1214-00	**Panel PC 720 12.1" SVGA T, 0 PCI slots** 12.1" SVGA color TFT display with touch screen (resistive); connections for 2 x RS232, 3 x USB 2.0, monitor, 2 x Ethernet 10/100, AC97 sound, PS/2 keyboard/mouse; IP65 protection (front side); 24 VDC. Plug for power supply must be ordered separately (screw clamp: 0TB103.9; cage clamps: 0TB103.91).	
5PC720.1505-00	**Panel PC 720 15" XGA T, 0 PCI slots** 15" XGA color TFT display with touch screen (resistive); connections for 2 x RS232, 3 x USB 2.0, monitor, 2 x Ethernet 10/100, AC97 sound, PS/2 keyboard/mouse; IP65 protection (front side); 24 VDC. Plug for power supply must be ordered separately (screw clamp: 0TB103.9; cage clamps: 0TB103.91).	

Table 3: Model numbers - system units

Model number	Short description	Note
5PC720.1505-01	**Panel PC 720 15" XGA T, 2 PCI slots, 1 disk drive slot** 15" XGA color TFT display with touch screen (resistive); 1 drive slot; connections for 2 x RS232, 3 x USB 2.0, monitor, 2 x Ethernet 10/100, AC97 sound, PS/2 keyboard/mouse; IP65 protection (front side); 24 VDC. Plug for power supply must be ordered separately (screw clamp: 0TB103.9; cage clamps: 0TB103.91).	
5PC720.1505-02	**Panel PC 720 15" XGA T, 1 PCI slot, 1 disk drive slot** 15" XGA color TFT display with touch screen (resistive); 1 drive slot; connections for 2 x RS232, 3 x USB 2.0, monitor, 2 x Ethernet 10/100, AC97 sound, PS/2 keyboard/mouse; IP65 protection (front side); 24 VDC. Plug for power supply must be ordered separately (screw clamp: 0TB103.9; cage clamps: 0TB103.91).	
5PC781.1043-00	**Panel PC 781 10.4" VGA FT, 0 PCI slots** 10.4" VGA color TFT display with touch screen (resistive); 10 softkeys; 28 function keys and 20 system keys; connections for 2 x RS232, 3 x USB 2.0, monitor, 2 x Ethernet 10/100, AC97 sound, PS/2 keyboard/mouse; IP65 protection (front side); 24 VDC. Plug for power supply must be ordered separately (screw clamp: 0TB103.9; cage clamps: 0TB103.91).	
5PC781.1505-00	**Panel PC 781 15" XGA FT, 0 PCI slots, 1 disk drive slot** 15" XGA color TFT display with touch screen (resistive); 1 drive slot; 12 softkeys; 20 function keys and 92 system keys; connections for 2 x RS232, 3 x USB 2.0, monitor, 2 x Ethernet 10/100, AC97 sound, PS/2 keyboard/mouse; IP65 protection (front side); 24 VDC. Plug for power supply must be ordered separately (screw clamp: 0TB103.9; cage clamps: 0TB103.91).	
5PC782.1043-00	**Panel PC 782 10.4" VGA FT, 0 PCI slots** 10.4" VGA color TFT display with touch screen (resistive); 10 softkeys; 44 function keys and 20 system keys; connections for 2 x RS232, 3 x USB 2.0, monitor, 2 x Ethernet 10/100, AC97 sound, PS/2 keyboard/mouse; IP65 protection (front side); 24 VDC. Plug for power supply must be ordered separately (screw clamp: 0TB103.9; cage clamps: 0TB103.91).	

Table 3: Model numbers - system units

5.2 815E CPU boards

Model number	Short description	Note
5PC600.E815-00	**815E C3-400 CPU board** Intel Celeron 3 CPU board, 400 MHz, 100 MHz FSB, 256 kB L2 cache, chipset 815E; 1 socket for SO-DIMM SDRAM module.	*Cancelled since 10/2005*
5PC600.E815-02	**815E C3-733 CPU board** Intel Celeron 3 CPU board, 733 MHz, 133 MHz FSB, 256 kB L2 cache, chipset 815E; 1 socket for SO-DIMM SDRAM module.	*Cancelled since 10/2005*
5PC600.E815-03	**815E C3-1000 CPU board** Intel Celeron 3 CPU board, 1000 MHz, 133 MHz FSB, 256 kB L2 cache, chipset 815E; 1 socket for SO-DIMM SDRAM module.	*Cancelled since 10/2005*

Table 4: Model numbers - 815E CPU boards

5.3 855GME CPU boards

Model number	Short description	Note
5PC600.E855-00	**855GME PM-1100 CPU board** Intel Pentium M CPU board, 1100 MHz, 400 MHz FSB, 1 MB L2 cache; chipset 855GME; 1 socket for SO-DIMM DDR RAM module.	
5PC600.E855-01	**855GME PM-1600 CPU board** Intel Pentium M CPU board, 1600 MHz, 400 MHz FSB, 1 MB L2 cache; chipset 855GME; 1 socket for SO-DIMM DDR RAM module.	
5PC600.E855-02	**855GME PM-1400 CPU board** Intel Pentium M CPU board, 1400 MHz, 400 MHz FSB, 2 MB L2 cache; chipset 855GME; 1 socket for SO-DIMM DDR RAM module.	
5PC600.E855-03	**855GME PM-1800 CPU board** Intel Pentium M CPU board, 1800 MHz, 400 MHz FSB, 2 MB L2 cache; chipset 855GME; 1 socket for SO-DIMM DDR RAM module.	
5PC600.E855-04	**855GME CM-600 CPU board** Intel Celeron M CPU board, 600 MHz, 400 MHz FSB, 512 kB L2 cache; chipset 855GME; 1 socket for SO-DIMM DDR module.	
5PC600.E855-05	**855GME CM-1000 CPU board** Intel Pentium M CPU board, 1000 MHz, 400 MHz FSB, 1 MB L2 cache; chipset 855GME; 1 socket for SO-DIMM DDR RAM module.	

Table 5: Model numbers - 855GME CPU boards

5.4 Heat sink

Model number	Short description	Note
5AC700.HS01-00	**Panel PC 700 fan** For PPC700 systems with an Intel 815E CPU board (5PC600.E815-00, 5PC600.E815-02 and 5PC600.E815-03).	*Cancelled since 10/2005*
5AC700.HS01-01	**Panel PC 700 fan** For PPC700 systems with an Intel 855GME CPU board (5PC600.E855-00, 5PC600.E855-02, 5PC600.E855-04 and 5PC600.E855-05)	
5AC700.HS01-02	**Panel PC 700 fan** for CPU boards with an Intel 855GME CPU board (5PC600.E855-01 and 5PC600.E855-03).	

Table 6: Model numbers - heat sinks

5.5 Main memory

Model number	Short description	Note
5MMSDR.0128-01	**SO-DIMM SDRAM 128 MB PC133** SO-DIMM SDRAM 128 MB PC133 for 815E CPU boards.	*Cancelled since 10/2005*
5MMSDR.0256-01	**SO-DIMM SDRAM 256 MB PC133** SO-DIMM SDRAM 256 MB PC133 for 815E CPU boards.	*Cancelled since 10/2005*
5MMSDR.0512-01	**SO-DIMM SDRAM 512 MB PC133** SO-DIMM SDRAM 512 MB PC133 for 815E CPU boards.	*Cancelled since 10/2005*
5MMDDR.0256-00	**SO-DIMM DDR-SDRAM 256 MB PC2700** SO-DIMM DDR-SDRAM 256 MB PC2700 for 855GME CPU boards.	

Table 7: Model numbers - main memory

Model number	Short description	Note
5MMDDR.0512-00	**SO-DIMM DDR-SDRAM 512 MB PC2700** SO-DIMM DDR-SDRAM 512 MB PC2700 for 855GME CPU boards.	
5MMDDR.1024-00	**SO-DIMM DDR-SDRAM 1024 MB PC2700** SO-DIMM DDR-SDRAM 1024 MB PC2700 for 855GME CPU boards.	

Table 7: Model numbers - main memory

5.6 Drives

Model number	Short description	Note
5AC600.HDDI-00	**Add-on hard disk 30 GB 24/7** 30 GB hard disk (add-on); ideal for 24-hour operation. For installation in an APC620 or PPC700.	
5AC600.HDDI-01	**Add-on hard disk 20 GB ET** 20 GB hard disk (add-on); with expanded temperature range. For installation in an APC620 or PPC700.	
5AC600.CFSI-00	**Add-on CompactFlash slot** CompactFlash slot (add-on); for installation in an APC620 or PPC700.	
5AC600.CDXS-00	**Slide-in CD-ROM** CD-ROM drive (slide-in); for operation in a slide-in drive slot in an APC620 or PPC700 system.	
5AC600.CFSS-00	**Slide-in CF 2-slot** Slide-in CompactFlash adapter for 2 CompactFlash (via IDE and USB2.0)	
5AC600.DVDS-00	**Slide-in DVD-ROM/CD-RW** DVD-ROM/CD-RW drive (slide-in); for operation in a slide-in drive slot in an APC620 or PPC700 system.	
5AC600.FDDS-00	**Slide-in USB FDD** FDD drive (slide-in); for operation in a slide-in drive slot in an APC620 or PPC700 system.	
5AC600.HDDS-00	**Slide-in hard disk 30 GB 24x7** 30 GB hard disk (slide-in); ideal for 24-hour operation. For use in a slide-in drive slot in an APC620 or PPC700 system.	
5AC600.HDDS-01	**Slide-in hard disk 20 GB ET** 20 GB hard disk (slide-in); with expanded temperature range. For use in a slide-in drive slot in an APC620 or PPC700 system.	
5ACPCI.RAIC-00	**PCI RAID controller ATA/100** PCI Raid controller	
5ACPCI.RAIS-00	**PCI RAID storage 2x40GB** PCI Raid hard disk 2 x 40 GB;	

Table 8: Model numbers - drives

5.7 Interface options

Model number	Short description	Note
5AC600.CANI-00	**Add-on CAN interface** CAN interface for installation in an APC620 or PPC700.	
5AC600.485I-00	**Add-on RS232/422/485 interface** Add-on RS232/422/485 interface for installation in an APC620 and PPC700.	

Table 9: Model numbers - interface

5.8 Fan kit

Model number	Short description	Note
5PC700.FA00-01	**Panel PC 700 fan kit** For Panel PC 700 10.4" and 15" with 0 PCI slots.	40 x 40 x 20
5PC700.FA02-00	**Panel PC 700 fan kit** For Panel PC 700 10.4" with 2 PCI slots.	60 x 60 x 10
5PC700.FA02-01	**Panel PC 700 fan kit** For Panel PC 15" with 1 or 2 PCI slots.	60 x 60 x 20

Table 10: Model numbers - fan kit

5.9 Accessories

5.9.1 Batteries

Model number	Short description	Note
0AC201.9	**Lithium batteries (5x)** Lithium batteries, 5 pcs., 3 V / 950 mAh, button cell	
4A0006.00-000	**Lithium battery (1x)** Lithium battery, 1 piece, 3 V / 950 mAh, button cell	

Table 11: Model numbers - batteries

5.9.2 Supply voltage connector

Model number	Short description	Note
0TB103.9	**Plug 24V 5.08 3p screw clamps** 24 VDC 3-pin connector, female. Screw clamp, 3.31 mm², protected against vibration by the screw flange.	
0TB103.91	**Plug 24V 5.08 3p cage clamps** 24 VDC 3-pin connector, female. Cage clamps, 3.31 mm², protected against vibration by the screw flange.	

Table 12: Model numbers - supply voltage connectors

5.9.3 CompactFlash cards

Model number	Short description	Note
5CFCRD.0032-02	**CompactFlash 32 MB True IDE SanDisk/A** CompactFlash card with 32 MB Flash PROM, and true IDE/ATA interface.	
5CFCRD.0064-02	**CompactFlash 64 MB True IDE SanDisk/A** CompactFlash card with 64 MB Flash PROM, and true IDE/ATA interface.	
5CFCRD.0128-02	**CompactFlash 128 MB True IDE SanDisk/A** CompactFlash card with 128 MB Flash PROM, and true IDE/ATA interface	
5CFCRD.0256-02	**CompactFlash 256 MB True IDE SanDisk/A** CompactFlash card with 256 MB Flash PROM, and true IDE/ATA interface	

Table 13: Model numbers - CompactFlash cards

Model number	Short description	Note
5CFCRD.0512-02	**CompactFlash 512 MB True IDE SanDisk/A** CompactFlash card with 512 MB Flash PROM, and true IDE/ATA interface	
5CFCRD.1024-02	**CompactFlash 1024 MB True IDE SanDisk/A** CompactFlash card with 1024 MB Flash PROM, and true IDE/ATA interface	
5CFCRD.2048-02	**CompactFlash 2048 MB True IDE SanDisk/A** CompactFlash card with 2048 MB Flash PROM, and true IDE/ATA interface	

Table 13: Model numbers - CompactFlash cards (cont.)

5.9.4 USB memory sticks

Model number	Short description	Note
5MMUSB.0128-00	**USB memory stick 128 MB SanDisk** USB 2.0 memory stick 128 MB	
5MMUSB.0256-00	**USB memory stick 256 MB SanDisk** USB 2.0 memory stick 256 MB	
5MMUSB.0512-00	**USB memory stick 512 MB SanDisk** USB 2.0 memory stick 512 MB	

Table 14: Model numbers - USB memory sticks

5.9.5 Cable

Model number	Description	Note
5CADVI.0018-00	**DVI-D cable 1.8 m / single** Cable (single) DVI-D/m:DVI-D/m 1.8 m	
5CADVI.0050-00	**DVI-D cable 5 m / single** Cable (single) DVI-D/m:DVI-D/m 5 m	
5CADVI.0100-00	**DVI-D cable 10 m / single** Cable (single) DVI-D/m:DVI-D/m 10 m	
5CASDL.0018-00	**SDL cable (1.8 m)** SDL cable DVI-D/m:DVI-D/m 1.8 m	
5CASDL.0050-00	**SDL cable (5 m)** SDL cable DVI-D/m:DVI-D/m 5 m	
5CASDL.0100-00	**SDL cable (10 m)** SDL cable DVI-D/m:DVI-D/m 10 m	
5CASDL.0150-00	**SDL cable (15 m)** SDL cable DVI-D/m:DVI-D/m 15 m	
5CASDL.0200-00	**SDL cable (20 m)** SDL cable DVI-D/m:DVI-D/m 20 m	
5CASDL.0250-00	**SDL cable (25 m)** SDL cable DVI-D/m:DVI-D/m 25 m	
5CASDL.0300-00	**SDL cable (30 m)** SDL cable DVI-D/m:DVI-D/m 30 m	
5CAUSB.0018-00	**USB 2.0 cable A/m:B/m 1.8 m** USB 2.0 connection cable; Type A - Type B; 1.8 m	

Table 15: Model numbers - cables

Model number	Description	Note
5CAUSB.0050-00	**USB 2.0 cable A/m:B/m 5 m** USB 2.0 connection cable; Type A - Type B; 5 m	
9A0014.02	**RS232 cable DB9/f:DB9/m 1.8 m** RS232 extension cable for remote operation of a display unit with touch screen, length 1.8 m.	
9A0014.05	**RS232 cable DB9/f:DB9/m 5 m** RS232 extension cable for remote operation of a display unit with touch screen, length 5 m.	
9A0014.10	**RS232 cable DB9/f:DB9/m 10 m** RS232 extension cable for remote operation of a display unit with touch screen, length 10 m.	

Table 15: Model numbers - cables (cont.)

5.9.6 Other

Model number	Short description	Note
5A5003.03	**Front cover** Front cover appropriate for the USB 2.0 Media Drive 5MD900.USB2-00.	
5AC600.ICOV-00	**Interface covers** Interface covers for APC620 and PPC700 devices; 5 pieces	
5AC900.1000-00	**Adapter DVI-A/m to CRT DB15HD/f** Adapter DVI (plug) to CRT (socket), for connecting a standard monitor to a DVI-I interface.	
5AC900.1200-00	**USB interface cover (cannot be lost)** Front side USB interface cover (cannot be lost) for Automation Panel 900 and Panel PC 700 devices.	
5MD900.USB2-00	**USB 2.0 drive DVD-ROM/CD-RW FDD CF USB** USB 2.0 drive combination, consists of DVD-ROM/CD-RW, FDD, CompactFlash slot (type II), USB connection (type A front, type B back); 24 V DC.	

Table 16: Model numbers - other items

5.10 Software

Model number	Short description	Note
9S0000.01-010	**OEM MS-DOS 6.22 German (disk)** OEM MS-DOS 6.22 German disks Only delivered with a new PC.	
9S0000.01-020	**OEM MS-DOS 6.22 English (disk)** OEM MS-DOS 6.22 English disks Only delivered with a new PC.	
9S0000.08-010	**OEM Microsoft Windows XP Professional** CD, German; Only delivered with a new PC.	
9S0000.08-020	**OEM Microsoft Windows XP Professional** CD, English; Only delivered with a new PC.	
9S0000.09-090	**OEM Microsoft Windows XP Professional Multilanguage** CDs; Only delivered with a new PC.	
9S0001.19-020	**OEM Microsoft Windows XP embedded APC620 815E w/CF, English** 512 MB CompactFlash with Windows XP embedded image for APC620 systems with a 815E CPU board. Only delivered with a new PC.	*Cancelled since 10/2005*

Table 17: Model numbers - software

Model number	Short description	Note
9S0001.20-020	**OEM Microsoft Windows XP embedded APC620 855GME w/CF, English** 512 MB CompactFlash with Windows XP embedded image for APC620 systems with a 855GME CPU board. Only delivered with a new PC.	
9S0001.27-020	**OEM Microsoft Windows XP embedded (incl. SP2) APC620 815E w/CF, English** 512 MB CompactFlash with Windows XP embedded image including SP2 for APC620 systems with a 815E CPU board. Only delivered with a new PC.	*Cancelled since 10/2005*
9S0001.28-020	**OEM Microsoft Windows XP embedded (incl. SP2) APC620 855GME w/CF, English** 512 MB Compact Flash with Windows XP embedded image including SP2 for APC620 systems with a 855GME CPU board. Only delivered with a new PC.	

Table 17: Model numbers - software (cont.)

Chapter 2 • Technical data

1. Introduction

1.1 Features

- Processors up to Pentium M 1.8 GHz
- CompactFlash slot (type I)
- Half-size PCI slots (PCI standard 2.2, PCI bus speed 33 MHz)
- AC97 sound
- USB 2.0
- 24 VDC supply voltage
- 2 x Ethernet 10/100 MBit interfaces
- 2x RS232 interface, modem compatible
- PS/2 keyboard/mouse (combined)
- CAN interface option
- RS232/422/485 interface option
- Fan free operation[1)]

1) Dependant on the device configuration and the environmental temperature.

- BIOS (Phoenix)
- Real-time clock, RTC (battery-buffered)
- Up to 1 GB central memory
- Connection of various display devices to the "Monitor/Panel" video output (supports RGB, DVI, and SDL - Smart Display Link - signals)

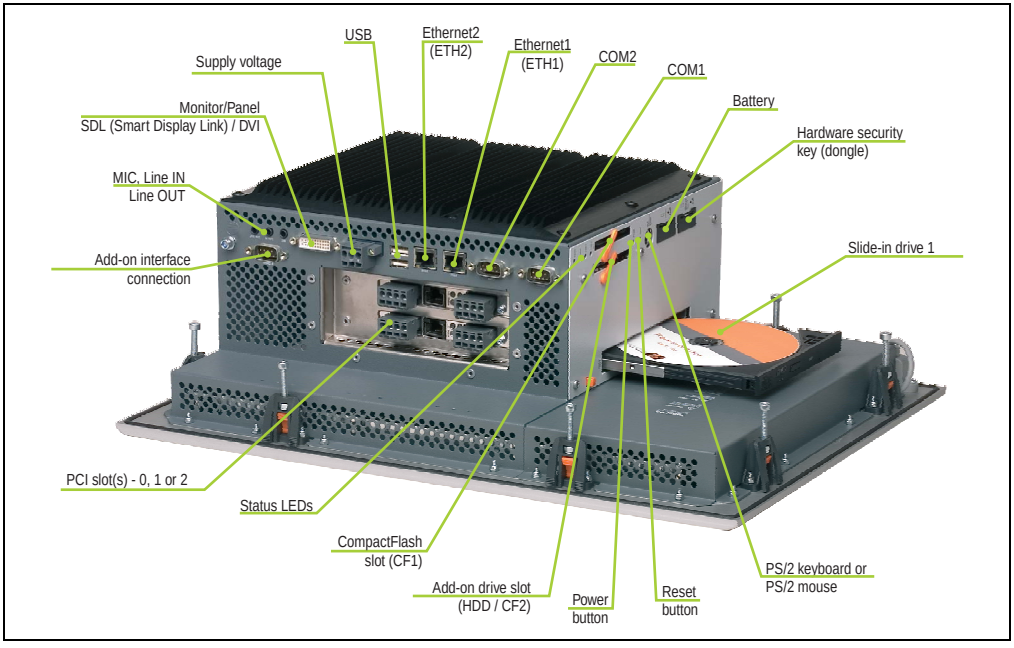
1.2 Construction

The PPC700 system can be assembled to meet individual requirements and operational conditions.

The following components are absolutely essential for operation:

- System unit
- CPU board
- Heat sink (CPU board dependent)
- Heat sink (CPU board dependent)
- Drive (mass memory such as CompactFlash card or hard disk) for the operating system
- Software

2. Device


USB
Ethernet2 (ETH2)
Ethernet1 (ETH1)
COM2
COM1
Battery
Supply voltage
Monitor/Panel SDL (Smart Display Link) / DVI
Hardware security key (dongle)
MIC, Line IN Line OUT
Add-on interface connection
Slide-in drive 1
PCI slot(s) - 0, 1 or 2
Status LEDs
CompactFlash slot (CF1)
Add-on drive slot (HDD / CF2)
Power button
Reset button
PS/2 keyboard or PS/2 mouse

2.1 General device interfaces

Depending on system unit, the device interfaces will vary only in the number of PCI slots and the presence of a slide-in drive slot.

2.1.1 Serial interfaces - COM1

Serial interfaces - COM1		
Type	RS232, modem capable, not electrically isolated	9-pin DSUB male 
UART	16550 compatible, 16 byte FIFO	
Transfer rate	Max. 115 kBaud	
Pin	**Assignment**	
1	DCD	
2	RXD	
3	TXD	
4	DTR	
5	GND	
6	DSR	
7	RTS	
8	CTS	
9	RI	

Table 18: Pin assignments - COM1

I/O address and IRQ

Resource	Default settings	Additional configuration possibilities
I/O address	3F8	2F8, 3E8, 2E8
IRQ	IRQ4	IRQ3

Table 19: COM1 - I/O address and IRQ

The I/O address and the IRQ settings can be changed in BIOS setup (under "Advanced" - submenu "I/O device configuration" setting "Serial port A"). Be aware that when changing this setting it is possible to create a conflict with another resource.

2.1.2 Serial interfaces - COM2

Serial interfaces - COM2		
Type	RS232, modem capable, not electrically isolated	9-pin DSUB male 
UART	16550 compatible, 16 byte FIFO	
Transfer rate	Max. 115 kBaud	
Pin	**Assignment**	
1	DCD	
2	RXD	
3	TXD	
4	DTR	
5	GND	
6	DSR	
7	RTS	
8	CTS	
9	RI	

Table 20: Pin assignments - COM2

I/O address and IRQ

Resource	Default settings	Additional configuration possibilities
I/O address	2F8	3F8, 3E8, 2E8
IRQ	IRQ3	IRQ4

Table 21: COM2 - I/O address and IRQ

The I/O address and the IRQ settings can be changed in BIOS setup (under "Advanced" - submenu "I/O device configuration" setting "Serial port B"). Be aware that when changing this setting it is possible to create a conflict with another resource.

2.1.3 Ethernet connection ETH1

This Ethernet connection is integrated in the CPU board being used.

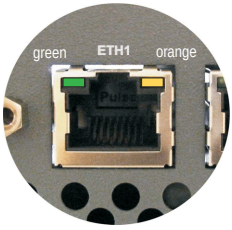
Ethernet connection (ETH1)			
Controller	Intel 82562		RJ45 Twisted Pair (10BaseT/100BaseT), female 
Cabling	S/STP (category 5)		
Transfer rate	10/100 MBit/s [1]		
LED	**On**	**Off**	
Green	100 MBit/s	10 MBit/s	
Orange	Link (Ethernet network connection available)	Activity (blinking) (Data transfer in progress)	

Table 22: Ethernet connection (ETH1)

1) Both operating modes possible. Change-over takes place automatically.

Driver support

Special drivers are necessary for operating the Intel Ethernet controller 82562. Drivers for Windows XP Professional, Windows XP Embedded, and DOS are available for download on the B&R Homepage in the download area (**www.br-automation.com**).

2.1.4 Ethernet connection ETH2

This Ethernet connection is integrated in the system unit.

Ethernet connection (ETH2)			
Controller	Intel 82551ER		RJ45 Twisted Pair (10BaseT/100BaseT), female
Cabling	S/STP (category 5)		
Transfer rate	10/100 MBit/s [1]		
LED	**On**	**Off**	
Green	100 MBit/s	10 MBit/s	
Orange	Link (Ethernet network connection available)	Activity (blinking) (Data transfer in progress)	

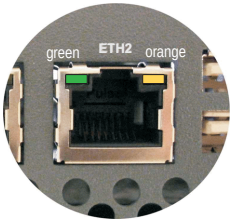


Table 23: Ethernet connection (ETH2)

1) Both operating modes possible. Change-over takes place automatically.

Driver support

Special drivers are necessary for operating the Intel Ethernet controller 82551ER. Drivers for Windows XP Professional, Windows XP Embedded, and DOS are available for download on the B&R Homepage in the download area (**www.br-automation.com**).

2.1.5 USB port

The PPC700 devices have a USB 2.0 (Universal Serial Bus) host controller with multiple USB ports, two of which are on the outside for easy user access.

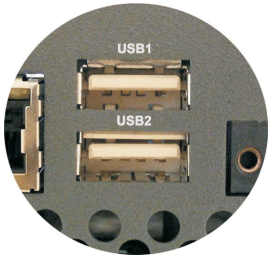
Universal Serial Bus		
Transfer rate	Low speed (1.5 MBit/s), full speed (12 MBit/s), to high speed (480 Mbit/s)	2x USB Type A, female 
Power supply	max. 500 mA per Port[1)]	
Maximum cable length	5 m (not including hub)	

Table 24: USB port

1) For safety, every USB port is equipped with a maintenance free USB current-limiting circuit breaker (max. 500 mA)

Warning!

Peripheral USB devices can be connected to the USB interfaces. Due to the vast number of USB devices available on the market, B&R cannot guarantee their performance. B&R does assure the performance of all USB devices that they provide.

Important!

Because of general PC specifications, this interface should be handled with extreme care with regard to EMC, location of cables etc.

Driver support

For optimal functionality of USB 2.0 (transfer speed up to 480 Mbit/s) with Windows XP, at least Service Pack 1 must be installed. Without the Service Pack, Windows XP will only support USB 1.1.

USB 2.0 comes already integrated in B&R's XP embedded operating system.

2.1.6 Supply voltage

The 3-pin socket required for the supply voltage connection is not contained in the delivery. This can be ordered from B&R using the model number 0TB103.9 (screw clamp) or 0TB103.91 (cage clamp).

The pin assignments can be found either in the following table or printed on the Panel PC 700 housing. The supply voltage has reverse polarity protection.

Supply voltage	
protected against reverse polarity	3-pin, male
Pin	**Description**
1	+
2	Functional grounding
3	-
Accessories	
0TB103.9	Plug 24 V 5.08 3p screw clamps
0TB103.91	Plug 24 V 5.08 3p cage clamps

Figure 1: Supply voltage connection

Important!

The pin's connection to the functional ground (pin 2) should be as short as possible.

PPC700 systems are equipped with a ground connection. The M4 self-locking nut can be used to fasten a copper strip for grounding.

Figure 2: Ground connection

2.1.7 Monitor / Panel connection

When using this video output, understand that the video signals that are available (RGB, DVI, and SDL - Smart Display Link) will vary depending on the system unit and CPU board. DVI hotplug is not supported

Monitor / Panel		
The following will provide an overview of the video signals available with different system units and CPU boards.		24-pin DVI-I with special functions, female 
System unit	**815E board**	**855GME board**
5PC720.1043-00	RGB	RGB, DVI, SDL
5PC720.1043-01	RGB	RGB, DVI, SDL
5PC720.1214-00	RGB	RGB, DVI, SDL
5PC720.1505-00	RGB	RGB, DVI, SDL
5PC720.1505-01	RGB	RGB, DVI, SDL
5PC720.1505-02	RGB	RGB, DVI, SDL
5PC781.1043-00	RGB	RGB, DVI, SDL
5PC781.1505-00	RGB	RGB, DVI, SDL
5PC782.1043-00	RGB	RGB, DVI, SDL

Figure 3: Monitor / Panel connection

2.1.8 MIC, Line IN and Line OUT Port

All PPC700 systems include an AC97 compatible sound chip with access to the channels MIC, Line IN and Line OUT from the outside.

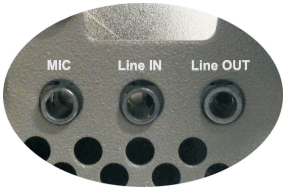
MIC, Line IN and Line OUT		
MIC	Connection of a mono microphone with a 3.5 mm stereo (headphone) jack.	3.5 mm socket, female 
Line IN	Stereo Line IN signal supplied via 3.5 mm plug.	
Line OUT	Connection of a stereo sound reader (e.g. amplifier) via a 3.5 mm plug.	

Table 25: MIC, Line IN and Line OUT Port

Driver support

Special drivers are necessary for operating the AC97 sound chip. Drivers for Windows XP Professional and Windows XP Embedded are available for download on the B&R Homepage in the download area (**www.br-automation.com**).

2.1.9 Add-on interface slot

An optional add-on interface (e.g. CAN, RS485) can be installed here. See also section 3.7 "Interface options" on page 121.

Add-on interface slot	
Available add-on interfaces	
5AC600.CANI-00	Add-on CAN interface
5AC600.485I-00	Add-on RS232/422/485 interface

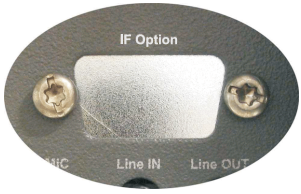


Table 26: Add-on interface slot

Information:

An add-on interface module is only available factory-installed.

2.1.10 PCI slots

Up to 2 PCI slots are available, depending on the system unit. 5 volt cards and universal cards that comply with the PCI half-size standard 2.2 and do not exceed the following dimensions can be inserted.

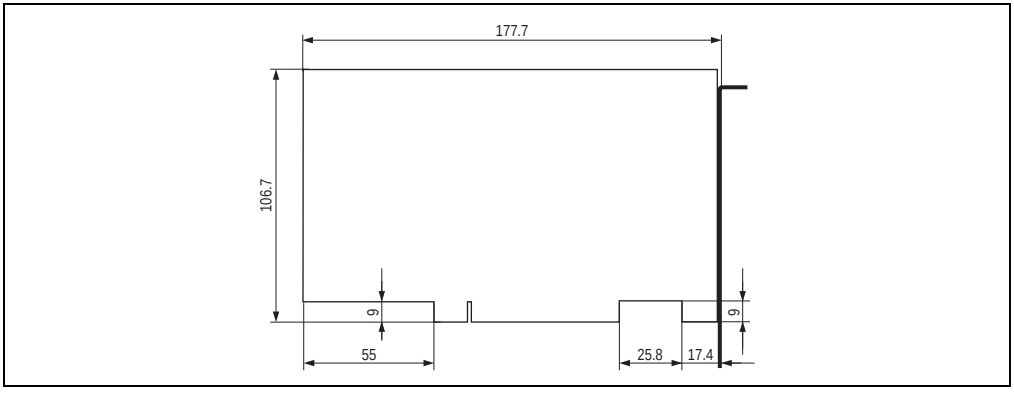


Figure 4: Dimensions - standard half-size PCI cards.

Information:

The total power of a PCI card per PCI slot should not exceed the limit with or without a fan kit (see section "Power management - APC620 systems with 1 and 2 PCI slots", on page 49).

Voltages on the PCI slot plug

The PCI slot plug is the same as a 5 volt PCI plug. The plug itself has the 3.3 volt and 5 volt supply.

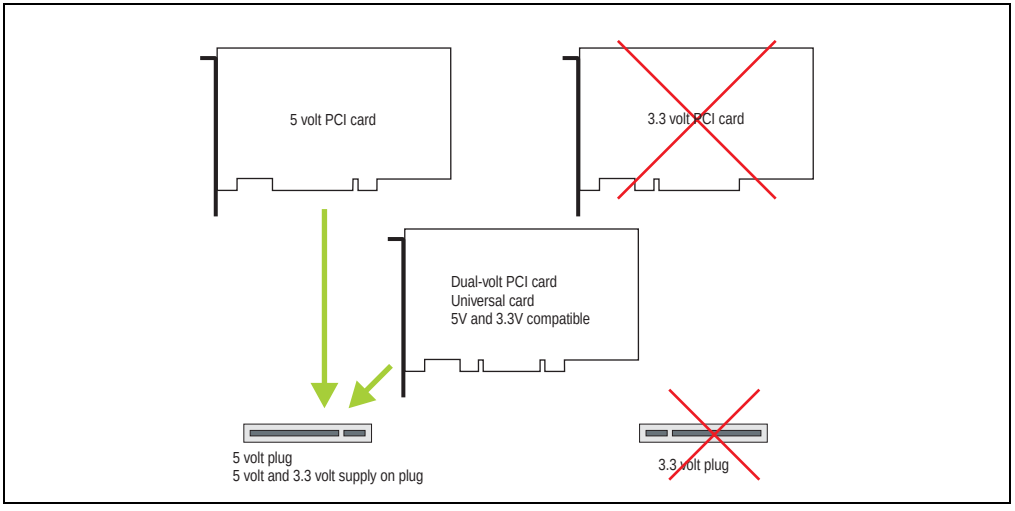


Figure 5: 5 volt PCI plug

2.1.11 Status LEDs

The status LEDs are integrated in the system unit.

Status LEDs			
LED	**Color**		**Description**
Power	Green	On	Supply voltage OK
	Red	On	The system is in standby mode (S5: soft-off mode or S4: hibernate mode - suspend-to-disk).
HDD	Yellow	On	Signals IDE drive access (CF, HDD, CD, etc.)
Link 1	Yellow	On	Active SDL connection.
		blinks	An active SDL connection has been interrupted by a loss of power in the display unit.
Link 2	Yellow	-	In preparation

Table 27: Status LEDs

2.1.12 CompactFlash slot (CF1)

This Compact Flash slot is a fixed component of an PPC700 system, and is defined in BIOS as the primary master drive.

CompactFlash slot (CF1)	
Connection	Primary master IDE device
CompactFlash Type	Type I
Accessories	**Short description**
5CFCRD.0032-02	CompactFlash 32 MB
5CFCRD.0064-02	CompactFlash 64 MB
5CFCRD.0128-02	CompactFlash 128 MB
5CFCRD.0256-02	CompactFlash 256 MB
5CFCRD.0512-02	CompactFlash 512 MB
5CFCRD.1024-02	CompactFlash 1024 MB
5CFCRD.2048-02	CompactFlash 2048 MB

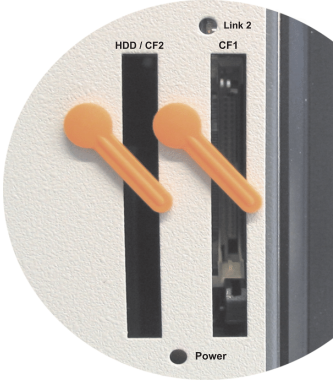


Table 28: CompactFlash slot (CF1)

Warning!

Inserting and removing the CompactFlash card can only take place without power applied!

2.1.13 Hard disk / CompactFlash slot (HDD/CF2)

This slot allows for installation of a hard disk or a second CompactFlash slot as so-called add-on drives (see table 8 "Model numbers - drives" for available add-on drives). The add-on drive is referred to in BIOS as the primary slave drive.

Information:

Add-on drives are only available factory-installed. Therefore, this needs to be requested when placing the order.

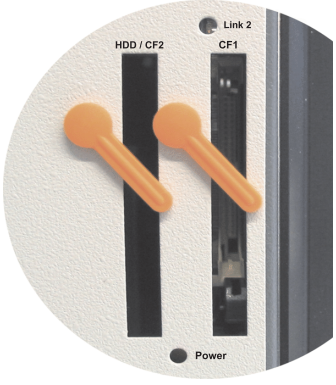
Hard disk / CompactFlash slot (HDD/CF2)		
Connection	Primary slave IDE device	
Add-on hard disks - 2.5" drive (internal)		
5AC600.HDDI-00	Add-on hard disk 30 GB 24/7	
5AC600.HDDI-01	Add-on hard disk 20 GB ET	
Add-on CompactFlash slot		
5AC600.CFSI-00	Add-on CompactFlash slot	
CompactFlash Type	Type I	
Accessories	**Short description**	
5CFCRD.0032-02	CompactFlash 32 MB	
5CFCRD.0064-02	CompactFlash 64 MB	
5CFCRD.0128-02	CompactFlash 128 MB	
5CFCRD.0256-02	CompactFlash 256 MB	
5CFCRD.0512-02	CompactFlash 512 MB	
5CFCRD.1024-02	CompactFlash 1024 MB	
5CFCRD.2048-02	CompactFlash 2048 MB	

Table 29: Hard disk / CompactFlash slot (HDD/CF2)

Warning!

Inserting and removing the CompactFlash card can only take place without power applied!

2.1.14 Power button

Due to the complete ATX power supply support, the power button serves various functions. These functions can be configured either in the BIOS setup (see BIOS function "power button function" in section "Power", on page 168 for 815E CPU boards, or section "Power", on page 219 for 855GME CPU boards) or, for example, in the operating system Windows XP.

Power button	
The power button can be pressed with a pointed object (i.e. paper clip or tip of a pen). The power button acts like the on/off switch on a normal desktop PC with ATX power supply: **press and release** ... Windows shuts down automatically **press and hold** ... ATX power supply switches off without shutting down the PPC700 system (**data could be lost!**). Pressing the power button does not reset the MTCX processor.	

Table 30: Power button

2.1.15 Reset button

Reset button	
The reset button can be pressed with a pointed object (i.e. paper clip or tip of a pen). Pushing the reset button results in a hardware-reset, PCI-reset. The PPC700 is restarted (cold restart). The MTCX processor is not reset when the reset button is pressed.	

Table 31: Reset button

Warning!

A reset triggered by pressing the reset button can cause data to be lost!

2.1.16 PS/2 keyboard/mouse

A standard PS/2 mouse or a PS/2 AT enhanced keyboard can be connected here. BIOS automatically determines whether a mouse or a keyboard has been connected, and transfers this information to the operating system.

With a PS/2 Y-cable, both keyboard and mouse can be operated simultaneously. They must be connected before the system is switched on.

This interface has a "Hot-Plug" function for PS/2 keyboards (only when no PS/2 mouse has ever been connected and used!).

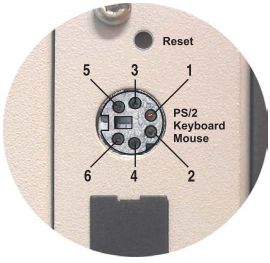
Connection for keyboard/mouse (PS/2)		
Pin	**Assignment**	PS/2 socket, female
1	DATA 0	
2	DATA 1	
3	GND	
4	+5 V [1)]	
5	CLK 0	
6	CLK 1	

Table 32: Connection for external keyboard/mouse (PS/2)

1) The PS/2 keyboard/mouse interface is protected by a multifuse (1A).

Warning!

Because of general PC specifications, this interface should be used with extreme care concerning EMC, location of cables, etc. Therefore it should only be used for service!

Information:

The BIOS setup defaults only allow for the operation of a PS/2 keyboard. If a PS/2 mouse is connected, it must be activated in BIOS. In order to do this, set "PS/2 mouse" in the BIOS setup menu to "enabled" and save. (Located under Advanced - Miscellaneous - Item "PS/2 mouse").

2.1.17 Battery

The real time clock is buffered by a lithium battery (3 V, 950 mAh), which is located behind the black cover.

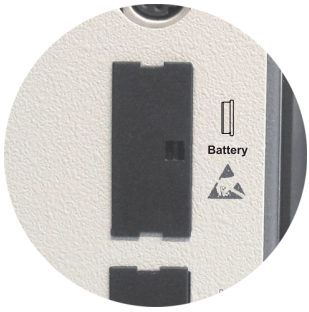
Battery		
Battery Type Exchangeable lifespan	 Renata 950 mAh Yes, accessible from the outside. 4 years at 25 °C	

Table 33: Battery

Warning!

Turn off power before removing or adding the lithium battery.

2.1.18 Hardware security key

B&R recommends a dongle (security key) based on the DS1425 from MAXIM (previously Dallas Semiconductors) for software copy protection.

Hardware security key	
A hardware security key (dongle) can be inserted behind the black cover.	

Table 34: Hardware security key

Warning!

Turn off power before removing or adding the hardware security key.

2.1.19 Slide-in slot 1 drive slot

This slide-in slot 1 drive slot exists only in PPC700 system units with 2 PCI slots. in which case it is possible to insert a number of slide-in drives. See table for available slide-in drives 8 "Model numbers - drives" on page 19.

The slide-in CD-ROM and the slide-in DVD-ROM/CD-RW drive are referred to in BIOS as "secondary slave". The slide-in USB FDD drive is referred to as USB.

Information:

- **It is possible to add, remove, or modify the slide-in drive at any time.**

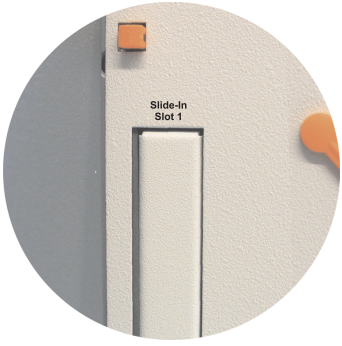
Slide-in slot 1		
Connection	Secondary slave IDE device	
Accessories	**Short description**	
5AC600.CDXS-00	Slide-in CD-ROM	
5AC600.CFSS-00	Slide-in CF 2-slot	
5AC600.DVDS-00	Slide-in DVD-ROM/CD-RW	
5AC600.FDDS-00	Slide-in USB FDD	
5AC600.HDDS-00	Slide-in hard disk 30 GB 24x7	
5AC600.HDDS-01	Slide-in hard disk 20 GB ET	

Table 35: Slide-in slot 1

Caution!

Turn off power before adding or removing a slide-in drive.

3. Individual components

3.1 System units

In the system unit, all components (CPU board, fan, main memory, drives) are connected together.

3.1.1 Panel PC 5PC720.1043-00

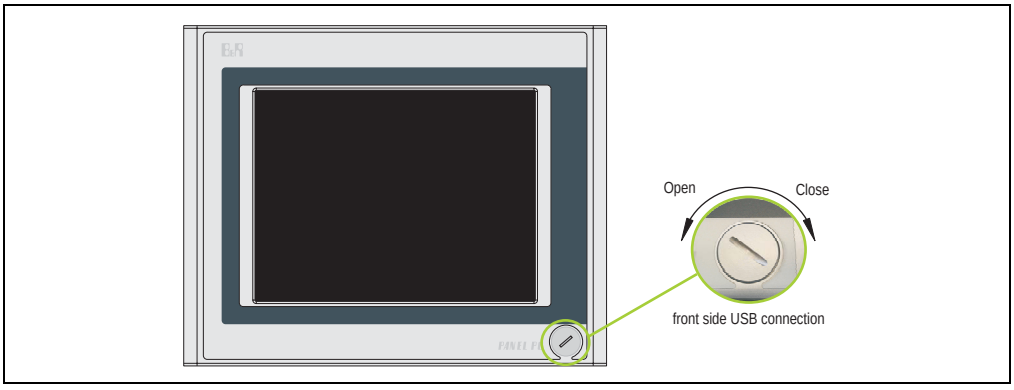


Figure 6: Front view - 5PC720.1043-00

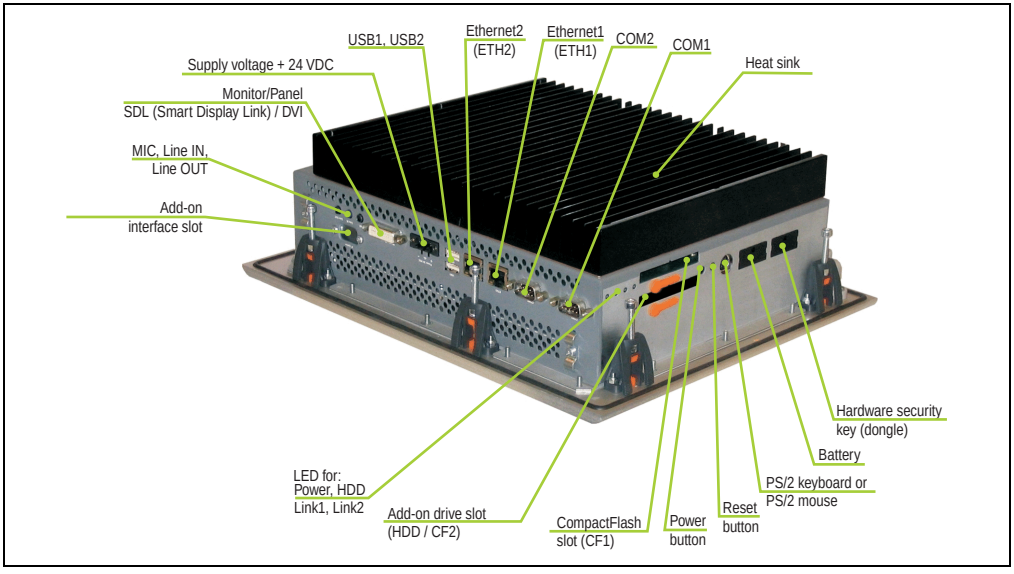


Figure 7: Rear view - 5PC720.1043-00

Warning!

Do not remove mounting screws from the heat sink, as it is connected to the processor and chipset by a thermal coupling. If this connection is broken, the PPC700 must be sent for repair. Removal of the mounting screws, which can be determined by a broken seal, voids all warranty.

During operation, surface temperatures of the heat sink may reach 70 °C (warning "hot surface").

Dimensions

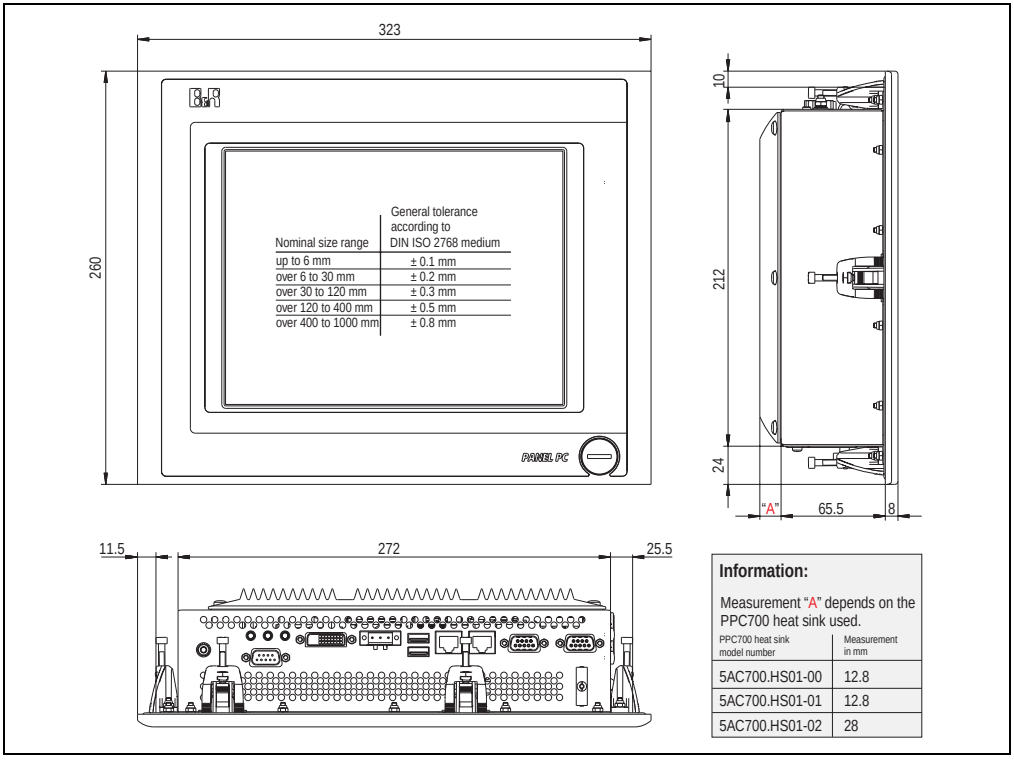


Figure 8: Dimensions - 5PC720.1043-00

Technical data

Features	5PC720.1043-00
Serial interfaces Type Number UART Transfer rate Connection	See "Serial interfaces - COM1", on page 28 and "Serial interfaces - COM2", on page 29 RS232, modem capable 2 16550 compatible, 16 byte FIFO max. 115 kBaud 9-pin DSUB, male
Ethernet Controller Transfer rate Connection	See "Ethernet connection ETH1", on page 30 and "Ethernet connection ETH2", on page 31 10/100 Mbit/s RJ45 Twisted Pair (10 BaseT / 100 BaseT)
USB interfaces Type Number Transfer rate Connection	See also "USB port", on page 32 USB 2.0 3 (2x back side, 1x front side) up to 480 MBit [1] (high speed) Type A
Monitor / Panel Type	See also "Monitor / Panel connection", on page 34 DVI-I, female
AC97 sound Inputs Outputs	See also "MIC, Line IN and Line OUT Port", on page 34 Microphone, Line in Line out
Add-on interface slot Number	See also "Add-on interface slot", on page 35 1
PCI slots Type Default	-
CompactFlash slot 1 (CF1) Internal organization	Yes, see also "CompactFlash slot (CF1)", on page 37 Primary master
CompactFlash slot 2 / hard disk (HDD/CF2) Type Internal organization	Yes, see also "Hard disk / CompactFlash slot (HDD/CF2)", on page 38 Combined Primary slave
Insert for slide-in drive 1 Internal organization	-
Reset button	Yes, see also "Power button", on page 39
Power button	Yes, see also "Reset button", on page 39
PS/2 keyboard/mouse Type	Yes, see also "PS/2 keyboard/mouse", on page 40 Combined, will be automatically detected
Battery compartment	Yes, see also "Battery", on page 41
Hardware security key compartment Optimized for	Yes, see also "Hardware security key", on page 41 DS1425 from MAXIM/Dallas)
Fan insert for fan kit	Yes
Automation Panel link slot	-
LED Number	See also "Status LEDs", on page 37 4 (Power, HDD, Link 1, Link 2)

Table 36: Technical data - 5PC720.1043-00

Features	5PC720.1043-00
Touch screen	
Technology	Analog, resistive
Controller	Elo, serial, 12-bit
Degree of transmission	Up to 78%
Display	
Type	Color TFT
Diagonal	10.4 inch (264 mm)
Colors	262,144 Colors
Resolution	VGA, 640 x 480 pixels
Contrast	300:1
Viewing angle horizontal / vertical	70° / 70°
Background lighting	
Brightness	350 cd/m²
Half-brightness time	50,000 hours
Keys	-
Function keys	
Softkeys	
Cursor pad	
Number block	
Other keys	
Electrical characteristics	
Power supply	See also "Supply voltage", on page 33
Rated voltage	24 VDC ±25%
Starting current	TBD
Power consumption	TBD
Electrical isolation	Yes
Mechanical characteristics	
Front	
Frame	Naturally anodized aluminum
Mylar	Polyester
Design	Gray
Gasket	Flat gasket around display front
Display design / colors	
Dark gray border around the display	Similar Pantone 432CV
Bright background	Similar Pantone 427CV
Housing	Metal
Outer dimensions	Also see drawing "Dimensions - 5PC720.1043-00", on page 44
Width	323 mm
Height	260 mm
Depth	86.3 or 103.5 mm (depending on the heat sink)
Weight	Approx. 3.6 kg
Environmental characteristics	
Environmental temperature	
Operation	TBD
Storage	TBD
Transport	TBD
Humidity	TBD
Operation	
Storage	
Transport	

Table 36: Technical data - 5PC720.1043-00 (cont.)

Environmental characteristics	5PC720.1043-00
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP20 back side (only with installed CompactFlash card) IP65 / NEMA 250 type 4X, dust and sprayed water protection (front side)
Altitude	Max. 3,000 m

Table 36: Technical data - 5PC720.1043-00 (cont.)

1) Software must support USB 2.0 (e.g. Windows XP with at least Service Pack 1).

Cutout installation

The Panel PC 700 with preassembled mounting blocks can be installed in a housing cutout. A cutout that corresponds to the following drawing must be made.

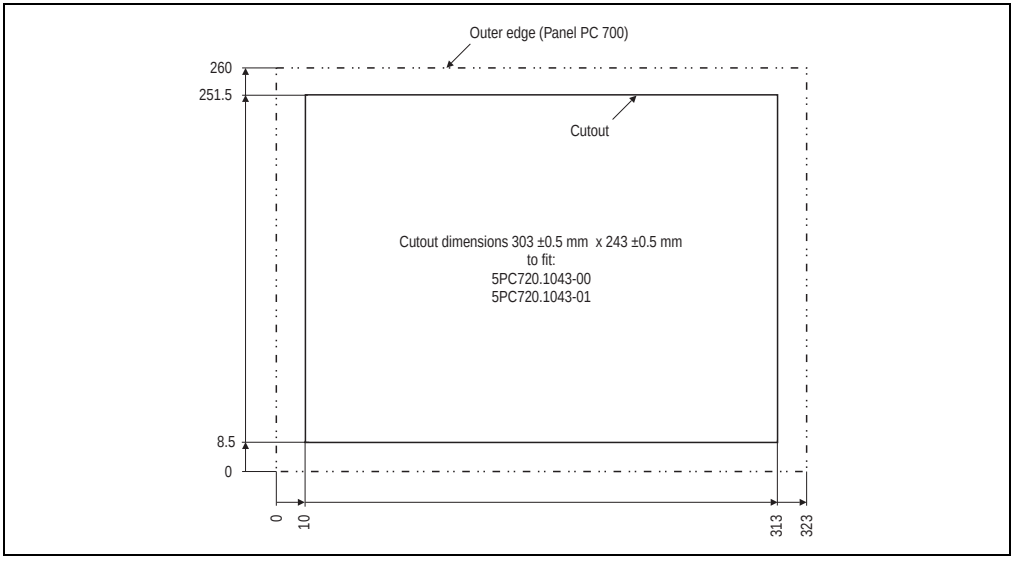


Figure 9: Cutout installation - 5PC720.1043-00

For further information regarding mounting and installation position, see chapter 3 "Installation" on page 129.

3.1.2 Panel PC 5PC720.1043-01

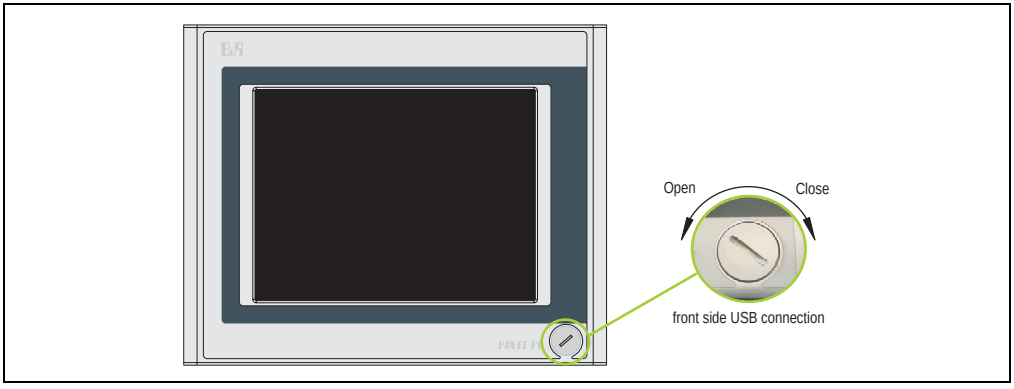


Figure 10: Front view - 5PC720.1043-01

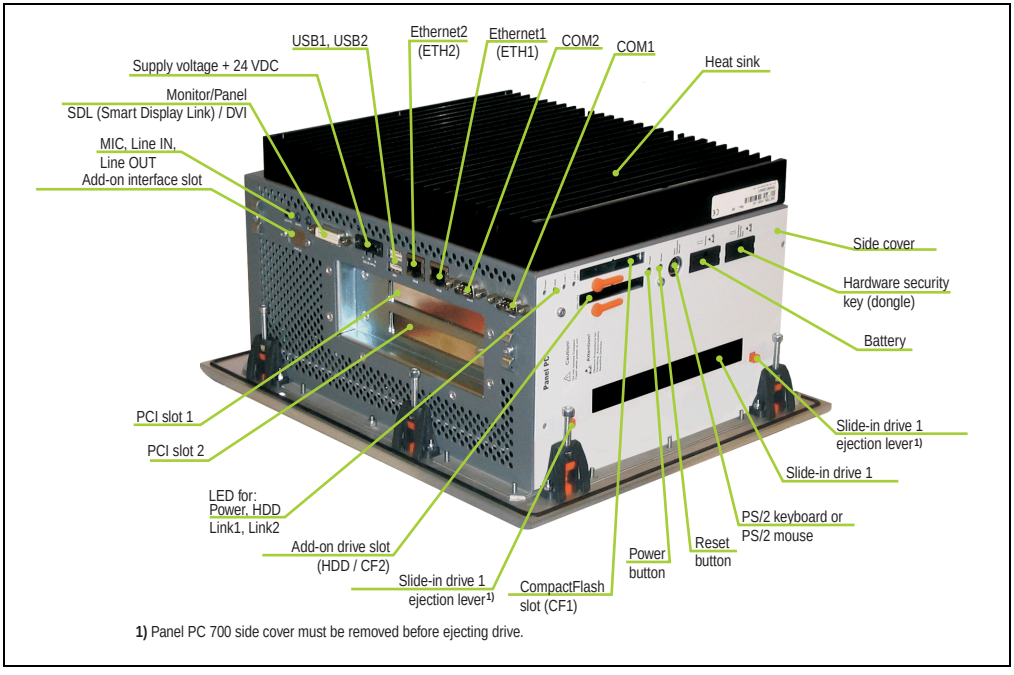


Figure 11: Rear view - 5PC720.1043-01

Warning!

Do not remove mounting screws from the heat sink, as it is connected to the processor and chipset by a thermal coupling. If this connection is broken, the PPC700 must be sent for repair. Removal of the mounting screws, which can be determined by a broken seal, voids all warranty.

During operation, surface temperatures of the heat sink may reach 70 °C (warning "hot surface").

Dimensions

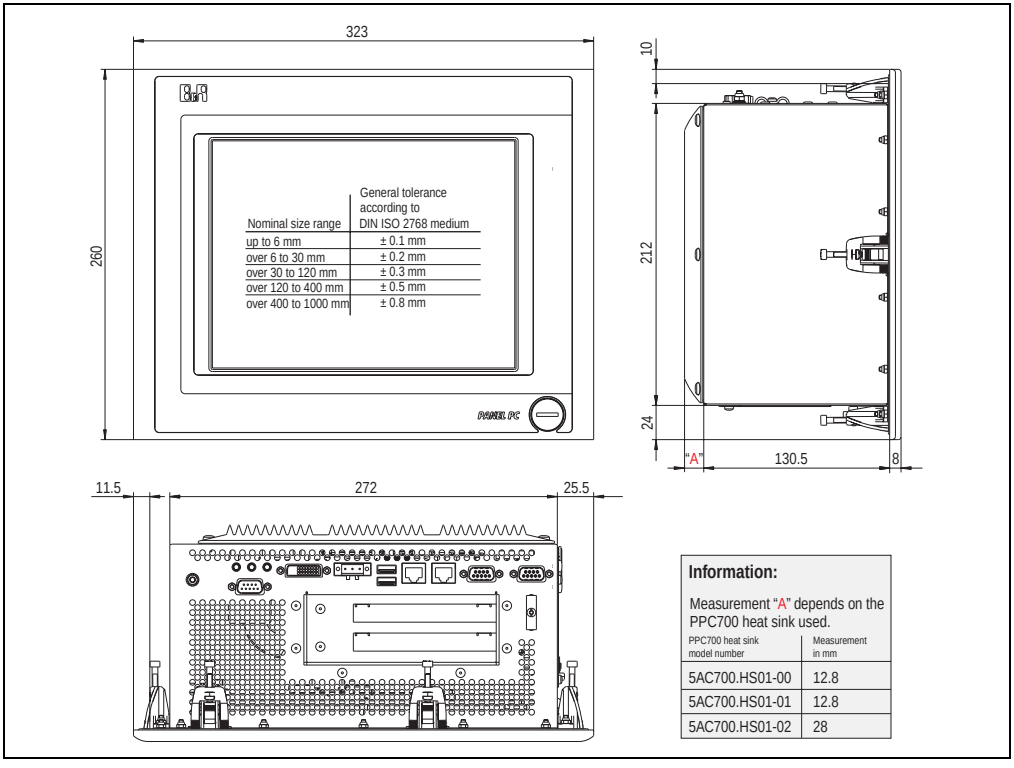


Figure 12: Dimensions - 5PC720.1043-01

Technical data

Features	5PC720.1043-01
Serial interfaces Type Number UART Transfer rate Connection	See "Serial interfaces - COM1", on page 28 and "Serial interfaces - COM2", on page 29 RS232, modem capable 2 16550 compatible, 16 byte FIFO max. 115 kBaud 9-pin DSUB, male
Ethernet Controller Transfer rate Connection	See "Ethernet connection ETH1", on page 30 and "Ethernet connection ETH2", on page 31 10/100 Mbit/s RJ45 Twisted Pair (10 BaseT / 100 BaseT)
USB interfaces Type Number Transfer rate Connection	See also "USB port", on page 32 USB 2.0 3 (2x back side, 1x front side) up to 480 MBit [1] (high speed) Type A
Monitor / Panel Type	See also "Monitor / Panel connection", on page 34 DVI-I, female
AC97 sound Inputs Outputs	See also "MIC, Line IN and Line OUT Port", on page 34 Microphone, Line in Line out
Add-on interface slot Number	See also "Add-on interface slot", on page 35 1
PCI slots Number Type Default	See also "PCI slots", on page 35 2 Half-size According to PCI half-size standard 2.2
CompactFlash slot 1 (CF1) Internal organization	Yes, see also "CompactFlash slot (CF1)", on page 37 Primary master
CompactFlash slot 2 / hard disk (HDD/CF2) Type Internal organization	Yes, see also "Hard disk / CompactFlash slot (HDD/CF2)", on page 38 Combined Primary slave
Insert for slide-in drive 1 Internal organization	Yes, see also "Slide-in slot 1 drive slot", on page 42 Secondary slave
Reset button	Yes, see also "Power button", on page 39
Power button	Yes, see also "Reset button", on page 39
PS/2 keyboard/mouse Type	Yes, see also "PS/2 keyboard/mouse", on page 40 Combined, will be automatically detected
Battery compartment	Yes, see also "Battery", on page 41
Hardware security key compartment Optimized for	Yes, see also "Hardware security key", on page 41 DS1425 from MAXIM/Dallas)
Fan insert for fan kit	Yes
Automation Panel link slot	-
LED Number	See also "Status LEDs", on page 37 4 (Power, HDD, Link 1, Link 2)

Table 37: Technical data - 5PC720.1043-01

Features	5PC720.1043-01
Touch screen	
Technology	Analog, resistive
Controller	Elo, serial, 12-bit
Degree of transmission	Up to 78%
Display	
Type	Color TFT
Diagonal	10.4 inch (264 mm)
Colors	262144 Colors
Resolution	VGA, 640 x 480 pixels
Contrast	300:1
Viewing angle horizontal / vertical	70° / 70°
Background lighting	
Brightness	350 cd/m²
Half-brightness time	50,000 hours
Keys	-
Function keys	
Softkeys	
Cursor pad	
Number block	
Other keys	
Electrical characteristics	
Power supply	See also "Supply voltage", on page 33
Rated voltage	24 VDC ±25%
Starting current	TBD
Power consumption	TBD
Electrical isolation	Yes
Mechanical characteristics	
Front	
Frame	Naturally anodized aluminum
Mylar	Polyester
Design	Gray
Gasket	Flat gasket around display front
Display design / colors	
Dark gray border around the display	Similar Pantone 432CV
Bright background	Similar Pantone 427CV
Housing	Metal
Outer dimensions	Also see drawing "Dimensions - 5PC720.1043-01", on page 49
Width	323 mm
Height	260 mm
Depth	151.3 or 168.5 mm (depending on the heat sink)
Weight	Approx. 4.5 kg
Environmental characteristics	
Environmental temperature	
Operation	TBD
Storage	TBD
Transport	TBD
Humidity	TBD
Operation	
Storage	
Transport	

Table 37: Technical data - 5PC720.1043-01 (cont.)

Environmental characteristics	5PC720.1043-01
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP20 back side (only with installed CompactFlash card) IP65 / NEMA 250 type 4X, dust and sprayed water protection (front side)
Altitude	Max. 3,000 m

Table 37: Technical data - 5PC720.1043-01 (cont.)

1) Software must support USB 2.0 (e.g. Windows XP with at least Service Pack 1).

Cutout installation

The Panel PC 700 with preassembled mounting blocks can be installed in a housing cutout. A cutout that corresponds to the following drawing must be made.

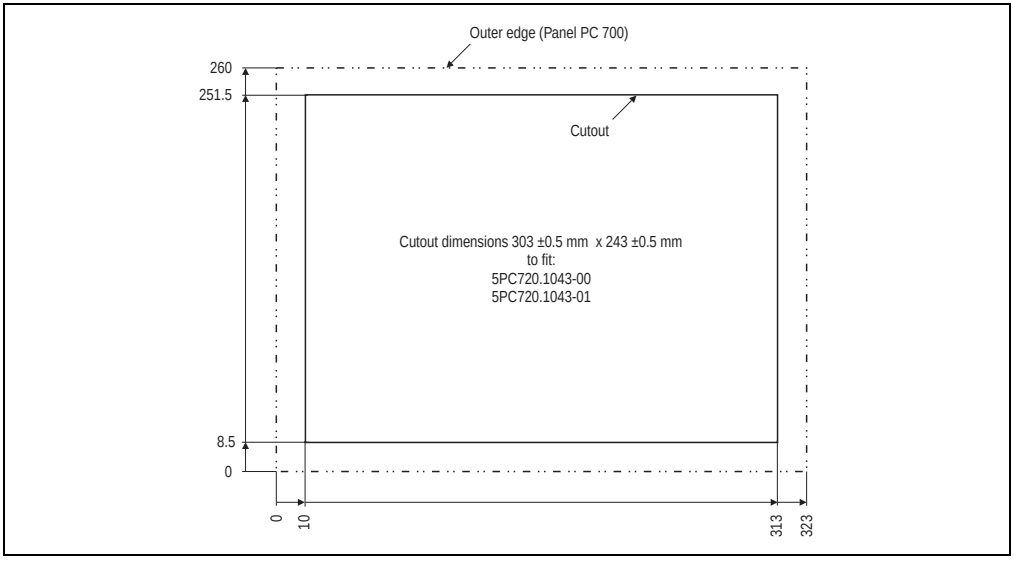


Figure 13: Cutout installation - 5PC720.1043-01

For further information regarding mounting and installation position, see chapter 3 "Installation" on page 129.

3.1.3 Panel PC 5PC720.1214-00

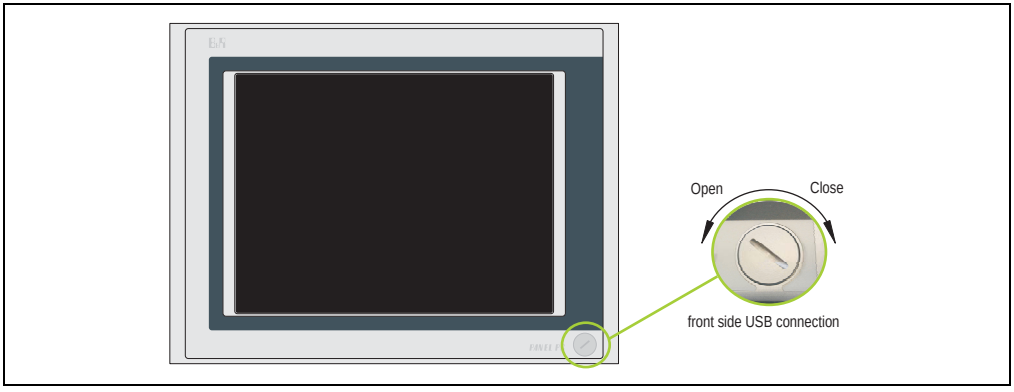


Figure 14: Front view - 5PC720.1214-00

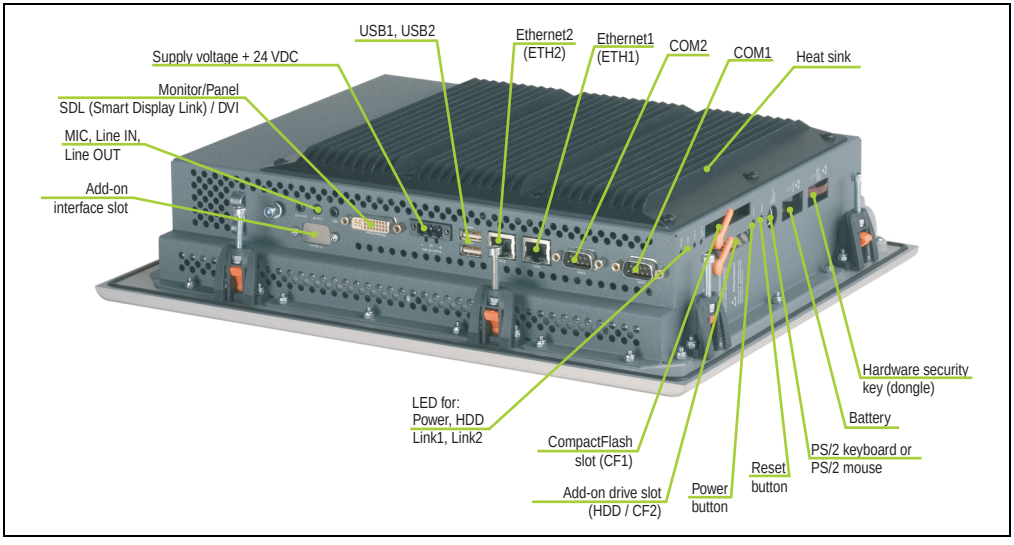


Figure 15: Rear view - 5PC720.1214-00

Warning!

Do not remove mounting screws from the heat sink, as it is connected to the processor and chipset by a thermal coupling. If this connection is broken, the PPC700 must be sent for repair. Removal of the mounting screws, which can be determined by a broken seal, voids all warranty.

During operation, surface temperatures of the heat sink may reach 70 °C (warning "hot surface").

Dimensions

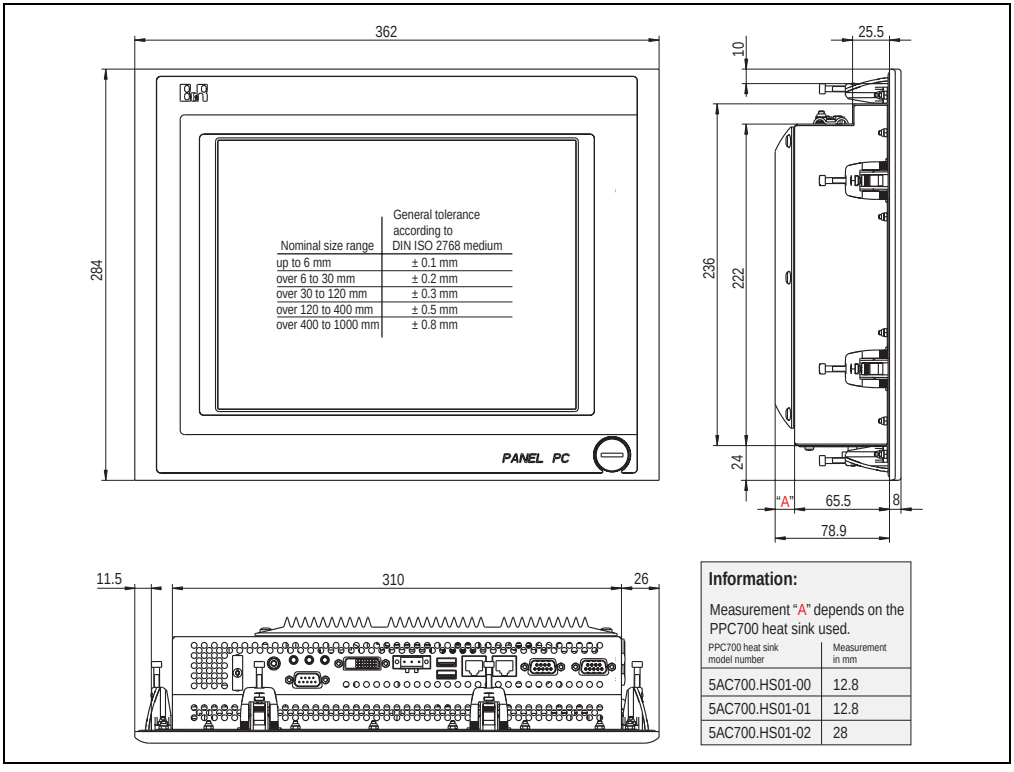


Figure 16: Dimensions - 5PC720.1214-00

Technical data

Features	5PC720.1214-00
Serial interfaces	See "Serial interfaces - COM1", on page 28 and "Serial interfaces - COM2", on page 29
Type	RS232, modem capable
Number	2
UART	16550 compatible, 16 byte FIFO
Transfer rate	max. 115 kBaud
Connection	9-pin DSUB, male
Ethernet	
Controller	See "Ethernet connection ETH1", on page 30 and "Ethernet connection ETH2", on page 31
Transfer rate	10/100 Mbit/s
Connection	RJ45 Twisted Pair (10 BaseT / 100 BaseT)

Table 38: Technical data - 5PC720.1214-00

USB interfaces Type Number Transfer rate Connection	See also "USB port", on page 32 USB 2.0 3 (2x back side, 1x front side) up to 480 MBit [1] (high speed) Type A
Monitor / Panel Type	See also "Monitor / Panel connection", on page 34 DVI-I, female
AC97 sound Inputs Outputs	See also "MIC, Line IN and Line OUT Port", on page 34 Microphone, Line in Line out
Add-on interface slot Number	See also "Add-on interface slot", on page 35 1
PCI slots Type Default	-
CompactFlash slot 1 (CF1) Internal organization	Yes, see also "CompactFlash slot (CF1)", on page 37 Primary master
CompactFlash slot 2 / hard disk (HDD/CF2) Type Internal organization	Yes, see also "Hard disk / CompactFlash slot (HDD/CF2)", on page 38 Combined Primary slave
Insert for slide-in drive 1 Internal organization	-
Reset button	Yes, see also "Power button", on page 39
Power button	Yes, see also "Reset button", on page 39
PS/2 keyboard/mouse Type	Yes, see also "PS/2 keyboard/mouse", on page 40 Combined, will be automatically detected
Battery compartment	Yes, see also "Battery", on page 41
Hardware security key compartment Optimized for	Yes, see also "Hardware security key", on page 41 DS1425 from MAXIM/Dallas)
Fan insert for fan kit	Yes
Automation Panel link slot	-
LED Number	See also "Status LEDs", on page 37 4 (Power, HDD, Link 1, Link 2)

Table 38: Technical data - 5PC720.1214-00 (cont.)

Features	5PC720.1214-00
Touch screen	
Technology	Analog, resistive
Controller	Elo, serial, 12-bit
Degree of transmission	Up to 78%
Display	
Type	Color TFT
Diagonal	12.1 in. (307 mm)
Colors	262,144 Colors
Resolution	SVGA, 800 x 600 pixels
Contrast	300:1
Viewing angle horizontal / vertical	70° / 70°
Background lighting	
Brightness	350 cd/m²
Half-brightness time	50,000 hours
Keys	-
Function keys	
Softkeys	
Cursor pad	
Number block	
Other keys	
Electrical characteristics	
Power supply	See also "Supply voltage", on page 33
Rated voltage	24 VDC ±25%
Starting current	TBD
Power consumption	TBD
Electrical isolation	Yes
Mechanical characteristics	
Front	
Frame	Naturally anodized aluminum
Mylar	Polyester
Design	Gray
Gasket	Flat gasket around display front
Display design / colors	
Dark gray border around the display	Similar Pantone 432CV
Bright background	Similar Pantone 427CV
Housing	Metal
Outer dimensions	Also see drawing "Dimensions - 5PC720.1214-00", on page 54
Width	362 mm
Height	284 mm
Depth	86.3 or 103.5 mm (depending on the heat sink)
Weight	Approx. 4.2 kg
Environmental characteristics	
Environmental temperature	
Operation	TBD
Storage	TBD
Transport	TBD
Humidity	TBD
Operation	
Storage	
Transport	

Table 38: Technical data - 5PC720.1214-00 (cont.)

Environmental characteristics	5PC720.1214-00
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP20 back side (only with installed CompactFlash card) IP65 / NEMA 250 type 4X, dust and sprayed water protection (front side)
Altitude	Max. 3,000 m

Table 38: Technical data - 5PC720.1214-00 (cont.)

1) Software must support USB 2.0 (e.g. Windows XP with at least Service Pack 1).

Cutout installation

The Panel PC 700 with preassembled mounting blocks can be installed in a housing cutout. A cutout that corresponds to the following drawing must be made.

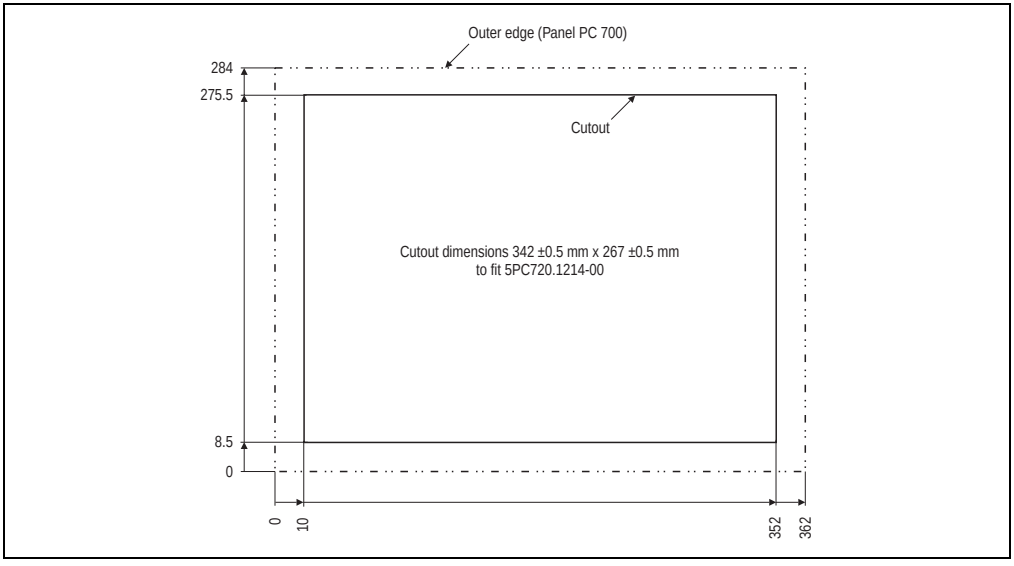


Figure 17: Cutout installation - 5PC720.1214-00

For further information regarding mounting and installation position, see chapter 3 "Installation" on page 129.

3.1.4 Panel PC 5PC720.1505-00

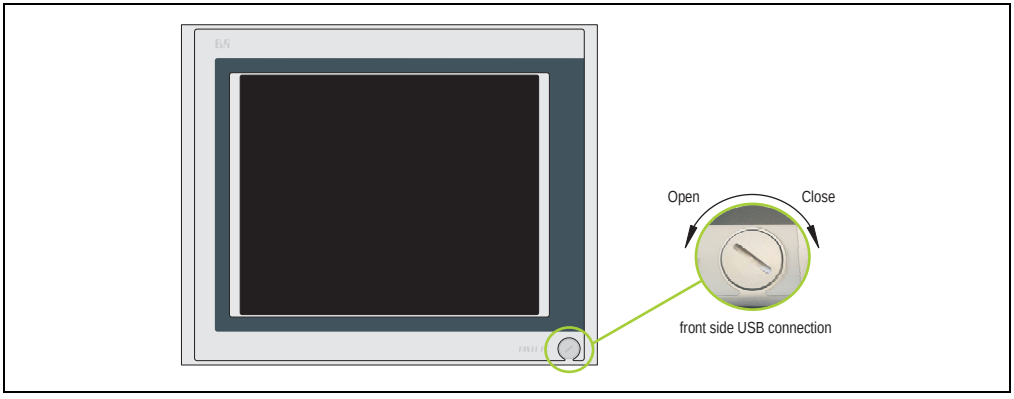


Figure 18: Front view - 5PC720.1505-00

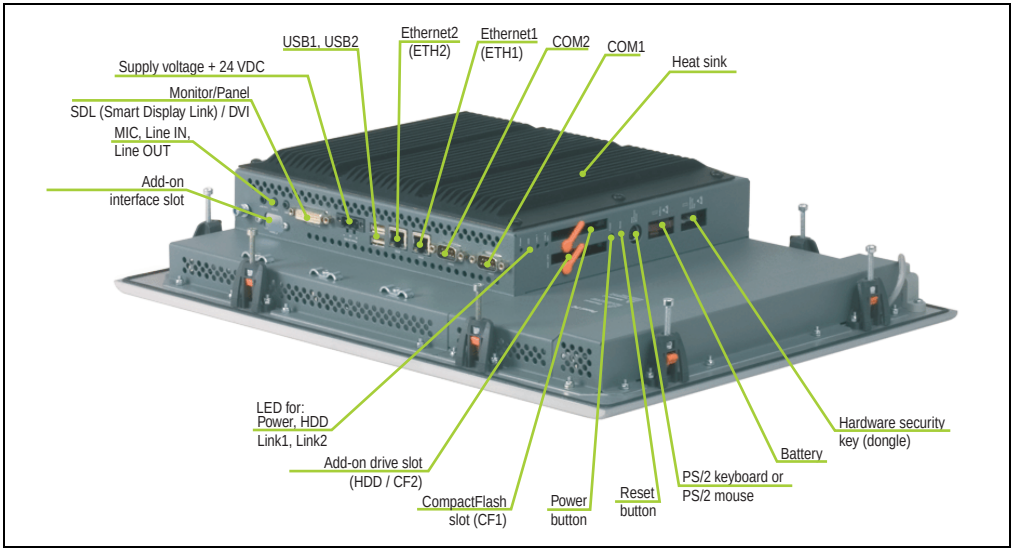


Figure 19: Rear view - 5PC720.1505-00

Warning!

Do not remove mounting screws from the heat sink, as it is connected to the processor and chipset by a thermal coupling. If this connection is broken, the PPC700 must be sent for repair. Removal of the mounting screws, which can be determined by a broken seal, voids all warranty.

During operation, surface temperatures of the heat sink may reach 70 °C (warning "hot surface").

Dimensions

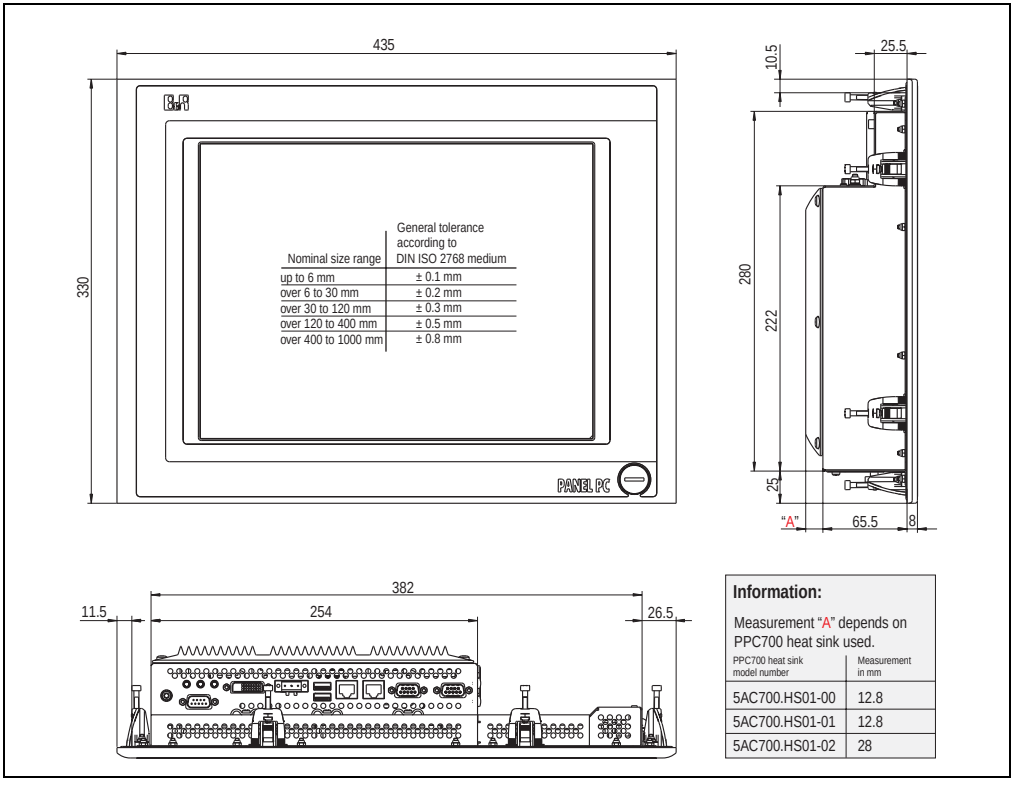


Figure 20: Dimensions - 5PC720.1505-00

Technical data

Features	5PC720.1505-00
Serial interfaces Type Number UART Transfer rate Connection	See "Serial interfaces - COM1", on page 28 and "Serial interfaces - COM2", on page 29 RS232, modem capable 2 16550 compatible, 16 byte FIFO max. 115 kBaud 9-pin DSUB, male
Ethernet Controller Transfer rate Connection	See "Ethernet connection ETH1", on page 30 and "Ethernet connection ETH2", on page 31 10/100 Mbit/s RJ45 Twisted Pair (10 BaseT / 100 BaseT)
USB interfaces Type Number Transfer rate Connection	See also "USB port", on page 32 USB 2.0 3 (2x back side, 1x front side) up to 480 MBit [1] (high speed) Type A
Monitor / Panel Type	See also "Monitor / Panel connection", on page 34 DVI-I, female
AC97 sound Inputs Outputs	See also "MIC, Line IN and Line OUT Port", on page 34 Microphone, Line in Line out
Add-on interface slot Number	See also "Add-on interface slot", on page 35 1
PCI slots Type Default	-
CompactFlash slot 1 (CF1) Internal organization	Yes, see also "CompactFlash slot (CF1)", on page 37 Primary master
CompactFlash slot 2 / hard disk (HDD/CF2) Type Internal organization	Yes, see also "Hard disk / CompactFlash slot (HDD/CF2)", on page 38 Combined Primary slave
Insert for slide-in drive 1 Internal organization	-
Reset button	Yes, see also "Power button", on page 39
Power button	Yes, see also "Reset button", on page 39
PS/2 keyboard/mouse Type	Yes, see also "PS/2 keyboard/mouse", on page 40 Combined, will be automatically detected
Battery compartment	Yes, see also "Battery", on page 41
Hardware security key compartment Optimized for	Yes, see also "Hardware security key", on page 41 DS1425 from MAXIM/Dallas)
Fan insert for fan kit	Yes
Automation Panel link slot	-
LED Number	See also "Status LEDs", on page 37 4 (Power, HDD, Link 1, Link 2)

Table 39: Technical data - 5PC720.1505-00

Features	5PC720.1505-00
Touch screen	
Technology	Analog, resistive
Controller	Elo, serial, 12-bit
Degree of transmission	Up to 78%
Display	
Type	Color TFT
Diagonal	15 in. (381 mm)
Colors	16 million
Resolution	XGA, 1024 x 768 pixels
Contrast	400:1
Viewing angle horizontal / vertical	85° / 85°
Background lighting	
Brightness	250 cd/m²
Half-brightness time	50,000 hours
Keys	-
Function keys	
Softkeys	
Cursor pad	
Number block	
Other keys	
Electrical characteristics	
Power supply	See also "Supply voltage", on page 33
Rated voltage	24 VDC ±25%
Starting current	TBD
Power consumption	TBD
Electrical isolation	Yes
Mechanical characteristics	
Front	
Frame	Naturally anodized aluminum
Mylar	Polyester
Design	Gray
Gasket	Flat gasket around display front
Display design / colors	
Dark gray border around the display	Similar Pantone 432CV
Bright background	Similar Pantone 427CV
Housing	Metal
Outer dimensions	Also see drawing "Dimensions - 5PC720.1505-00", on page 59
Width	435 mm
Height	330 mm
Depth	86.3 or 103.5 mm (depending on the heat sink)
Weight	Approx. 6 kg
Environmental characteristics	
Environmental temperature	
Operation	TBD
Storage	TBD
Transport	TBD
Humidity	TBD
Operation	
Storage	
Transport	

Table 39: Technical data - 5PC720.1505-00 (cont.)

Environmental characteristics	5PC720.1505-00
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP20 back side (only with installed CompactFlash card) IP65 / NEMA 250 type 4X, dust and sprayed water protection (front side)
Altitude	Max. 3,000 m

Table 39: Technical data - 5PC720.1505-00 (cont.)

1) Software must support USB 2.0 (e.g. Windows XP with at least Service Pack 1).

Cutout installation

The Panel PC 700 with preassembled mounting blocks can be installed in a housing cutout. A cutout that corresponds to the following drawing must be made.

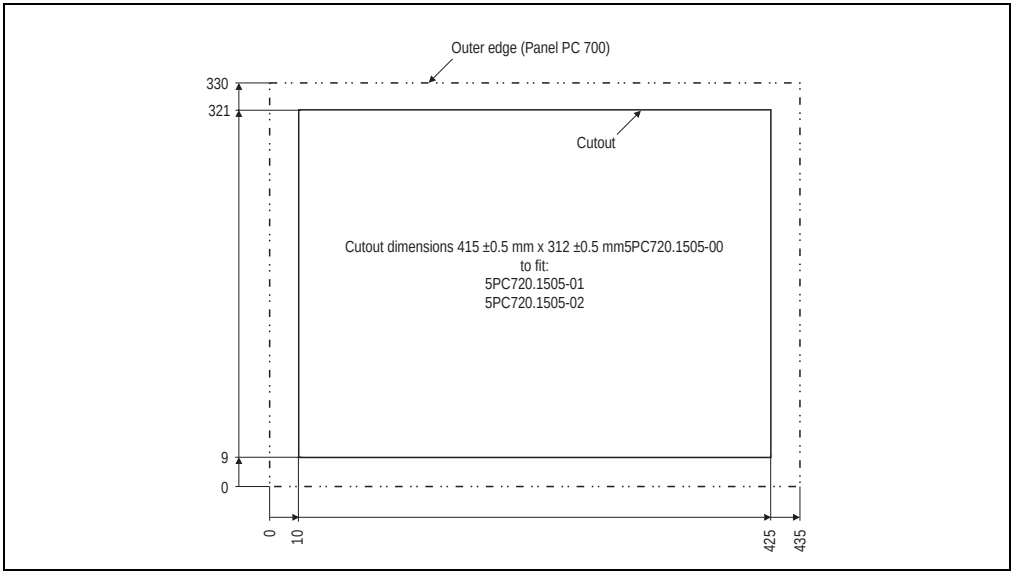


Figure 21: Cutout installation - 5PC720.1505-00

For further information regarding mounting and installation position, see chapter 3 "Installation" on page 129.

3.1.5 Panel PC 5PC720.1505-01

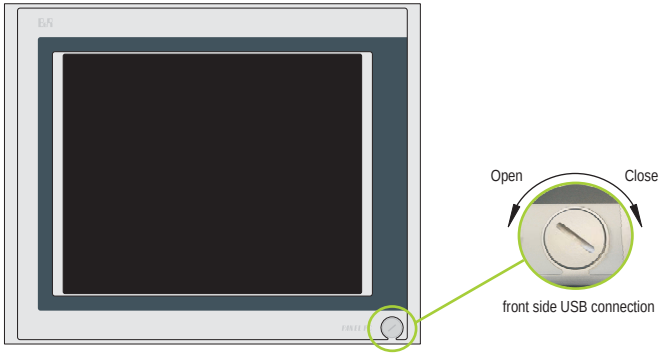


Figure 22: Front view - 5PC720.1505-01

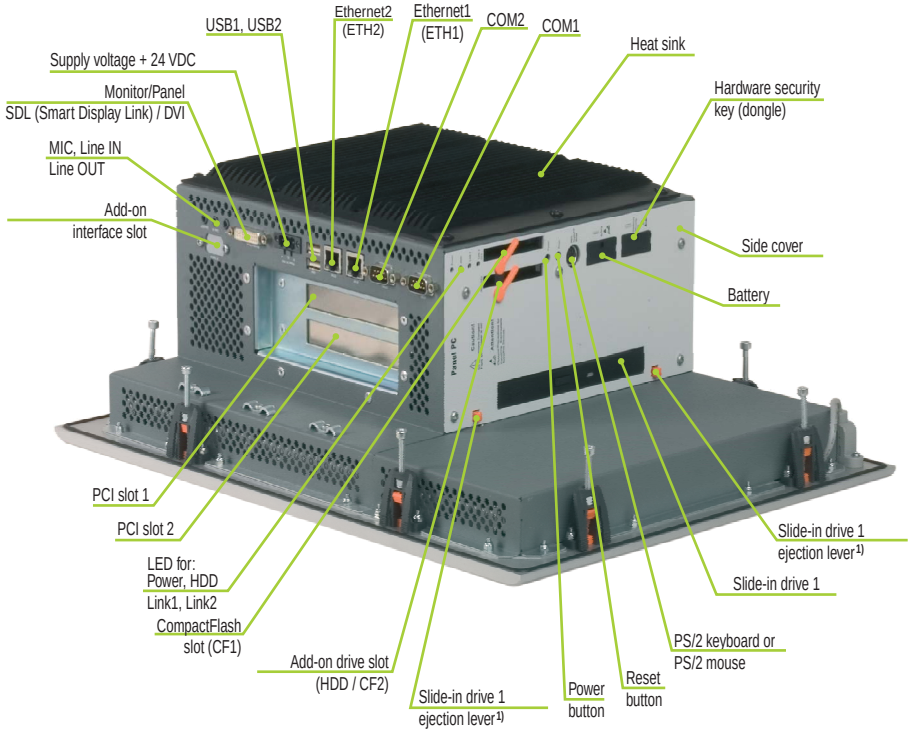


Figure 23: Rear view - 5PC720.1505-01

Warning!

Do not remove mounting screws from the heat sink, as it is connected to the processor and chipset by a thermal coupling. If this connection is broken, the PPC700 must be sent for repair. Removal of the mounting screws, which can be determined by a broken seal, voids all warranty.

During operation, surface temperatures of the heat sink may reach 70 °C (warning "hot surface").

Dimensions

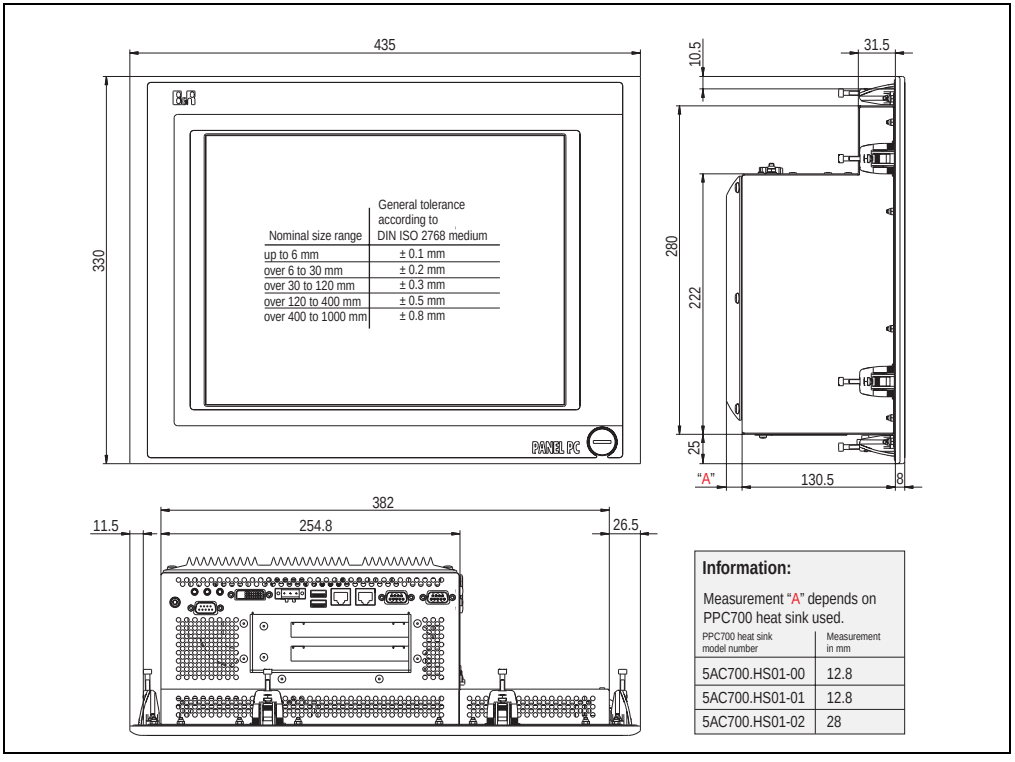


Figure 24: Dimensions - 5PC720.1505-01

Technical data

Features	5PC720.1505-01
Serial interfaces Type Number UART Transfer rate Connection	See "Serial interfaces - COM1", on page 28 and "Serial interfaces - COM2", on page 29 RS232, modem capable 2 16550 compatible, 16 byte FIFO max. 115 kBaud 9-pin DSUB, male
Ethernet Controller Transfer rate Connection	See "Ethernet connection ETH1", on page 30 and "Ethernet connection ETH2", on page 31 10/100 Mbit/s RJ45 Twisted Pair (10 BaseT / 100 BaseT)
USB interfaces Type Number Transfer rate Connection	See also "USB port", on page 32 USB 2.0 3 (2x back side, 1x front side) up to 480 MBit [1] (high speed) Type A
Monitor / Panel Type	See also "Monitor / Panel connection", on page 34 DVI-I, female
AC97 sound Inputs Outputs	See also "MIC, Line IN and Line OUT Port", on page 34 Microphone, Line in Line out
Add-on interface slot Number	See also "Add-on interface slot", on page 35 1
PCI slots Number Type Default	See also "PCI slots", on page 35 2 Half-size According to PCI half-size standard 2.2
CompactFlash slot 1 (CF1) Internal organization	Yes, see also "CompactFlash slot (CF1)", on page 37 Primary master
CompactFlash slot 2 / hard disk (HDD/CF2) Type Internal organization	Yes, see also "Hard disk / CompactFlash slot (HDD/CF2)", on page 38 Combined Primary slave
Insert for slide-in drive 1 Internal organization	Yes, see also "Slide-in slot 1 drive slot", on page 42 Secondary slave
Reset button	Yes, see also "Power button", on page 39
Power button	Yes, see also "Reset button", on page 39
PS/2 keyboard/mouse Type	Yes, see also "PS/2 keyboard/mouse", on page 40 Combined, will be automatically detected
Battery compartment	Yes, see also "Battery", on page 41
Hardware security key compartment Optimized for	Yes, see also "Hardware security key", on page 41 DS1425 from MAXIM/Dallas)
Fan insert for fan kit	Yes
Automation Panel link slot	-
LED Number	See also "Status LEDs", on page 37 4 (Power, HDD, Link 1, Link 2)

Table 40: Technical data - 5PC720.1505-01

Features	5PC720.1505-01
Touch screen	
Technology	Analog, resistive
Controller	Elo, serial, 12-bit
Degree of transmission	Up to 78%
Display	
Type	Color TFT
Diagonal	15 in. (381 mm)
Colors	16 million
Resolution	XGA, 1024 x 768 pixels
Contrast	400:1
Viewing angle horizontal / vertical	85° / 85°
Background lighting	
Brightness	250 cd/m²
Half-brightness time	50,000 hours
Keys	-
Function keys	
Softkeys	
Cursor pad	
Number block	
Other keys	
Electrical characteristics	
Power supply	See also "Supply voltage", on page 33
Rated voltage	24 VDC ±25%
Starting current	TBD
Power consumption	TBD
Electrical isolation	Yes
Mechanical characteristics	
Front	
Frame	Naturally anodized aluminum
Mylar	Polyester
Design	Gray
Gasket	Flat gasket around display front
Display design / colors	
Dark gray border around the display	Similar Pantone 432CV
Bright background	Similar Pantone 427CV
Housing	Metal
Outer dimensions	Also see drawing "Dimensions - 5PC720.1505-01", on page 64
Width	435 mm
Height	330 mm
Depth	151.3 or 168.5 mm (depending on the heat sink)
Weight	Approx. 6.7 kg
Environmental characteristics	
Environmental temperature	
Operation	TBD
Storage	TBD
Transport	TBD
Humidity	TBD
Operation	
Storage	
Transport	

Table 40: Technical data - 5PC720.1505-01 (cont.)

Environmental characteristics	5PC720.1505-01
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP20 back side (only with installed CompactFlash card) IP65 / NEMA 250 type 4X, dust and sprayed water protection (front side)
Altitude	Max. 3,000 m

Table 40: Technical data - 5PC720.1505-01 (cont.)

1) Software must support USB 2.0 (e.g. Windows XP with at least Service Pack 1).

Cutout installation

The Panel PC 700 with preassembled mounting blocks can be installed in a housing cutout. A cutout that corresponds to the following drawing must be made.

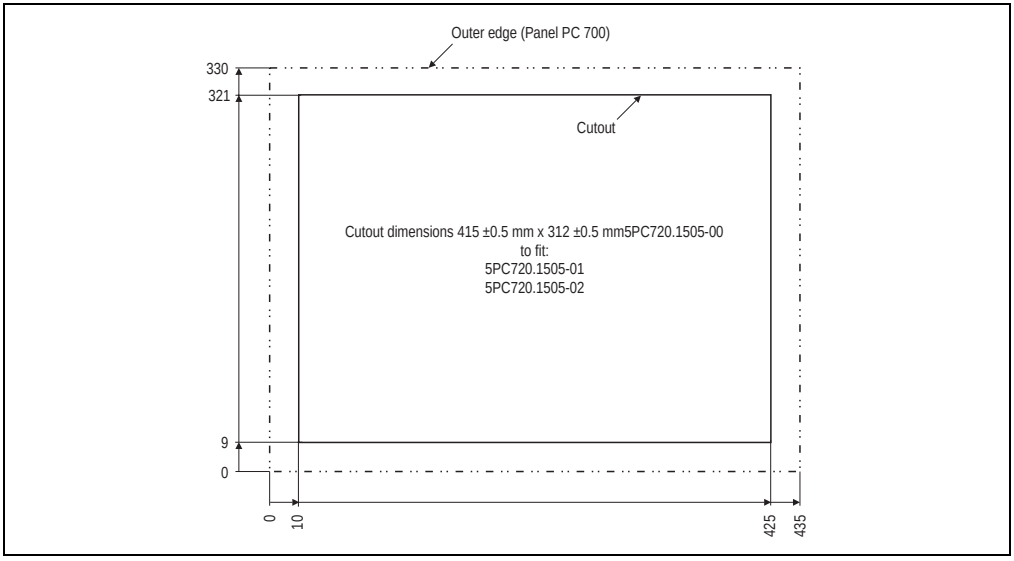


Figure 25: Cutout installation - 5PC720.1505-01

For further information regarding mounting and installation position, see chapter 3 "Installation" on page 129.

3.1.6 Panel PC 5PC720.1505-02

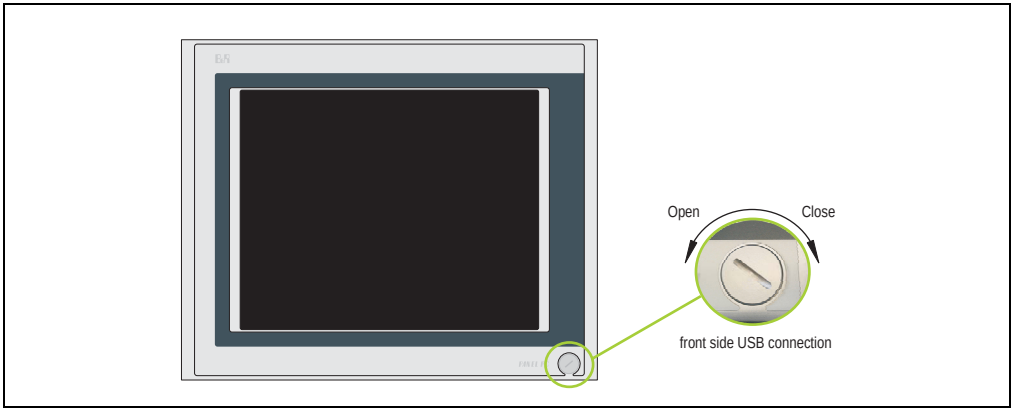


Figure 26: Front view - 5PC720.1505-02

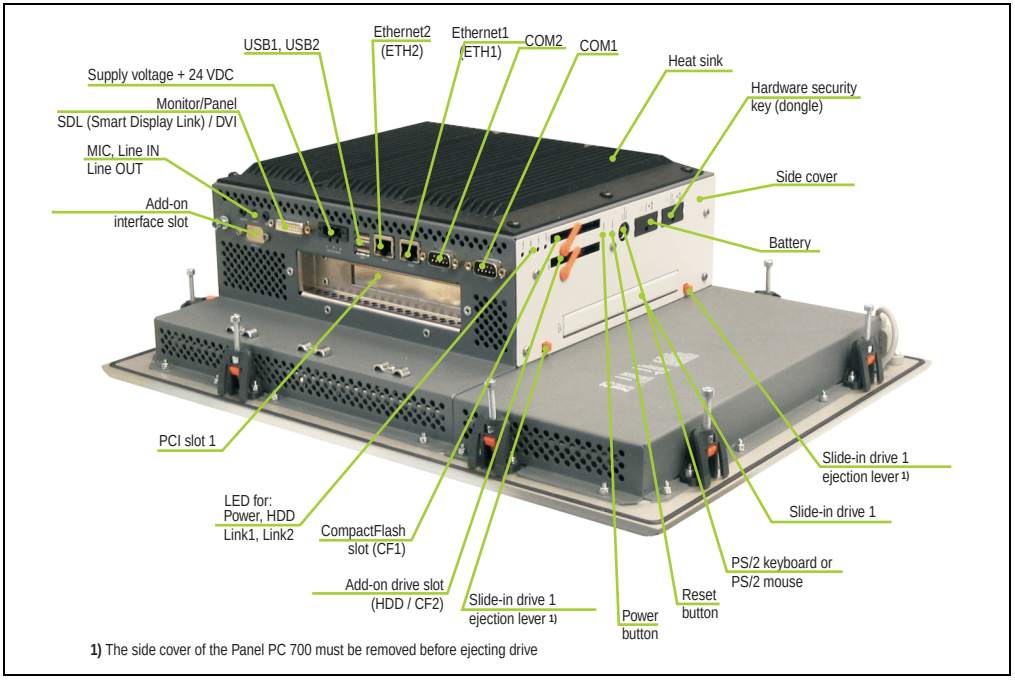


Figure 27: Rear view - 5PC720.1505-02

Warning!

Do not remove mounting screws from the heat sink, as it is connected to the processor and chipset by a thermal coupling. If this connection is broken, the PPC700 must be sent for repair. Removal of the mounting screws, voids all warranty.

During operation, surface temperatures of the heat sink may reach 70 °C (warning "hot surface").

Dimensions

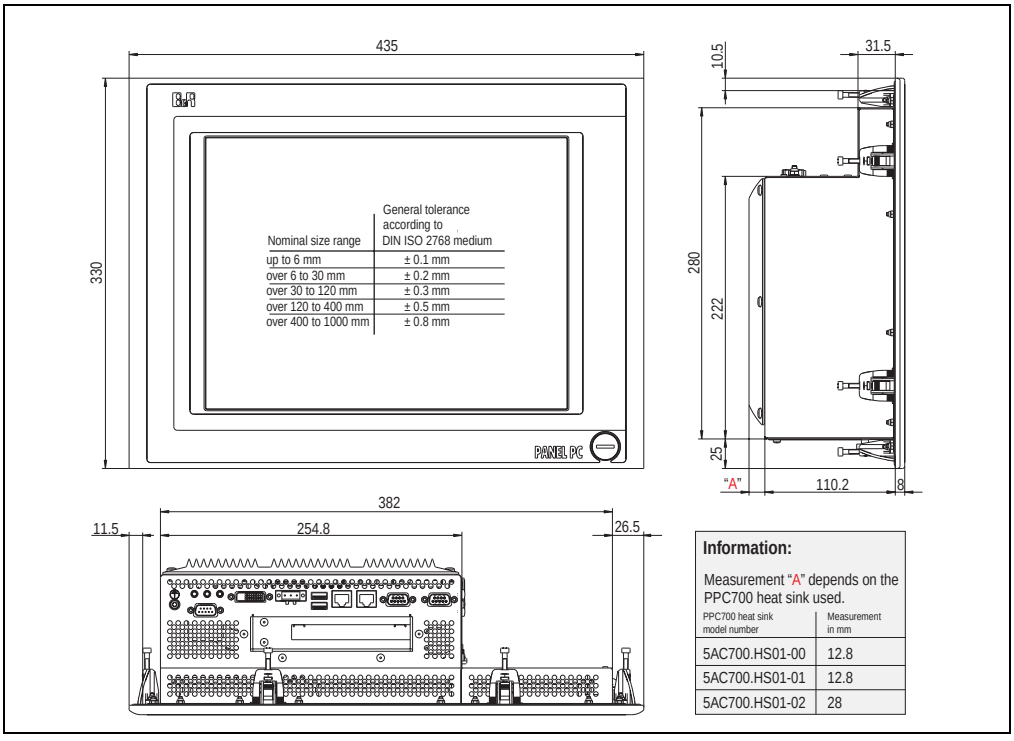


Figure 28: Dimensions - 5PC720.1505-02

Technical data

Features	5PC720.1505-02
Serial interfaces Type Number UART Transfer rate Connection	See "Serial interfaces - COM1", on page 28 and "Serial interfaces - COM2", on page 29 RS232, modem capable 2 16550 compatible, 16 byte FIFO max. 115 kBaud 9-pin DSUB, male
Ethernet Controller Transfer rate Connection	See "Ethernet connection ETH1", on page 30 and "Ethernet connection ETH2", on page 31 10/100 Mbit/s RJ45 Twisted Pair (10 BaseT / 100 BaseT)
USB interfaces Type Number Transfer rate Connection	See also "USB port", on page 32 USB 2.0 3 (2x back side, 1x front side) up to 480 MBit [1] (high speed) Type A
Monitor / Panel Type	See also "Monitor / Panel connection", on page 34 DVI-I, female
AC97 sound Inputs Outputs	See also "MIC, Line IN and Line OUT Port", on page 34 Microphone, Line in Line out
Add-on interface slot Number	See also "Add-on interface slot", on page 35 1
PCI slots Number Type Default	See also "PCI slots", on page 35 1 Half-size According to PCI half-size standard 2.2
CompactFlash slot 1 (CF1) Internal organization	Yes, see also "CompactFlash slot (CF1)", on page 37 Primary master
CompactFlash slot 2 / hard disk (HDD/CF2) Type Internal organization	Yes, see also "Hard disk / CompactFlash slot (HDD/CF2)", on page 38 Combined Primary slave
Insert for slide-in drive 1 Internal organization	Yes, see also "Slide-in slot 1 drive slot", on page 42 Secondary slave
Reset button	Yes, see also "Power button", on page 39
Power button	Yes, see also "Reset button", on page 39
PS/2 keyboard/mouse Type	Yes, see also "PS/2 keyboard/mouse", on page 40 Combined, will be automatically detected
Battery compartment	Yes, see also "Battery", on page 41
Hardware security key compartment Optimized for	Yes, see also "Hardware security key", on page 41 DS1425 from MAXIM/Dallas)
Fan insert for fan kit	Yes
Automation Panel link slot	-
LED Number	See also "Status LEDs", on page 37 4 (Power, HDD, Link 1, Link 2)

Table 41: Technical data - 5PC720.1505-02

Features	5PC720.1505-02
Touch screen	
Technology	Analog, resistive
Controller	Elo, serial, 12-bit
Degree of transmission	Up to 78%
Display	
Type	Color TFT
Diagonal	15 in. (381 mm)
Colors	16 million
Resolution	XGA, 1024 x 768 pixels
Contrast	400:1
Viewing angle horizontal / vertical	85° / 85°
Background lighting	
Brightness	250 cd/m²
Half-brightness time	50,000 hours
Keys	-
Function keys	
Softkeys	
Cursor pad	
Number block	
Other keys	
Electrical characteristics	
Power supply	See also "Supply voltage", on page 33
Rated voltage	24 VDC ±25%
Starting current	TBD
Power consumption	TBD
Electrical isolation	Yes
Mechanical characteristics	
Front	
Frame	Naturally anodized aluminum
Mylar	Polyester
Design	Gray
Gasket	Flat gasket around display front
Display design / colors	
Dark gray border around the display	Similar Pantone 432CV
Bright background	Similar Pantone 427CV
Housing	Metal
Outer dimensions	Also see drawing "Dimensions - 5PC720.1505-02", on page 69
Width	435 mm
Height	330 mm
Depth	131 or 146.2 mm (depending on the heat sink)
Weight	Approx. 6.5 kg
Environmental characteristics	
Environmental temperature	
Operation	TBD
Storage	TBD
Transport	TBD
Humidity	TBD
Operation	
Storage	
Transport	

Table 41: Technical data - 5PC720.1505-02 (cont.)

Environmental characteristics	5PC720.1505-02
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP20 back side (only with installed CompactFlash card) IP65 / NEMA 250 type 4X, dust and sprayed water protection (front side)
Altitude	Max. 3,000 m

Table 41: Technical data - 5PC720.1505-02 (cont.)

1) Software must support USB 2.0 (e.g. Windows XP with at least Service Pack 1).

Cutout installation

The Panel PC 700 with preassembled mounting blocks can be installed in a housing cutout. A cutout that corresponds to the following drawing must be made.

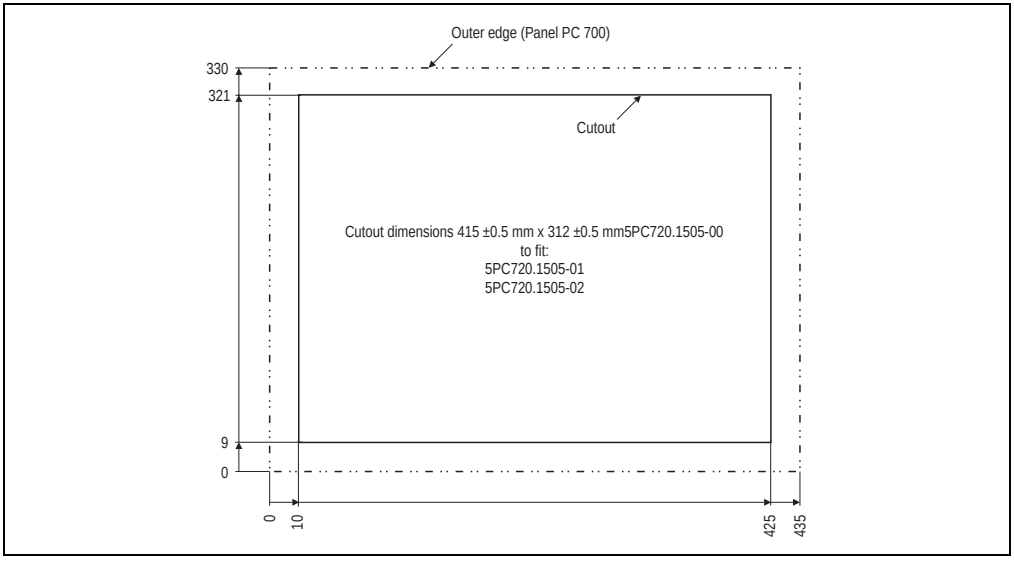


Figure 29: Cutout installation - 5PC720.1505-02

For further information regarding mounting and installation position, see chapter 3 "Installation" on page 129.

3.1.7 Panel PC 5PC781.1043-00

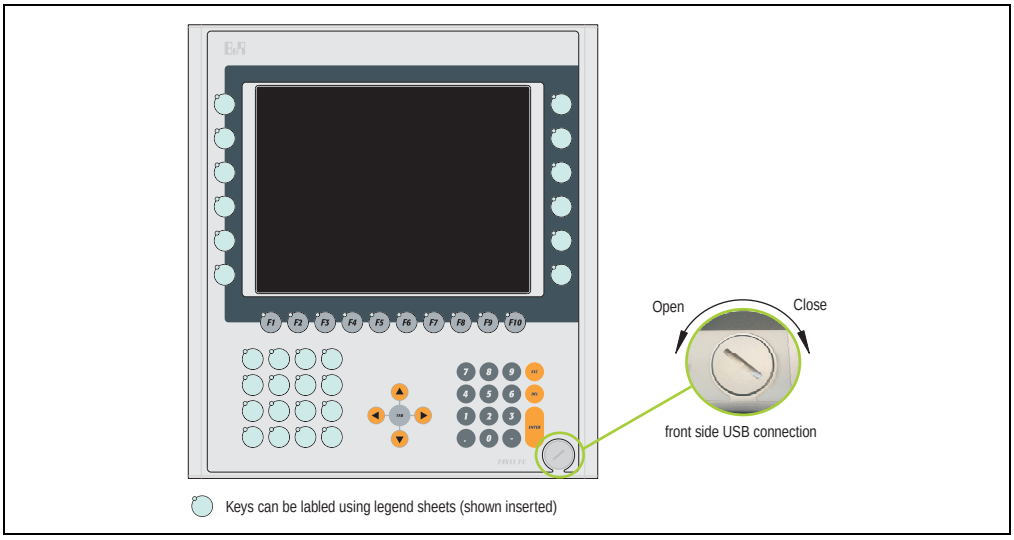


Figure 30: Front view - 5PC781.1043-00

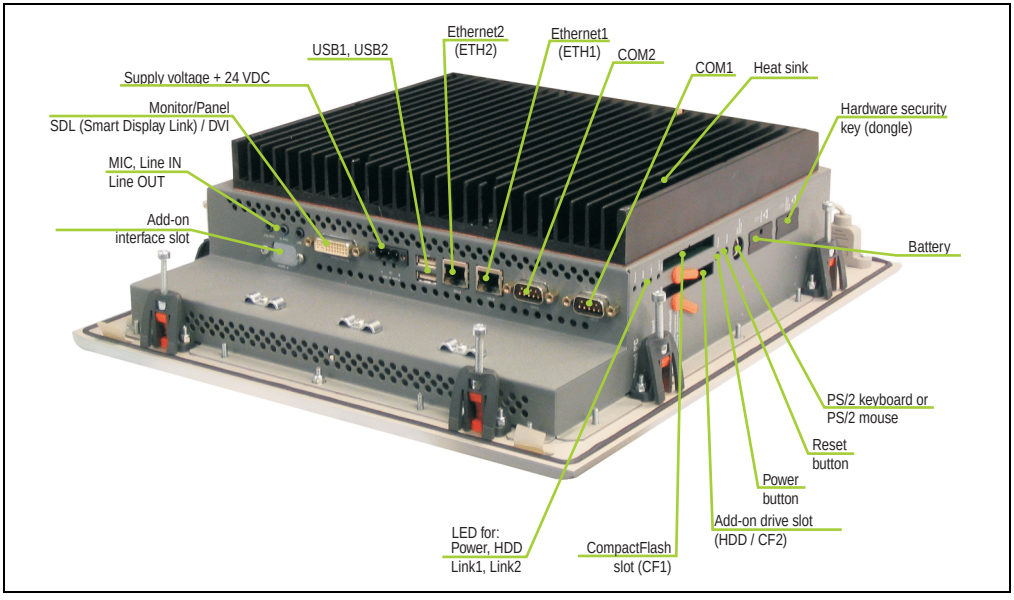


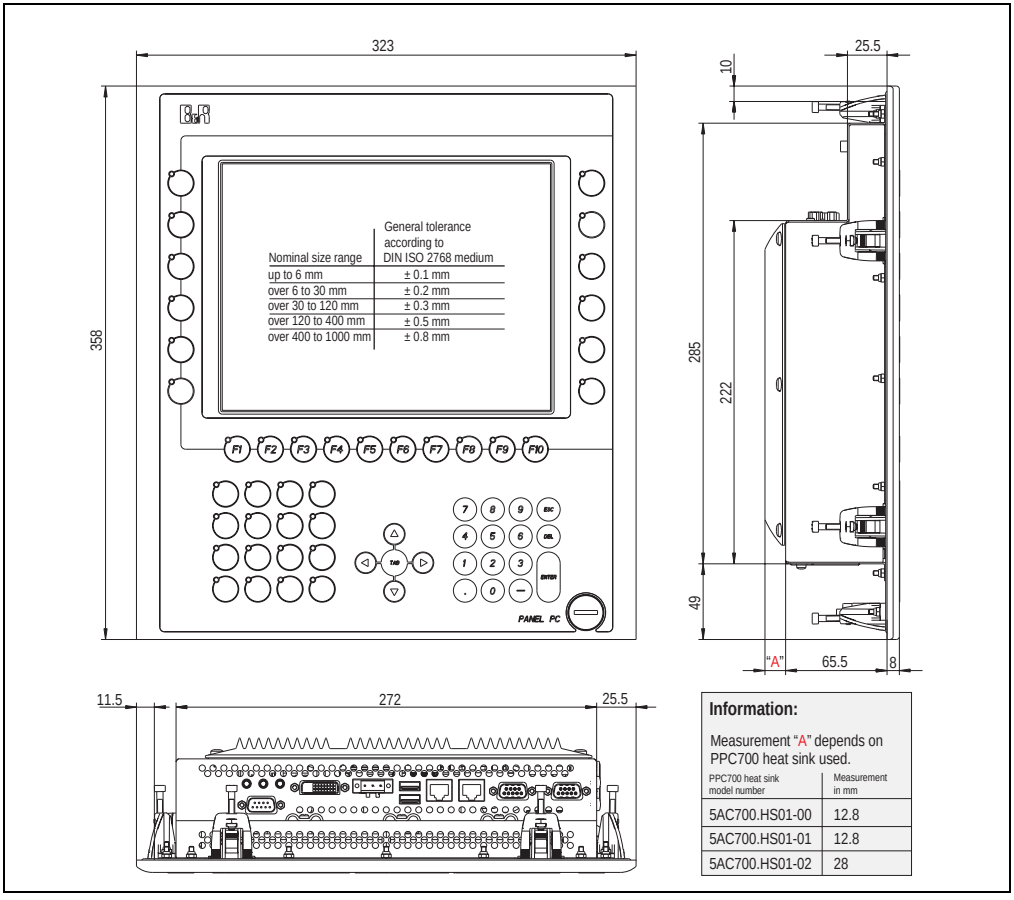
Figure 31: Rear view - 5PC781.1043-00

Warning!

Do not remove mounting screws from the heat sink, as it is connected to the processor and chipset by a thermal coupling. If this connection is broken, the PPC700 must be sent for repair. Removal of the mounting screws, which can be determined by a broken seal, voids all warranty.

During operation, surface temperatures of the heat sink may reach 70 °C (warning "hot surface").

Dimensions



Nominal size range	General tolerance according to DIN ISO 2768 medium
up to 6 mm	± 0.1 mm
over 6 to 30 mm	± 0.2 mm
over 30 to 120 mm	± 0.3 mm
over 120 to 400 mm	± 0.5 mm
over 400 to 1000 mm	± 0.8 mm

Information:

Measurement "A" depends on PPC700 heat sink used.

PPC700 heat sink model number	Measurement in mm
5AC700.HS01-00	12.8
5AC700.HS01-01	12.8
5AC700.HS01-02	28

Figure 32: Dimensions - 5PC781.1043-00

Technical data

Features	5PC781.1043-00
Serial interfaces Type Number UART Transfer rate Connection	See "Serial interfaces - COM1", on page 28 and "Serial interfaces - COM2", on page 29 RS232, modem capable 2 16550 compatible, 16 byte FIFO max. 115 kBaud 9-pin DSUB, male
Ethernet Controller Transfer rate Connection	See "Ethernet connection ETH1", on page 30 and "Ethernet connection ETH2", on page 31 10/100 Mbit/s RJ45 Twisted Pair (10 BaseT / 100 BaseT)
USB interfaces Type Number Transfer rate Connection	See also "USB port", on page 32 USB 2.0 3 (2x back side, 1x front side) up to 480 MBit [1] (high speed) Type A
Monitor / Panel Type	See also "Monitor / Panel connection", on page 34 DVI-I, female
AC97 sound Inputs Outputs	See also "MIC, Line IN and Line OUT Port", on page 34 Microphone, Line in Line out
Add-on interface slot Number	See also "Add-on interface slot", on page 35 1
PCI slots Type Default	-
CompactFlash slot 1 (CF1) Internal organization	Yes, see also "CompactFlash slot (CF1)", on page 37 Primary master
CompactFlash slot 2 / hard disk (HDD/CF2) Type Internal organization	Yes, see also "Hard disk / CompactFlash slot (HDD/CF2)", on page 38 Combined Primary slave
Insert for slide-in drive 1 Internal organization	-
Reset button	Yes, see also "Power button", on page 39
Power button	Yes, see also "Reset button", on page 39
PS/2 keyboard/mouse Type	Yes, see also "PS/2 keyboard/mouse", on page 40 Combined, will be automatically detected
Battery compartment	Yes, see also "Battery", on page 41
Hardware security key compartment Optimized for	Yes, see also "Hardware security key", on page 41 DS1425 from MAXIM/Dallas)
Fan insert for fan kit	Yes
Automation Panel link slot	-
LED Number	See also "Status LEDs", on page 37 4 (Power, HDD, Link 1, Link 2)

Table 42: Technical data - 5PC781.1043-00

Features	5PC781.1043-00
Touch screen	
Technology	Analog, resistive
Controller	Elo, serial, 12-bit
Degree of transmission	Up to 78%
Display	
Type	Color TFT
Diagonal	10.4 in. (264 mm)
Colors	262144 Colors
Resolution	VGA, 640 x 480 pixels
Contrast	300:1
Viewing angle horizontal / vertical	70° / 70°
Background lighting	
Brightness	350 cd/m²
Half-brightness time	50,000 hours
Keys	
Function keys	28 with LED
Softkeys	10 with LED
Cursor pad	-
Number block	15 without LED
Other keys	5 without LED
Caution! **Pressing several keys at the same time may trigger unintended actions.**	
Electrical characteristics	
Power supply	See also "Supply voltage", on page 33
Rated voltage	24 VDC ±25%
Starting current	TBD
Power consumption	TBD
Electrical isolation	Yes

Table 42: Technical data - 5PC781.1043-00 (cont.)

Mechanical characteristics	
Front	
Frame	Naturally anodized aluminum
Mylar	Polyester
Design	Gray
Gasket	Flat gasket around display front
Display design / colors	
Dark gray border around the display	Similar Pantone 432CV
Bright background	Similar Pantone 427CV
Orange keys	Similar Pantone 151CV
Dark gray keys	Similar Pantone 431CV
Legend strips	Similar Pantone 429CV
Housing	Metal
Outer dimensions	Also see drawing "Dimensions - 5PC781.1043-00", on page 74
Width	323 mm
Height	358 mm
Depth	86.3 or 103.5 mm (depending on the heat sink)
Weight	Approx. 4.5 kg
Environmental characteristics	**5PC781.1043-00**
Environmental temperature	
Operation	TBD
Storage	TBD
Transport	TBD
Humidity	TBD
Operation	
Storage	
Transport	
Vibration	TBD
Operation (continuous)	
Operation (occasional)	
Storage	
Transport	
Shock	TBD
Operation	
Storage	
Transport	
Protection	IP20 back side (only with installed CompactFlash card) IP65 / NEMA 250 type 4X, dust and sprayed water protection (front side)
Altitude	Max. 3,000 m

Table 42: Technical data - 5PC781.1043-00 (cont.)

1) Software must support USB 2.0 (e.g. Windows XP with at least Service Pack 1).

Cutout installation

The Panel PC 700 with preassembled mounting blocks can be installed in a housing cutout. A cutout that corresponds to the following drawing must be made.

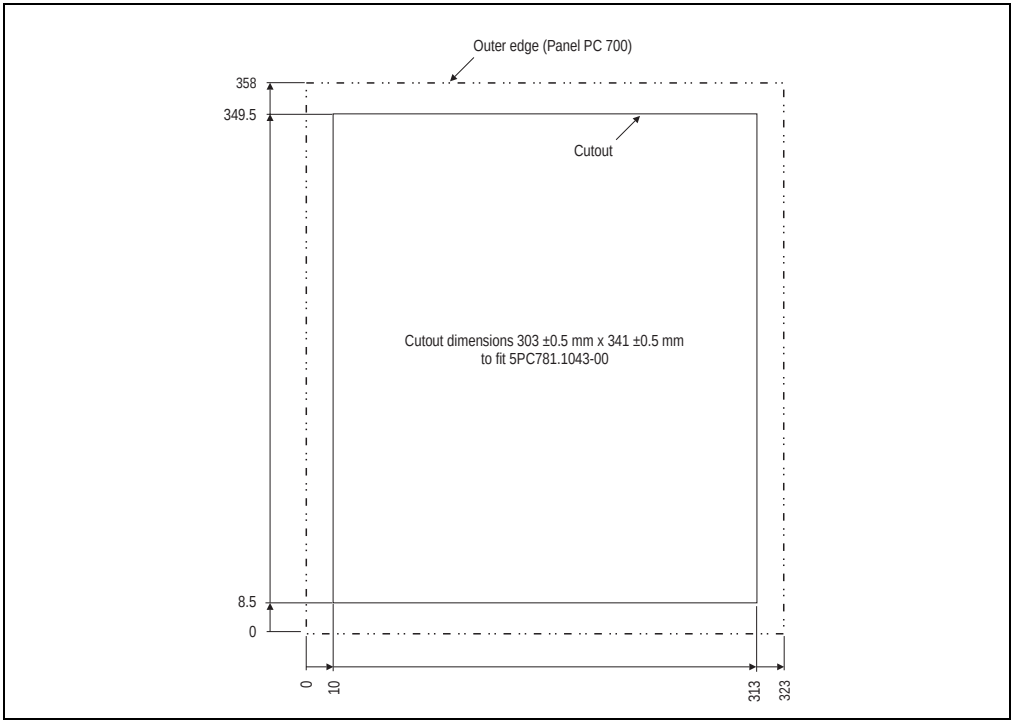


Figure 33: Cutout installation - 5PC781.1043-00

For further information regarding mounting and installation position, see chapter 3 "Installation" on page 129.

3.1.8 Panel PC 5PC781.1505-00

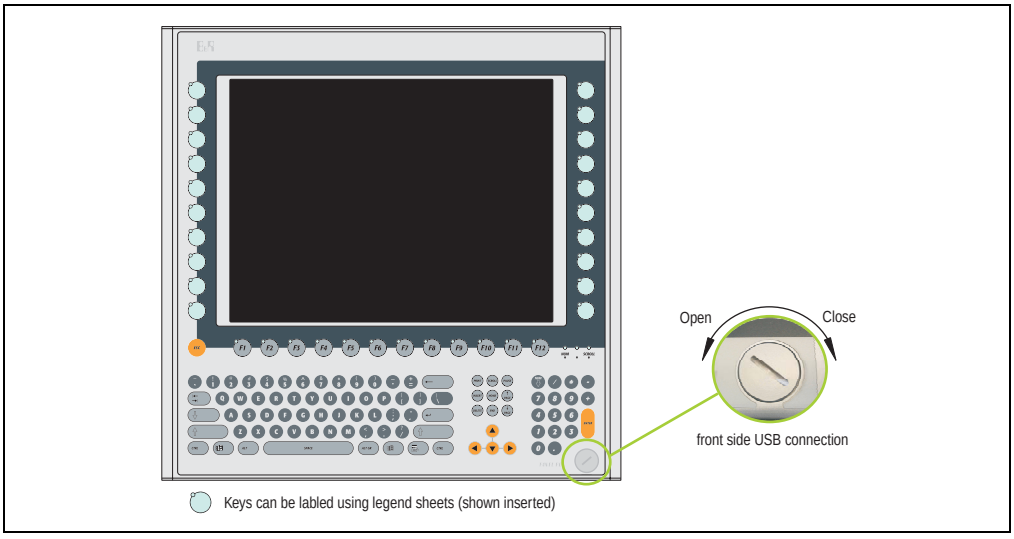


Figure 34: Front view - 5PC781.1505-00

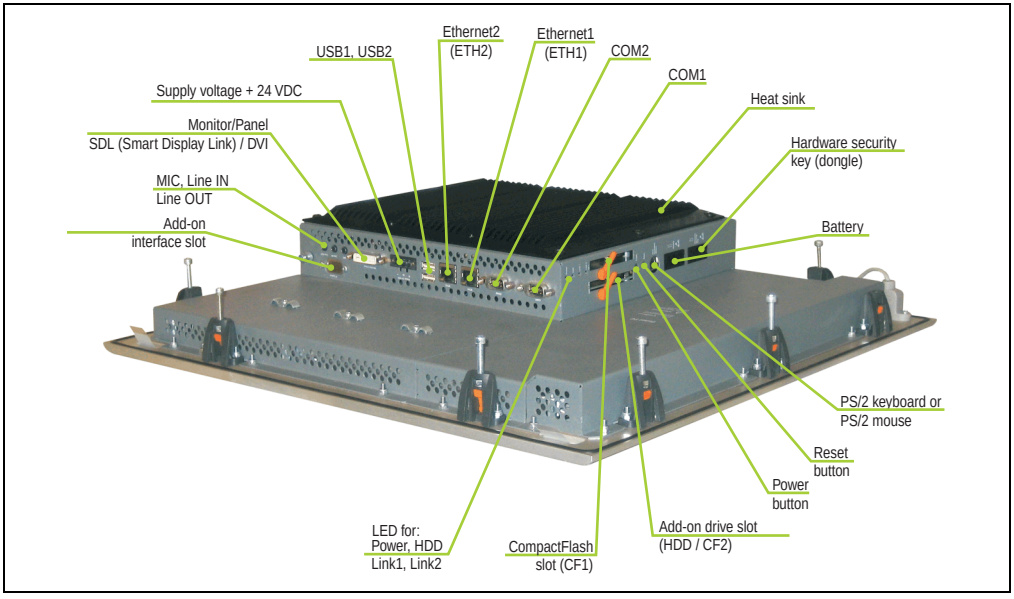


Figure 35: Rear view - 5PC781.1505-00

Warning!

Do not remove mounting screws from the heat sink, as it is connected to the processor and chipset by a thermal coupling. If this connection is broken, the PPC700 must be sent for repair. Removal of the mounting screws, which can be determined by a broken seal, voids all warranty.

During operation, surface temperatures of the heat sink may reach 70 °C (warning "hot surface").

Dimensions

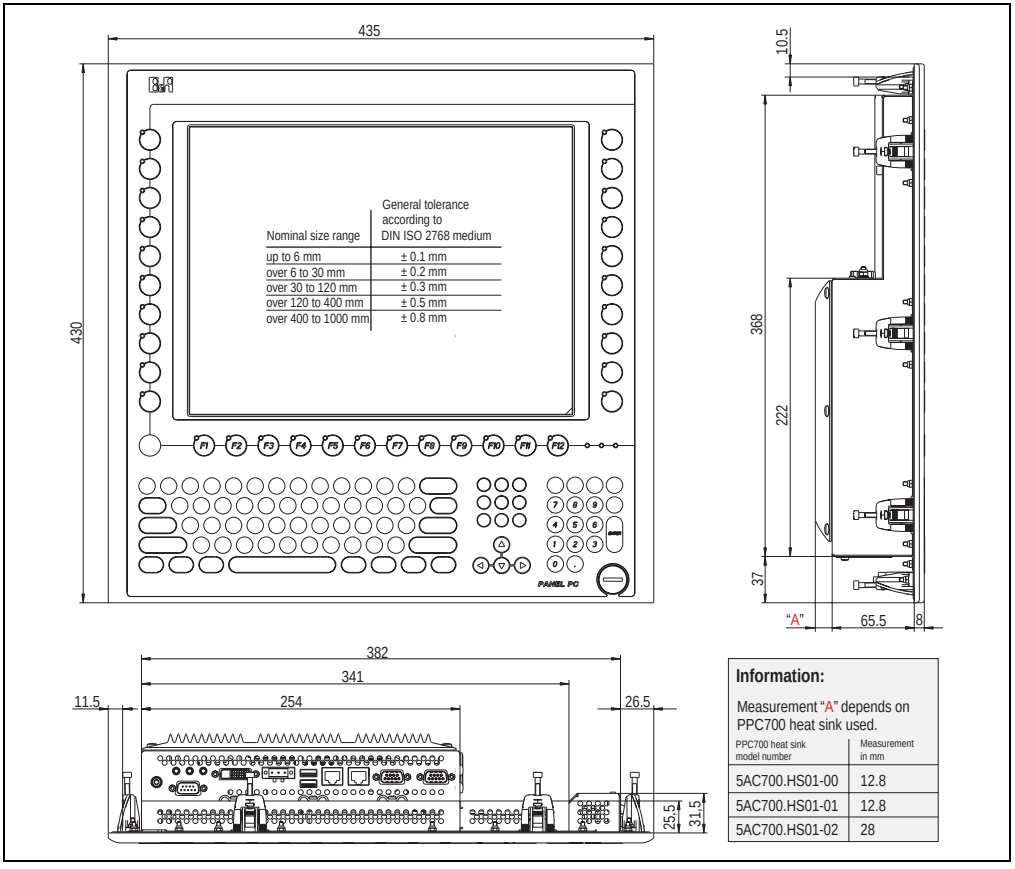


Figure 36: Dimensions - 5PC781.1505-00

Technical data

Features	5PC781.1505-00
Serial interfaces Type Number UART Transfer rate Connection	See "Serial interfaces - COM1", on page 28 and "Serial interfaces - COM2", on page 29 RS232, modem capable 2 16550 compatible, 16 byte FIFO max. 115 kBaud 9-pin DSUB, male
Ethernet Controller Transfer rate Connection	See "Ethernet connection ETH1", on page 30 and "Ethernet connection ETH2", on page 31 10/100 Mbit/s RJ45 Twisted Pair (10 BaseT / 100 BaseT)
USB interfaces Type Number Transfer rate Connection	See also "USB port", on page 32 USB 2.0 3 (2x back side, 1x front side) up to 480 MBit [1] (high speed) Type A
Monitor / Panel Type	See also "Monitor / Panel connection", on page 34 DVI-I, female
AC97 sound Inputs Outputs	See also "MIC, Line IN and Line OUT Port", on page 34 Microphone, Line in Line out
Add-on interface slot Number	See also "Add-on interface slot", on page 35 1
PCI slots Number Type Default	-
CompactFlash slot 1 (CF1) Internal organization	Yes, see also "CompactFlash slot (CF1)", on page 37 Primary master
CompactFlash slot 2 / hard disk (HDD/CF2) Type Internal organization	Yes, see also "Hard disk / CompactFlash slot (HDD/CF2)", on page 38 Combined Primary slave
Insert for slide-in drive 1 Internal organization	-
Reset button	Yes, see also "Power button", on page 39
Power button	Yes, see also "Reset button", on page 39
PS/2 keyboard/mouse Type	Yes, see also "PS/2 keyboard/mouse", on page 40 Combined, will be automatically detected
Battery compartment	Yes, see also "Battery", on page 41
Hardware security key compartment Optimized for	Yes, see also "Hardware security key", on page 41 DS1425 from MAXIM/Dallas)
Fan insert for fan kit	Yes
Automation Panel link slot	-
LED Number	See also "Status LEDs", on page 37 4 (Power, HDD, Link 1, Link 2)

Table 43: Technical data - 5PC781.1505-00

Features	5PC781.1505-00
Touch screen	
Technology	Analog, resistive
Controller	Elo, serial, 12-bit
Degree of transmission	Up to 78%
Display	
Type	Color TFT
Diagonal	15 in. (381 mm)
Colors	16 million
Resolution	XGA, 1024 x 768 pixels
Contrast	400:1
Viewing angle horizontal / vertical	85° / 85°
Background lighting	
Brightness	250 cd/m²
Half-brightness time	50,000 hours
Keys	
Function keys	20 with LED
Softkeys	12 with LED
Cursor pad	-
Number block	15 without LED
Other keys	77 without LED
Caution! **Pressing several keys at the same time may trigger unintended actions.**	
Electrical characteristics	
Power supply	See also "Supply voltage", on page 33
Rated voltage	24 VDC ±25%
Starting current	TBD
Power consumption	TBD
Electrical isolation	Yes
Mechanical characteristics	
Front	
Frame	Naturally anodized aluminum
Mylar	Polyester
Design	Gray
Gasket	Flat gasket around display front
Display design / colors	
Dark gray border around the display	Similar Pantone 432CV
Bright background	Similar Pantone 427CV
Orange keys	Similar Pantone 151CV
Dark gray keys	Similar Pantone 431CV
Legend strips	Similar Pantone 429CV
Housing	Metal
Outer dimensions	Also see drawing "Dimensions - 5PC781.1505-00", on page 80
Width	435 mm
Height	430 mm
Depth	86.3 or 103.5 mm (depending on the heat sink)
Weight	Approx. 7.5 kg

Table 43: Technical data - 5PC781.1505-00 (cont.)

Environmental characteristics	5PC781.1505-00
Environmental temperature Operation Storage Transport	 TBD TBD TBD
Humidity Operation Storage Transport	TBD
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP20 back side (only with installed CompactFlash card) IP65 / NEMA 250 type 4X, dust and sprayed water protection (front side)
Altitude	Max. 3,000 m

Table 43: Technical data - 5PC781.1505-00 (cont.)

1) Software must support USB 2.0 (e.g. Windows XP with at least Service Pack 1).

Cutout installation

The Panel PC 700 with preassembled mounting blocks can be installed in a housing cutout. A cutout that corresponds to the following drawing must be made.

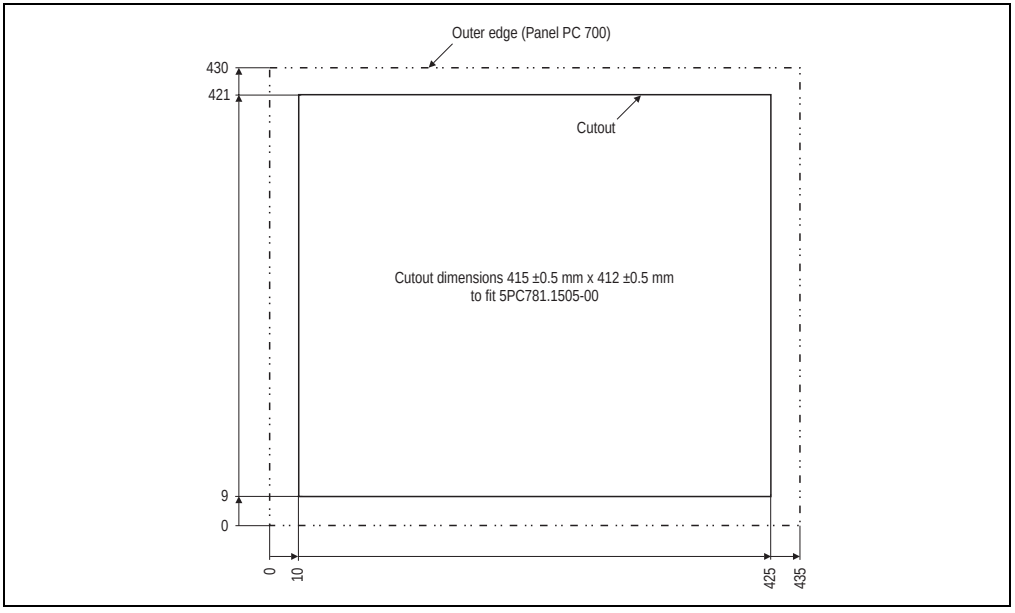


Figure 37: Cutout installation - 5PC781.1505-00

For further information regarding mounting and installation position, see chapter 3 "Installation" on page 129.

3.1.9 Panel PC 5PC782.1043-00

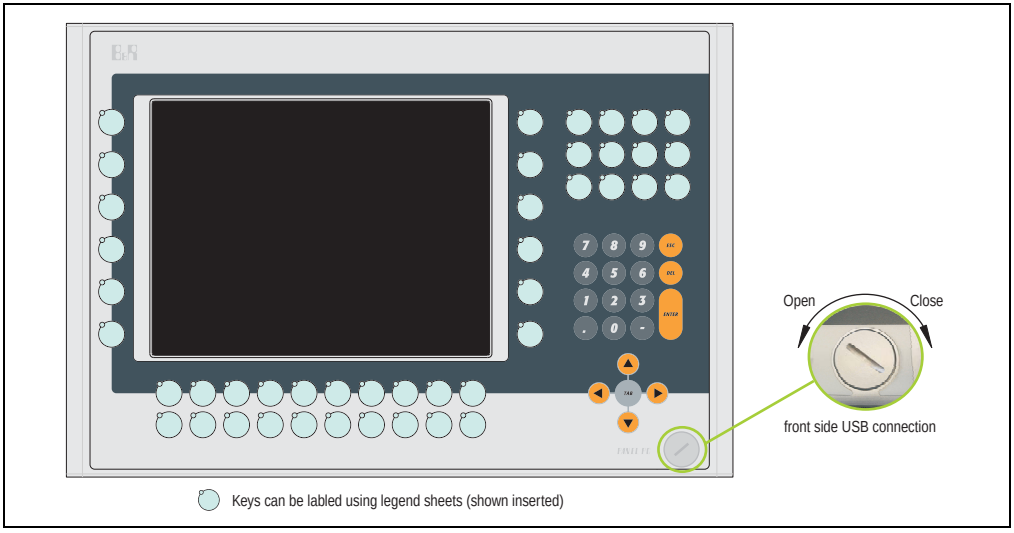


Figure 38: Front view - 5PC782.1043-00

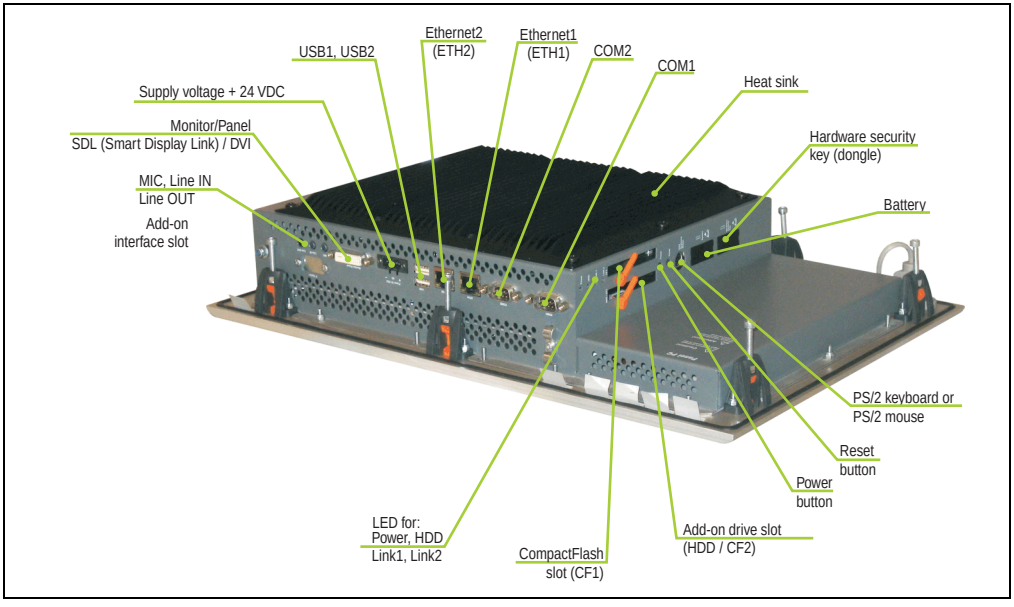


Figure 39: Rear view - 5PC782.1043-00

Warning!

Do not remove mounting screws from the heat sink, as it is connected to the processor and chipset by a thermal coupling. If this connection is broken, the PPC700 must be sent for repair. Removal of the mounting screws, voids all warranty.

During operation, surface temperatures of the heat sink may reach 70 °C (warning "hot surface").

Dimensions

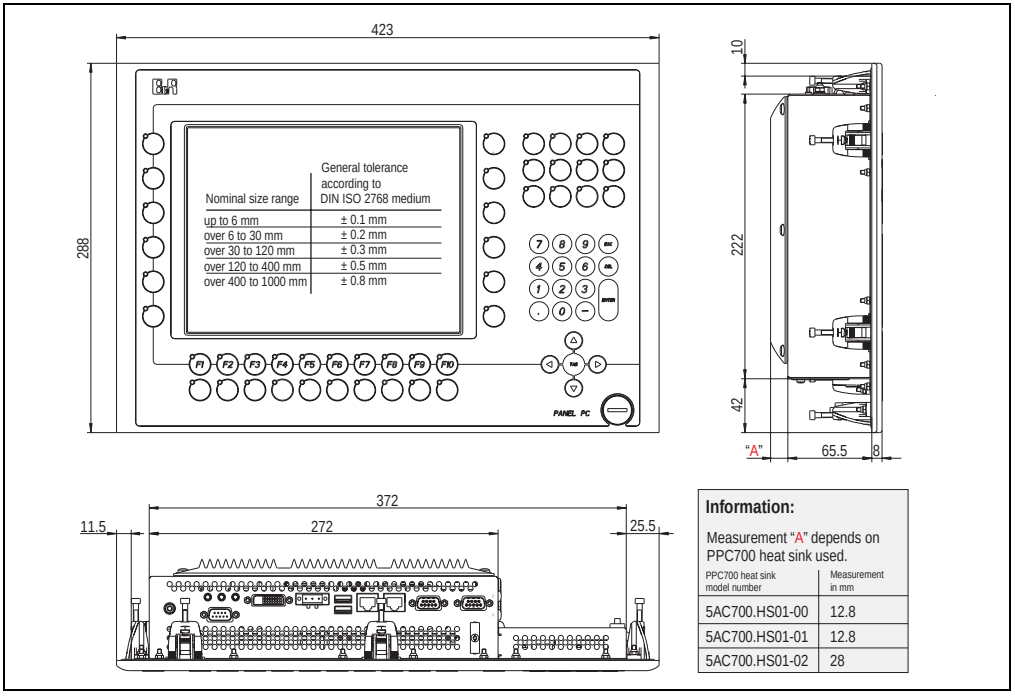


Figure 40: Dimensions - 5PC782.1043-00

Technical data

Features	5PC782.1043-00
Serial interfaces Type Number UART Transfer rate Connection	See "Serial interfaces - COM1", on page 28 and "Serial interfaces - COM2", on page 29 RS232, modem capable 2 16550 compatible, 16 byte FIFO max. 115 kBaud 9-pin DSUB, male
Ethernet Controller Transfer rate Connection	See "Ethernet connection ETH1", on page 30 and "Ethernet connection ETH2", on page 31 10/100 Mbit/s RJ45 Twisted Pair (10 BaseT / 100 BaseT)
USB interfaces Type Number Transfer rate Connection	See also "USB port", on page 32 USB 2.0 3 (2x back side, 1x front side) up to 480 MBit [1] (high speed) Type A
Monitor / Panel Type	See also "Monitor / Panel connection", on page 34 DVI-I, female
AC97 sound Inputs Outputs	See also "MIC, Line IN and Line OUT Port", on page 34 Microphone, Line in Line out
Add-on interface slot Number	See also "Add-on interface slot", on page 35 1
PCI slots Number Type Default	-
CompactFlash slot 1 (CF1) Internal organization	Yes, see also "CompactFlash slot (CF1)", on page 37 Primary master
CompactFlash slot 2 / hard disk (HDD/CF2) Type Internal organization	Yes, see also "Hard disk / CompactFlash slot (HDD/CF2)", on page 38 Combined Primary slave
Insert for slide-in drive 1 Internal organization	-
Reset button	Yes, see also "Power button", on page 39
Power button	Yes, see also "Reset button", on page 39
PS/2 keyboard/mouse Type	Yes, see also "PS/2 keyboard/mouse", on page 40 Combined, will be automatically detected
Battery compartment	Yes, see also "Battery", on page 41
Hardware security key compartment Optimized for	Yes, see also "Hardware security key", on page 41 DS1425 from MAXIM/Dallas)
Fan insert for fan kit	Yes
Automation Panel link slot	-
LED Number	See also "Status LEDs", on page 37 4 (Power, HDD, Link 1, Link 2)

Table 44: Technical data - 5PC782.1043-00

Features	5PC782.1043-00
Touch screen	
Technology	Analog, resistive
Controller	Elo, serial, 12-bit
Degree of transmission	Up to 78%
Display	
Type	Color TFT
Diagonal	10.4 in. (264 mm)
Colors	262144 Colors
Resolution	VGA, 640 x 480 pixels
Contrast	300:1
Viewing angle horizontal / vertical	70° / 70°
Background lighting	
Brightness	350 cd/m²
Half-brightness time	50,000 hours
Keys	
Function keys	44 with LED
Softkeys	-
Cursor pad	-
Number block	15 without LED
Other keys	5 without LED
Caution! **Pressing several keys at the same time may trigger unintended actions.**	
Electrical characteristics	
Power supply	See also "Supply voltage", on page 33
Rated voltage	24 VDC ±25%
Starting current	TBD
Power consumption	TBD
Electrical isolation	Yes
Mechanical characteristics	
Front	
Frame	Naturally anodized aluminum
Mylar	Polyester
Design	Gray
Gasket	Flat gasket around display front
Display design / colors	
Dark gray border around the display	Similar Pantone 432CV
Bright background	Similar Pantone 427CV
Orange keys	Similar Pantone 151CV
Dark gray keys	Similar Pantone 431CV
Legend strips	Similar Pantone 429CV
Housing	Metal
Outer dimensions	Also see drawing "Dimensions - 5PC782.1043-00", on page 86
Width	423 mm
Height	288 mm
Depth	86.3 or 103.5 mm (depending on the heat sink)
Weight	Approx. 7.5 kg

Table 44: Technical data - 5PC782.1043-00 (cont.)

Environmental characteristics	5PC782.1043-00
Environmental temperature Operation Storage Transport	 TBD TBD TBD
Humidity Operation Storage Transport	TBD
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP20 back side (only with installed CompactFlash card) IP65 / NEMA 250 type 4X, dust and sprayed water protection (front side)
Altitude	Max. 3,000 m

Table 44: Technical data - 5PC782.1043-00 (cont.)

1) Software must support USB 2.0 (e.g. Windows XP with at least Service Pack 1).

Cutout installation

The Panel PC 700 with preassembled mounting blocks can be installed in a housing cutout. A cutout that corresponds to the following drawing must be made.

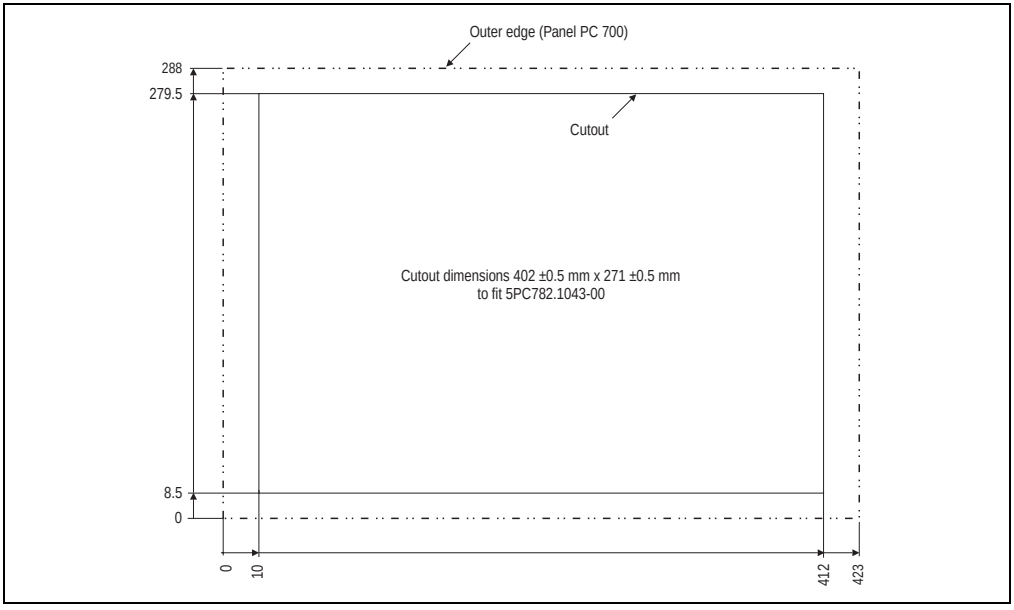


Figure 41: Cutout installation - 5PC782.1043-00

For further information regarding mounting and installation position, see chapter 3 "Installation" on page 129.

3.2 815E CPU boards

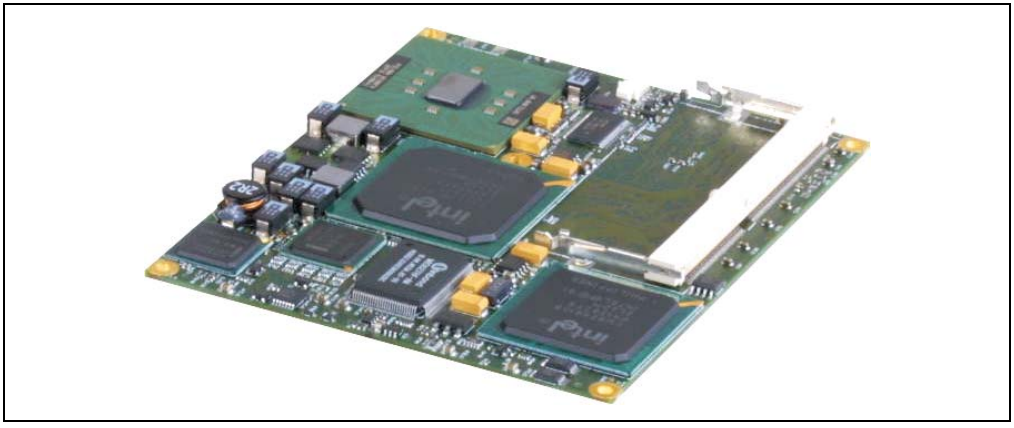


Figure 42: 815E CPU boards

Information:

The following characteristics, features and limit values are only valid for these individual components and can deviate from those for the entire device. For the entire device in which these individual components are used, refer to the data given specifically for the entire device.

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

3.2.1 Technical data

Features	5PC600.E815-00	5PC600.E815-02	5PC600.E815-03
Boot loader / Operating system	BIOS Phoenix		
Processor Architectures Type Expanded command set L1 cache L2 cache Floating Point Unit (FPU)	 0.13 µm Intel Celeron 3 400 MHz MMX technology, streaming SIMD extension 16 kByte 256 kByte Yes	 0.13 µm Intel Celeron 3 733 MHz MMX technology, streaming SIMD extension 16 kByte 256 kByte Yes	 0.13 µm Intel Celeron 1 GHz MMX technology, streaming SIMD extension 16 kByte 256 kByte Yes
Chipset	Intel 82815E (GMCH) Intel 82801DB (ICH4)		

Table 45: Technical data - 815E CPU boards

Features	5PC600.E815-00	5PC600.E815-02	5PC600.E815-03
Front side bus	100 MHz	133 MHz	133 MHz
IDE ports	2 IDE ports, UDMA 100		
Memory Type Size Socket	 SDRAM max. 512 MB SO-DIMM 144-pin		
Graphics Controller Memory Color depth	Support up to SXGA display units Intel 82815 (integrated in the chipset) 64 MB shared memory (reserved in the main memory) Max. 24-bit		

Table 45: Technical data - 815E CPU boards (cont.)

Driver support

In order for the CPU board with the Intel 82815E chipset to work properly, it is necessary to install the Intel chipset driver (e.g. special USB driver) and the graphic chip. They can be downloaded from the download area on the B&R homepage (**www.br-automation.com**).

3.3 855GME CPU boards

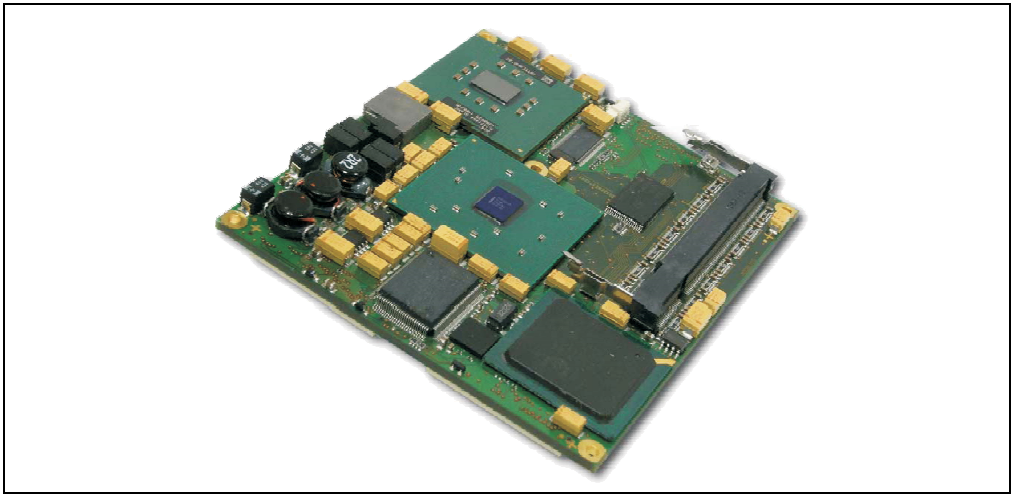


Figure 43: 855GME CPU boards

Information:

The following characteristics, features and limit values are only valid for these individual components and can deviate from those for the entire device. For the entire device in which these individual components are used, refer to the data given specifically for the entire device.

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

3.3.1 Technical data

Features	5PC600.E855-00	5PC600.E855-01	5PC600.E855-02	5PC600.E855-03	5PC600.E855-04	5PC600.E855-05
Boot loader / Operating system	BIOS Phoenix					
Processor						
Architectures	0.13 µm	0.13 µm	0.90 nm	0.90 nm	0.13 µm	90 nm
Type	Intel Pentium M 1,1 GHz	Intel Pentium M 1.6 GHz	Intel Pentium M 1.4 GHz	Intel Pentium M 1.8 GHz	Intel Celeron M 600 MHz	Intel Celeron M 1000 MHz
Expanded command set	MMX technology, streaming SIMD extension 2	MMX technology, streaming SIMD extension 2	MMX technology, streaming SIMD extension 2	MMX technology, streaming SIMD extension 2	MMX technology, streaming SIMD extension 2	MMX technology, streaming SIMD extension 2
L1 cache	32 kByte	32 kByte	32 kByte	32 kByte	32 kByte	32 kByte
L2 cache	1 MB	1 MB	2 MB	2 MB	512 kB	1 MB
Floating Point Unit (FPU)	Yes	Yes	Yes	Yes	Yes	Yes

Table 46: Technical data - 855GME CPU boards

Features	5PC600.E855-00	5PC600.E855-01	5PC600.E855-02	5PC600.E855-03	5PC600.E855-04	5PC600.E855-05
Chipset	Intel 82855GME (GMHC) Intel 82801DB (ICH4)					
Front side bus	400 MHz					
IDE ports	2 IDE ports, UDMA 100					
Memory Type Size Socket	 DDRAM Max. 1 GB SO-DIMM 200-pin					
Graphics Controller Memory Color depth	 Intel Extreme Graphics 2 (integrated in the chipset) 64 MB shared memory (reserved in the main memory) Max. 32-bit					

Table 46: Technical data - 855GME CPU boards (cont.)

Driver support

In order for the CPU board with the Intel 82855GME chipset to work properly, it is necessary to install the Intel chipset driver (e.g. special USB driver) and the graphics chip. They can be downloaded from the download area on the B&R homepage (**www.br-automation.com**).

3.4 Heat sink

There are a number of heat sink variants available to be used on different CPU boards.

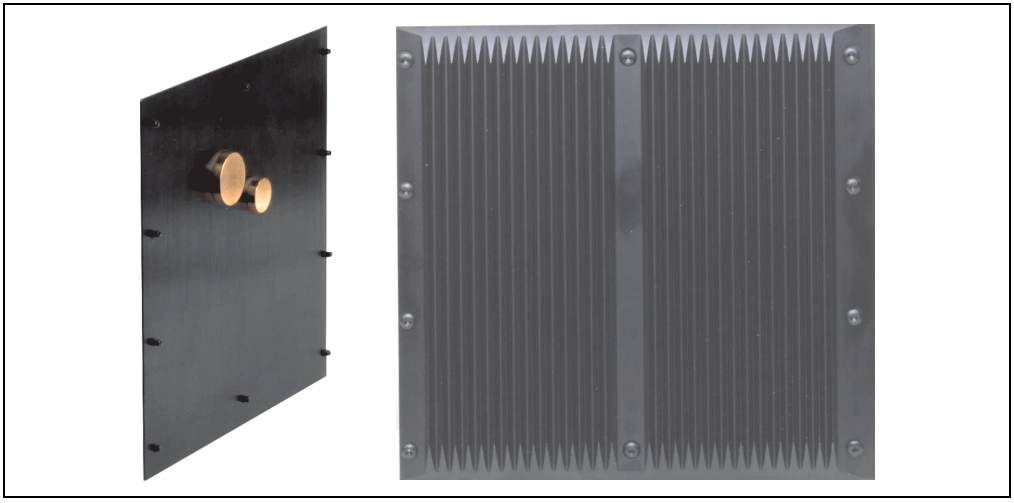


Figure 44: Heat sink

Information:

The following characteristics, features and limit values are only valid for these individual components and can deviate from those for the entire device. For the entire device in which these individual components are used, refer to the data given specifically for the entire device.

A heat sink can only be replaced at the B&R plant.

Mechanical characteristics	5AC700.HS01-00	5AC700.HS01-01	5AC700.HS01-02
Ideal for CPU boards	5PC600.E815-00 5PC600.E815-02 5PC600.E815-03	5PC600.E855-00 5PC600.E855-02 5PC600.E855-04 5PC600.E855-05	5PC600.E855-01 5PC600.E855-03
Material	Black-coated aluminum		
Outer dimensions Width Height Depth	250 mm 208 mm 12.8 mm		250 mm 208 mm 30 mm
Weight	1,450 g		1,900 g

Table 47: Technical data - heat sink

3.5 Main memory

The CPU boards (815E, 855GME) are each equipped with a socket for memory modules. When choosing a main memory, it is important to consider both the maximum memory capacity (for 815E CPU boards 512 MB, and for 855GME CPU boards 1 GB) and the correct type.

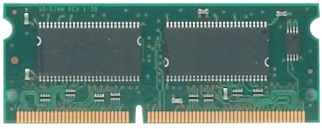


Figure 45: Main memory module

Information:

The following characteristics, features and limit values are only valid for these individual components and can deviate from those for the entire device. For the entire device in which these individual components are used, refer to the data given specifically for the entire device.

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

3.5.1 Technical data

Features	5MMSDR.0128-01	5MMSDR.0256-01	5MMSDR.0512-01	5MMDDR.0256-00	5MMDDR.0512-00	5MMDDR.1024-00
Ideal for CPU boards	815E			855GME		
Size Construction Type	128 MB 144-pin SO-DIMM SDRAM	256 MB 144-pin SO-DIMM SDRAM	512 MB 144-pin SO-DIMM SDRAM	256 MB 200-pin SO-DIMM DDR-SDRAM	512 MB 200-pin SO-DIMM DDR-SDRAM	1 GB 200-pin SO-DIMM DDR-SDRAM
Organization	16Mx64	32Mx64	64Mx64	32Mx64	64Mx64	128Mx64

Table 48: Technical data - main memory

Information:

A main memory module can only be replaced at the B&R plant.

3.6 Drives

3.6.1 Add-on hard disk 30 GB 24x7

This hard disc is specified for 24-hour operation. The add-on drive is referred to internally as the primary slave drive.

Information:

Add-on drives are only available factory-installed. Therefore, this needs to be requested when placing the order.

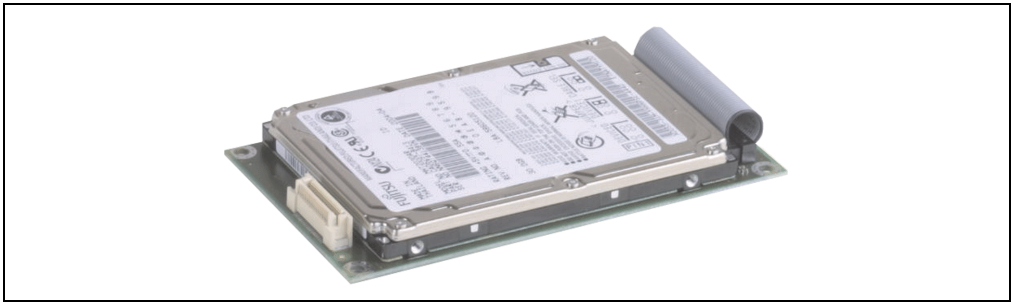


Figure 46: Add-on hard disk 30 GB 24/7

Information:

The following characteristics, features and limit values are only valid for these individual components and can deviate from those for the entire device. For the entire device in which these individual components are used, refer to the data given specifically for the entire device.

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

Technical data

Features	5AC600.HDDI-00
Manufacturer's product ID	Fujitsu MHT2030AR
Formatted capacity	30 GB
Number of heads	2
Number of sectors (user)	58,605,120
Bytes per sector	512

Table 49: Technical data - add-on hard disk 5AC600.HDDI-00

Features	5AC600.HDDI-00
Revolution speed	4200 rpm ± 1%
Access time (average)	7.14 ms
Positioning time (seek, typical values) Minimum (track to track) Average (read access) Maximum	 1.5 ms 12 ms 22 ms
Starting time (0 rpm to read access)	5 seconds (typically)
Interface	ATA-6
Data transfer rate To the medium To / from host	 26.1 to 32.1 MB/s Max. 100 MB/s (ultra-DMA mode 5)
Cache	2 MB
Noise level (idle mode)	Approx. 24 dBA at 30 cm
Electrical characteristics	
Lifespan	5 years or 20,000 POH (Power-On Hours)
MTBF	300,000 hours
Mechanical characteristics	
Add-on mounting	Fixed
Outer dimensions (without slide-in) Width Length Height	 70 mm 100 mm 9.5 mm
Weight	120 g
Environmental characteristics	
Environmental temperature Operation - standard [1)] Operation - 24-hour [2)] Storage Transport	 +5 °C .. +55 °C +5 °C .. +45 °C -40 °C .. +60 °C -40 °C .. +60 °C
Humidity Operation Storage Transport	 8 - 90 % non-condensing 5 - 95 % non-condensing 5 - 95 % non-condensing
Vibration Operation Storage	 No non-recovered errors at max. 5 - 500 Hz and 1 g (9.8 m/s^2 0-peak) No damage at max. 5 - 500 Hz and 5 g (49 m/s^2 0-peak)
Shock (pulse with a sinus half-wave) Operation Storage	 No non-recovered errors at max. 225 g (2,207 m/s^2 0-peak) and 2 ms duration No damage at max. 900 g (8,820 m/s^2 0-peak) and 1 ms duration No damage at max. 120 g (1,176 m/s^2 0-peak) and 11 ms duration
Altitude Operation Storage	 - 300 to 3,000 meters - 300 to 12,000 meters

Table 49: Technical data - add-on hard disk 5AC600.HDDI-00 (cont.)

1) Standard operation means 250 POH (Power-On Hours) per month.

2) 24-hour operation means 732 POH (Power-On Hours) per month.

3.6.2 Add-on hard disk 20 GB ET

This hard disk has an expanded temperature specification, but is not allowed for 24-hour operation. The add-on drive is referred to internally as the primary slave drive.

Information:

Add-on drives are only available factory-installed. Therefore, this needs to be requested when placing the order.

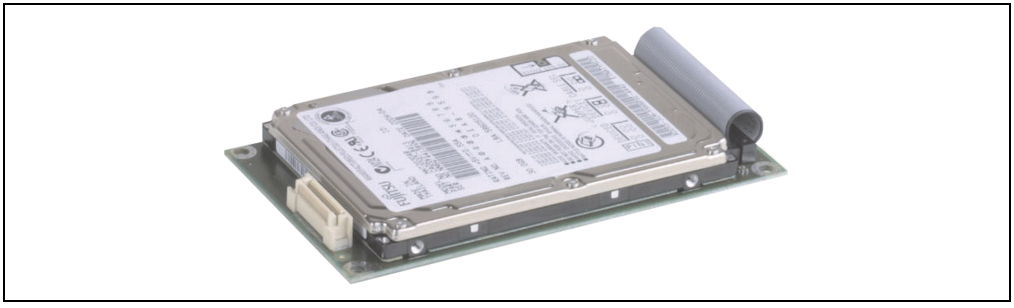


Figure 47: Add-on hard disk 20 GB

Information:

The following characteristics, features and limit values are only valid for these individual components and can deviate from those for the entire device. For the entire device in which these individual components are used, refer to the data given specifically for the entire device.

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

Technical data

Features	5AC600.HDDI-01
Manufacturer's product ID	Fujitsu MHT2020AC
Formatted capacity	20 GB
Number of heads	2
Number of sectors (user)	39,070,080
Bytes per sector	512
Revolution speed	4,200 rpm ± 1%
Access time (average)	7.14 ms

Table 50: Technical data - add-on hard disk 5AC600.HDDI-01

Features	5AC600.HDDI-01
Positioning time (seek, typical values) Minimum (track to track) Average (read access) Maximum	 1.5 ms 12 ms 22 ms
Starting time (0 rpm to read access)	5 seconds (typically)
Interface	ATA-6
Data transfer rate To the medium To / from host	 Up to 28.9 MB/s Max. 100 MB/s (ultra-DMA mode 5)
Cache	2 MB
Noise level (idle mode)	Approx. 22 dBA at 30 cm
Electrical characteristics	
MTBF	20,000 hours at -20 °C .. +55 °C 2,000 hours with environmental temperatures > + 55°C
Mechanical characteristics	
Slide-in mounting	Fixed
Outer dimensions (without slide-in) Width Length Height	 70 mm 100 mm 9.5 mm
Weight	120 g
Environmental characteristics	
Environmental temperature Operation Storage Transport	 -20 °C .. +85°C[1)] -40 °C .. +85 °C -40 °C .. +85 °C
Humidity Operation Storage Transport	 8 - 90 % non-condensing 5 - 95 % non-condensing 5 - 95 % non-condensing
Vibration Operation Storage	 No non-recovered errors at max. 5 - 500 Hz and 1 g (9.8 m/s^2 0-peak) No damage at max. 5 - 500 Hz and 5 g (49 m/s^2 0-peak)
Shock (pulse with a sinus half-wave) Operation Storage	 No non-recovered errors at max. 225 g (2,207 m/s^2 0-peak) and 2 ms duration No damage at max. 900 g (8,820 m/s^2 0-peak) and 1 ms duration No damage at max. 120 g (1,176 m/s^2 0-peak) and 11 ms duration
Altitude Operation Storage	 - 300 to 3,000 meters - 300 to 12,000 meters

Table 50: Technical data - add-on hard disk 5AC600.HDDI-01 (cont.)

1) Surface temperature of the hard disk.

3.6.3 Add-on CompactFlash slot

A CompactFlash card inserted in the add-on drive is referred to internally as the "primary slave drive."

Information:

Add-on drives are only available factory-installed. Therefore, this needs to be requested when placing the order.

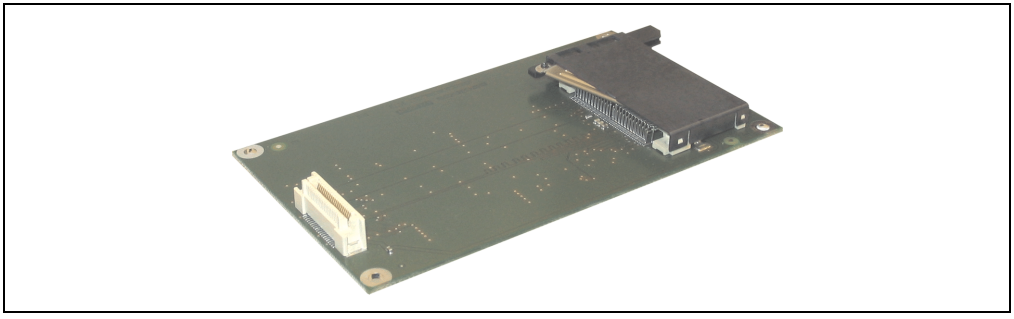


Figure 48: Add-on CompactFlash slot

Technical data

Features	5AC600.CFSI-00
CompactFlash Type Number Connection	 Type I 1 slot Primary slave
Weight	100 g

Table 51: Technical data - add-on Compact Flash slot 5AC600.CFSI-00

Warning!

The CompactFlash card can only be inserted and removed without the power applied!

3.6.4 Slide-in CD-ROM

The slide-in drive can be used in system units with 1 or 2 PCI slots. When inserted in slide-in slot 1, it is referred to internally as "secondary slave".

Information:

It is possible to add or remove a slide-in drive at any time.

Caution!

Turn off power before adding or removing a slide-in drive.

Figure 49: Slide-in CD-ROM

Information:

The following characteristics, features and limit values are only valid for these individual components and can deviate from those for the entire device. For the entire device in which these individual components are used, refer to the data given specifically for the entire device.

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

Technical data

Features	5AC600.CDXS-00
Reading rate	24x
Data transfer rate	max. 33.3 MByte/sec.
Access time (average)	115 ms
Revolution speed	max. 5,136 rpm ± 1%
Starting time (0 rpm to read access)	10 seconds (maximum)
Host interface	IDE (ATAPI)
Readable CD media	CD/CD-ROM (12 cm, 8 cm), CD-R, CD-RW
Compatible formats	CD-DA, CD-ROM mode 1/mode 2 CD-ROM XA mode 2 (form 1, form 2) Photo CD (single/multi-session) Enhanced CD
Cache	128 kB
Noise level (complete read access)	Approx. 45 dBA at 50 cm
Lifespan Opening/closing the drawer	60,000 POH (Power-On Hours) > 10,000 times
Environmental characteristics	
Environmental temperature Operation Storage Transport	 -5 °C .. +60°C[1)] -20 °C .. +60 °C -40 °C .. +65 °C
Humidity Operation Storage Transport	 8 - 80 % non-condensing 5 - 95 % non-condensing 5 - 95 % non-condensing
Vibration Operation Storage Transport	 at max. 5 - 500 Hz and 0.3 g at max. 5 - 500 Hz and 2 g at max. 5 - 500 Hz and 5 g
Shock (pulse with a sinus half-wave) Operation Storage Transport	 at max. 7 g for 11 ms at max. 60 g for 11 ms at max. 200 g for 2 ms at max. 60 g for 11 ms at max. 200 g for 2 ms

Table 52: Technical data - slide-in CD-ROM 5AC600.CDXS-00

1) Drive surface temperature

3.6.5 Slide-in DVD-ROM/CD-RW

The slide-in drive can be used in system units with 1 or 2 PCI slots. When inserted in slide-in slot 1, it is referred to internally as "secondary slave".

Information:

It is possible to add or remove a slide-in drive at any time.

Caution!

Turn off power before adding or removing a slide-in drive.

Figure 50: Slide-in DVD-ROM/CD-RW

Information:

The following characteristics, features and limit values are only valid for these individual components and can deviate from those for the entire device. For the entire device in which these individual components are used, refer to the data given specifically for the entire device.

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

Technical data

Features	5AC600.DVDS-00
Write speed CD-R CD-RW	 24x, 16x, 10x and 4x 10x and 4x
Reading rate CD DVD	 24x 8x
Data transfer rate	max. 33.3 MByte/sec.
Access time (average) CD DVD	 85 ms 110 ms
Revolution speed	max. 5,136 rpm ± 1%
Starting time (0 rpm to read access)	19 seconds (maximum)
Host interface	IDE (ATAPI)
Readable media CD DVD	 CD/CD-ROM (12 cm, 8 cm), CD-R, CD-RW DVD-ROM, DVD-R, DVD-RW, DVD-RAM
Non-write protected media CD	 CD-R, CD-RW
Compatible formats	CD-DA, CD-ROM mode 1/mode 2 CD-ROM XA mode 2 (form 1, form 2) Photo CD (single/multi-session) Enhanced CD, CD-text DVD-ROM, DVD-R, DVD-Video (double layer) DVD-RAM (4.7 GB, 2.6 GB)
Write-methods	Disc at once, session at once, packet write, track at once
Laser class	Class 1 laser
Data buffer capacity	2 MB
Noise level (complete read access)	Approx. 45 dBA at 50 cm
Lifespan Opening/closing the drawer	60,000 POH (Power-On Hours) > 10,000 times
Environmental characteristics	
Environmental temperature Operation Storage Transport	 -5 °C .. +60°C[1)] -20 °C .. +60 °C -40 °C .. +65 °C
Humidity Operation Storage Transport	 8 - 80 % non-condensing 5 - 95 % non-condensing 5 - 95 % non-condensing
Vibration Operation Storage Transport	 at max. 5 - 500 Hz and 0.2 g at max. 5 - 500 Hz and 2 g at max. 5 - 500 Hz and 2 g

Table 53: Technical data - slide-in DVD-ROM/CD-RW 5AC600.DVDS-00

Features	5AC600.DVDS-00
Shock (pulse with a sinus half-wave)	
Operation	at max. 5 g for 11 ms
Storage	at max. 60 g for 11 ms at max. 200 g for 2 ms
Transport	at max. 60 g for 11 ms at max. 200 g for 2 ms

Table 53: Technical data - slide-in DVD-ROM/CD-RW 5AC600.DVDS-00 (cont.)

1) Drive surface temperature

3.6.6 Slide-in CF 2-slot

The slide-in drive can be used in system units with 1 or 2 PCI slots. When inserted in slide-in slot 1, CompactFlash slot CF3 is referred to internally as "secondary slave". CompactFlash slot CF4 is always accessed via USB.

Information:

It is possible to add or remove a slide-in drive at any time.

Caution!

Turn off power before adding or removing a slide-in drive.

Warning!

The CompactFlash card can only be inserted in and removed from the CF3 IDE CompactFlash slot without power applied to the PPC700!

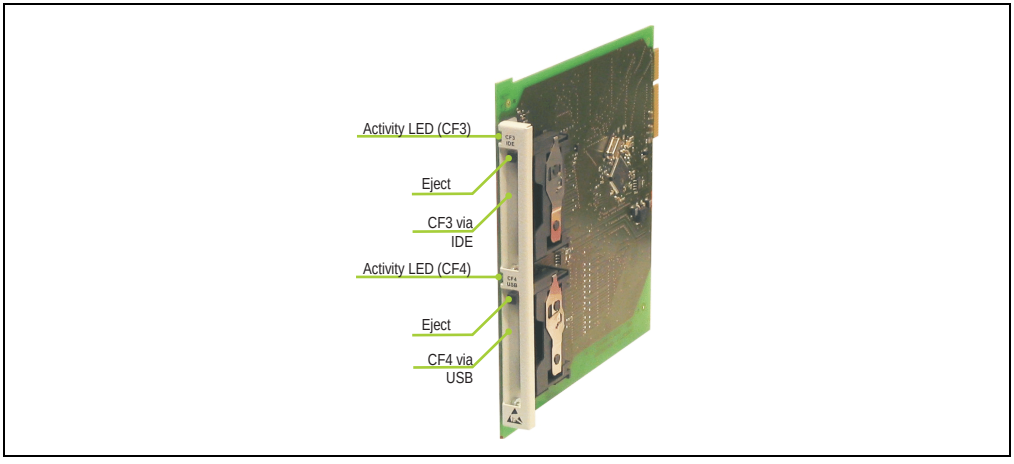


Figure 51: Slide-in CF 2-slot

Technical data

Features	5AC600.CFSS-00
CompactFlash (CF3)	
Type	Type I and II
Number	1 slot
Connection	IDE - Secondary slave in slide-in slot 1 IDE - Secondary master in slide-in slot 2
Activity LED	Yes
CompactFlash (CF4)	
Type	Type I and II
Number	1 slot
Connection	Via USB 2.0
Activity LED	Yes

Table 54: Technical data - slide-in CF 2 Slot 5AC600.CFSS-00

3.6.7 Slide-in USB FDD

The slide-in drive can be used in system units with 1 or 2 PCI slots. In these units it is connected to the system via USB.

Information:

It is possible to add, remove, or modify the slide-in drive at any time.

Caution!

Turn off power before adding or removing a slide-in drive.

Figure 52: Slide-in USB FDD

Information:

The following characteristics, features and limit values are only valid for these individual components and can deviate from those for the entire device. For the entire device in which these individual components are used, refer to the data given specifically for the entire device.

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

Technical data

Features	5AC600.FDDS-00
Data capacity	720 KB / 1.25 MB / 1.44 MB (formatted)
USB transfer rate	Full speed (12 Mbps)
Data transfer rate	250 kbits (720 KB) or 500 kbits (1.25 MB and 1.44 MB)
Rotation speed	Up to 360 rpm
Diskette media	High density (2HD) or normal density (2DD) 3.5" diskettes
MTBF	30,000 POH (Power-On Hours)
Environmental characteristics	
Environmental temperature Operation Storage Transport	 5 °C .. +45°C -20 °C .. +60 °C -40 °C .. +85 °C
Environmental characteristics	
Humidity Operation Storage Transport	 20 - 80 % non-condensing 5 - 90 % non-condensing 5 - 95 % non-condensing
Vibration Operation Storage Transport	 at max. 5 - 500 Hz and 0.3 g at max. 10 - 100 Hz and 2 g at max. 10 - 100 Hz and 2 g
Environmental characteristics	**5AC600.FDDS-00**
Shock (pulse with a sinus half-wave) Operation Storage Transport	 at max. 5 g for 11 ms at max. 60 g for 11 ms at max. 60 g for 11 ms
Altitude	Max. 3,000 meters

Table 55: Technical data - slide-in USB diskette drive 5AC600.FDDS-00

3.6.8 Slide-in hard disk 30 GB 24x7

This hard disc is specified for 24-hour operation. The slide-in drive can be used in system units with 1 or 2 PCI slots. When inserted in slide-in slot 1, it is referred to internally as "secondary slave".

Information:

It is possible to add or remove a slide-in drive at any time.

Caution!

Turn off power before adding or removing a slide-in drive.

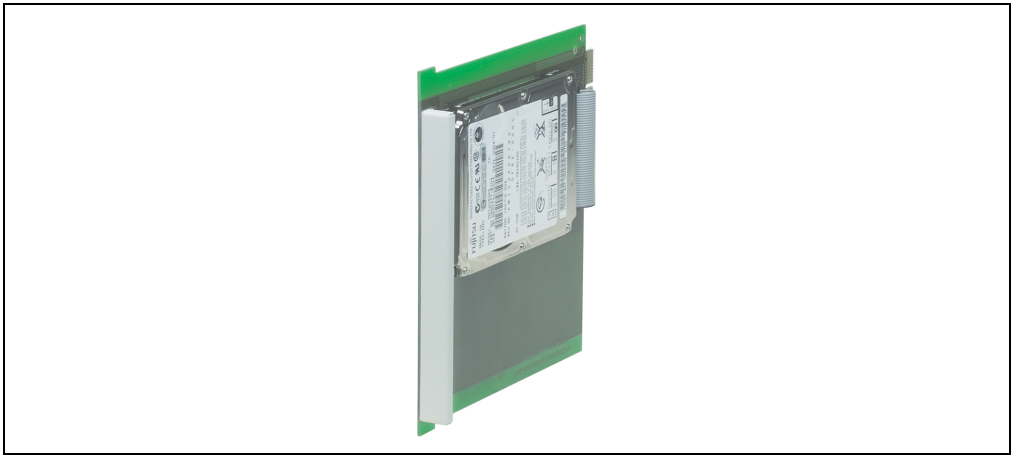


Figure 53: Slide-in hard disk 30 GB

Information:

The following characteristics, features and limit values are only valid for these individual components and can deviate from those for the entire device. For the entire device in which these individual components are used, refer to the data given specifically for the entire device.

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

Technical data

Features	5AC600.HDDS-00
Manufacturer's product ID	Fujitsu MHT2030AR
Formatted capacity	30 GB
Number of heads	2
Number of sectors (user)	58,605,120
Bytes per sector	512
Revolution speed	4,200 rpm ± 1%
Access time (average)	7.14 ms
Positioning time (seek, typical values) Minimum (track to track) Average (read access) Maximum	 1.5 ms 12 ms 22 ms
Starting time (0 rpm to read access)	5 seconds (typically)
Interface	ATA-6
Data transfer rate To the medium To / from host	 26.1 to 32.1 MB/s Max. 100 MB/s (ultra-DMA mode 5)
Cache	2 MB
Noise level (idle mode)	Approx. 24 dBA at 30 cm
Electrical characteristics	
Lifespan	5 years or 20,000 POH (Power-On Hours)
MTBF	300,000 hours
Mechanical characteristics	
Slide-in mounting	Fixed
Outer dimensions (without slide-in) Width Length Height	 70 mm 100 mm 9.5 mm
Weight	120 g
Environmental characteristics	
Environmental temperature Operation - standard [1)] Operation - 24-hour [2)] Storage Transport	 +5 °C .. +55 °C +5 °C .. +45 °C -40 °C .. +60 °C -40 °C .. +60 °C
Humidity Operation Storage Transport	 8 - 90 % non-condensing 5 - 95 % non-condensing 5 - 95 % non-condensing
Vibration Operation Storage	 No non-recovered errors at max. 5 - 500 Hz and 1 g (9.8 m/s^2 0-peak) No damage at max. 5 - 500 Hz and 5 g (49 m/s^2 0-peak)

Table 56: Technical data - add-on hard disk 5AC600.HDDS-00

Features	5AC600.HDDS-00
Shock (pulse with a sinus half-wave) Operation Storage	 No non-recovered errors at max. 225 g (2,207 m/s^2 0-peak) and 2 ms duration No damage at max. 900 g (8,820 m/s^2 0-peak) and 1 ms duration No damage at max. 120 g (1,176 m/s^2 0-peak) and 11 ms duration
Altitude Operation Storage	 - 300 to 3,000 meters - 300 to 12,000 meters

Table 56: Technical data - add-on hard disk 5AC600.HDDS-00 (cont.)

1) Standard operation means 250 POH (Power-On Hours) per month.

2) 24-hour operation means 732 POH (Power-On Hours) per month.

3.6.9 Slide-in hard disk ET 20 GB

This hard disk has an expanded temperature specification, but is not allowed for 24-hour operation. The slide-in drive can be used in system units with 1 or 2 PCI slots. When inserted in slide-in slot 1 it is referred to internally as "secondary slave" and when in slide-in slot 2 as "secondary master."

Information:

It is possible to add or remove a slide-in drive at any time.

Caution!

Turn off power before adding or removing a slide-in drive.

Figure 54: Slide-in hard disk 20 GB

Information:

The following characteristics, features and limit values are only valid for these individual components and can deviate from those for the entire device. For the entire device in which these individual components are used, refer to the data given specifically for the entire device.

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

Technical data

Features	5AC600.HDDS-01
Manufacturer's product ID	Fujitsu MHT2020AC
Formatted capacity	20 GB
Number of heads	2
Number of sectors (user)	39,070,080
Bytes per sector	512
Revolution speed	4,200 rpm ± 1%
Access time (average)	7.14 ms
Positioning time (seek, typical values) Minimum (track to track) Average (read access) Maximum	 1.5 ms 12 ms 22 ms
Starting time (0 rpm to read access)	5 seconds (typically)
Interface	ATA-6
Data transfer rate To the medium To / from host	 Up to 28.9 MB/s Max. 100 MB/s (ultra-DMA mode 5)
Cache	2 MB
Noise level (idle mode)	Approx. 22 dBA at 30 cm
Electrical characteristics	
MTBF	20,000 hours at -20 °C .. +55 °C 2,000 hours with environmental temperatures > + 55°C
Mechanical characteristics	
Slide-in mounting	Fixed
Outer dimensions (without slide-in) Width Length Height	 70 mm 100 mm 9.5 mm
Weight	120 g
Environmental characteristics	
Environmental temperature Operation Storage Transport	 -20 °C .. +85°C[1)] -40 °C .. +85 °C -40 °C .. +85 °C
Humidity Operation Storage Transport	 8 - 90 % non-condensing 5 - 95 % non-condensing 5 - 95 % non-condensing
Vibration Operation Storage	 No non-recovered errors at max. 5 - 500 Hz and 1 g (9.8 m/s^2 0-peak) No damage at max. 5 - 500 Hz and 5 g (49 m/s^2 0-peak)

Table 57: Technical data - slide-in hard disk 5AC600.HDDS-01

Features	5AC600.HDDS-01
Shock (pulse with a sinus half-wave) Operation Storage	 No non-recovered errors at max. 225 g (2,207 m/s^2 0-peak) and 2 ms duration No damage at max. 900 g (8,820 m/s^2 0-peak) and 1 ms duration No damage at max. 120 g (1,176 m/s^2 0-peak) and 11 ms duration
Altitude Operation Storage	 - 300 to 3,000 meters - 300 to 12,000 meters

Table 57: Technical data - slide-in hard disk 5AC600.HDDS-01 (cont.)

1) Surface temperature of the hard disk.

3.6.10 RAID system

Sometimes it is simply not possible to avoid using hard disks due to the amount of data that needs to be saved. In this case, a RAID provides high system availability. All data is simultaneously and automatically stored on two hard drives. This double data storage means that when one hard disk fails, the system will continue to run on the second hard disk.

Advantages for the user:

- No data loss when hard drive fails.
- The system continues to run with a hard disk.
- Data redundancy is automatically restored to by the system when the faulty hard disk has been replaced.

The RAID 1 system is executed in the form of 2 PCI cards: PCI RAID controller (5ACPCI.RAIC-00) and PCI card with two hard disks (5ACPCI.RAIS-00). The system can be implemented in all Panel PC 700s with two free PCI slots. There are no further hardware requirements. The RAID card has its own controller. This means that the industrial PC's main processor is not overloaded by redundant data storage. The system also supports RAID 0 applications. As a result, parallel access to two hard drives with a relatively high data throughput is the main focus, in addition to the high availability.

PCI RAID Controller ATA/100 5ACPCI.RAIC-00

Information:

PCI RAID controllers are only available factory-installed. Therefore, this needs to be requested when placing the order.

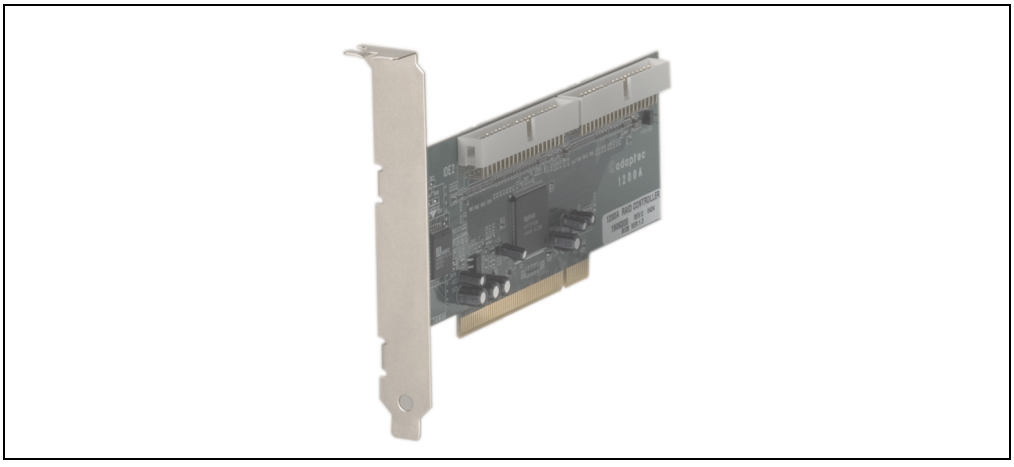


Figure 55: RAID controller 5ACPCI.RAIC-00

Technical data

Features	5ACPCI.RAIC-00
Manufacturer's product ID	Adaptec ATA RAID 1200A
Data transfer rate	Up to 100 MB/s per channel
RAID Level	Supports RAID 0, 1, 0/1 and JBOD
Internal connections	Two 40-pin connections
Electrical characteristics	
Power consumption	0.15 A at 5 V (PCI bus)
Mechanical characteristics	
Outer dimensions Length Height	 168 mm 64 mm
Environmental characteristics	
Environmental temperature Operation Storage Transport	 0 °C .. 55 °C -20 °C .. 60 °C -20 °C .. 60 °C

Table 58: Technical data - RAID controller 5ACPCI.RAIC-00

PCI RAID storage 2 x 40 GB 5ACPCI.RAIS-00

Information:

PCI RAID storage drives are only available factory-installed. Therefore, this needs to be requested when placing the order.

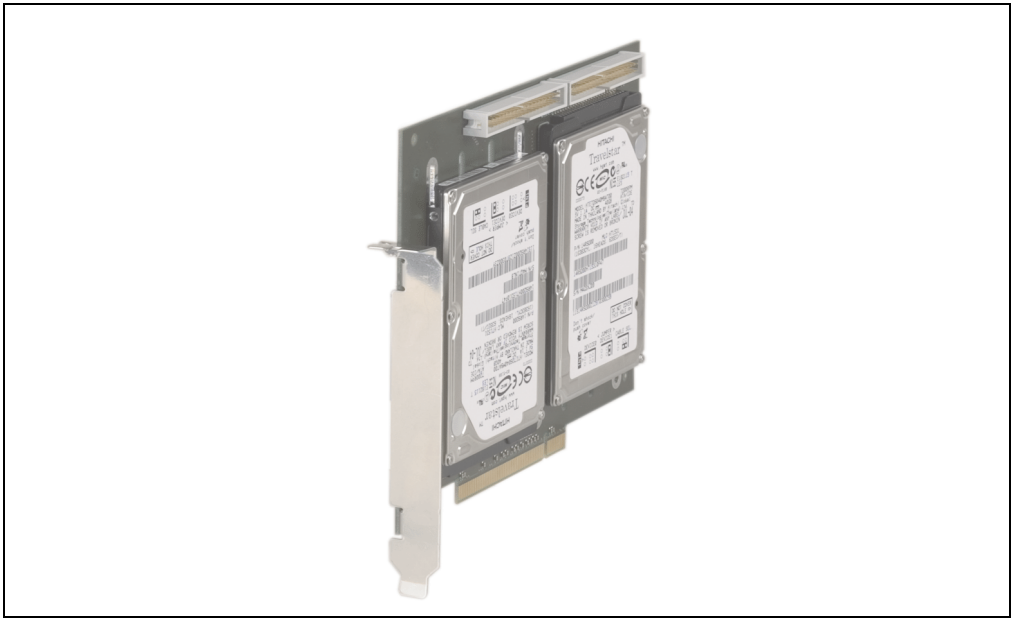


Figure 56: PCI RAID storage 5ACPCI.RAIS-00

Information:

The following characteristics, features and limit values are only valid for these individual components and can deviate from those for the entire device. For the entire device in which these individual components are used, refer to the data given specifically for the entire device.

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

Technical data

Features	5ACPCI.RAIS-00
Manufacturer's product ID	Hitachi Travelstar HTE726040M9AT00
Formatted capacity	40 GB
Number of heads	4
Number of sectors (user)	78,140,160
Bytes per sector	512
Revolution speed	7,200 rpm ± 1%
Access time (average)	4.2 ms
Positioning time (seek, typical values) Minimum (track to track) Average (read access) Maximum	 1 ms 10 ms 16 ms
Starting time (0 rpm to read access)	4 seconds (typically)
Interface	ATA-6
Data transfer rate To the medium To / from host	 Up to 28.9 MB/s Max. 100 MB/s (ultra-DMA mode 5)
Cache	2 MB
Noise level (idle mode)	Approx. 22 dBA at 30 cm
Electrical characteristics	
MTBF	30,000 hours
Mechanical characteristics	
Slide-in mounting	Fixed
Outer dimensions (without slide-in) Width Length Height	 70 mm 100 mm 9.5 mm
Weight	120 g
Environmental characteristics	
Environmental temperature Operation - 24-hour Storage Transport	 +5 °C .. +40 °C[1)] -40 °C .. +65 °C -40 °C .. +65 °C
Humidity Operation Storage Transport	 8 - 90 % non-condensing 5 - 95 % non-condensing 5 - 95 % non-condensing
Vibration Operation Storage	 No non-recovered errors at max. 5 - 500 Hz and 1 g (9.8 m/s^2 0-peak) No damage at max. 5 - 500 Hz and 5 g (49 m/s^2 0-peak)

Table 59: Technical data - slide-in hard disk 5AC600.HDDS-01

Features	5ACPCI.RAIS-00
Shock (pulse with a sinus half-wave) Operation Storage	 No non-recovered errors at max. 200 g (1,960 m/s^2 0-peak) and 2 ms duration No damage at max. 1000 g (9,800 m/s^2 0-peak) and 1 ms duration No damage at max. 120 g (1,176 m/s^2 0-peak) and 11 ms duration
Altitude Operation Storage	 - 300 to 3,000 meters - 300 to 12,000 meters

Table 59: Technical data - slide-in hard disk 5AC600.HDDS-01 (cont.)

1) Surface temperature of the hard disk.

3.7 Interface options

Another interface(CAN or combined RS232/422/485) can be inserted using an interface option.

Information:

It is possible to add or remove an interface option at any time.

Caution!

Turn off power before adding or removing an interface option.

3.7.1 Add-on CAN interface

The add-on CAN interface is equipped with an Intel 82527 CAN controller, which conforms to CAN specifications 2.0 part A/B. The CAN controller can trigger an NMI (non-maskable interrupt).

Order data

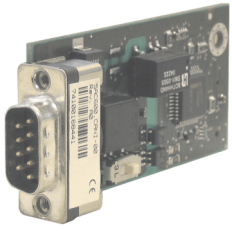
Model number	Description	Image
5AC600.CANI-00	**Add-on CAN interface** CAN interface for installation in an APC620 or PPC700.	

Table 60: Add-on CAN interface 5AC600.CANI-00

Technical data

Features	5AC600.CANI-00
CAN interface Controller Number Connection	 Intel 82527 1 9-pin DSUB, male
Terminating resistance	Can be activated and deactivated using a sliding switch

Table 61: Technical data - add-on CAN interface 5AC600.CANI-00

Pin assignments

Add-On CAN	
Electrically isolated	
Pin	**Assignment**
1	n.c.
2	CAN Low
3	GND
4	n.c.
5	n.c.
6	Reserved
7	CAN high
8	n.c.
9	n.c.

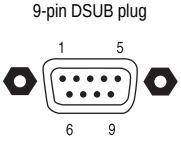


Table 62: Pin assignments - CAN

Terminating resistance

CAN networks are cabled using a bus structure where both ends of the bus are equipped with terminating resistors. The add-on CAN interface has an integrated terminating resistor.

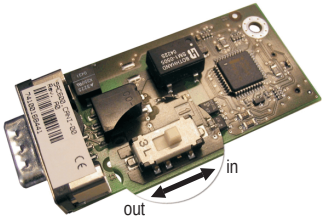


Figure 57: Terminating resistor for add-on CAN interface 5AC600.CANI-00

Contents of the delivery / mounting material

The screws included in the mounting kit are to be used for installation.

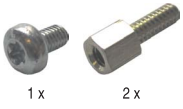


Figure 58: Contents of the delivery / mounting material 5AC600.CANI-00

3.7.2 Add-on RS232/422/485 interface

The serial interface is a combined RS232/RS422/RS485 interface. The operating mode (RS232/RS422/RS485) is selected automatically, depending on the electrical connection.

Order data

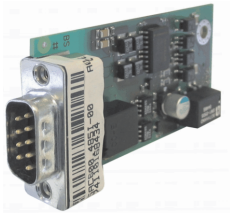
Model number	Description	Image
5AC600.485I-00	**Add-on RS232/422/485 interface** Add-on RS232/422/485 interface for installation in an APC620 and PPC700.	

Table 63: Add-on RS232/422/485 interface 5AC600.485I-00

Pin assignments

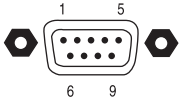
Add-on RS232/422/485			
RS232/RS422 interface electrically isolated RS232 up to 115 kBaud, RS422/485 up to 115.2 kBaud mode			
Pin	**Assignment RS232**	**Pin assignments - RS422**	
1	n.c.	$\overline{\text{TXD}}$	9-pin DSUB plug 
2	RXD	n.c.	
3	TXD	n.c.	
4	n.c.	TXD	
5	GND	GND	
6	n.c.	$\overline{\text{RXD}}$	
7	RTS	n.c.	
8	CTS	n.c.	
9	n.c.	RXD	

Table 64: Pin assignments - RS232/RS422

RS485 interface operation

In RS422 mode, the interface can also be operated as an RS485 interface. This is possible by a TriState switching, which is made using RTS (Request To Send).

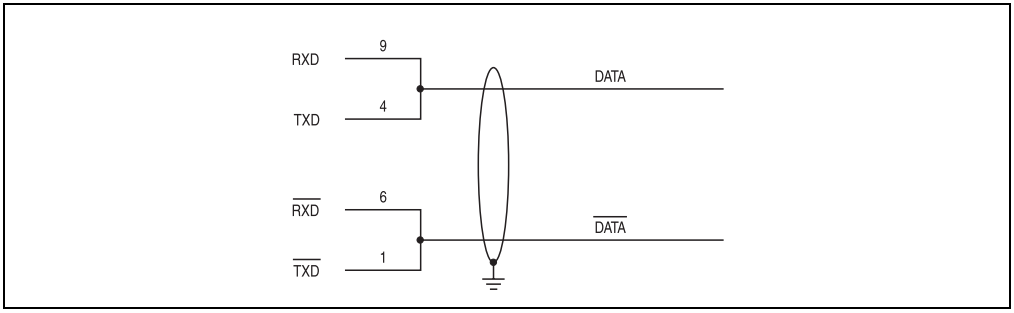


Figure 59: Add-on RS232/422/485 Interface - operated in RS485 mode

Contents of the delivery / mounting material

The screws included in the mounting kit are to be used for installation.

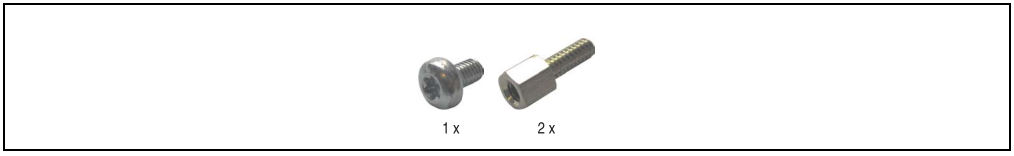


Figure 60: Contents of the delivery / mounting material - 5AC600.485I-00

3.8 Fan kit

Information:

Fans are necessary when using components which must work within certain temperature limits, e.g. hard disks, DVD combos, PCI cards, etc.

3.8.1 Fan kit for 10.4" and 15" with 0 PCI

This fan kit is an optional addition for 10.4" and 15" Panel PC 700 system units with 0 PCI slots.

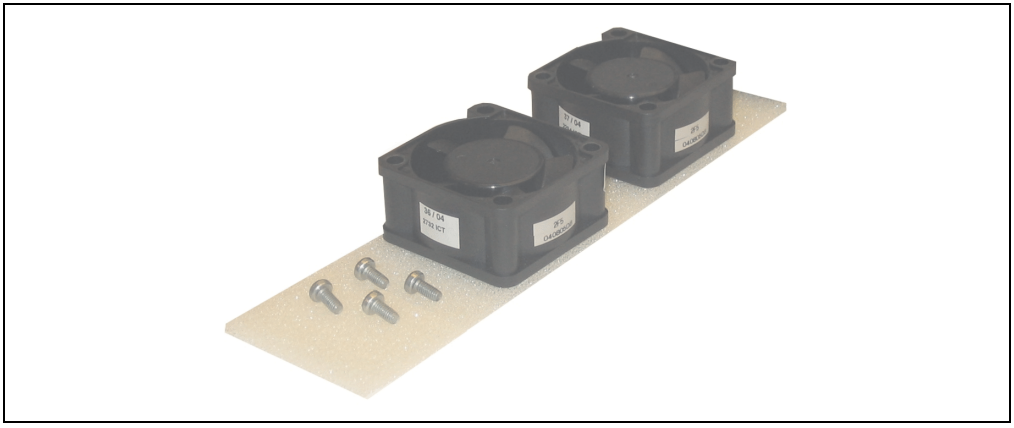


Figure 61: Fan kit 5PC700.FA00-01

Technical data

Features	5PC700.FA00-01
Fan type Width Length Height	Double ball bearings 40 mm 40 mm 20 mm
Revolution speed	5,600 rpm ± 10%
Noise level	24 dB
Lifespan	80,000 hours at 30 °C
Maintenance interval	Depending on the work environment, the dust filter should be checked with appropriate frequency to determine whether the air flow provides sufficient cooling. An exchange or cleaning of the filter kit is appropriate at that time.

Table 65: Technical data - 5PC700.FA00-01

Contents of delivery

- 2 fans with 40 mm diameter
- 1 dust filter
- Installation material - mounting screws

Installation

TBD

3.8.2 Fan kit for 10.4" with 2 PCI

This fan kit is an optional addition for 10.4" Panel PC 700 system units with 2 PCI slots.

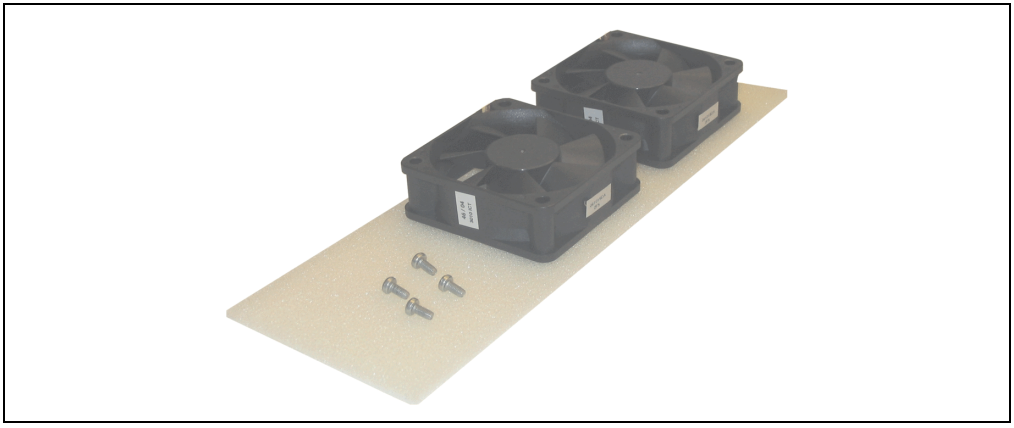


Figure 62: Fan kit 5PC700.FA02-00

Technical data

Features	5PC700.FA02-00
Fan type Width Length Height	Double ball bearings 60 mm 60 mm 10 mm
Revolution speed	3,600 rpm ± 10%
Noise level	30.5 dB
Lifespan	80,000 hours at 30 °C
Maintenance interval	Depending on the work environment, the dust filter should be checked with appropriate frequency to determine whether the air flow provides sufficient cooling. An exchange or cleaning of the filter kit is appropriate at that time.

Table 66: Technical data - 5PC700.FA02-00

Contents of delivery

- 2 fans with 60 mm diameter
- 1 dust filter
- Installation material - mounting screws

Installation

TBD

3.8.3 Fan kit for 15" with 2 PCI

This fan kit is an optional addition for 15" Panel PC 700 system units with 2 PCI slots.

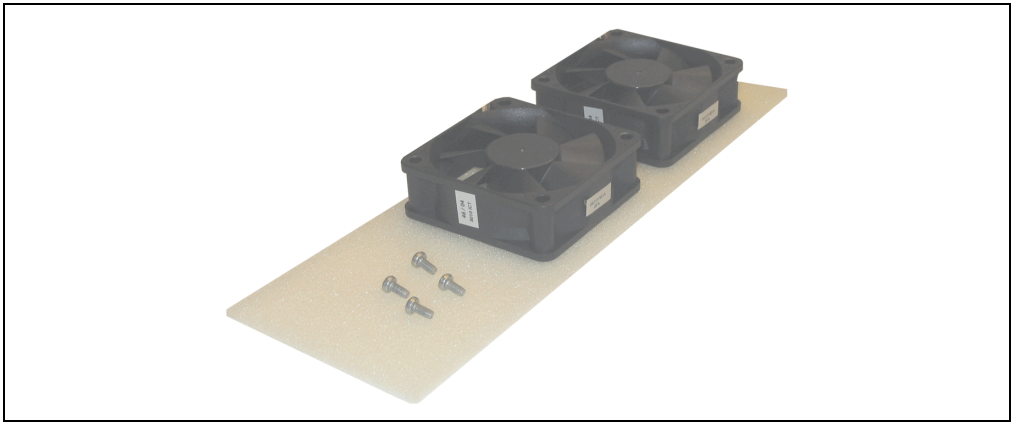


Figure 63: Fan kit 5PC700.FA02-01

Technical data

Features	5PC700.FA02-01
Fan type Width Length Height	Double ball bearings 60 mm 60 mm 20 mm
Revolution speed	3,600 rpm ± 10%
Noise level	30,5 dB
Lifespan	80,000 hours at 30 °C
Maintenance interval	Depending on the work environment, the dust filter should be checked with appropriate frequency to determine whether the air flow provides sufficient cooling. An exchange or cleaning of the filter kit is appropriate at that time.

Table 67: Technical data - 5PC700.FA02-01

Contents of delivery

- 2 fans with 60 mm diameter
- 1 dust filter
- Installation material - mounting screws

Installation

TBD

Chapter 3 • Installation

1. Mounting instructions

Panel PC 700 devices are best mounted in a housing cutout using the clamps found on the housing. The cutout dimensions for the respective Panel PC 700 device can be found in the technical data for the system units (see chapter 2 "Technical data" starting on page 25).

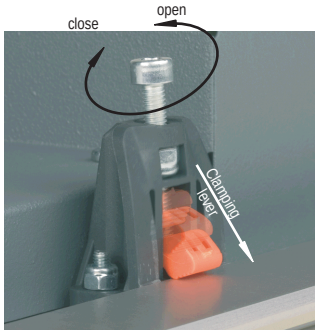
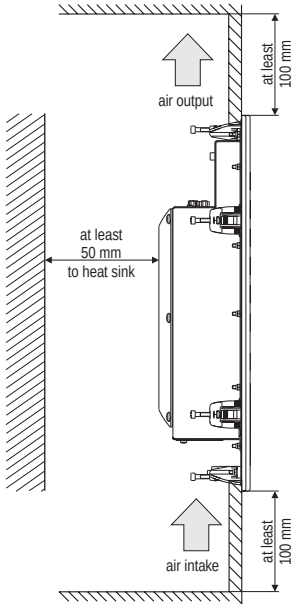


Figure 64: Mounting clamps

The mounting clamps are designed for a max. thickness of 10 mm for the material where the device is being clamped. A hex key (3mm) is needed to tighten and loosen the screws. The maximum torque when tightening the clamp is 0.5 Nm.

In order to guarantee proper air circulation, allow the specified amount of space above, below, to the side and behind the Panel PC. The minimum specified free space can be found in the diagram below.

Side view



Rear View

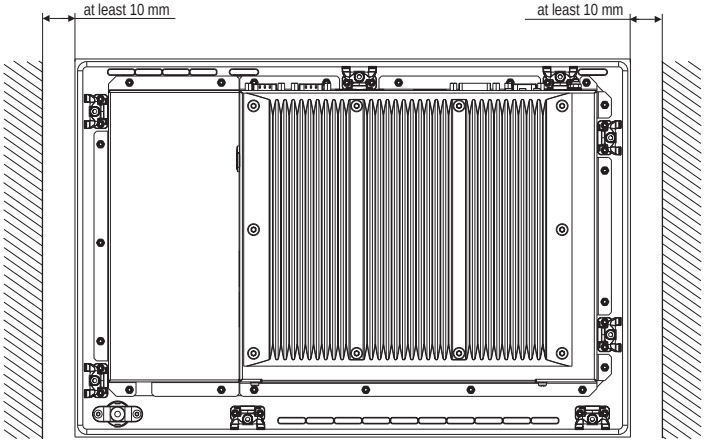


Figure 65: Distance for air circulation

2. Mounting orientation

The following diagram displays the specified mounting orientation for the Panel PC device.

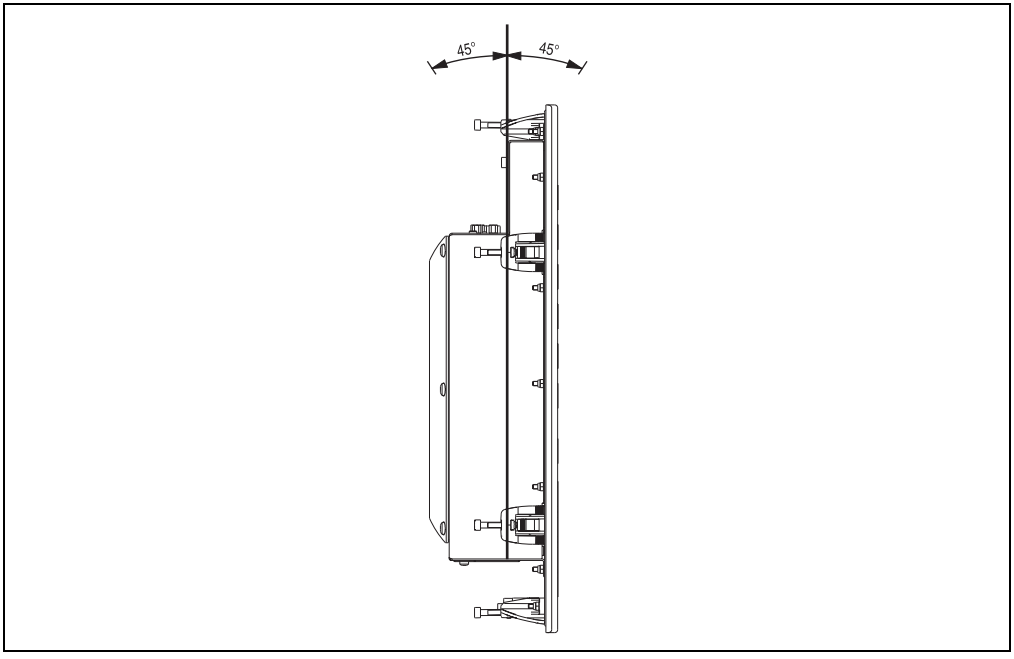


Figure 66: Mounting orientation

Chapter 4 • Software

1. 815E BIOS description

Information:

- **The following diagrams, BIOS menu items, and descriptions refer to BIOS Version R115. Therefore, it is possible that the diagrams and BIOS descriptions might not correspond with the installed BIOS version.**
- **The setup defaults are the settings recommended by B&R. The setup defaults are dependant on the DIP switch configuration on the baseboard (see Section 1.10 "Profile overview" on page 175).**

1.1 General information

BIOS stands for "Basic Input Output System." It is the most basic standardized communication between the user and the system (hardware). The BIOS system used on the Panel PC 700 systems is produced by Phoenix.

The BIOS setup utility lets you modify basic system configuration settings. These settings are stored in CMOS and in EEPROM (as a backup).

The CMOS is buffered by a battery, and remains in the PPC700 even when the power is turned off.

1.2 BIOS setup

BIOS is immediately activated when you switch on the power supply of the Panel PC 700 system. BIOS reads the system configuration information in CMOS RAM, checks the system, and configures it using the Power On Self Test (POST).

When these "preliminary steps" are finished, BIOS searches for an operating system in the data storage devices available (hard drive, floppy drive, etc.). BIOS launches the operating system and hands over control of system operations to it.

To enter BIOS setup, the F2 key must be pressed as soon as the following message appears on the lower margin of the display (during POST):

"Press <F2> to enter SETUP"

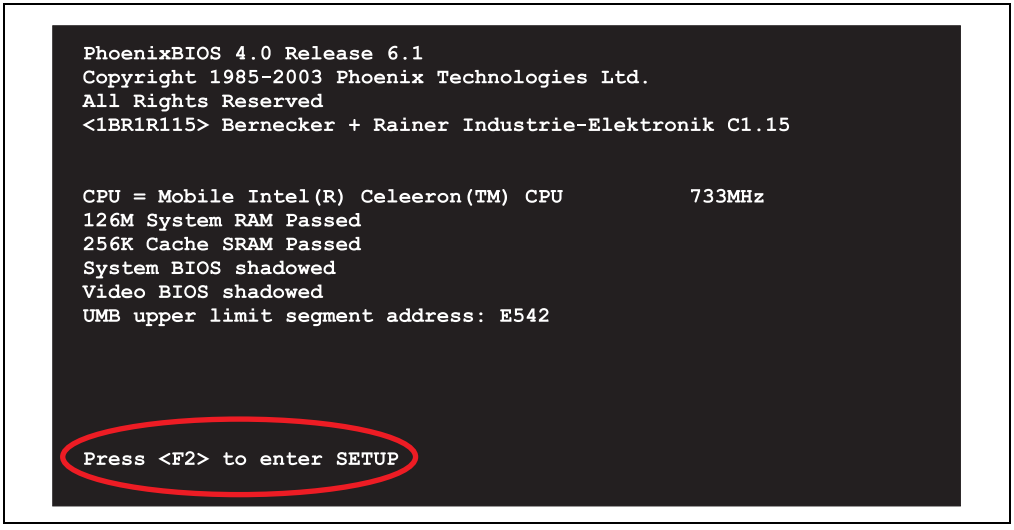


Figure 67: 815E - BIOS diagnostic screen

1.2.1 Summary screen

After the POST, the summary screen displays the most important system characteristics.

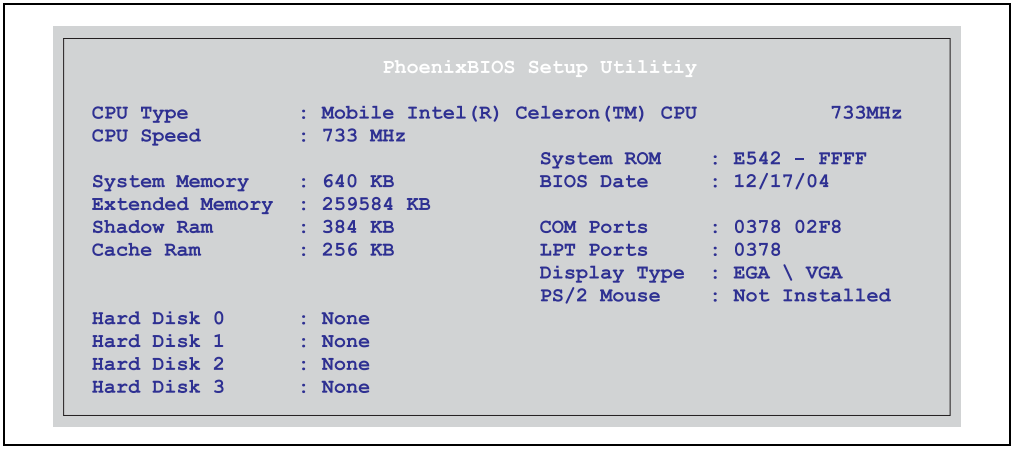


Figure 68: 815E - BIOS summary screen

1.3 BIOS setup keys

The following keys are active during the POST:

Key	Function
F2	Enters the BIOS setup menu.
ESC	Cues the boot menu. Lists all bootable devices that are connected to the system. With cursor ↑ and cursor ↓ and by pressing <ENTER>, select the device from which will be booted.
<Spacebar>	Pressing the spacebar skips the system RAM check.
<Pause>	Pressing the <pause> key stops the POST. Press any other key to resume the POST.

Table 68: Keys relevant to BIOS during POST

The following keys can be used after entering the BIOS setup:

Key	Function
Cursor ↑	Move to previous item.
Cursor ↓	Move to next item.
Cursor ←	Move to the item on the left.
Cursor →	Move to the item on the right.
<ESC>	Exits the submenu.
PgUp↑	Moves the cursor to the top of the current BIOS setup page.
PgDn ↓	Moves the cursor to the bottom of the current BIOS setup page.
<F1> or <Alt+H>	Opens a help window showing the key assignments.
<F5> or <->	Scrolls to the previous option for the selected BIOS setting.
<F6> or <+> or <spacebar>	Scrolls to the next option for the selected BIOS setting.
<F9>	Loads setup defaults for the current BIOS setup screen.
<F10>	Saves settings and closes BIOS setup.
<Enter>	Opens submenu for a BIOS setup menu item, or displays the configurable values of a BIOS setup item.

Table 69: Keys relevant to BIOS

The following sections explain the individual BIOS setup menu items in detail.

BIOS setup menu Item	Function	From page
Main	The basic system configurations (e.g. time, date, hard disk parameters) can be set in this menu.	136
Advanced	Advanced BIOS options such as cache areas, PnP, keyboard repeat rate, as well as settings specific to B&R integrated hardware, can be configured here.	143
Security	For setting up the system's security functions.	166
Power	Setup of various APM (Advanced Power Management) options.	168
Boot	The boot order can be set here.	172
Exit	To end the BIOS setup.	173

Table 70: Overview of BIOS menu items

1.4 Main

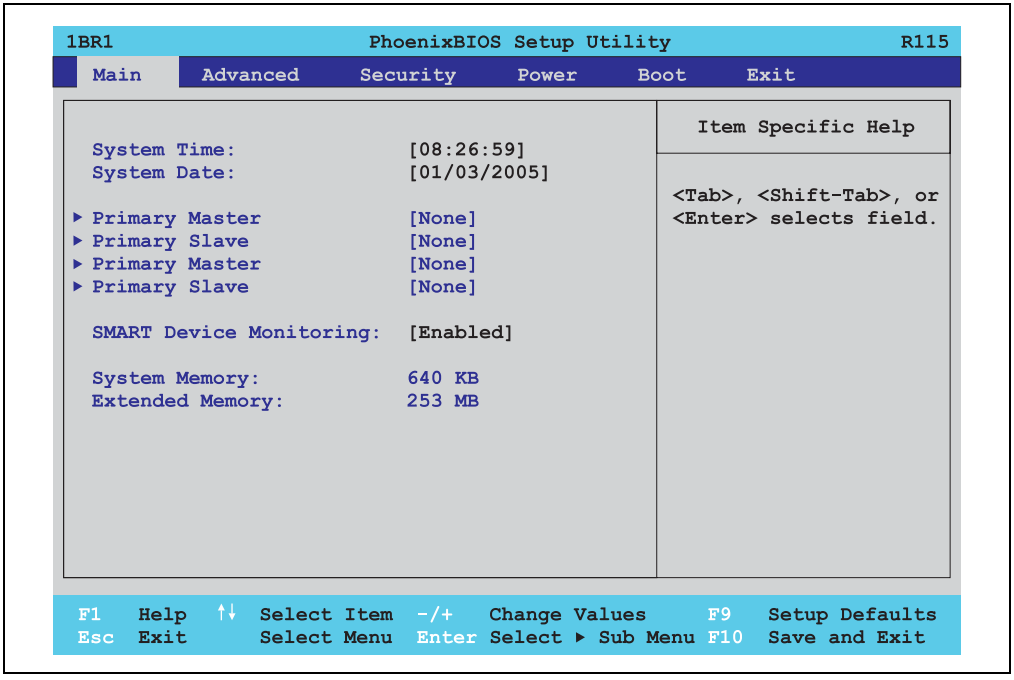


Figure 69: 815E - main menu

BIOS setting	Description	Setting options	Effect
System time	This is the current system time setting. The time is buffered by a battery (CMOS battery) after the system has been switched off.	Adjustment of the system time	Set the system time in the format (hh:mm:ss).
System date	This is the current system date setting. The time is buffered by a battery (CMOS battery) after the system has been switched off.	Changes to the system date	Set the system date in the format (mm:dd:yyyy).
Primary master	The drive in the system that is connected to the IDE primary master port is configured here.	Enter	Opens submenu see "Primary master", on page 137.
Primary slave	The drive in the system that is connected to the IDE primary slave port is configured here.	Enter	Opens submenu see "Primary slave", on page 139.
Secondary master	The drive in the system that is connected to the IDE secondary master port is configured here.	Enter	Opens submenu see "Secondary master", on page 140.
Secondary slave	The drive in the system that is connected to the IDE secondary slave port is configured here.	Enter	Opens submenu see "Secondary slave", on page 142.

Table 71: 815E - main setting options

BIOS setting	Description	Setting options	Effect
Smart device monitoring	S.M.A.R.T. (Self Monitoring Analysis and Reporting Technology) is implemented in the today's hard drives. This technology allows you to detect reading or rotational problems with the hard drive, and much more.	Enabled	Activates this function. In the future, a message regarding impending errors is produced.
		Disabled	Deactivates this function.
System memory	Displays the amount of main memory installed. Between 0 and 640 KB.	None	-
Extended memory	Displays the available main memory from the first MB to the maximum memory capacity.	None	-

Table 71: 815E - main setting options (cont.)

1.4.1 Primary master

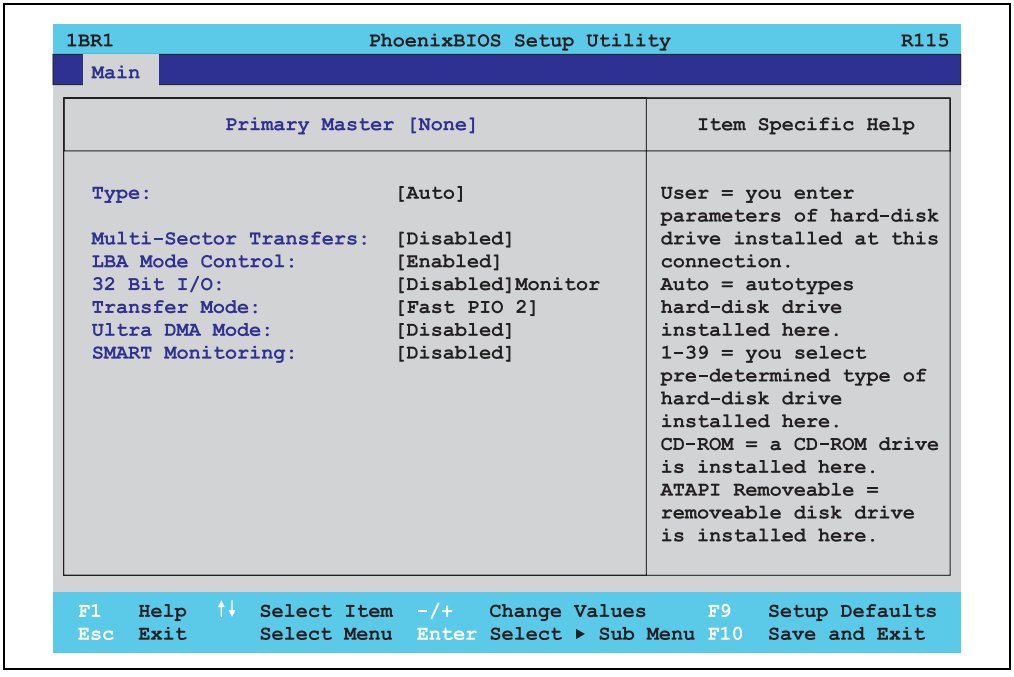


Figure 70: 815E - primary master setup

BIOS setting	Description	Setting options	Effect
Type	The type of drive connected to the primary master is configured here.	Auto	Automatic recognition of the drive and setup of appropriate values.
		User	Manual setup of the drive (number of cylinders, heads, and sectors).
		Other ATAPI	Use this option for IDE disk drives that are not mentioned here.
		CD ROM	CD-ROM = CD-ROM drive
		ATAPI removable	The removable media drive is treated as a hard drive or floppy drive.
		IDE removable	The IDE removable drive is treated as a hard drive.
Multi-sector transfer	This option determines the number of sectors per block. Only possible when manually setting up the drive.	Disabled	Deactivates the function.
		2, 4, 8 or 16 sectors	Number of sectors per block.
LBA mode control	This option activates the logical block addressing for IDE. This function enables support of drives larger than 540 MB. Only possible when manually setting up the drive.	Disabled	Deactivates the function.
		Enabled	Activates the function.
32-bit I/O	This function enables 32-bit data transfer.	Disabled	Deactivates the function.
		Enabled	Activates the function.
Transfer mode	The communication path between the primary master drive and the system memory is defined here. Only possible when manually setting up the drive.	Default	Default setting
		Fast PIO 1 - Fast PIO 4 / DMA2	Manual configuration of PIO mode.
Ultra DMA mode	The data transfer rate to and from the primary master drive is defined here. The DMA mode must be activated in the Windows device manager in order to guarantee maximum performance. Only possible when manually setting up the drive.	Disabled	Deactivates the function. Do not use UDMA mode.
		Mode 0 - Mode 5	Manual setting option for UDMA mode.
SMART monitoring	Indicates whether the primary master drive supports SMART technology.	Disabled	No drive support, and function is deactivated.
		Enabled	Drive support present, and function is activated.

Table 72: 815E - primary master setting options

1.4.2 Primary slave

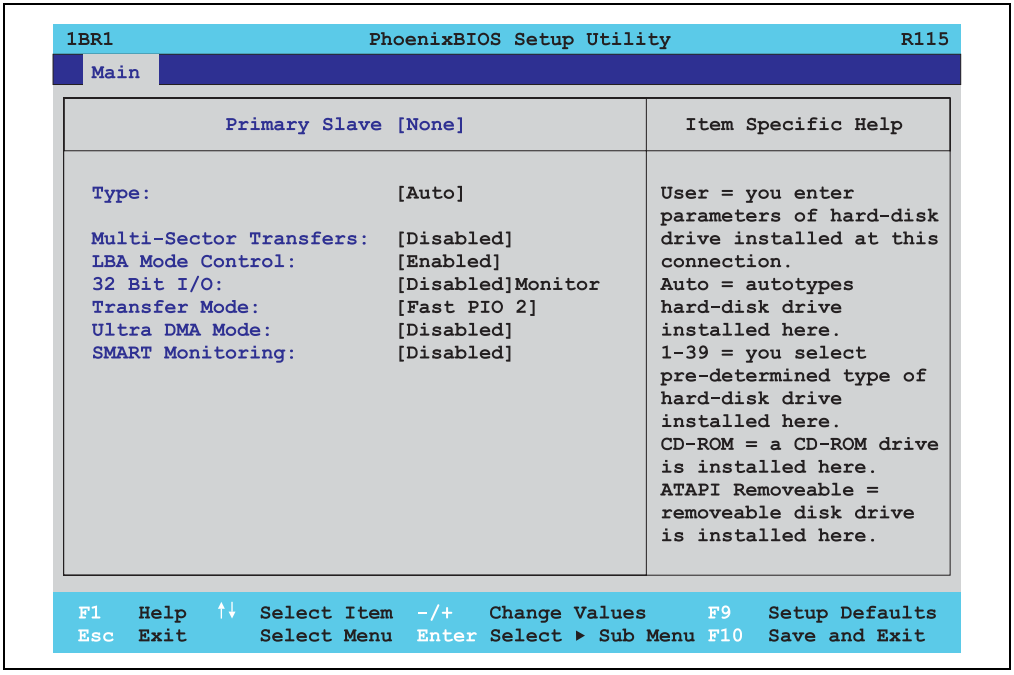


Figure 71: 815E - primary slave setup

BIOS setting	Description	Setting options	Effect
Type	The type of drive connected to the primary slave is configured here.	Auto	Automatic recognition of the drive and setup of appropriate values.
		User	Manual setup of the drive (number of cylinders, heads, and sectors).
		Other ATAPI	Use this option for IDE disk drives that are not mentioned here.
		CD ROM	CD-ROM = CD-ROM drive
		ATAPI removable	The removable media drive is treated as a hard drive or floppy drive.
		IDE removable	The IDE removable drive is treated as a hard drive.
Multi-sector transfer	This option determines the number of sectors per block. Only possible when manually setting up the drive.	Disabled	Deactivates the function.
		2, 4, 8 or 16 sectors	Number of sectors per block.
LBA mode control	This option activates the logical block addressing for IDE. This function enables support of drives larger than 540 MB. Only possible when manually setting up the drive.	Disabled	Deactivates the function.
		Enabled	Activates the function.

Table 73: 815E - primary slave setting options

BIOS setting	Description	Setting options	Effect
32-bit I/O	This function enables 32-bit data transfer.	Disabled	Deactivates the function.
		Enabled	Activates the function.
Transfer mode	The communication path between the primary slave drive and the system memory is defined here. Only possible when manually setting up the drive.	Default	Default setting
		Fast PIO 1 - Fast PIO 4 / DMA2	Manual configuration of PIO mode.
Ultra DMA mode	The data transfer rate to and from the primary slave drive is defined here. The DMA mode must be activated in the Windows device manager in order to guarantee maximum performance. Only possible when manually setting up the drive.	Disabled	Deactivates the function. Do not use UDMA mode.
		Mode 0 - Mode 5	Manual setting option for UDMA mode.
SMART monitoring	Indicates whether the primary slave drive supports SMART technology.	Disabled	No drive support, and function is deactivated.
		Enabled	Drive support present, and function is activated.

Table 73: 815E - primary slave setting options (cont.)

1.4.3 Secondary master

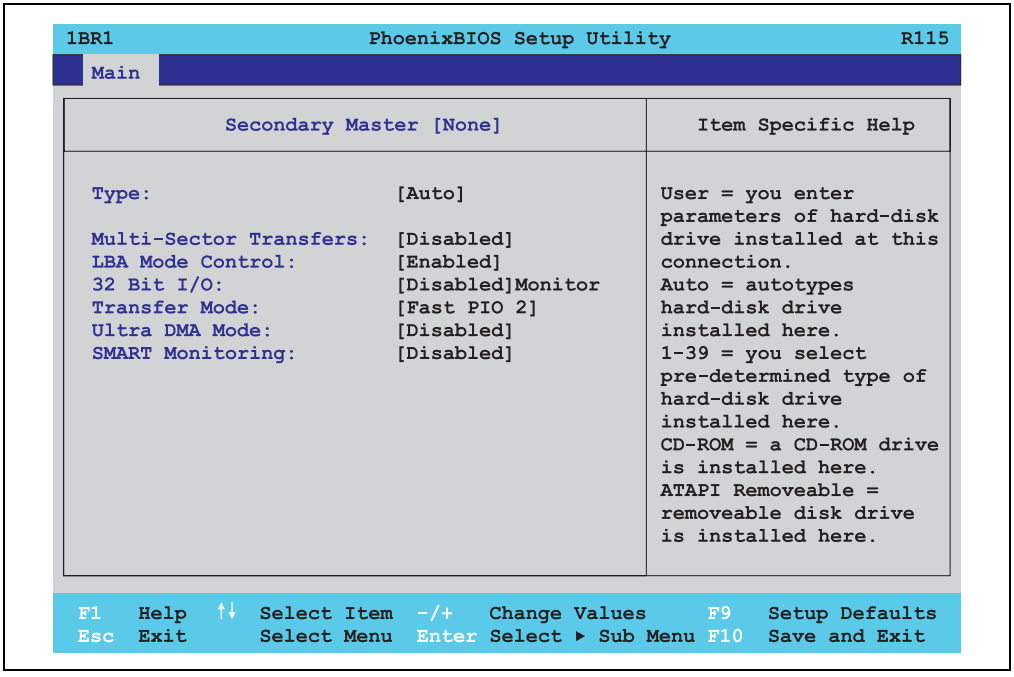


Figure 72: 815E - secondary master setup

BIOS setting	Description	Setting options	Effect
Type	The type of drive connected to the secondary master is configured here.	Auto	Automatic recognition of the drive and setup of appropriate values.
		User	Manual setup of the drive (number of cylinders, heads, and sectors).
		Other ATAPI	Use this option for IDE disk drives that are not mentioned here.
		CD ROM	CD-ROM = CD-ROM drive
		ATAPI removable	The removable media drive is treated as a hard drive or floppy drive.
		IDE removable	The IDE removable drive is treated as a hard drive.
Multi-sector transfer	This option determines the number of sectors per block. Only possible when manually setting up the drive.	Disabled	Deactivates the function.
		2, 4, 8 or 16 sectors	Number of sectors per block.
LBA mode control	This option activates the logical block addressing for IDE. This function enables support of drives larger than 540 MB. Only possible when manually setting up the drive.	Disabled	Deactivates the function.
		Enabled	Activates the function.
32-bit I/O	This function enables 32-bit data transfer.	Disabled	Deactivates the function.
		Enabled	Activates the function.
Transfer mode	The communication path between the secondary master drive and the system memory is defined here. Only possible when manually setting up the drive.	Default	Default setting
		Fast PIO 1 - Fast PIO 4 / DMA2	Manual configuration of PIO mode.
Ultra DMA mode	The data transfer rate to and from the secondary master drive is defined here. The DMA mode must be activated in the Windows device manager in order to guarantee maximum performance. Only possible when manually setting up the drive.	Disabled	Deactivates the function. Do not use UDMA mode.
		Mode 0 - Mode 5	Manual setting option for UDMA mode.
SMART monitoring	Indicates whether the secondary master drive supports SMART technology.	Disabled	No drive support, and function is deactivated.
		Enabled	Drive support present, and function is activated.

Table 74: 815E - secondary master setting options

1.4.4 Secondary slave

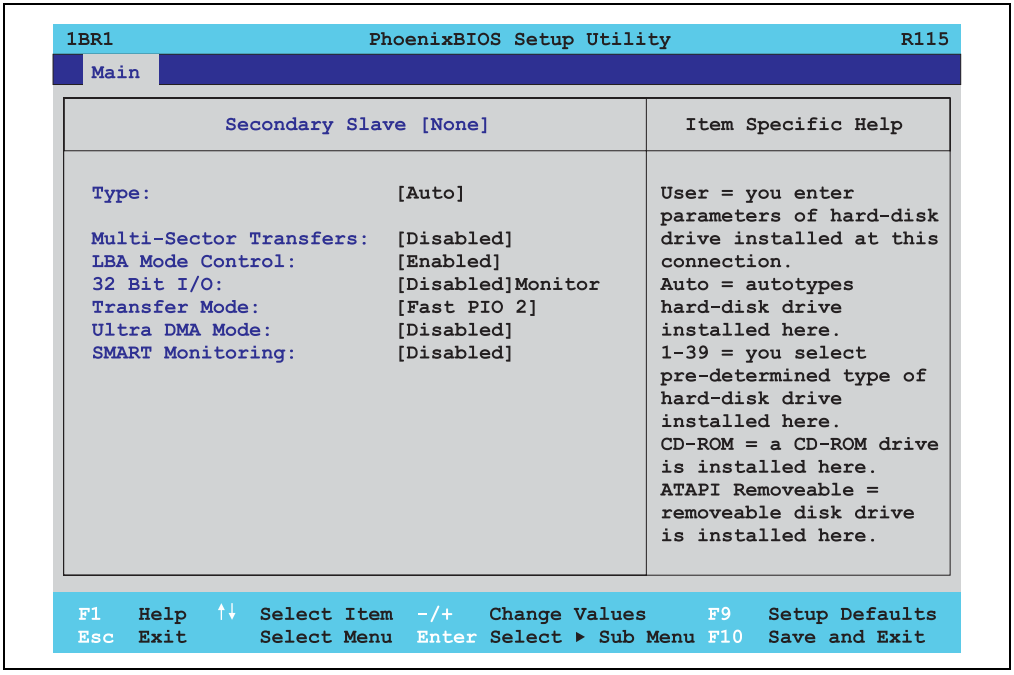


Figure 73: 815E - secondary slave setup

BIOS setting	Description	Setting options	Effect
Type	The type of drive connected to the secondary slave is configured here.	Auto	Automatic recognition of the drive and setup of appropriate values.
		User	Manual setup of the drive (number of cylinders, heads, and sectors).
		Other ATAPI	Use this option for IDE disk drives that are not mentioned here.
		CD ROM	CD-ROM = CD-ROM drive
		ATAPI removable	The removable media drive is treated as a hard drive or floppy drive.
		IDE removable	The IDE removable drive is treated as a hard drive.
Multi-sector transfer	This option determines the number of sectors per block. Only possible when manually setting up the drive.	Disabled	Deactivates the function.
		2, 4, 8 or 16 sectors	Number of sectors per block.
LBA mode control	This option activates the logical block addressing for IDE. This function enables support of drives larger than 540 MB. Only possible when manually setting up the drive.	Disabled	Deactivates the function.
		Enabled	Activates the function.

Table 75: 815E - secondary slave setting options

BIOS setting	Description	Setting options	Effect
32-bit I/O	This function enables 32-bit data transfer.	Disabled	Deactivates the function.
		Enabled	Activates the function.
Transfer mode	The communication path between the secondary slave drive and the system memory is defined here. Only possible when manually setting up the drive.	Default	Default setting
		Fast PIO 1 - Fast PIO 4 / DMA2	Manual configuration of PIO mode.
Ultra DMA mode	The data transfer rate to and from the secondary slave is defined here. The DMA mode must be activated in the Windows device manager in order to guarantee maximum performance. Only possible when manually setting up the drive.	Disabled	Deactivates the function. Do not use UDMA mode.
		Mode 0 - Mode 5	Manual setting option for UDMA mode.
SMART monitoring	Indicates whether the secondary slave drive supports SMART technology.	Disabled	No drive support, and function is deactivated.
		Enabled	Drive support present, and function is activated.

Table 75: 815E - secondary slave setting options (cont.)

1.5 Advanced

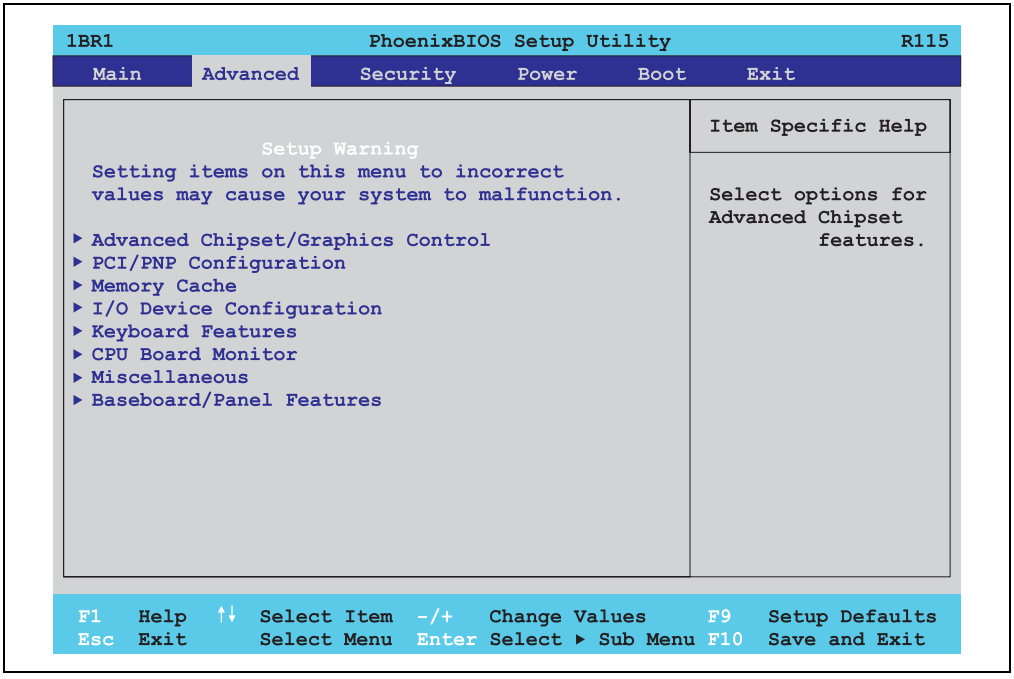


Figure 74: 815E - advanced menu

BIOS setup menu	Description	Setting options	Effect
Advanced chipset/graphics control	Setup of advanced chipset and graphics functions.	Enter	Opens submenu see "Advanced chipset/graphics control", on page 144.
PCI/PNP configuration	Configures PCI devices.	Enter	Opens submenu see "PCI/PNP configuration", on page 146.
Memory cache	Configuration of the memory cache resources.	Enter	Opens submenu see "Memory cache", on page 153.
I/O device configuration	Configuration of the I/O devices.	Enter	Opens submenu see "I/O device configuration", on page 155.
Keyboard features	Configuration of the keyboard options.	Enter	Opens submenu see "Keyboard features", on page 157.
CPU board monitor	Displays the current voltages and temperature of the processor in use.	Enter	Opens submenu see "CPU board monitor", on page 158.
Miscellaneous	Configuration of various BIOS settings (summary screen, halt on errors, etc.).	Enter	Opens submenu see "Miscellaneous", on page 159.
Baseboard/panel features	Display of device specific information and setup of device specific values.	Enter	Opens submenu see "Baseboard/panel features", on page 160.

Table 76: 815E - advanced menu setting options

1.5.1 Advanced chipset/graphics control

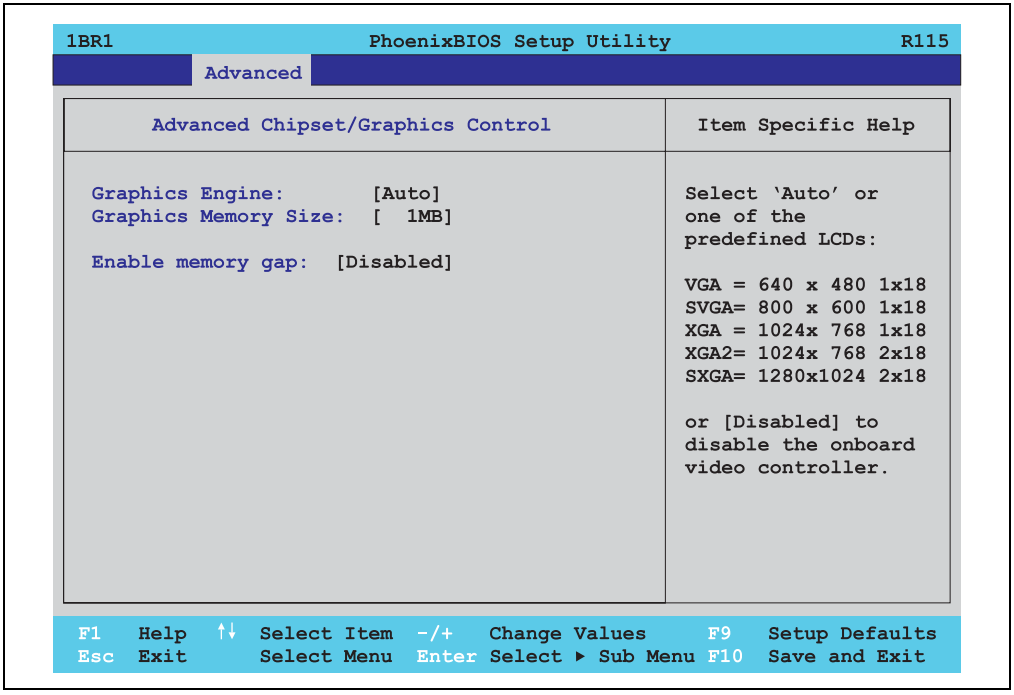


Figure 75: 815E - advanced chipset/graphics control

BIOS setting	Description	Setting options	Effect
Graphics engine	Settings can be made for the onboard video controller.	Auto	Automatic setting of the resolution (using a read-out of the connected panel's EDID data).
		VGA, SVGA, XGA, XGA2, SXGA	VGA = 640 x 480 resolution SVGA = 800 x 600 resolution XGA = 1024 x 768 resolution XGA2 = 1024 x 768 resolution SXGA = 1280 x 1024 resolution
		Disabled	**Important!** **The onboard video must be activated to make video output possible. Deactivate only for use of an external PCI graphics card.**
Graphics memory size	Reserves a memory location in the RAM for the onboard graphics controller, into which the memory access will be directed.	1 MB	1 MB main memory is reserved for the onboard video controller.
		512kB	512 k main memory is reserved for the onboard video controller.
Enable memory gap	Specific settings for an inserted PCI graphics card can be activated here.	Disabled	Deactivates the function.
		Extended	A memory location is reserved in the main memory: 128 kB (for cards with 512 kB or more) or 1 MB (for cards with 15 MB or more) .

Table 77: 815E - advanced chipset/graphics control setting options

1.5.2 PCI/PNP configuration

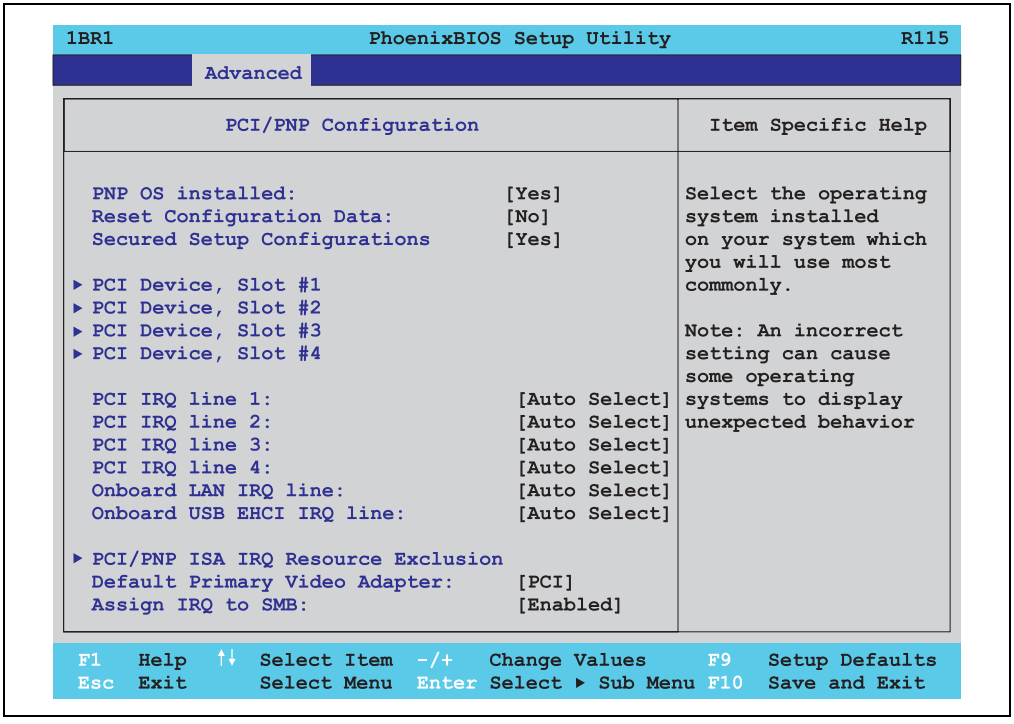


Figure 76: 815E - PCI/PNP configuration

BIOS setting	Description	Setting options	Effect
PNP OS installed	If the operating system is plug & play capable, then this option informs BIOS that the operating system will handle the distribution of resources in the future.	Yes	The ISA PnP resources are not assigned. The resource assignment sequence is as follows: 1. Motherboard devices 2. PCI devices
		No	The resource assignment sequence is as follows: 1. Motherboard devices 2. ISA PnP devices 3. PCI devices
Reset configuration data	During booting, the assigned resources are stored in Flash (ESCD).	Yes	When the system is reset after leaving the BIOS setup, all ECSD entries (extended system configuration data) are deleted.
		No	Deactivates the function. Resources are not reset.
Secured setup configuration	This option protects the setup configuration from interference from a PnP operating system.	Yes	Prevents a PnP operating system from changing system settings.
		No	Deactivates the function. Changes are allowed.

Table 78: 815E - PCI/PNP configuration options

BIOS setting	Description	Setting options	Effect
PCI device, slot #1	Advanced configuration of the PCI slot number 1.	Enter	Opens submenu See "PCI device, slot #1", on page 148
PCI device, slot #2	Advanced configuration of the PCI slot number 2.	Enter	Opens submenu See "PCI device, slot #2", on page 149
PCI device, slot #3	Advanced configuration of the PCI slot number 3.	Enter	Opens submenu See "PCI device, slot #3", on page 150
PCI device, slot #4	Advanced configuration of the PCI slot number 4.	Enter	Opens submenu See "PCI device, slot #4", on page 151
PCI IRQ line 1	Under this option, the external PCI interrupt 1 is assigned to an ISA interrupt.	Auto-select	The interrupt is automatically assigned according to the Plug & Play guidelines.
		Disabled	Deactivates the function. No assignment.
		3, 4, 5, 7, 8, 9, 10, 11, 12, 14, 15	Manual configuration of the IRQ.
PCI IRQ line 2	Under this option, the external PCI interrupt 2 is assigned to an ISA interrupt.	Auto-select	The interrupt is automatically assigned according to the Plug & Play guidelines.
		Disabled	Deactivates the function. No assignment.
		3, 4, 5, 7, 8, 9, 10, 11, 12, 14, 15	Manual configuration of the IRQ.
PCI IRQ line 3	Under this option, the external PCI interrupt 3 is assigned to an ISA interrupt.	Auto-select	The interrupt is automatically assigned according to the Plug & Play guidelines.
		Disabled	Deactivates the function. No assignment.
		3, 4, 5, 7, 8, 9, 10, 11, 12, 14, 15	Manual configuration of the IRQ.
PCI IRQ line 4	Under this option, the external PCI interrupt 4 is assigned to an ISA interrupt.	Auto-select	The interrupt is automatically assigned according to the Plug & Play guidelines.
		Disabled	Deactivates the function. No assignment.
		3, 4, 5, 7, 8, 9, 10, 11, 12, 14, 15	Manual configuration of the IRQ.
Onboard LAN IRQ line	Under this option, the onboard LAN interrupt is assigned to an ISA interrupt.	Auto-select	The interrupt is automatically assigned according to the Plug & Play guidelines.
		Disabled	Deactivates the function. No assignment.
		3, 4, 5, 7, 8, 9, 10, 11, 12, 14, 15	Manual configuration of the IRQ.
Onboard USB EHCI IRQ line	Under this option, the USB EHCI interrupt is assigned to an ISA interrupt.	Auto-select	The interrupt is automatically assigned according to the Plug & Play guidelines.
		Disabled	Deactivates the function. No assignment.
		3, 4, 5, 7, 8, 9, 10, 11, 12, 14, 15	Manual configuration of the IRQ.
PCI/PNP ISA IRQ resource exclusion	This option reserves IRQs that are not being used by plug & play capable ISA devices.	Enter	Opens submenu See "PCI/PNP ISA IRQ resource exclusion", on page 152
Default primary video adapter	This option sets the default graphics card (either an existing AGP or the PCI graphic card).	PCI	A PCI graphics card is set as the default display device.
		AGP	An AGP graphics card is set as the default display device.

Table 78: 815E - PCI/PNP configuration options (cont.)

BIOS setting	Description	Setting options	Effect
Assign IRQ to SMB	Use this function to set whether or not the SM (System Management) bus controller is assigned a PCI interrupt.	Enabled	Automatic assignment of a PCI interrupt.
		Disabled	No assignment of an interrupt.

Table 78: 815E - PCI/PNP configuration options (cont.)

PCI device, slot #1

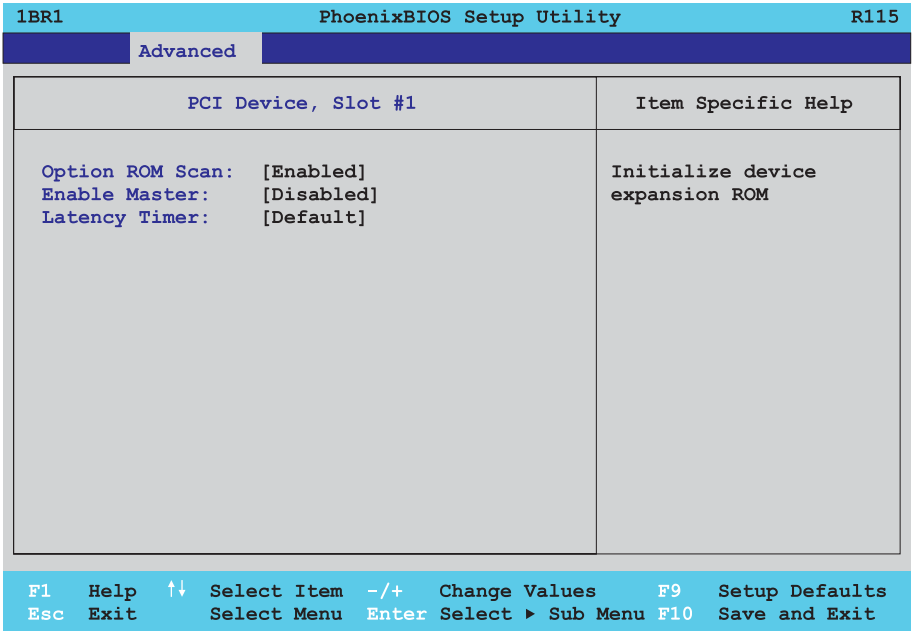


Figure 77: 815E - PCI device, slot #1

BIOS setting	Description	Setting options	Effect
ROM scan option	Setting for the initialization of a device's ROM.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Enable master	Sets the PCI device to be treated as the PCI bus master. Not all PCI devices can function as PCI bus master! Check device description.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Latency timer	This option controls how long one card can continue to use the PCI bus master after another PCI card has requested access.	Default	Default setting. Standard.
		0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, 00E0h	Manual configuration of the setting.

Table 79: 815E - PCI device, slot #1 - setting options

PCI device, slot #2

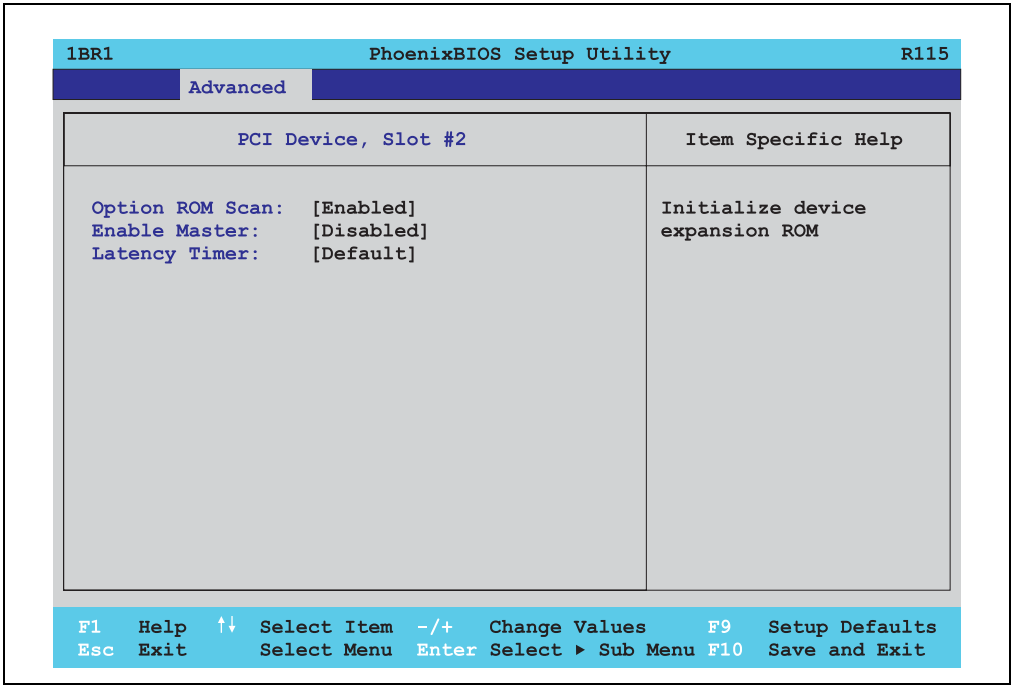


Figure 78: 815E - PCI device, slot #2

BIOS setting	Description	Setting options	Effect
ROM scan option	Setting for the initialization of a device's ROM.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Enable master	Sets the PCI device to be treated as the PCI bus master. Not all PCI devices can function as PCI bus master! Check device description.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Latency timer	This option controls how long one card can continue to use the PCI bus master after another PCI card has requested access.	Default	Default setting. Standard.
		0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, 00E0h	Manual configuration of the setting.

Table 80: 815E - PCI device, slot #2 - setting options

PCI device, slot #3

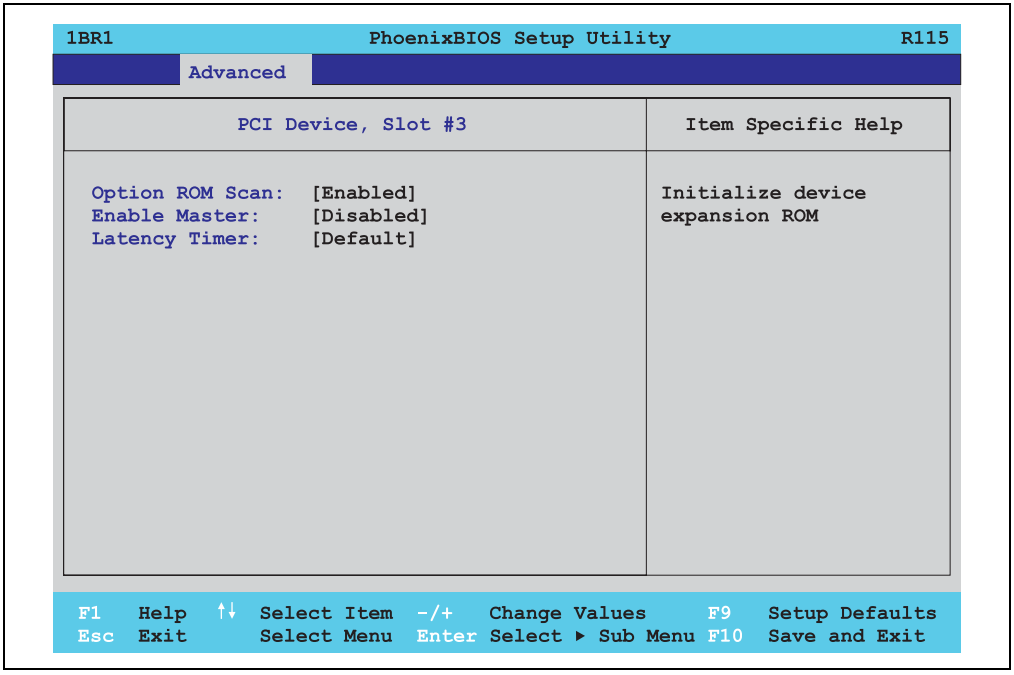


Figure 79: 815E - PCI device, slot #3

BIOS setting	Description	Setting options	Effect
ROM scan option	Setting for the initialization of a device's ROM.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Enable master	Sets the PCI device to be treated as the PCI bus master. Not all PCI devices can function as PCI bus master! Check device description.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Latency timer	This option controls how long one card can continue to use the PCI bus master after another PCI card has requested access.	Default	Default setting. Standard.
		0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, 00E0h	Manual configuration of the setting.

Table 81: 815E - PCI device, slot #3 - setting options

PCI device, slot #4

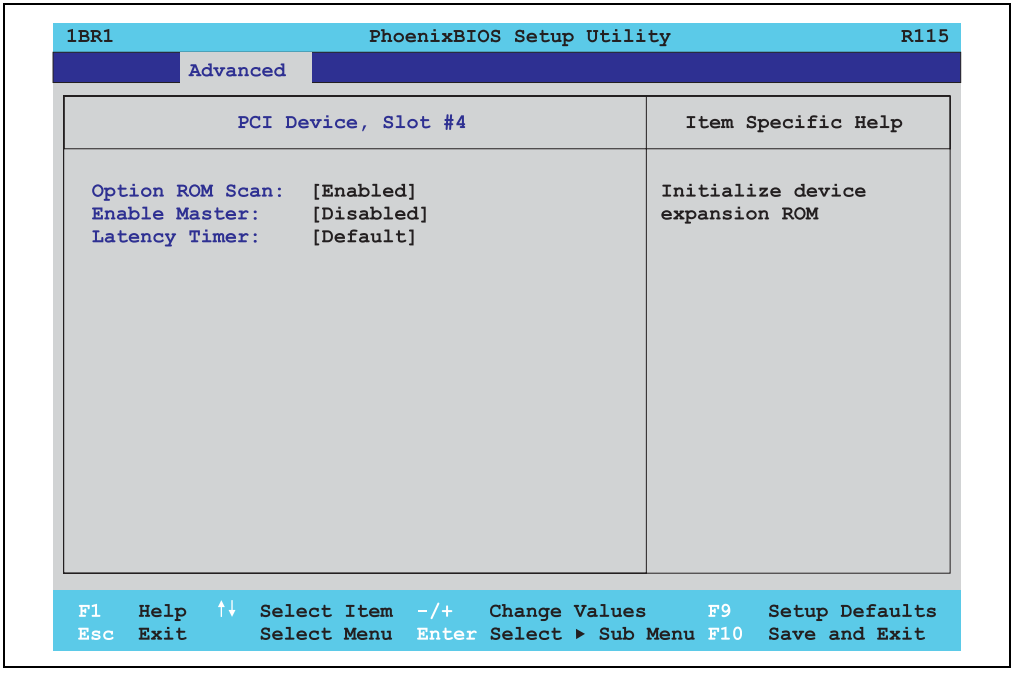


Figure 80: 815E - PCI device, slot #4

BIOS setting	Description	Setting options	Effect
ROM scan option	Setting for the initialization of a device's ROM.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Enable master	Sets the PCI device to be treated as the PCI bus master. Not all PCI devices can function as PCI bus master! Check device description.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Latency timer	This option controls how long one card can continue to use the PCI bus master after another PCI card has requested access.	Default	Default setting. Standard.
		0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, 00E0h	Manual configuration of the setting.

Table 82: 815E - PCI device, slot #4 - setting options

PCI/PNP ISA IRQ resource exclusion

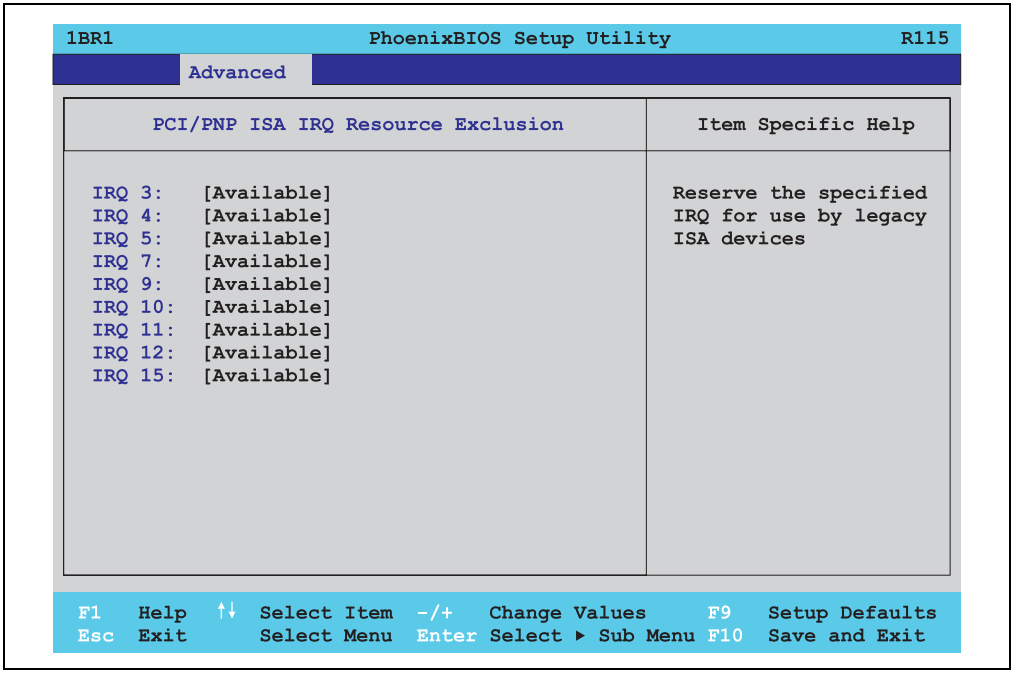


Figure 81: 815E - PCI/PNP ISA IRQ resource exclusion

BIOS setting	Description	Setting options	Effect
IRQ 3	This setting determines whether the IRQ 3 is reserved for legacy ISA devices.	Available	It is available for PCI devices.
		Reserved	It is reserved for ISA devices.
IRQ 4	This setting determines whether the IRQ 4 is reserved for legacy ISA devices.	Available	It is available for PCI devices.
		Reserved	It is reserved for ISA devices.
IRQ 5	This setting determines whether the IRQ 5 is reserved for legacy ISA devices.	Available	It is available for PCI devices.
		Reserved	It is reserved for ISA devices.
IRQ 7	This setting determines whether the IRQ 7 is reserved for legacy ISA devices.	Available	It is available for PCI devices.
		Reserved	It is reserved for ISA devices.
IRQ 9	This setting determines whether the IRQ 9 is reserved for legacy ISA devices.	Available	It is available for PCI devices.
		Reserved	It is reserved for ISA devices.
IRQ 10	This setting determines whether the IRQ 10 is reserved for legacy ISA devices.	Available	It is available for PCI devices.
		Reserved	It is reserved for ISA devices.
IRQ 11	This setting determines whether the IRQ 11 is reserved for legacy ISA devices.	Available	It is available for PCI devices.
		Reserved	It is reserved for ISA devices.

Table 83: 815E - PCI/PNP ISA IRQ resource exclusion - setting options

BIOS setting	Description	Setting options	Effect
IRQ 12	This setting determines whether the IRQ 12 is reserved for legacy ISA devices.	Available	It is available for PCI devices.
		Reserved	It is reserved for ISA devices.
IRQ 15	This setting determines whether the IRQ 15 is reserved for legacy ISA devices.	Available	It is available for PCI devices.
		Reserved	It is reserved for ISA devices.

Table 83: 815E - PCI/PNP ISA IRQ resource exclusion - setting options (cont.)

1.5.3 Memory cache

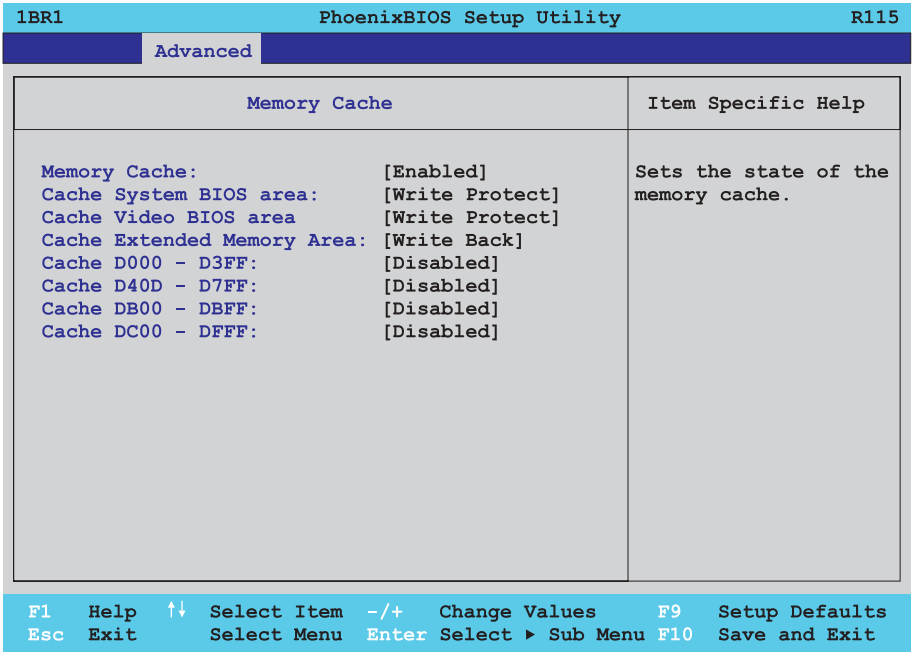


Figure 82: 815E - memory cache

BIOS setting	Description	Setting options	Effect
Memory cache	Enable/ disable utilization of the L2 cache.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Cache system BIOS area	Set whether or not the system BIOS should be buffered.	Write protect	System BIOS is mapped in the cache.
		Uncached	System BIOS is not mapped in the cache.
Cache video BIOS area	Set whether or not the video BIOS should be buffered.	Write protect	Video BIOS is mapped in the cache.
		Uncached	Video BIOS is not mapped in the cache.

Table 84: 815E - memory cache - setting options

BIOS setting	Description	Setting options	Effect
Cache extended memory area	Configure how the memory content of the system memory above 1MB should be mapped.	Uncached	No mapping.
		Write through	Memory content is simultaneously mapped in the cache and written to the main memory.
		Write protect	Memory content is mapped in the cache.
		Write back	Memory content is mapped only when necessary.
Cache D000 - D3FF	Configure how the memory content of D000-D3FF should be mapped.	Uncached	No mapping.
		Write through	Memory content is simultaneously mapped in the cache and written to the main memory.
		Write protect	Memory content is mapped in the cache.
		Write back	Memory content is mapped only when necessary.
Cache D400 - D7FF	Configure how the memory content of D400-D7FF should be mapped.	Uncached	No mapping.
		Write through	Memory content is simultaneously mapped in the cache and written to the main memory.
		Write protect	Memory content is mapped in the cache.
		Write back	Memory content is mapped only when necessary.
Cache D800 - DBFF	Configure how the memory content of D800-DBFF should be mapped.	Uncached	No mapping.
		Write through	Memory content is simultaneously mapped in the cache and written to the main memory.
		Write protect	Memory content is mapped in the cache.
		Write back	Memory content is mapped only when necessary.
Cache DC00 - DFFF	Configure how the memory content of DC00-DFFF should be mapped.	Uncached	No mapping.
		Write through	Memory content is simultaneously mapped in the cache and written to the main memory.
		Write protect	Memory content is mapped in the cache.
		Write back	Memory content is mapped only when necessary.

Table 84: 815E - memory cache - setting options (cont.)

1.5.4 I/O device configuration

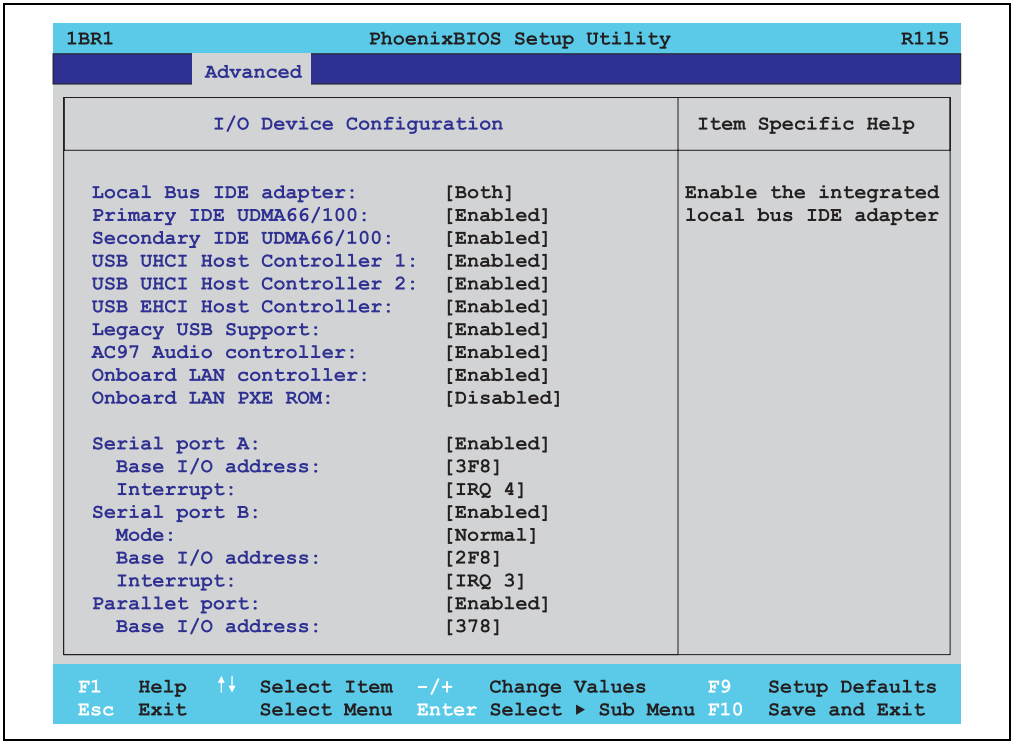


Figure 83: 815E - I/O device configuration

BIOS setting	Description	Setting options	Effect
Local bus IDE adapter	Enable or disable one or both of the PCI IDE controllers (primary and secondary).	Disabled	Deactivates both PCI IDE controllers (primary and secondary).
		Primary	Activates the primary IDE controller only.
		Secondary	Activates the secondary IDE controller only.
		Both	Activates both PCI IDE controllers (primary and secondary).
Primary IDE UDMA66/100	Setup the data transfer rate for a device connected to the primary IDE channel. This option is only available when a primary IDE drive is connected.	Disabled	The maximum data transfer rate is UDMA33.
		Enabled	The maximum data transfer rate is UDMA66 or higher.
Secondary IDE UDMA66/100	Setup the data transfer rate for a device connected to the secondary IDE channel. This option is only available when a secondary IDE drive is connected.	Disabled	The maximum data transfer rate is UDMA33.
		Enabled	The maximum data transfer rate is UDMA66.
USB UHCI host controller 1	Configuration of the USB UHCI controller 1 for USB port 0 und 1.	Disabled	Deactivates the USB support.
		Enabled	Activates the USB support.

Table 85: 815E - I/O device configuration - setting options

BIOS setting	Description	Setting options	Effect
USB UHCI host controller 2	Configuration of the USB UHCI controller 1 for USB port 2 and 3. Can only be configured if the USB UHCI controller 1 is activated.	Disabled	Deactivates the USB support.
		Enabled	Activates the USB support.
USB UHCI host controller	Configuration of the USB EHCI controller. Can only be configured if the USB UHCI controller 1 is activated.	Disabled	Deactivates the USB support.
		Enabled	When enabled, the USB 2.0 support is activated as soon as a USB 2.0 device is connected to the interface.
Legacy USB support	Here IRQs are assigned to the USB connections.	Disabled	No IRQ assigned.
		Enabled	IRQ assigned.
AC97 audio controller	For turning the AC97 audio controller on and off.	Disabled	AC97 sound is deactivated.
		Enabled	AC97 sound is activated.
Onboard LAN controller	For turning the ICH4 on-board LAN controller (for ETH1) on and off.	Disabled	Deactivates the LAN controller or the ETH1 interface.
		Enabled	Activates the LAN controller or the ETH1 interface.
Onboard LAN PXE ROM	For turning the remote boot BIOS extension for the on-board LAN controller (ETH1) on and off.	Disabled	Deactivates the function.
		Enabled	Activates the function.
Serial port A	For the configuration of serial port A (COM1).	Disabled	Port A deactivated.
		Enabled	Port A activated. The base I/O addresses and the interrupt must then be configured manually.
		Auto	Either BIOS or the operating system configures the port automatically.
Base I/O address	Selection of the base I/O address for port A. A yellow star indicates a conflict with another device.	3F8, 2F8, 3E8, 2E8	Base I/O address is manually assigned.
Interrupt	Selection of the interrupt for port A. A yellow star indicates a conflict with another device.	IRQ 3, IRQ 4	Manual assignment of the interrupt.
Serial port B	For the configuration of serial port B (COM2).	Disabled	Port B deactivated.
		Enabled	Port A activated. The base I/O addresses and the interrupt must then be configured manually.
		Auto	Either BIOS or the operating system configures the port automatically.
Mode	This option is for setting the serial port B as either a standard interface or as an infrared interface.	Normal	Serial port B is used as a standard interface.
		IR	The serial interface is used as an infrared interface, and allows data transfers up to 115 kBit/s.
Base I/O address	Selection of the base I/O address for port B. A yellow star indicates a conflict with another device.	3F8, 2F8, 3E8, 2E8	Selected base I/O address is manually assigned.

Table 85: 815E - I/O device configuration - setting options (cont.)

BIOS setting	Description	Setting options	Effect
Interrupt	Selection of the interrupt for port B. A yellow star indicates a conflict with another device.	IRQ 3, IRQ 4	Selected interrupt is manually assigned.
Parallel port	For configuring the hardware security key (dongle), which accessed internally through the parallel interface.	Disabled	Deactivates the port.
		Enabled	Activates the port. The base I/O address must then be set.
		Auto	First BIOS and then the operating system configure the port automatically.
Base I/O address	Selection of the base I/O address for the parallel port.	378, 278, 3BC	Base I/O address is manually assigned.

Table 85: 815E - I/O device configuration - setting options (cont.)

1.5.5 Keyboard features

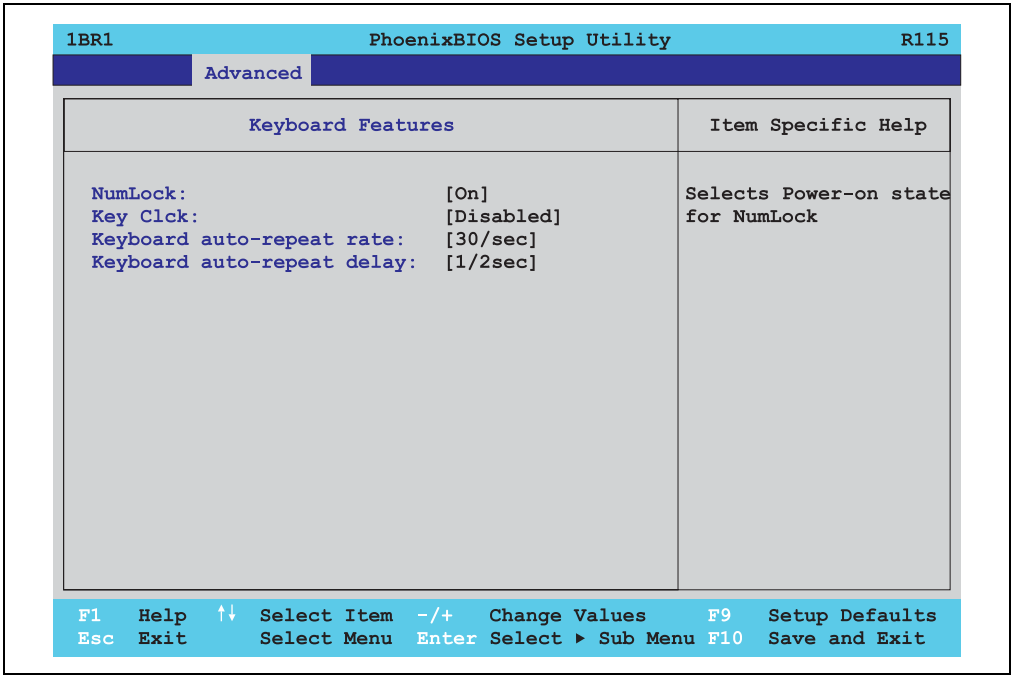


Figure 84: 815E - keyboard features

BIOS setting	Description	Setting options	Effect
NumLock	This option sets the status of the numeric keypad when the the system is booted.	On	Numeric keypad is activated.
		Off	Only the cursor functions of the numerical keypad are activated.
		Auto	Numeric keypad is activated, if present.

Table 86: 815E - keyboard features - setting options

BIOS setting	Description	Setting options	Effect
Key click	Using this option, the clicking of the keys can be turned on or off.	Disabled	Deactivates the function.
		Enabled	Activates the function.
Keyboard auto-repeat rate	For setting the speed of repetition when a key is held down.	30/sec, 26.7/sec, 21.8/sec, 18.5/sec, 13.3/sec, 10/sec, 6/sec, 2/sec	Settings from 2 to 30 characters per second.
Keyboard auto-repeat delay	For setting the amount of delay after the key is pressed before the auto-repeat begins.	1/4 sec, 1/2 sec, 3/4 sec, 1 sec	Setting of the desired delay.

Table 86: 815E - keyboard features - setting options

1.5.6 CPU board monitor

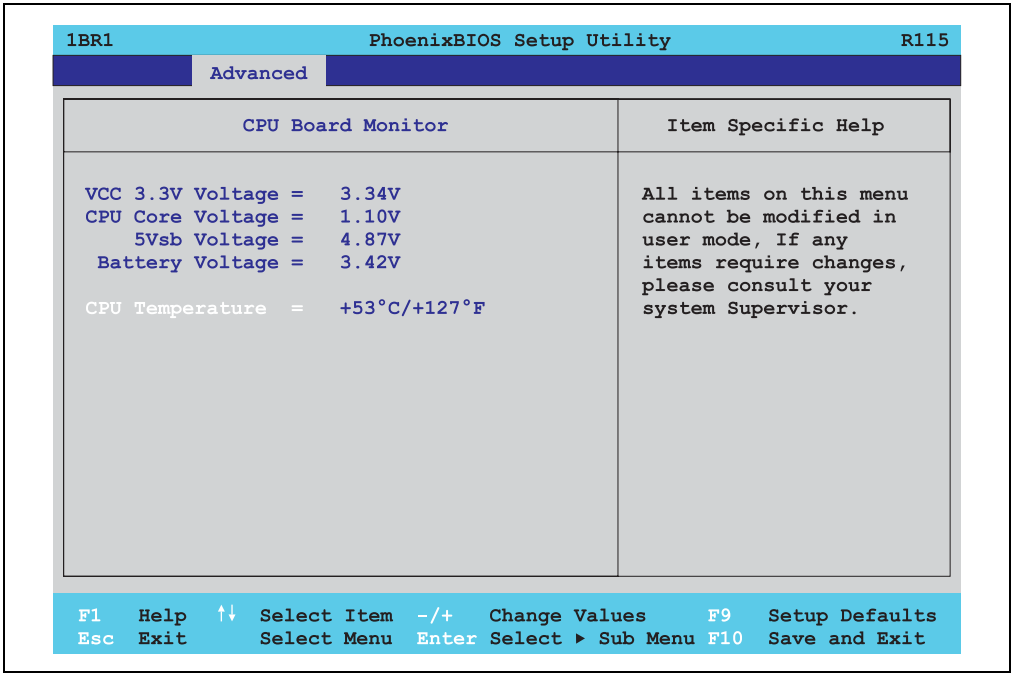


Figure 85: 815E - CPU board monitor

BIOS setting	Description	Setting options	Effect
VCC 3.3V voltage	Displays the current voltage of the 3.3 volt supply (in volts).	None	
CPU core voltage	Displays the processor's core voltage (in volts).	None	
5Vsb voltage	Displays the 5 V standby voltage (in volts).	None	
Battery voltage	Displays the battery voltage (in volts).	None	

Table 87: 815E - CPU board monitor - setting options

BIOS setting	Description	Setting options	Effect
CPU temperature	Displays the processor's temperature (in degrees Celsius and Fahrenheit).	None	

Table 87: 815E - CPU board monitor - setting options

1.5.7 Miscellaneous

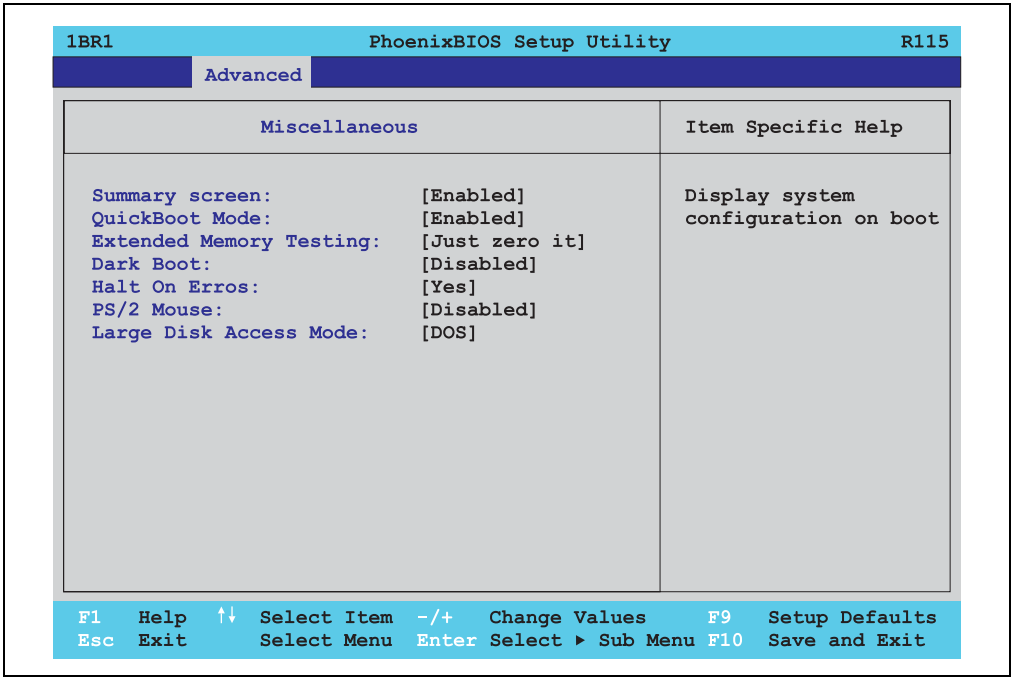


Figure 86: 815E - miscellaneous

BIOS setting	Description	Setting options	Effect
Summary screen	Set whether or not the system summary screen should open when the system is started (see figure 68 "815E - BIOS summary screen" on page 134).	Enabled	Activates the function.
		Disabled	Deactivates the function.
QuickBoot mode	Speeds up the booting process by skipping several tests.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Extended memory testing	This function determines the method by which the main memory over 1 MB is tested.	Just zero it	The main memory is quickly tested.
		None	The main memory is not tested at all.
		Normal	This option is only available when the function "QuickBoot mode" has been set to "disabled." The main memory is tested more slowly than with "Just zero It."

Table 88: 815E - miscellaneous setting options

BIOS setting	Description	Setting options	Effect
Dark boot	Sets whether the diagnostics screen (see figure 67 "815E - BIOS diagnostic screen" on page 134) should be displayed when the system is started.	Enabled	Activates the function. The diagnostics screen is displayed.
		Disabled	Deactivates the function. The diagnostics screen is not displayed.
Halt on errors	This option sets whether the system should pause the Power On Self Test (POST) when it encounters an error.	Yes	The system pauses. The system pauses every time an error is encountered.
		No	The system does not pause. All errors are ignored.
PS/2 mouse	Sets whether the PS/2 mouse port should be activated.	Disabled	Deactivates the port.
		Enabled	Activates the port. The IRQ12 is reserved, and is not available for other components.
Large disk access mode	This option is intended for hard discs with more than 1024 cylinders, 16 heads, and more than 63 sectors per track. Setting options: DOS	Other	For non-compatible access (e.g. Novell, SCO Unix.)
		DOS	For MS DOS compatible access.

Table 88: 815E - miscellaneous setting options (cont.)

1.5.8 Baseboard/panel features

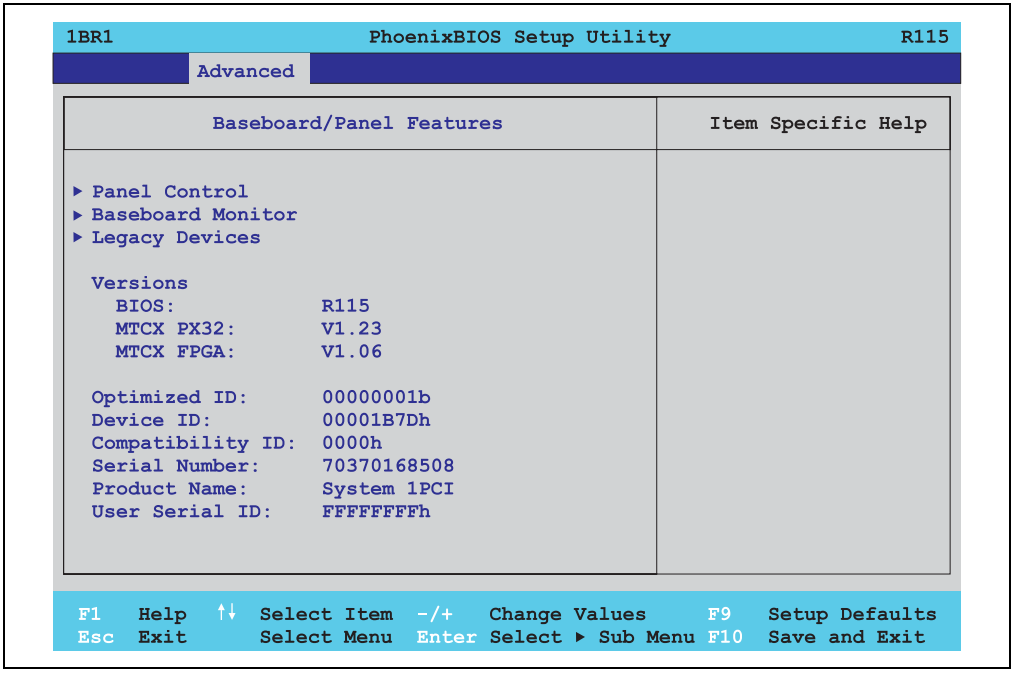


Figure 87: 815E - baseboard / panel features

BIOS setting	Description	Setting options	Effect
Panel control	For special setup of connected panels (display units).	Enter	Opens submenu See "Panel control", on page 162
Baseboard monitor	Display of various temperatures and fan RPMs.	Enter	Opens submenu See "Baseboard monitor", on page 163
Legacy devices		Enter	Opens submenu See "Legacy devices", on page 164
BIOS	Displays the BIOS version.	None	
MTCX PX32	Displays the MTCX PX32 firmware version.	None	
MTCX FPGA	Displays the MTCX FPGA firmware version.	None	
Optimized ID	Displays the DIP switch setting of the configuration switch.	None	
Device ID	Displays the hexadecimal value of the hardware device ID.	None	
Compatibility ID	Displays the version of the device within the same B&R device code. This ID is needed for Automation Runtime.	None	
Serial number	Displays the B&R serial number.	None	
Product name	Displays the B&R model number.	None	
User serial ID	Displays the hexadecimal value of the user serial ID number. This number can only be changed with "control center," available from B&R.	None	

Table 89: 815E - baseboard / panel features - setting options

Panel control

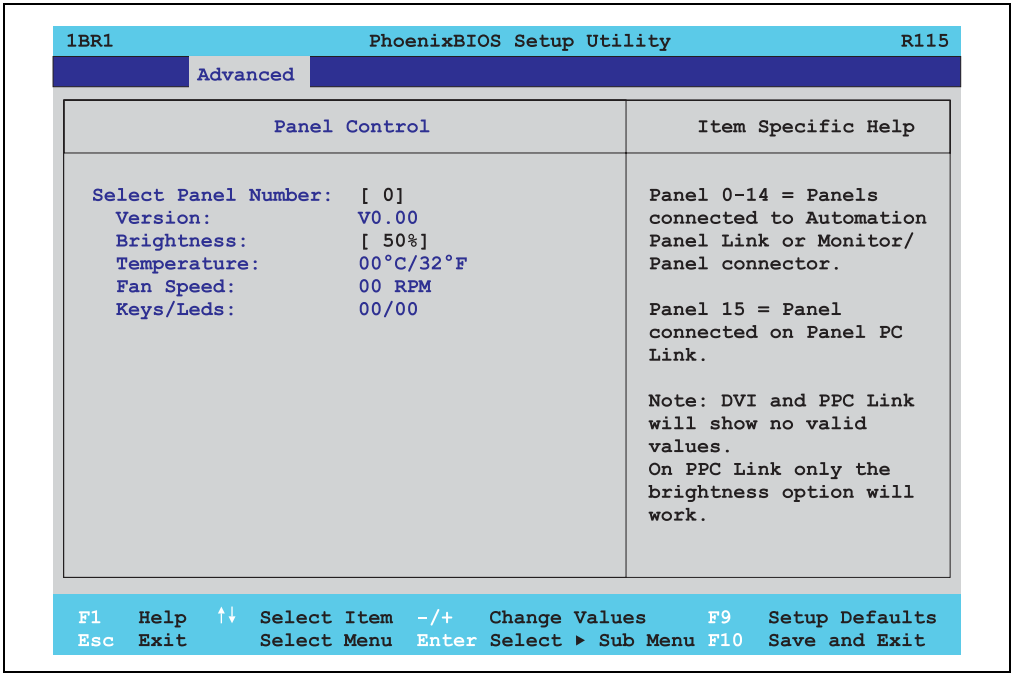


Figure 88: 815E - panel control

BIOS setting	Description	Setting options	Effect
Select panel number	Selection of the panel number for which the values should be read out and/or changed.	0 ... 15	Selection of panel 0 ... 15. Panel 15 is specifically intended for panel PC 700 systems.
Version	Display of the firmware version of the SDLR controller.	None	
Brightness	For setting the brightness of the selected panel.	0%, 25%, 50%, 75%, 100%	For setting the brightness in % of the selected panel. Changes take effect after saving and restarting the system (e.g. by pressing <F10>).
Temperature	Displays the selected panel's temperature (in degrees Celsius and Fahrenheit).	None	
Fan speed	Displays fan RPMs of the selected panel.	None	
Keys/LEDs	Displays the available keys and LEDs on the selected panel.	None	

Table 90: 815E - panel control - setting options

Baseboard monitor

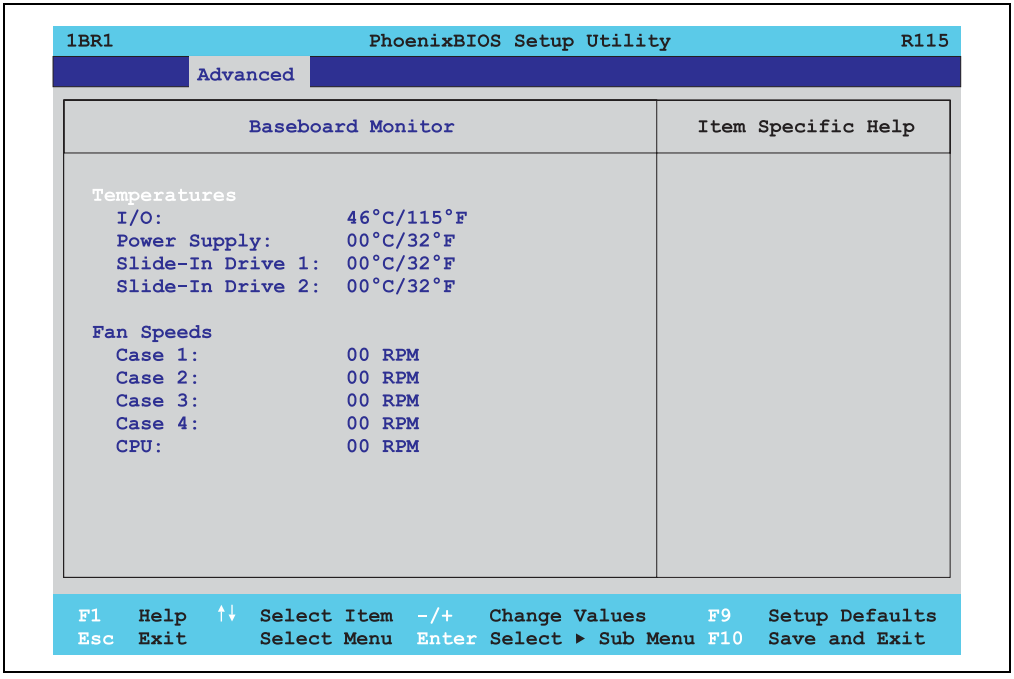


Figure 89: 815E - baseboard monitor

BIOS setting	Description	Setting options	Effect
I/O	Displays the temperature in the I/O area in degrees Celsius and Fahrenheit.	None	
Power supply	Displays the temperature in the power supply area in degrees Celsius and Fahrenheit.	None	
Slide-in drive 1	Displays the temperature of the slide-in drive 1 in degrees Celsius and Fahrenheit.	None	
Slide-in drive 2	Displays the temperature of the slide-in drive 2 in degrees Celsius and Fahrenheit.	None	
Case 1	Displays the fan RPMs of housing fan 1.	None	
Case 2	Displays the fan RPMs of housing fan 2.	None	
Case 3	Displays the fan RPMs of housing fan 3.	None	
Case 4	Displays the fan RPMs of housing fan 4.	None	
CPU	Displays the fan RPMs of the processor fan.	None	

Table 91: 815E - baseboard monitor - setting options

Legacy devices

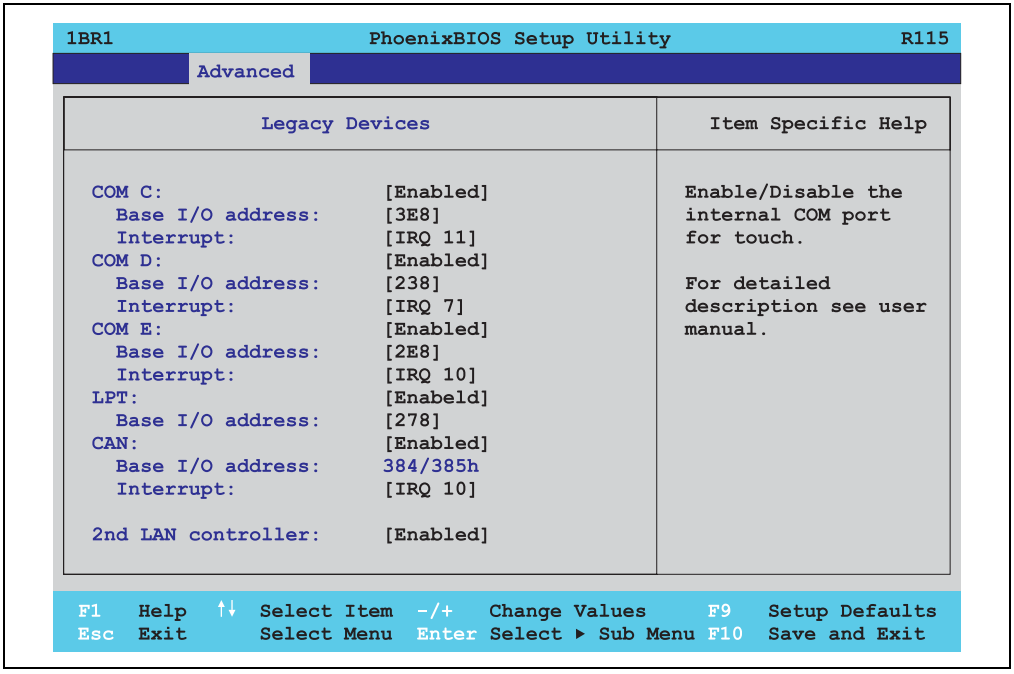


Figure 90: 815E - Legacy devices

BIOS setting	Description	Setting options	Effect
COM C	Settings for the internal serial interfaces in the system. This setting activates the touch screen in panel PC 700 systems, and, using SDL and LDL transfer technology, also in Automation Panel 900 display units.	Disabled	Deactivates the interface.
		Enabled	Activates the interface.
Base I/O address	Selection of the base I/O address for the COM C port. A yellow star indicates a conflict with another device.	238, 2E8, 2F8, 328, 338, 3E8, 3F8	Selected base I/O address is assigned.
Interrupt	Selection of the interrupt for the COM C port. A yellow star indicates a conflict with another device.	IRQ 3, IRQ 4, IRQ 5, IRQ 10, IRQ 11, IRQ 12, IRQ 15	Selected interrupt is assigned.
COM D	Configuration of the COM D port for the serial interface of an automation panel link slot.	Disabled	Deactivates the interface.
		Enabled	Activates the interface.
Base I/O address	Configuration of the base I/O address for the serial COM D port. A yellow star indicates a conflict with another device.	238, 2E8, 2F8, 328, 338, 3E8, 3F8	Selected base I/O address is assigned.

Table 92: 815E - Legacy devices - setting options

BIOS setting	Description	Setting options	Effect
Interrupt	Selection of the interrupt for the COM D port. A yellow star indicates a conflict with another device.	IRQ 3, IRQ 4, IRQ 5, IRQ 10, IRQ 11, IRQ 12, IRQ 15	Selected interrupt is assigned.
COM E	Configuration of the optional COM E port of a B&R add-on interface option (IF option).	Disabled	Deactivates the interface.
		Enabled	Activates the interface.
Base I/O address	Configuration of the base I/O address for the serial COM E port. A yellow star indicates a conflict with another device.	238, 2E8, 2F8, 328, 338, 3E8, 3F8	Selected base I/O address is assigned.
Interrupt	Selection of the interrupt for the COM E port. A yellow star indicates a conflict with another device.	IRQ 3, IRQ 4, IRQ 5, IRQ 10, IRQ 11, IRQ 12, IRQ 15	Selected interrupt is assigned.
LPT	This setting is specific to B&R and should not be changed.	Disabled	Deactivates the interface.
		Enabled	Activates the interface.
Base I/O address	Configuration of the base I/O address for the optional LPT. A yellow star indicates a conflict with another device.	278, 378, 3BC	Selected base I/O address is assigned.
CAN	Configuration of the CAN port of a B&R add-on interface card.	Disabled	Deactivates the interface.
		Enabled	Activates the interface.
Base I/O address	384/385h	None	-
Interrupt	Selection of the interrupt for the CAN port.	IRQ 10	Selected interrupt is assigned.
		NMI	NMI interrupt is assigned.
2nd LAN controller	For turning the on-board LAN controller (ETH2) on and off.	Disabled	Deactivates the controller.
		Enabled	Activates the controller.

Table 92: 815E - Legacy devices - setting options (cont.)

1.6 Security

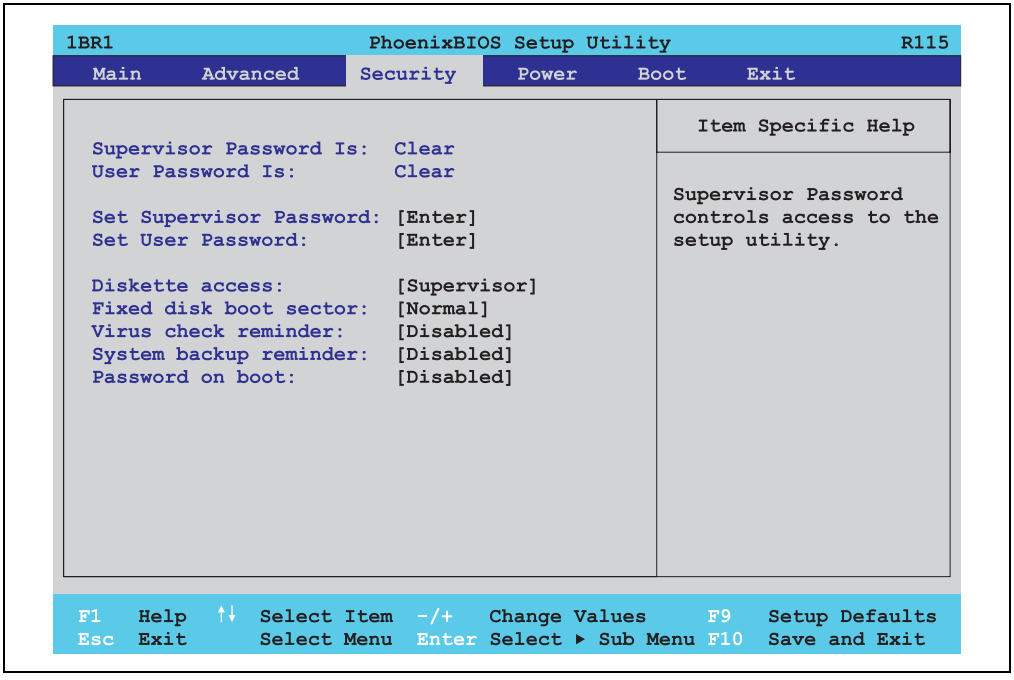


Figure 91: 815E - security menu

BIOS setting	Description	Setting options	Effect
Supervisor password is	Displays whether or not a supervisor password has been set.	None	Display **set**: A supervisor password has been set. Display **clear**: No supervisor password has been set.
User password is	Displays whether or not a user password has been set.	None	Display **set**: A user password has been set. Display **clear**: No user password has been set.
Set supervisor password	To enter/change a supervisor password. A supervisor password is necessary to edit all BIOS settings.	Enter maximum 7 alphanumeric characters - not case sensitive.	Press Enter and enter password two times. The password must be 7 alphanumeric characters or less. Needed to enter BIOS setup. To change the password, enter the old password once and then the new password twice.
Set user password	To enter/change a user password. A user password allows the user to edit only certain BIOS settings.	Enter maximum 7 alphanumeric characters - not case sensitive.	Press Enter and enter password two times. The password must be 7 alphanumeric characters or less. Needed to enter BIOS setup. To change the password, enter the old password once and then the new password twice.

Table 93: 815E - security - setting options

BIOS setting	Description	Setting options	Effect
Diskette access	Access to the diskette drive is controlled here. Either or the supervisor or the user has access to it. Does not work with USB diskette drives.	Supervisor	Supervisor password is needed to access a diskette drive.
		User	User password is needed to access a diskette drive.
Fixed disk boot sector	The boot sector of the primary hard drive can be write protected against viruses with this option.	Normal	Write access allowed.
		Write protect	Boot sector is write protected.
Virus check reminder	This function opens a reminder when the system is started to scan for viruses.	Disabled	Deactivates the function.
		Daily	A reminder appears every day when the system is started.
		Weekly	A reminder appears the first time the system is started after every Sunday.
		Monthly	A reminder appears the first time the system is started each month.
System backup reminder	This function opens a reminder when the system is started to create a system backup.	Disabled	Deactivates the function.
		Daily	A reminder appears every day when the system is started.
		Weekly	A reminder appears the first time the system is started after every Sunday.
		Monthly	A reminder appears the first time the system is started each month.
Password at boot	This function requires a supervisor or user password when the system is started. Only possible when a supervisor or user password is enabled.	Disabled	Deactivates the function.
		Enabled	Activates the function.

Table 93: 815E - security - setting options (cont.)

1.7 Power

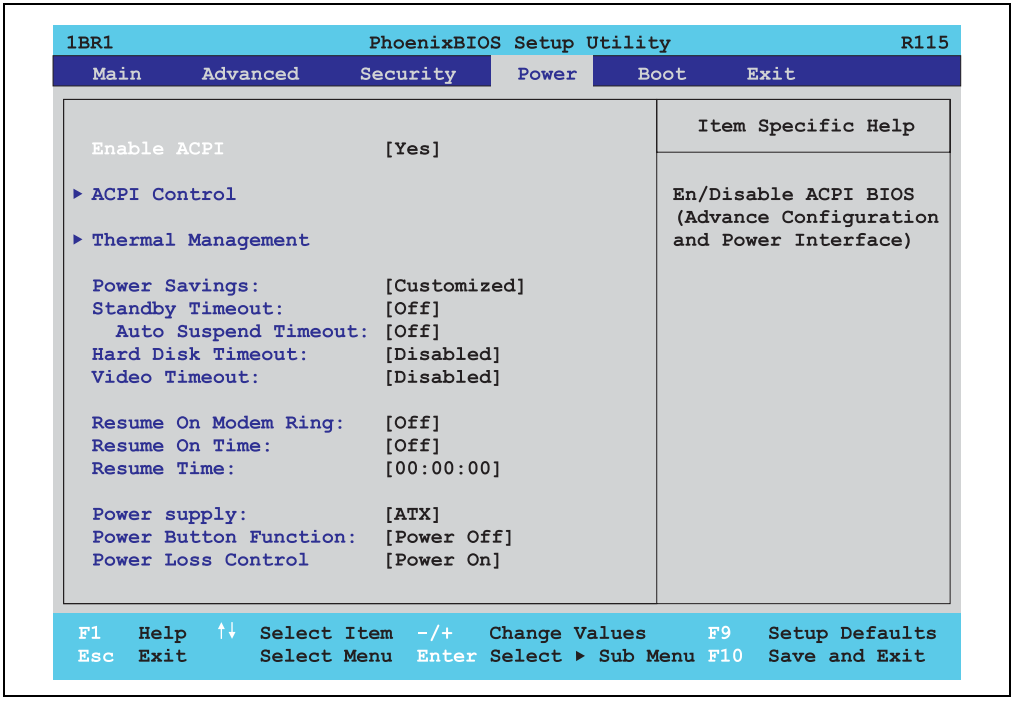


Figure 92: 815E - power menu

BIOS setting	Description	Setting options	Effect
Enable ACPI	This option turns the ACPI function (Advanced Configuration and Power Interface) on or off. This is an advanced plug & play and power management functionality.	Yes	Activates the function.
		No	Deactivates the function.
ACPI control	Configuration of specific limits.	Enter	Opens submenu See "ACPI control", on page 170
Thermal management	Configuration of specific CPU limits.	Enter	Opens submenu See "Thermal management", on page 171
Power savings	This function determines if and how the power save function is used.	Disabled	Deactivates the power save function.
		Customized	Power management is configured by adjusting the individual settings.
		Maximum power Savings	Maximum power savings function.
		Maximum performance	Energy savings function to maximize performance.

Table 94: 815E - power - setting options

BIOS setting	Description	Setting options	Effect
Standby timeout	Set here when the system should enter standby mode. During standby, various devices and the display will be deactivated. This option only available when "power savings" is set to customized.	Off	No standby.
		1, 2, 4, 8 minutes	Time in minutes until standby.
Auto suspend timeout	Set here when the system should enter suspend mode to save electricity. This option only available when "power savings" is set to customized.	Off	No standby.
		5, 10, 15, 20, 30, 40, 60 minutes	Time in minutes until standby.
Hard disk timeout	Set here how long after the last access the hard disk should enter standby mode. This option only available when "power savings" is set to customized.	Disabled	Deactivates the function.
		10, 15, 30, 45 seconds	Time in seconds until standby.
		1, 2, 4, 6, 8, 10, 15 minutes	Time in minutes until standby.
Video timeout		Disabled	
Resume on modem ring	If an external modem is connected to a serial port and the telephone rings, the system starts up.	Off	Deactivates the function.
		On	Activates the function.
Resume on time	This function enables the system to start at the time set under "resume time."	Off	Deactivates the function.
		On	Activates the function.
Resume time	Time setting for the option "resume on time" (when the system should start up).	[00:00:00]	Personal setting of the time in the format (hh:mm:ss).
Power supply	The type of power supply being used can be entered here.	ATX	An ATX compatible power supply is being used. **Since the PPC700 contains an ATX power supply, ATX should be selected.**
		AT	An AT compatible power supply is being used.
Power button function	This option determines the function of the power button.	Power off	Shuts down the system.
		Sleep	The system enters sleep mode.
Power loss control	This option determines how the system reacts to a power outage.	Stay off	The system does not turn back on. The system remains off until the power button is pressed.
		Power-on	The system turns back on.
		Last state	The system resumes the last state it was in before the power outage.

Table 94: 815E - power - setting options (cont.)

1.7.1 ACPI control

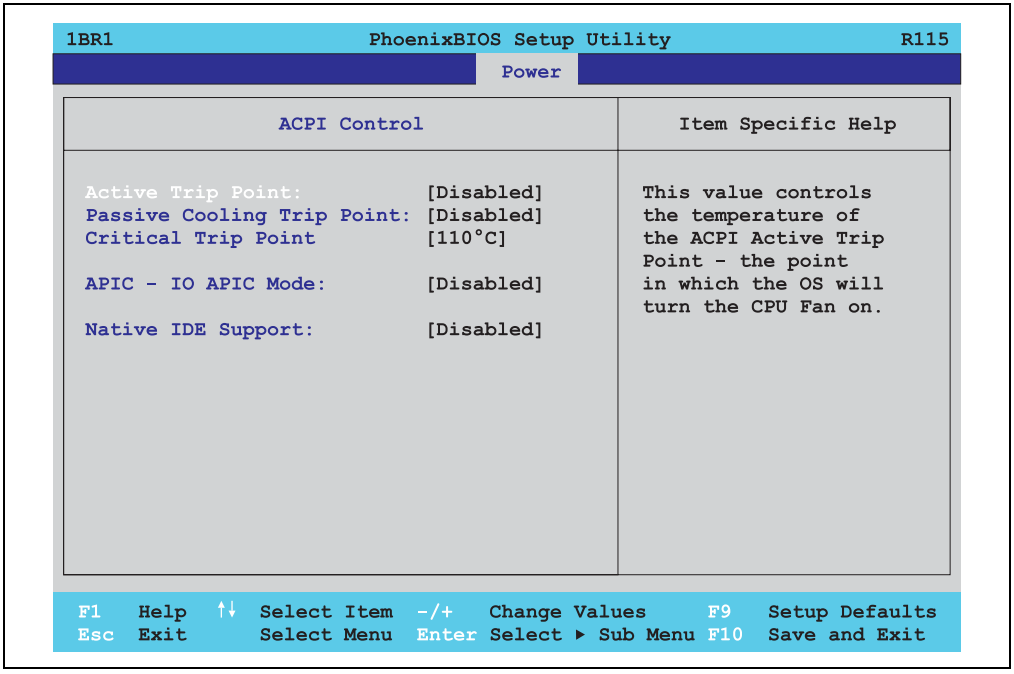


Figure 93: 815E - ACPI control

BIOS setting	Description	Setting options	Effect
Active trip point	With this function, an optional CPU fan above the operating system can be set to turn on when the CPU reaches the set temperature.	Disabled	Deactivates the function.
		40°... 100°C	Temperature setting for the active trip point. Can be set in 5 degree increments.
Passive cooling trip point	With this function, a temperature can be set at which the CPU automatically reduces its speed.	Disabled	Deactivates the function.
		40°... 100°C	Temperature setting for the passive cooling trip point. Can be set in 5 degree increments.
Critical trip point	With this function, a temperature can be set at which the operating system automatically shuts itself down. **Warning!** **This function should never be deactivated, as this would allow the CPU to rise above the temperature specifications.**	Disabled	Deactivates the function.
		40°... 110°C	Temperature setting for the critical trip point. Can be set in 5 degree increments.

Table 95: 815E - ACPI control - setting options

BIOS setting	Description	Setting options	Effect
APIC - I/O APIC mode	This option controls the functionality of the advanced interrupt controller in the processor.	Disabled	Deactivates the function
		Enabled	Activates the function. The activation of this option is only effective if it takes place before the operating system (Windows XP) is activated. There are then 23 IRQs available.
Native IDE support	The native IDE support offers the possibility to make 4 hard disk controllers (2 x primary ATA for a total of 4 devices, and 2 x secondary ATA for another 2 devices) accessible through Windows XP.	Disabled	Deactivates the function.
		Enabled	Activates the function.

Table 95: 815E - ACPI control - setting options (cont.)

1.7.2 Thermal management

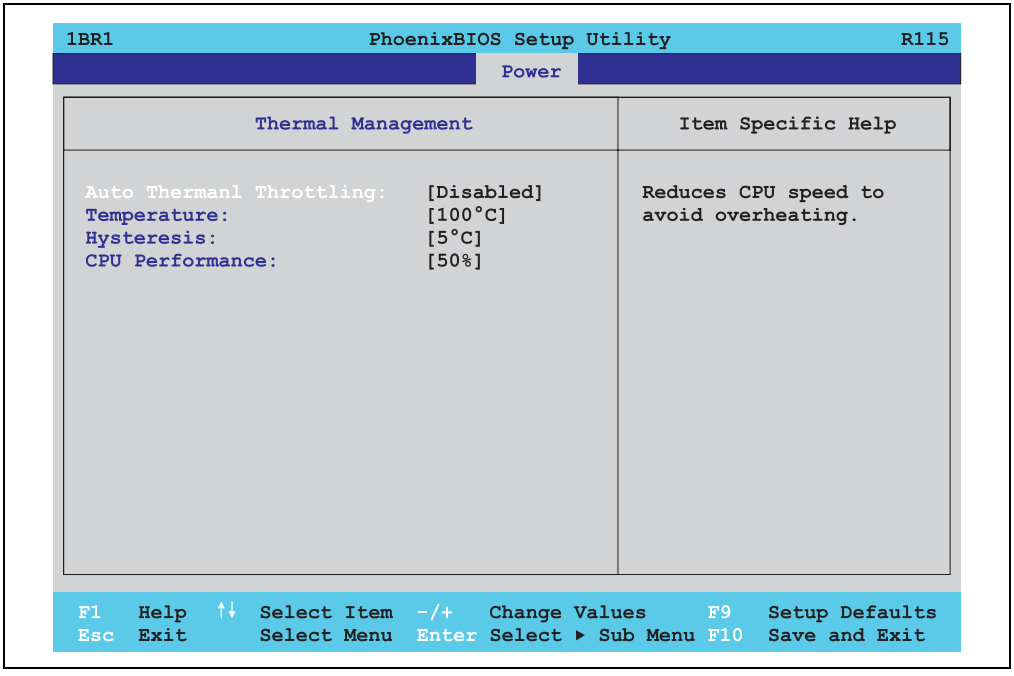


Figure 94: 815E - thermal management

BIOS setting	Description	Setting options	Effect
Auto thermal throttling	Reduces the CPU speed when it exceeds the limit set in the "temperature" option by the amount set in the "CPU performance" option.	Enabled	Activates the function.
		Disabled	Deactivates the function.

Table 96: 815E - thermal management

BIOS setting	Description	Setting options	Effect
Temperature	Temperature limit for the setting "auto thermal throttling."	75°C ... 110°C	Can be set in increments of 5°C.
Hysteresis	When auto thermal throttling has been activated and the temperature sinks by the number of degrees in this setting, the processor resumes 100% performance.	3°C ... 6°C	Can be set in increments of 1°C.
CPU performance	When the CPU reaches the temperature set in the "temperature" option, the CPU is throttled by the amount (%) set in this option.	13%, 25%, 50%, 75%	CPU performance throttled by amount selected, in percent.

Table 96: 815E - thermal management (cont.)

1.8 Boot

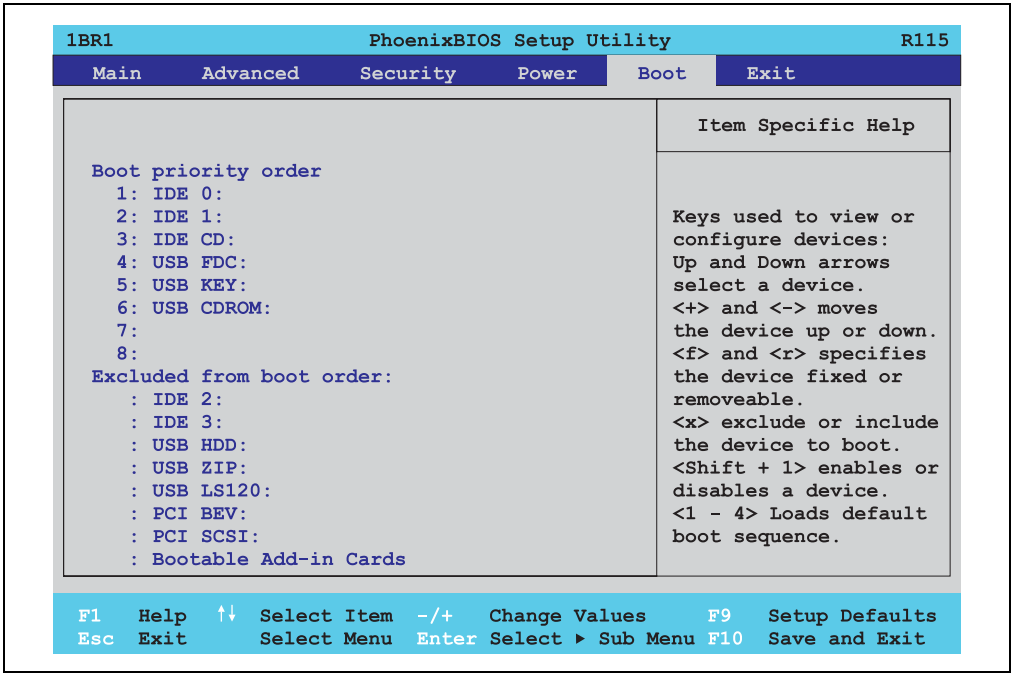


Figure 95: 815E - boot menu

BIOS setting	Description	Setting options	Effect
1:		IDE 0, IDE 1, IDE 2, IDE 3, IDE CD USB FDC, USB KEY USB CDROM USB HDD, USB ZIP USB LS120, PCI BEV, PCI SCSI, bootable add-in cards	Use the up arrow ↑ and down arrow ↓ , to select a device. Then, use the <+> und <-> keys to change the boot priority of the drive. To add a device to the "boot priority order" list from the "excluded from boot order" list, use the <x> key. In the same way, the <x> key can move boot devices down out of the boot priority order. The keys 1 - 4 can load preset boot sequences.
2:			
3:			
4:			
5:			
6:			
7:			
8:			

Table 97: 815E - boot menu - setting options

1.9 Exit

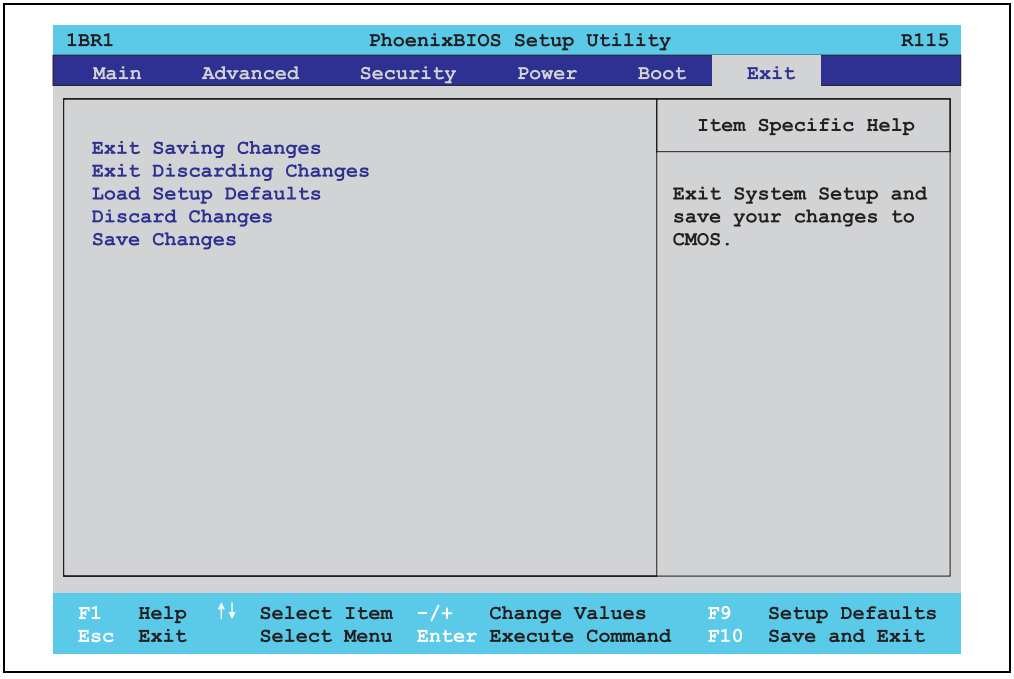


Figure 96: 815E - exit menu

BIOS setting	Description	Setting options	Effect
Exit saving changes	BIOS setup is closed with this item. Changes made are saved in CMOS after confirmation, and the system is rebooted.	Yes / No	

Table 98: 815E - exit menu - setting options

BIOS setting	Description	Setting options	Effect
Exit discarding changes	With this item you can close BIOS setup without saving the changes made. The system is then rebooted.	Yes / No	
Load setup defaults	This item loads the BIOS setup defaults, which are defined by the DIP switch settings. These settings are loaded for all BIOS configurations.	Yes / No	
Discard changes	Should unknown changes have been made and not yet saved, they can be discarded.	Yes / No	
Save changes	Settings are saved, and the system is not restarted.	Yes / No	

Table 98: 815E - exit menu - setting options (cont.)

1.10 Profile overview

If the function "load setup defaults" is chosen in the main BIOS setup menu, or if exit is selected (or <F9> is pressed) in the individual setup screens, the following BIOS settings are the optimized values that will be used.

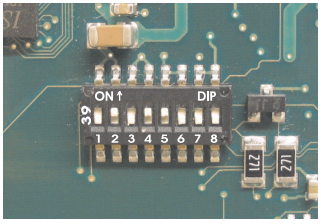


Figure 97: DIP switch on system unit

The first six DIP switches (1-6) are used to set the profiles. The rest (7,8) are reserved.

Number	Optimized for	DIP switch setting							
		1	2	3	4	5	6	7[1)]	8[1)]
Profile 0	Automation PC 620 system units 5PC600.SX01-00.	Off	Off	Off	Off	Off	Off	-	-
Profile 1	Reserved	On	Off	Off	Off	Off	Off	-	-
Profile 2	Automation PC 620 system units 5PC600.SX02-00, 5PC600.SX02-01, 5PC600.SX05-00 and 5PC600.SX05-01.	Off	On	Off	Off	Off	Off	-	-
Profile 3	Panel PC 700 system unit 5PC720.1043-00, 5PC720.1214-00, 5PC720.1505-00, 5PC781.1043-00, 5PC781.1505-00 and 5PC782.1043-00.	On	On	Off	Off	Off	Off	-	-
Profile 4	Panel PC 700 system unit 5PC720.1043-01, 5PC720.1505-01 and 5PC720.1505-02.	Off	Off	On	Off	Off	Off	-	-

Table 99: 815E - profile overview

1) Reserved.

The following pages provide an overview of the BIOS default settings for the different DIP switch configurations.

Personal settings

If changes have been made to the BIOS defaults, they can be entered in the personal settings column of following tables for backup.

1.10.1 Main

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
System time	-	-	-	-	-	
System date	-	-	-	-	-	
SMART device monitoring	Enabled	Enabled	Enabled	Enabled	Enabled	
Primary master						
Type	Auto	Auto	Auto	Auto	Auto	
Multi-sector transfer	-	-	-	-	-	
LBA mode control	-	-	-	-	-	
32-bit I/O	Disabled	Disabled	Disabled	Disabled	Disabled	
Transfer mode	-	-	-	-	-	
Ultra DMA mode	-	-	-	-	-	
SMART monitoring	Disabled	Disabled	Disabled	Disabled	Disabled	
Primary slave						
Type	Auto	Auto	Auto	Auto	Auto	
Multi-sector transfer	-	-	-	-	-	
LBA mode control	-	-	-	-	-	
32-bit I/O	Disabled	Disabled	Disabled	Disabled	Disabled	
Transfer mode	-	-	-	-	-	
Ultra DMA mode	-	-	-	-	-	
SMART monitoring	Disabled	Disabled	Disabled	Disabled	Disabled	
Secondary master						
Type	Auto	Auto	Auto	Auto	Auto	
Multi-sector transfer	-	-	-	-	-	
LBA mode control	-	-	-	-	-	
32-bit I/O	Disabled	Disabled	Disabled	Disabled	Disabled	
Transfer mode	-	-	-	-	-	
Secondary master						
Ultra DMA mode	-	-	-	-	-	
SMART monitoring	Disabled	Disabled	Disabled	Disabled	Disabled	
Secondary slave						
Type	Auto	Auto	Auto	Auto	Auto	
Multi-sector transfer	-	-	-	-	-	
LBA mode control	-	-	-	-	-	
32-bit I/O	Disabled	Disabled	Disabled	Disabled	Disabled	
Transfer mode	-	-	-	-	-	
Ultra DMA mode	-	-	-	-	-	
SMART monitoring	Disabled	Disabled	Disabled	Disabled	Disabled	

Table 100: 815E - main profile setting overview

1.10.2 Advanced

Advanced chipset/graphics control

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
Graphics engine 1	Auto	Auto	Auto	Auto	Auto	
Graphics memory size	1MB	1MB	1MB	1MB	1MB	
Enable memory gap	Disabled	Disabled	Disabled	Disabled	Disabled	

Table 101: 815E - advanced chipset/graphics control - profile settings overview

PCI/PNP configuration

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
PNP OS installed	Yes	Yes	Yes	Yes	Yes	
Reset configuration data	No	No	No	No	No	
Secured setup configuration	Yes	Yes	Yes	Yes	Yes	
PCI IRQ line 1	Auto-select	Auto-select	Auto-select	Auto-select	Auto-select	
PCI IRQ line 2	Auto-select	Auto-select	Auto-select	Auto-select	Auto-select	
PCI IRQ line 3	Auto-select	Auto-select	Auto-select	Auto-select	Auto-select	
PCI IRQ line 4	Auto-select	Auto-select	Auto-select	Auto-select	Auto-select	
Onboard LAN IRQ line	Auto-select	Auto-select	Auto-select	Auto-select	Auto-select	
Onboard USB EHCI IRQ line	Auto-select	Auto-select	Auto-select	Auto-select	Auto-select	
Default primary video adapter	PCI	PCI	PCI	PCI	PCI	
Assign IRQ to SMB	Enabled	Enabled	Enabled	Enabled	Enabled	
PCI device, slot #1						
ROM scan option	Enabled	Enabled	Enabled	Enabled	Enabled	
Enable master	Disabled	Disabled	Disabled	Disabled	Disabled	
Latency timer	Default	Default	Default	Default	Default	
PCI device, slot #2						
ROM scan option	Enabled	Enabled	Enabled	Enabled	Enabled	
Enable master	Disabled	Disabled	Disabled	Disabled	Disabled	
Latency timer	Default	Default	Default	Default	Default	
PCI device, slot #3						
ROM scan option	Enabled	Enabled	Enabled	Enabled	Enabled	
Enable master	Disabled	Disabled	Disabled	Disabled	Disabled	
Latency timer	Default	Default	Default	Default	Default	

Table 102: 815E - PCI/PNP configuration - profile setting options

PCI device, slot #4	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
ROM scan option	Enabled	Enabled	Enabled	Enabled	Enabled	
Enable master	Disabled	Disabled	Disabled	Disabled	Disabled	
Latency timer	Default	Default	Default	Default	Default	
PCI/PNP ISA IRQ resource exclusion						
IRQ 3	Available	Available	Available	Available	Available	
IRQ 4	Available	Available	Available	Available	Available	
IRQ 5	Available	Available	Available	Available	Available	
IRQ 7	Available	Available	Available	Available	Available	
IRQ 9	Available	Available	Available	Available	Available	
IRQ 10	Available	Available	Available	Available	Available	
IRQ 11	Available	Available	Available	Available	Available	
IRQ 12	Available	Available	Available	Available	Available	
IRQ 15	Available	Available	Available	Available	Available	

Table 102: 815E - PCI/PNP configuration - profile setting options (cont.)

Memory cache

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
Memory cache	Enabled	Enabled	Enabled	Enabled	Enabled	
Cache system BIOS area	Write protect	Write protect	Write protect	Write protect	Write protect	
Cache video BIOS area	Write protect	Write protect	Write protect	Write protect	Write protect	
Cache extended memory area	Write back	Write back	Write back	Write back	Write back	
Cache D000 - D3FF	Disabled	Disabled	Disabled	Disabled	Disabled	
Cache D400 - D7FF	Disabled	Disabled	Disabled	Disabled	Disabled	
Cache D800 - DBFF	Disabled	Disabled	Disabled	Disabled	Disabled	
Cache DC00 - DFFF	Disabled	Disabled	Disabled	Disabled	Disabled	

Table 103: 815E - memory cache - profile setting overview

I/O device configuration

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
Local bus IDE adapter	Primary	**Both**	**Both**	Primary	**Both**	
Primary IDE UDMA66/100	Enabled	Enabled	Enabled	Enabled	Enabled	
USB UHCI host controller 1	Enabled	Enabled	Enabled	Enabled	Enabled	
USB UHCI host controller 2	Enabled	Enabled	Enabled	Enabled	Enabled	
USB UHCI host controller	Enabled	Enabled	Enabled	Enabled	Enabled	
Legacy USB support	Enabled	Enabled	Enabled	Enabled	Enabled	
AC97 audio controller	Enabled	Enabled	Enabled	Enabled	Enabled	
Onboard LAN controller	Enabled	Enabled	Enabled	Enabled	Enabled	
Onboard LAN PXE ROM	Disabled	**Enabled**	Disabled	Disabled	Disabled	
Serial port A	Enabled	Enabled	Enabled	Enabled	Enabled	
Base I/O address	3F8	3F8	3F8	3F8	3F8	
Interrupt	IRQ 4	IRQ 4	IRQ 4	IRQ 4	IRQ 4	
Serial port B	Enabled	Enabled	Enabled	Enabled	Enabled	
Mode	Normal	Normal	Normal	Normal	Normal	
Base I/O address	3F8	3F8	3F8	3F8	3F8	
Interrupt	IRQ 3	IRQ 3	IRQ 3	IRQ 3	IRQ 3	
Parallel port	Enabled	Enabled	Enabled	Enabled	Enabled	
Base I/O address	378	378	378	378	378	

Table 104: 815E - I/O device configuration - profile setting overview

Keyboard features

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
NumLock	On	On	On	On	On	
Key click	Disabled	Disabled	Disabled	Disabled	Disabled	
Keyboard auto-repeat rate	30/sec	30/sec	30/sec	30/sec	30/sec	
Keyboard auto-repeat delay	1/2 sec	1/2 sec	1/2 sec	1/2 sec	1/2 sec	

Table 105: 815E - keyboard features - profile setting overview

CPU board monitor

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
VCC 3.3V voltage	-	-	-	-	-	
CPU core voltage	-	-	-	-	-	
5Vsb voltage	-	-	-	-	-	
Battery voltage	-	-	-	-	-	
CPU temperature	-	-	-	-	-	

Table 106: 815E - CPU board monitor - profile setting overview

Miscellaneous

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
Summary screen	Enabled	Enabled	Enabled	Enabled	Enabled	
QuickBoot mode	Enabled	Enabled	Enabled	Enabled	Enabled	
Extended memory testing	Just zero it	Just zero it	Just zero it	Just zero it	Just zero it	
Dark boot	Disabled	Disabled	Disabled	Disabled	Disabled	
Halt on errors	Yes	Yes	Yes	Yes	Yes	
PS/2 mouse	Disabled	**Enabled**	Disabled	Disabled	Disabled	
Large disk access mode	DOS	DOS	DOS	DOS	DOS	

Table 107: 815E - miscellaneous - profile setting overview

Baseboard/panel features

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
Versions	-	-	-	-	-	
BIOS	-	-	-	-	-	
MTCX	-	-	-	-	-	
FPGA	-	-	-	-	-	
Optimized ID	-	-	-	-	-	
Device ID	-	-	-	-	-	
Compatibility ID	-	-	-	-	-	
Serial number	-	-	-	-	-	
Product name	-	-	-	-	-	
User serial ID	-	-	-	-	-	
Panel control						
Select panel number	0	0	0	**15**	**15**	
Version	-	-	-	-	-	
Brightness	100 %	100 %	100 %	100 %	100 %	
Temperature	-	-	-	-	-	
Fan speed	-	-	-	-	-	
Keys/LEDs	-	-	-	-	-	
Baseboard monitor						
Temperatures	-	-	-	-	-	
I/O	-	-	-	-	-	
Power supply	-	-	-	-	-	
Slide-in drive 1	-	-	-	-	-	
Slide-in drive 2	-	-	-	-	-	

Table 108: 815E - baseboard/panel features - profile setting overview

Baseboard monitor	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
Fan speeds	-	-	-	-	-	
Case 1	-	-	-	-	-	
Case 2	-	-	-	-	-	
Case 3	-	-	-	-	-	
Case 4	-	-	-	-	-	
CPU	-	-	-	-	-	
Legacy devices						
COM C	Disabled	Disabled	Disabled	**Enabled**	**Enabled**	
Base I/O address	-	-	-	**3E8h**	**3E8h**	
Interrupt	-	-	-	**11**	**11**	
COM D	Disabled	Disabled	Disabled	Disabled	Disabled	
Base I/O address	-	-	-	-	-	
Interrupt	-	-	-	-	-	
COM E	Disabled	Disabled	Disabled	Disabled	Disabled	
Base I/O address	-	-	-	-	-	
Interrupt	-	-	-	-	-	
LPT	Disabled	Disabled	Disabled	Disabled	Disabled	
Base I/O address	-	-	-	-	-	
CAN	Disabled	Disabled	Disabled	Disabled	Disabled	
Base I/O address	-	-	-	-	-	
Interrupt	-	-	-	-	-	
2nd LAN controller	Enabled	Enabled	Enabled	Enabled	Enabled	

Table 108: 815E - baseboard/panel features - profile setting overview (cont.)

1.10.3 Security

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
Supervisor password is	Clear	Clear	Clear	Clear	Clear	
User password is	Clear	Clear	Clear	Clear	Clear	
Set supervisor password	-	-	-	-	-	
Set user password	-	-	-	-	-	
Diskette access	Supervisor	Supervisor	Supervisor	Supervisor	Supervisor	
Fixed disk boot sector	Normal	Normal	Normal	Normal	Normal	
Virus check reminder	Disabled	Disabled	Disabled	Disabled	Disabled	
System backup reminder	Disabled	Disabled	Disabled	Disabled	Disabled	
Password at boot	Disabled	Disabled	Disabled	Disabled	Disabled	

Table 109: 815E - security - profile setting overview

1.10.4 Power

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
Enable ACPI	Yes	Yes	Yes	Yes	Yes	
Power savings	Disabled	Disabled	Disabled	Disabled	Disabled	
Standby timeout	-	-	-	-	-	
Auto suspend timeout	-	-	-	-	-	
Hard disk timeout	Disabled	Disabled	Disabled	Disabled	Disabled	
Video timeout	Disabled	Disabled	Disabled	Disabled	Disabled	
Resume on modem ring	Off	Off	Off	Off	Off	
Resume on time	Off	Off	Off	Off	Off	
Resume time	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	
Power supply	ATX	ATX	ATX	ATX	ATX	
Power button function	Power off	Power off	Power off	Power off	Power off	
Power loss control	Power-on	Power-on	Power-on	Power-on	Power-on	
ACPI control						
Active trip point	Disabled	Disabled	Disabled	Disabled	Disabled	
Passive cooling trip point	Disabled	Disabled	Disabled	Disabled	Disabled	
Critical trip point	110°C	110°C	110°C	110°C	110°C	
APIC - I/O APIC mode	Disabled	**Enabled**	Disabled	Disabled	Disabled	
Native IDE support	Disabled	Disabled	Disabled	Disabled	Disabled	
Thermal management						
Auto thermal throttling	Enabled	Enabled	Enabled	Enabled	Enabled	
Temperature	100°C	100°C	100°C	100°C	100°C	
Hysteresis	5°C	5°C	5°C	5°C	5°C	
CPU performance	50%	50%	50%	50%	50%	

Table 110: 815E - power - profile setting overview

1.10.5 Boot

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
Boot priority order						
1:	IDE 0	**PCI BEV**	IDE 0	IDE 0	IDE 0	
2:	IDE 1	**IDE 0**	IDE 1	IDE 1	IDE 1	
3:	IDE CD	**IDE 1**	IDE CD	IDE CD	IDE CD	
4:	USB FDC	**IDE CD**	USB FDC	USB FDC	USB FDC	
5:	USB KEY	**USB FDC**	USB KEY	USB KEY	USB KEY	
6:	USB CDROM	**USB KEY**	USB CDROM	USB CDROM	USB CDROM	
7:	-	**USB CDROM**	**IDE 2**	-	**IDE 2**	
8:	-	-	**IDE 3**	-	**IDE 3**	
Excluded from boot order						
:	IDE 2	IDE 2	**USB HDD**	IDE 2	**USB HDD**	
:	IDE 3	IDE 3	**USB ZIP**	IDE 3	**USB ZIP**	
:	USB HDD	USB HDD	**USB LS120**	USB HDD	**USB LS120**	
:	USB ZIP	USB ZIP	**PCI BEV**	USB ZIP	**PCI BEV**	
:	USB LS120	USB LS120	**PCI SCSI**	USB LS120	**PCI SCSI**	
:	PCI BEV	**PCI SCSI**	**Bootable add-in cards**	PCI BEV	**Bootable add-in cards**	
:	PCI SCSI	**Bootable add-in cards**		PCI SCSI		
:	Bootable add-in cards			Bootable add-in cards		

Table 111: 815E - boot - profile setting overview

2. 855GME -BIOS description

Information:

- **The following diagrams, BIOS menu items, and descriptions refer to BIOS Version R114. Therefore, it is possible that the diagrams and BIOS descriptions might not correspond with the installed BIOS version.**
- **The setup defaults are the settings recommended by B&R. The setup defaults are dependant on the DIP switch configuration on the baseboard (see section 2.10 "Profile overview" on page 225).**

2.1 General information

BIOS stands for "Basic Input Output System." It is the most basic standardized communication between the user and the system (hardware). The BIOS system used on the Panel PC 700 systems is produced by Phoenix.

The BIOS setup utility lets you modify basic system configuration settings. These settings are stored in CMOS and in EEPROM (as a backup).

The CMOS is buffered by a battery, and remains in the PPC700 even when the power is turned off.

2.2 BIOS setup

BIOS is immediately activated when you switch on the power supply of the Panel PC 700 system. BIOS reads the system configuration information in CMOS RAM, checks the system, and configures it using the Power On Self Test (POST).

When these "preliminary steps" are finished, BIOS searches for an operating system in the data storage devices available (hard drive, floppy drive, etc.). BIOS launches the operating system and hands over control of system operations to it.

To enter BIOS setup, the F2 key must be pressed as soon as the following message appears on the lower margin of the display (during POST):

"Press <F2> to enter SETUP"

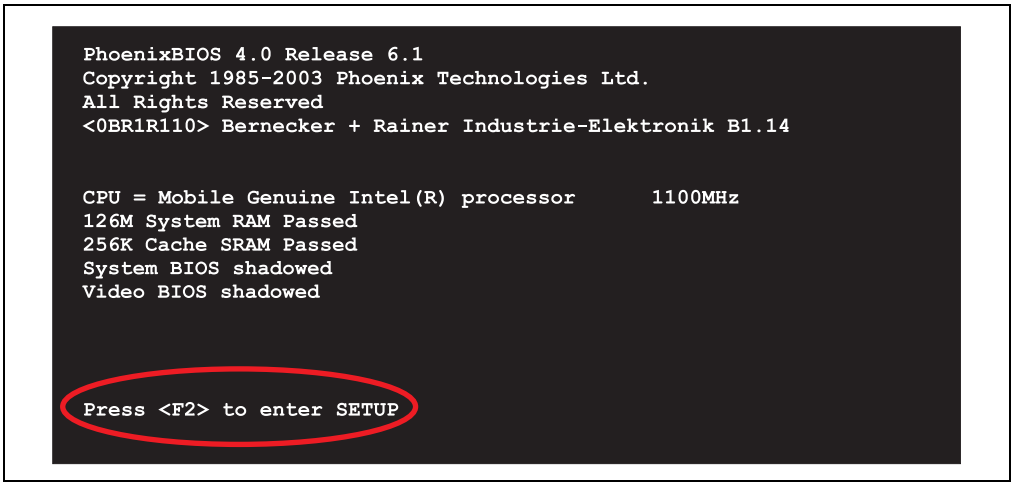


Figure 98: 855GME - BIOS diagnostics screen

2.2.1 Summary screen

After the POST, the summary screen displays the most important system characteristics.

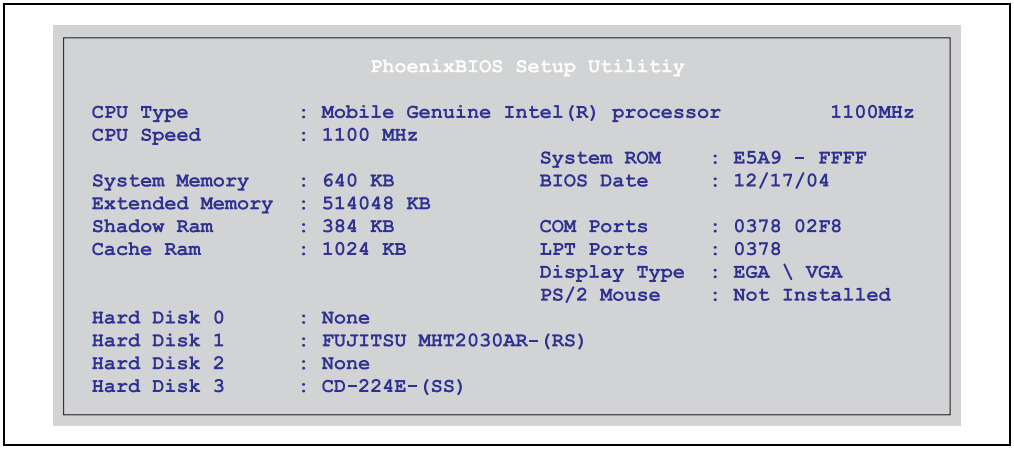


Figure 99: 855GME - BIOS summary screen

2.3 BIOS setup keys

The following keys are active during the POST:

Key	Function
F2	Enters the BIOS setup menu.
ESC	Cues the boot menu. Lists all bootable devices that are connected to the system. With cursor ↑ and cursor ↓ and by pressing <ENTER>, select the device from which will be booted.
<Spacebar>	Pressing the spacebar skips the system RAM check.
<Pause>	Pressing the <pause> key stops the POST. Press any other key to resume the POST.

Table 112: Keys relevant to BIOS during POST

The following keys can be used after entering the BIOS setup:

Key	Function
Cursor ↑	Move to previous item.
Cursor ↓	Move to next item.
Cursor ←	Move to the item on the left.
Cursor →	Move to the item on the right.
<ESC>	Exits the submenu.
PgUp↑	Moves the cursor to the top of the current BIOS setup page.
PgDn ↓	Moves the cursor to the bottom of the current BIOS setup page.
<F1> or <Alt+H>	Opens a help window showing the key assignments.
<F5> or <->	Scrolls to the previous option for the selected BIOS setting.
<F6> or <+> or <spacebar>	Scrolls to the next option for the selected BIOS setting.
<F9>	Loads setup defaults for the current BIOS setup screen.
<F10>	Saves settings and closes BIOS setup.
<Enter>	Opens submenu for a BIOS setup menu item, or displays the configurable values of a BIOS setup item.

Table 113: Keys relevant to BIOS

The following sections explain the individual BIOS setup menu items in detail.

BIOS setup menu Item	Function	From page
Main	The basic system configurations (e.g. time, date, hard disk parameters) can be set in this menu.	187
Advanced	Advanced BIOS options such as cache areas, PnP, keyboard repeat rate, as well as settings specific to B&R integrated hardware, can be configured here.	194
Security	For setting up the system's security functions.	217
Power	Setup of various APM (Advanced Power Management) options.	219
Boot	The boot order can be set here.	222
Exit	To end the BIOS setup.	223

Table 114: Overview of BIOS menu items

2.4 Main

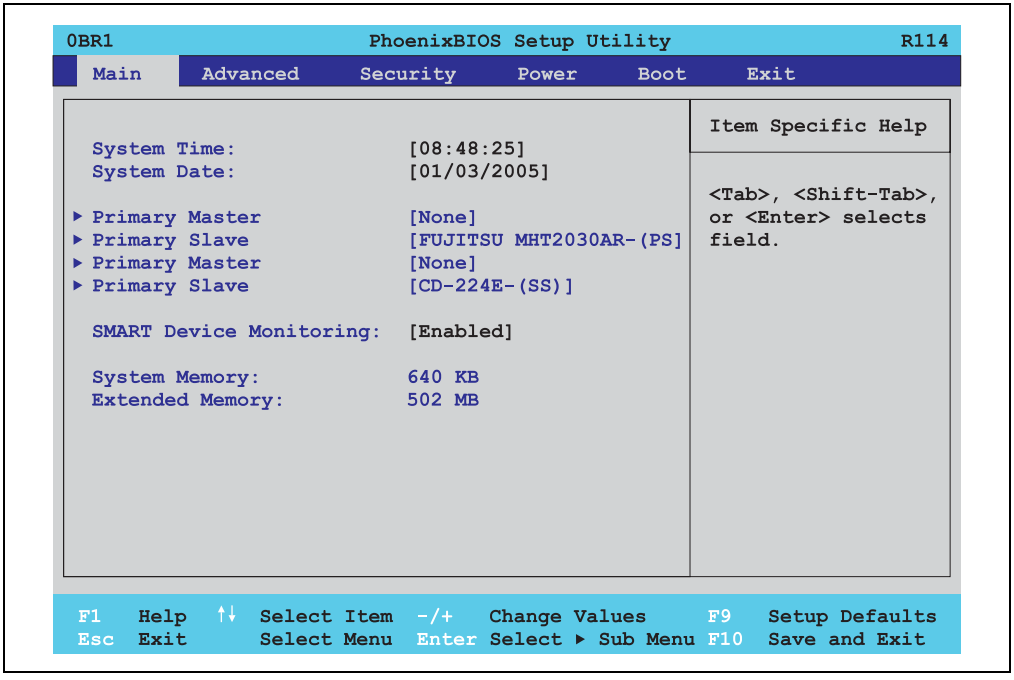


Figure 100: 855GME - main

BIOS setting	Description	Setting options	Effect
System time	This is the current system time setting. The time is buffered by a battery (CMOS battery) after the system has been switched off.	Adjustment of the system time	Set the system time in the format (hh:mm:ss).
System date	This is the current system date setting. The time is buffered by a battery (CMOS battery) after the system has been switched off.	Changes to the system date	Set the system date in the format (mm:dd:yyyy).
Primary master	The drive in the system that is connected to the IDE primary master port is configured here.	Enter	Opens submenu see "Primary master", on page 188.
Primary slave	The drive in the system that is connected to the IDE primary slave port is configured here.	Enter	Opens submenu see "Primary slave", on page 190.
Secondary master	The drive in the system that is connected to the IDE secondary master port is configured here.	Enter	Opens submenu see "Secondary master", on page 191.
Secondary slave	The drive in the system that is connected to the IDE secondary slave port is configured here.	Enter	Opens submenu see "Secondary slave", on page 193.

Table 115: 855GME - main - setting options

BIOS setting	Description	Setting options	Effect
Smart device monitoring	S.M.A.R.T. (Self Monitoring Analysis and Reporting Technology) is implemented in the today's hard drives. This technology allows you to detect reading or rotational problems with the hard drive, and much more.	Enabled	Activates this function. In the future, a message regarding impending errors is produced.
		Disabled	Deactivates this function.
System memory	Displays the amount of main memory installed. Between 0 and 640 KB.	None	-
Extended memory	Displays the available main memory from the first MB to the maximum memory capacity.	None	-

Table 115: 855GME - main - setting options (cont.)

2.4.1 Primary master

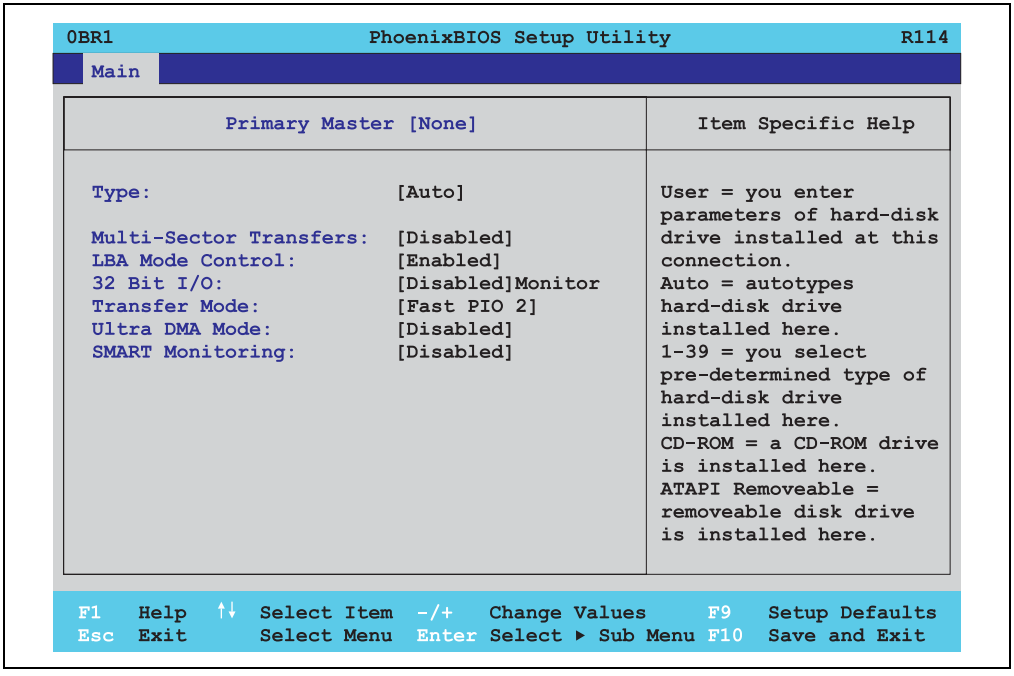


Figure 101: 855GME - primary master setup

BIOS setting	Description	Setting options	Effect
Type	The type of drive connected to the primary master is configured here.	Auto	Automatic recognition of the drive and setup of appropriate values.
		User	Manual setup of the drive (number of cylinders, heads, and sectors).
		Other ATAPI	Use this option for IDE disk drives that are not mentioned here.
		CD ROM	CD-ROM = CD-ROM drive
		ATAPI removable	The removable media drive is treated as a hard drive or floppy drive.
		IDE removable	The IDE removable drive is treated as a hard drive.
Multi-sector transfer	This option determines the number of sectors per block. Only possible when manually setting up the drive.	Disabled	Deactivates the function.
		2, 4, 8 or 16 sectors	Number of sectors per block.
LBA mode control	This option activates the logical block addressing for IDE. This function enables support of drives larger than 540 MB. Only possible when manually setting up the drive.	Disabled	Deactivates the function.
		Enabled	Activates the function.
32-bit I/O	This function enables 32-bit data transfer.	Disabled	Deactivates the function.
		Enabled	Activates the function.
Transfer mode	The communication path between the primary master drive and the system memory is defined here. Only possible when manually setting up the drive.	Default	Default setting
		Fast PIO 1 - Fast PIO 4 / DMA2	Manual configuration of PIO mode.
Ultra DMA mode	The data transfer rate to and from the primary master drive is defined here. The DMA mode must be activated in the Windows device manager in order to guarantee maximum performance. Only possible when manually setting up the drive.	Disabled	Deactivates the function. Do not use UDMA mode.
		Mode 0 - Mode 5	Manual setting option for UDMA mode.
SMART monitoring	Indicates whether the primary master drive supports SMART technology.	Disabled	No drive support, and function is deactivated.
		Enabled	Drive support present, and function is activated.

Table 116: 855GME - primary master - setting options

2.4.2 Primary slave

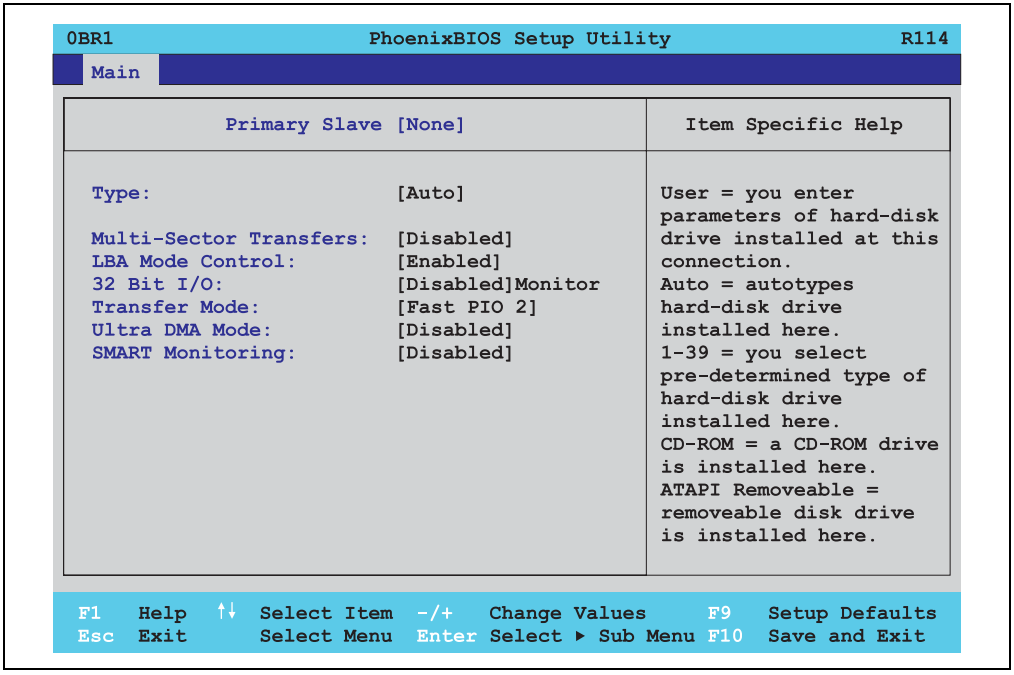


Figure 102: 855GME - primary slave setup

BIOS setting	Description	Setting options	Effect
Type	The type of drive connected to the primary slave is configured here.	Auto	Automatic recognition of the drive and setup of appropriate values.
		User	Manual setup of the drive (number of cylinders, heads, and sectors).
		Other ATAPI	Use this option for IDE disk drives that are not mentioned here.
		CD ROM	CD-ROM = CD-ROM drive
		ATAPI removable	The removable media drive is treated as a hard drive or floppy drive.
		IDE removable	The IDE removable drive is treated as a hard drive.
Multi-sector transfer	This option determines the number of sectors per block. Only possible when manually setting up the drive.	Disabled	Deactivates the function.
		2, 4, 8 or 16 sectors	Number of sectors per block.
LBA mode control	This option activates the logical block addressing for IDE. This function enables support of drives larger than 540 MB. Only possible when manually setting up the drive.	Disabled	Deactivates the function.
		Enabled	Activates the function.

Table 117: 855GME - primary slave - setting options

BIOS setting	Description	Setting options	Effect
32-bit I/O	This function enables 32-bit data transfer.	Disabled	Deactivates the function.
		Enabled	Activates the function.
Transfer mode	The communication path between the primary slave drive and the system memory is defined here. Only possible when manually setting up the drive.	Default	Default setting
		Fast PIO 1 - Fast PIO 4 / DMA2	Manual configuration of PIO mode.
Ultra DMA mode	The data transfer rate to and from the primary slave drive is defined here. The DMA mode must be activated in the Windows device manager in order to guarantee maximum performance. Only possible when manually setting up the drive.	Disabled	Deactivates the function. Do not use UDMA mode.
		Mode 0 - Mode 5	Manual setting option for UDMA mode.
SMART monitoring	Indicates whether the primary slave drive supports SMART technology.	Disabled	No drive support, and function is deactivated.
		Enabled	Drive support present, and function is activated.

Table 117: 855GME - primary slave - setting options (cont.)

2.4.3 Secondary master

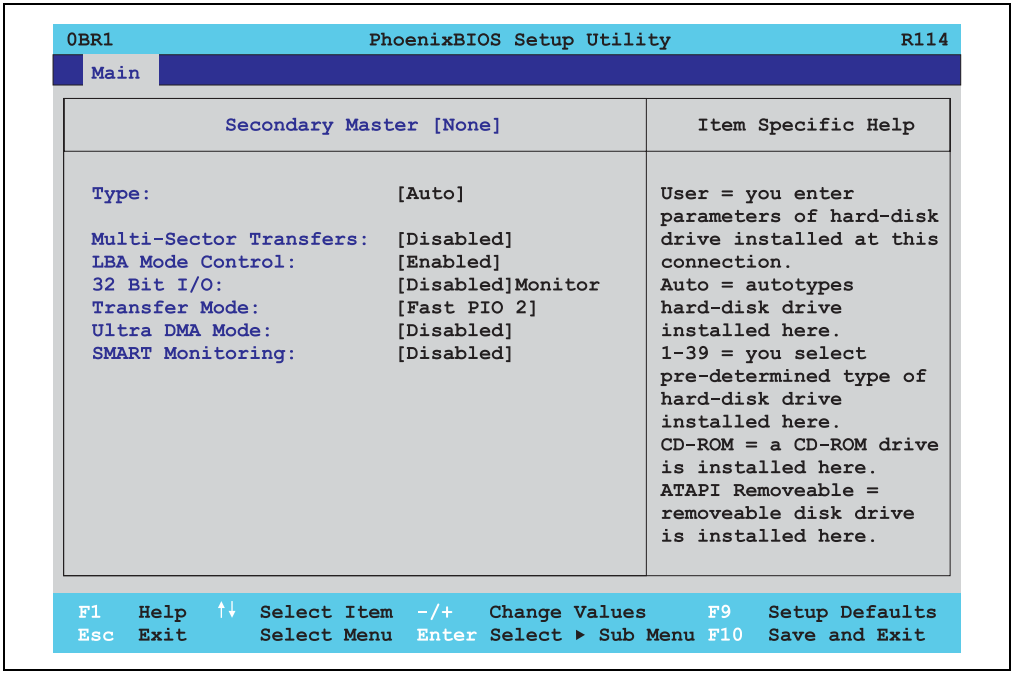


Figure 103: 855GME - secondary master setup

BIOS setting	Description	Setting options	Effect
Type	The type of drive connected to the secondary master is configured here.	Auto	Automatic recognition of the drive and setup of appropriate values.
		User	Manual setup of the drive (number of cylinders, heads, and sectors).
		Other ATAPI	Use this option for IDE disk drives that are not mentioned here.
		CD ROM	CD-ROM = CD-ROM drive
		ATAPI removable	The removable media drive is treated as a hard drive or floppy drive.
		IDE removable	The IDE removable drive is treated as a hard drive.
Multi-sector transfer	This option determines the number of sectors per block. Only possible when manually setting up the drive.	Disabled	Deactivates the function.
		2, 4, 8 or 16 sectors	Number of sectors per block.
LBA mode control	This option activates the logical block addressing for IDE. This function enables support of drives larger than 540 MB. Only possible when manually setting up the drive.	Disabled	Deactivates the function.
		Enabled	Activates the function.
32-bit I/O	This function enables 32-bit data transfer.	Disabled	Deactivates the function.
		Enabled	Activates the function.
Transfer mode	The communication path between the secondary master drive and the system memory is defined here. Only possible when manually setting up the drive.	Default	Default setting
		Fast PIO 1 - Fast PIO 4 / DMA2	Manual configuration of PIO mode.
Ultra DMA mode	The data transfer rate to and from the secondary master drive is defined here. The DMA mode must be activated in the Windows device manager in order to guarantee maximum performance. Only possible when manually setting up the drive.	Disabled	Deactivates the function. Do not use UDMA mode.
		Mode 0 - Mode 5	Manual setting option for UDMA mode.
SMART monitoring	Indicates whether the secondary master drive supports SMART technology.	Disabled	No drive support, and function is deactivated.
		Enabled	Drive support present, and function is activated.

Table 118: 855GME - secondary master - setting options

2.4.4 Secondary slave

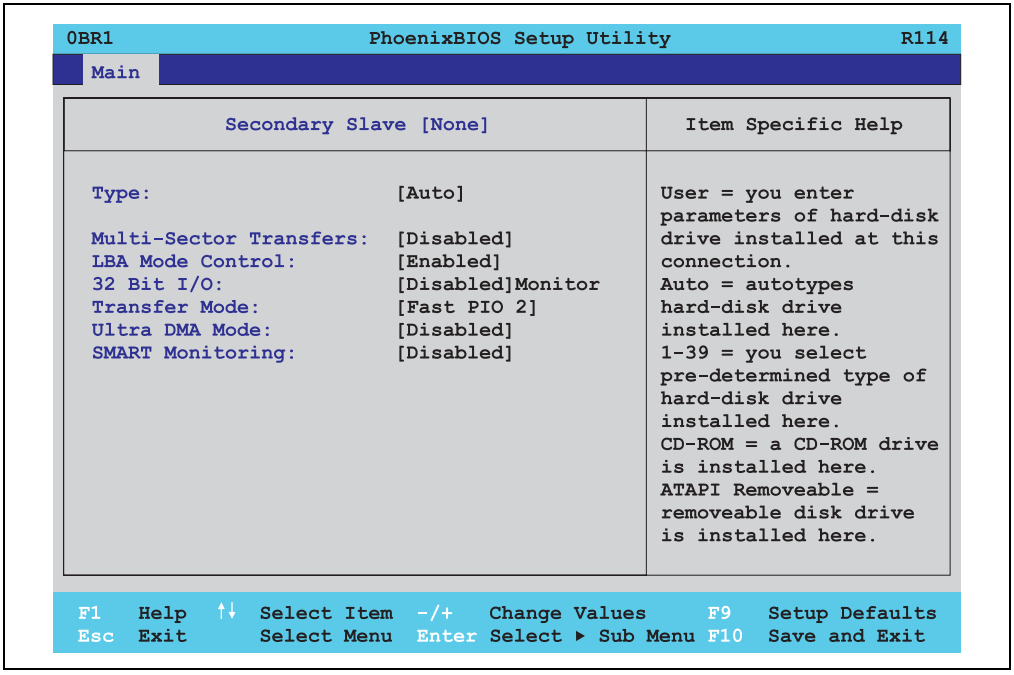


Figure 104: 855GME - secondary slave setup

BIOS setting	Description	Setting options	Effect
Type	The type of drive connected to the secondary slave is configured here.	Auto	Automatic recognition of the drive and setup of appropriate values.
		User	Manual setup of the drive (number of cylinders, heads, and sectors).
		Other ATAPI	Use this option for IDE disk drives that are not mentioned here.
		CD ROM	CD-ROM = CD-ROM drive
		ATAPI removable	The removable media drive is treated as a hard drive or floppy drive.
		IDE removable	The IDE removable drive is treated as a hard drive.
Multi-sector transfer	This option determines the number of sectors per block. Only possible when manually setting up the drive.	Disabled	Deactivates the function.
		2, 4, 8 or 16 sectors	Number of sectors per block.
LBA mode control	This option activates the logical block addressing for IDE. This function enables support of drives larger than 540 MB. Only possible when manually setting up the drive.	Disabled	Deactivates the function.
		Enabled	Activates the function.

Table 119: 855GME - secondary slave - setup options

BIOS setting	Description	Setting options	Effect
32-bit I/O	This function enables 32-bit data transfer.	Disabled	Deactivates the function.
		Enabled	Activates the function.
Transfer mode	The communication path between the secondary slave drive and the system memory is defined here. Only possible when manually setting up the drive.	Default	Default setting
		Fast PIO 1 - Fast PIO 4 / DMA2	Manual configuration of PIO mode.
Ultra DMA mode	The data transfer rate to and from the secondary slave is defined here. The DMA mode must be activated in the Windows device manager in order to guarantee maximum performance. Only possible when manually setting up the drive.	Disabled	Deactivates the function. Do not use UDMA mode.
		Mode 0 - Mode 5	Manual setting option for UDMA mode.
SMART monitoring	Indicates whether the secondary slave drive supports SMART technology.	Disabled	No drive support, and function is deactivated.
		Enabled	Drive support present, and function is activated.

Table 119: 855GME - secondary slave - setup options (cont.)

2.5 Advanced

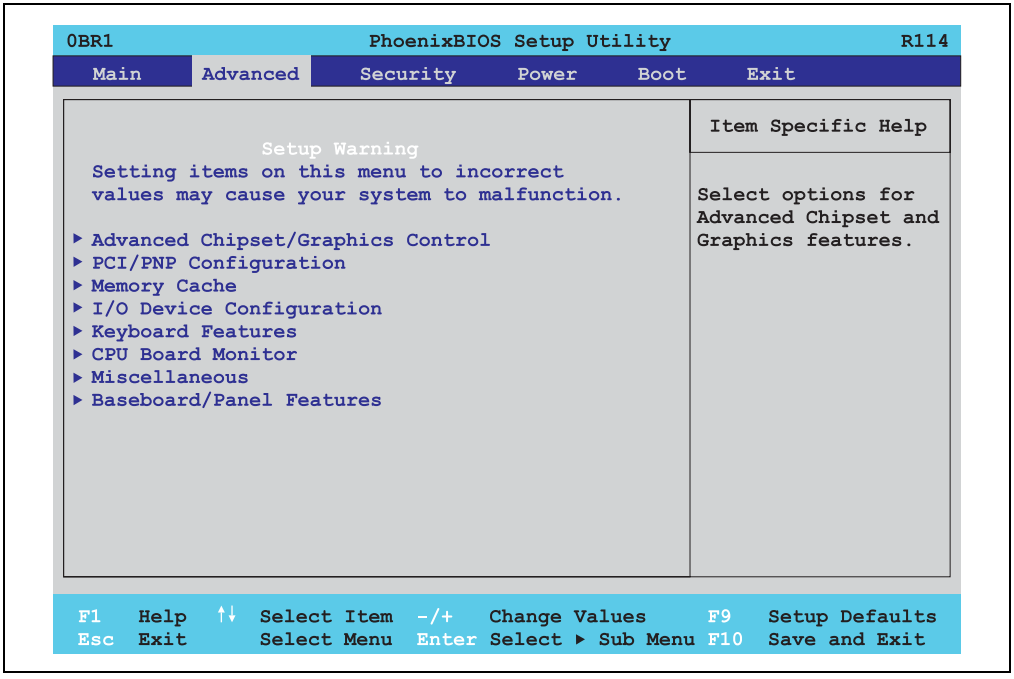


Figure 105: 855GME - advanced setup menu - overview

BIOS setup menu	Description	Setting options	Effect
Advanced chipset/graphics control	Setup of advanced chipset and graphics functions.	Enter	Opens submenu see "Advanced chipset/graphics control", on page 195.
PCI/PNP configuration	Configures PCI devices.	Enter	Opens submenu see "PCI/PNP configuration", on page 197.
Memory cache	Configuration of the memory cache resources.	Enter	Opens submenu see "Memory cache", on page 204.
I/O device configuration	Configuration of the I/O devices.	Enter	Opens submenu see "I/O device configuration", on page 206.
Keyboard features	Configuration of the keyboard options.	Enter	Opens submenu see "Keyboard features", on page 208.
CPU board monitor	Displays the current voltages and temperature of the processor in use.	Enter	Opens submenu see "CPU board monitor", on page 209.
Miscellaneous	Configuration of various BIOS settings (summary screen, halt on errors, etc.).	Enter	Opens submenu see "Miscellaneous", on page 210.
Baseboard/panel features	Display of device specific information and setup of device specific values.	Enter	Opens submenu see "Baseboard/panel features", on page 211.

Table 120: 855GME - advanced menu - setting options

2.5.1 Advanced chipset/graphics control

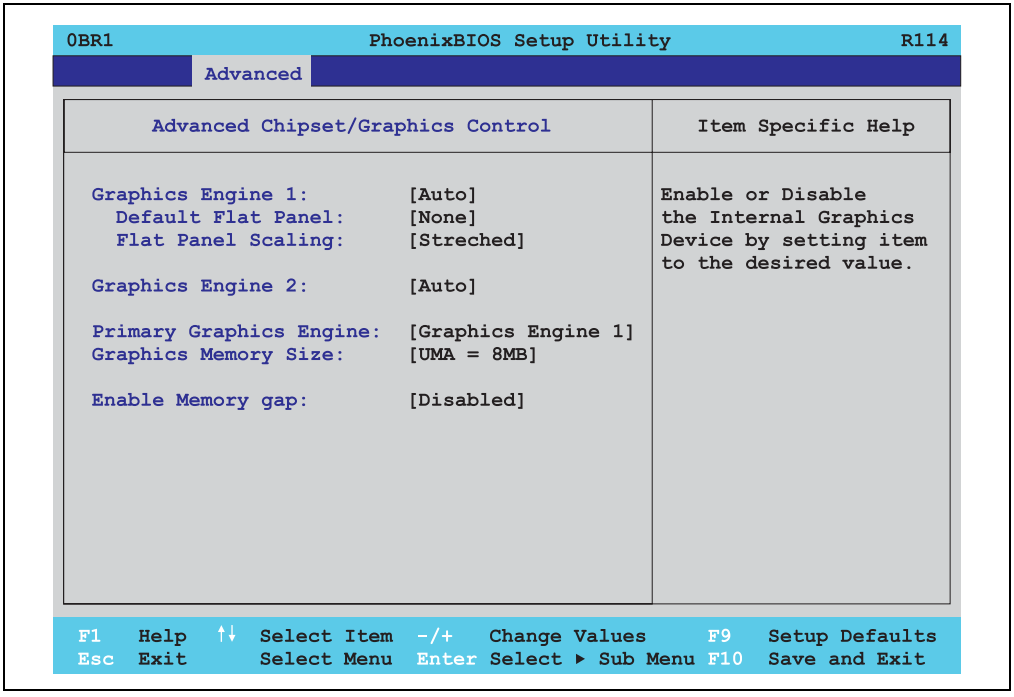


Figure 106: 855GME - advanced chipset control

BIOS setting	Description	Setting options	Effect
Graphics engine 1	Settings can be made for the onboard video controller (internal graphics device).	Auto	Automatic setting of the graphics engine 1. The setting of the resolution using a read-out of the panel's EDID data.
		Disabled	Disable graphics controller. **Important!** **Activation of onboard video controller is necessary to make video output possible. Deactivate only for use of an external PCI graphics card.**
Default flat panel	Should the connected panel fail to be automatically recognized, a predefined resolution can be set manually here.	None	
		VGA, SVGA, XGA, XGA2, SXGA	VGA = 640 x 480 resolution SVGA = 800 x 600 resolution XGA = 1024 x 768 resolution XGA2 = 1024 x 768 resolution SXGA = 1280 x 1024 resolution
Flat panel scaling	For setting whether the video signal should be centered on the panel (stamp format), or fill the entire display (stretched).	Centered	Display is centered.
		Stretched	Display is stretched to fit screen.
Graphics engine 2		Auto	
		Disabled	
Graphics engine		Graphics engine 1	
		Graphics engine 2	
Graphics memory size	For setting how much of the main memory (in MB) the graphics controller can use.	1 MB	1 MB main memory to be used by the graphics controller.
		UMA = 8 MB	8 MB main memory to be used by the graphics controller.
		UMA = 16 MB	16 MB main memory to be used by the graphics controller.
		UMA = 32 MB	32 MB main memory to be used by the graphics controller.
Enable memory gap		Disabled	
		Extended	
IGD - device 2, function 1	For turning function 1 of the internal graphics controller on and off.	Enabled	Activate function.
		Disabled	Deactivate function.
IGD - memory size		UMA = 1MB, 8MB, 16MB or 32MB	

Table 121: 855GME - advanced chipset control - setting options

2.5.2 PCI/PNP configuration

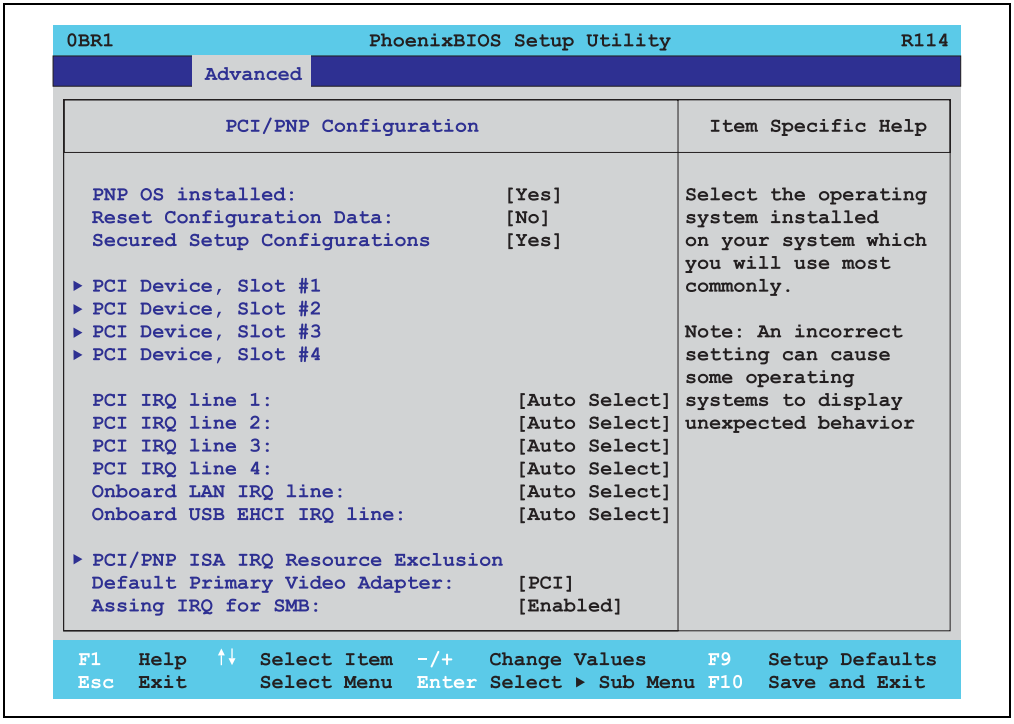


Figure 107: 855GME - PCI/PNP configuration

BIOS setting	Description	Setting options	Effect
PNP OS installed	If the operating system is plug & play capable, then this option informs BIOS that the operating system will handle the distribution of resources in the future.	Yes	The ISA PnP resources are not assigned. The resource assignment sequence is as follows: 1. Motherboard devices 2. PCI devices
		No	The resource assignment sequence is as follows: 1. Motherboard devices 2. ISA PnP devices 3. PCI devices
Reset configuration data	During booting, the assigned resources are stored in Flash (ESCD).	Yes	When the system is reset after leaving the BIOS setup, all ECSD entries (extended system configuration data) are deleted.
		No	Deactivates the function. Resources are not reset.
Secured setup configuration	This option protects the setup configuration from interference from a PnP operating system.	Yes	Prevents a PnP operating system from changing system settings.
		No	Deactivates the function. Changes are allowed.

Table 122: 855GME - PCI/PNP configuration - setting options

BIOS setting	Description	Setting options	Effect
PCI device, slot #1	Advanced configuration of the PCI slot number 1.	Enter	Opens submenu See "PCI device, slot #1", on page 199
PCI device, slot #2	Advanced configuration of the PCI slot number 2.	Enter	Opens submenu See "PCI device, slot #2", on page 200
PCI device, slot #3	Advanced configuration of the PCI slot number 3.	Enter	Opens submenu See "PCI device, slot #3", on page 201
PCI device, slot #4	Advanced configuration of the PCI slot number 4.	Enter	Opens submenu See "PCI device, slot #4", on page 202
PCI IRQ line 1	Under this option, the external PCI interrupt 1 is assigned to an ISA interrupt.	Auto-select	The interrupt is automatically assigned according to the plug & play guidelines.
		Disabled	Deactivates the function. No assignment.
		3, 4, 5, 7, 8, 9, 10, 11, 12, 14, 15	Manual configuration of the IRQ.
PCI IRQ line 2	Under this option, the external PCI interrupt 2 is assigned to an ISA interrupt.	Auto-select	The interrupt is automatically assigned according to the plug & play guidelines.
		Disabled	Deactivates the function. No assignment.
		3, 4, 5, 7, 8, 9, 10, 11, 12, 14, 15	Manual configuration of the IRQ.
PCI IRQ line 3	Under this option, the external PCI interrupt 3 is assigned to an ISA interrupt.	Auto-select	The interrupt is automatically assigned according to the plug & play guidelines.
		Disabled	Deactivates the function. No assignment.
		3, 4, 5, 7, 8, 9, 10, 11, 12, 14, 15	Manual configuration of the IRQ.
PCI IRQ line 4	Under this option, the external PCI interrupt 4 is assigned to an ISA interrupt.	Auto-select	The interrupt is automatically assigned according to the plug & play guidelines.
		Disabled	Deactivates the function. No assignment.
		3, 4, 5, 7, 8, 9, 10, 11, 12, 14, 15	Manual configuration of the IRQ.
Onboard LAN IRQ line	Under this option, the onboard LAN interrupt is assigned to an ISA interrupt.	Auto-select	The interrupt is automatically assigned according to the plug & play guidelines.
		Disabled	Deactivates the function. No assignment.
		3, 4, 5, 7, 8, 9, 10, 11, 12, 14, 15	Manual configuration of the IRQ.
Onboard USB EHCI IRQ line	Under this option, the USB EHCI interrupt is assigned to an ISA interrupt.	Auto-select	The interrupt is automatically assigned according to the plug & play guidelines.
		Disabled	Deactivates the function. No assignment.
		3, 4, 5, 7, 8, 9, 10, 11, 12, 14, 15	Manual configuration of the IRQ.
PCI/PNP ISA IRQ resource exclusion	This option reserves IRQs that are not being used by plug & play capable ISA devices.	Enter	Opens submenu See "PCI/PNP ISA IRQ resource exclusion", on page 203
Default primary video adapter	This option sets the first activated graphics card (either an existing AGP or the PCI graphic card).	PCI	A PCI graphics card is set as the default display device.
		AGP	An AGP graphics card is set as the default display device.

Table 122: 855GME - PCI/PNP configuration - setting options (cont.)

BIOS setting	Description	Setting options	Effect
Assign IRQ to SMB	Use this function to set whether or not the SM (System Management) bus controller is assigned a PCI interrupt.	Enabled	Automatic assignment of a PCI interrupt.
		Disabled	No assignment of an interrupt.

Table 122: 855GME - PCI/PNP configuration - setting options (cont.)

PCI device, slot #1

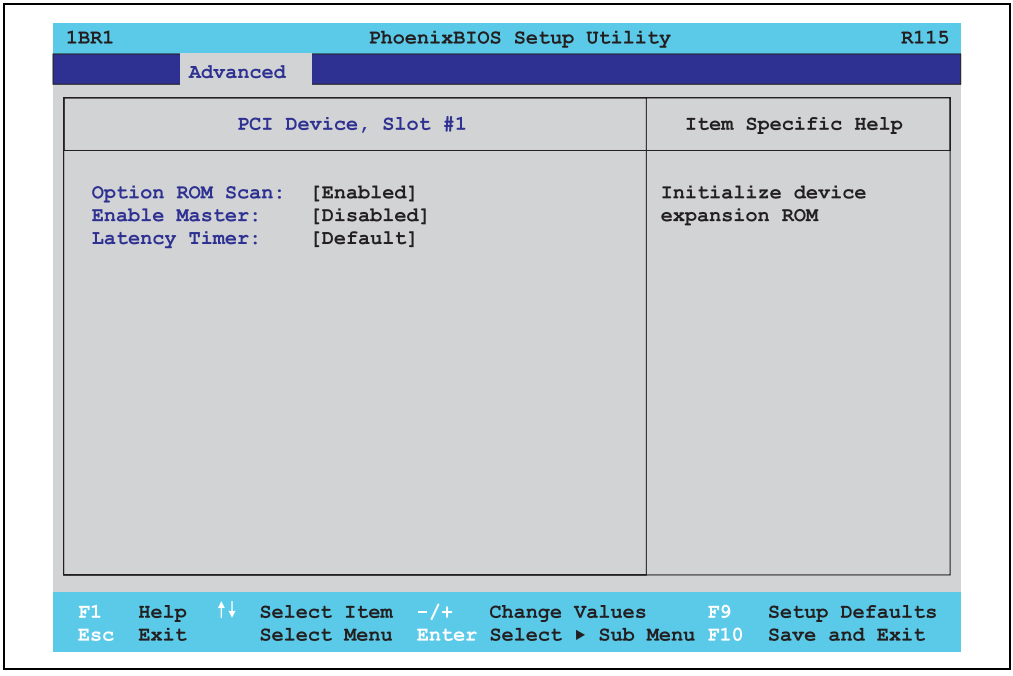


Figure 108: 855GME - PCI device, slot #1

BIOS setting	Description	Setting options	Effect
ROM scan option	Setting for the initialization of a device's ROM.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Enable master	Sets the PCI device to be treated as the PCI bus master. Not all PCI devices can function as PCI bus master! Check device description.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Latency timer	This option controls how long one card can continue to use the PCI bus master after another PCI card has requested access.	Default	Default setting. Standard.
		0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, 00E0h	Manual configuration of the setting.

Table 123: 855GME - PCI device, slot #1 - setting options

PCI device, slot #2

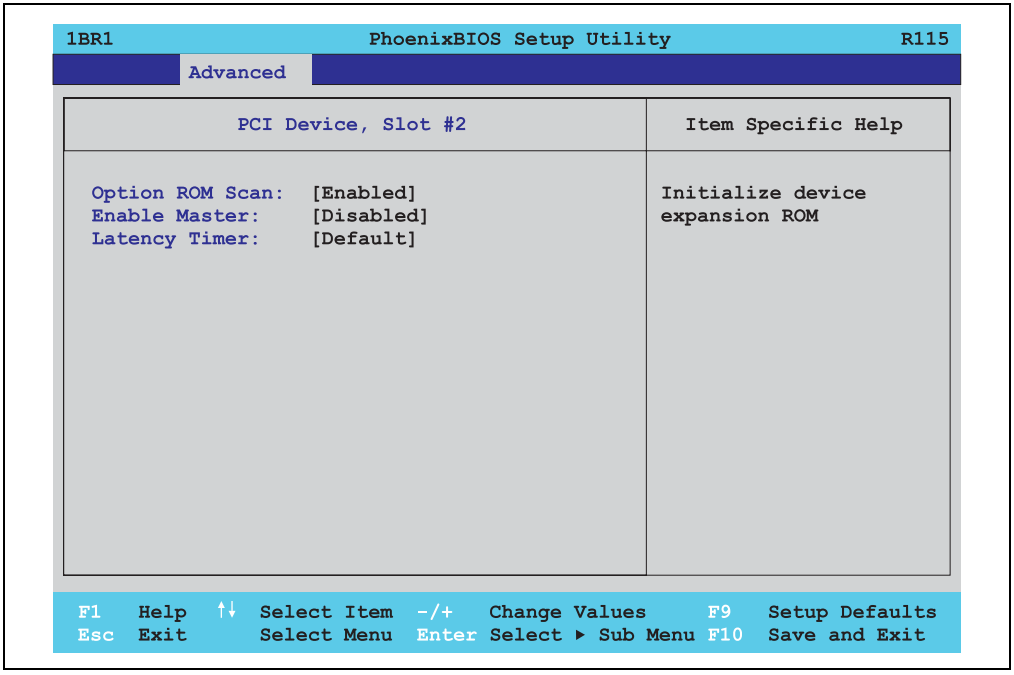


Figure 109: 855GME - PCI device, slot #2

BIOS setting	Description	Setting options	Effect
ROM scan option	Setting for the initialization of a device's ROM.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Enable master	Sets the PCI device to be treated as the PCI bus master. Not all PCI devices can function as PCI bus master! Check device description.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Latency timer	This option controls how long one card can continue to use the PCI bus master after another PCI card has requested access.	Default	Default setting. Standard.
		0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, 00E0h	Manual configuration of the setting.

Table 124: 855GME - PCI device, slot #2 - setting options

PCI device, slot #3

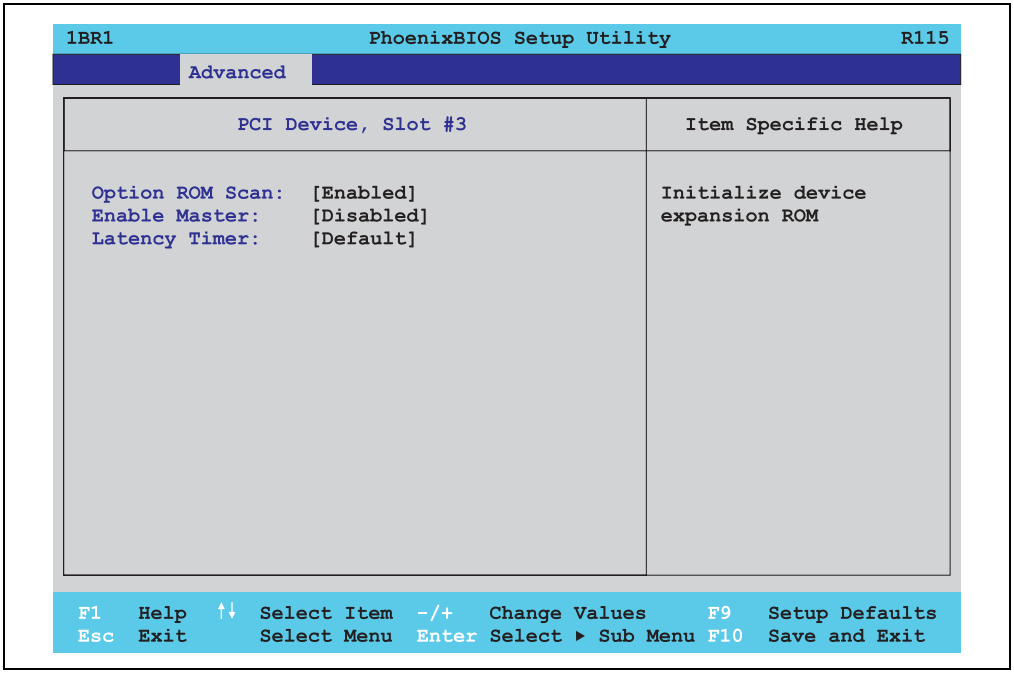


Figure 110: 855GME - PCI device, slot #3

BIOS setting	Description	Setting options	Effect
ROM scan option	Setting for the initialization of a device's ROM.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Enable master	Sets the PCI device to be treated as the PCI bus master. Not all PCI devices can function as PCI bus master! Check device description.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Latency timer	This option controls how long one card can continue to use the PCI bus master after another PCI card has requested access.	Default	Default setting. Standard.
		0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, 00E0h	Manual configuration of the setting.

Table 125: 855GME - PCI device, slot #3 - setting options

PCI device, slot #4

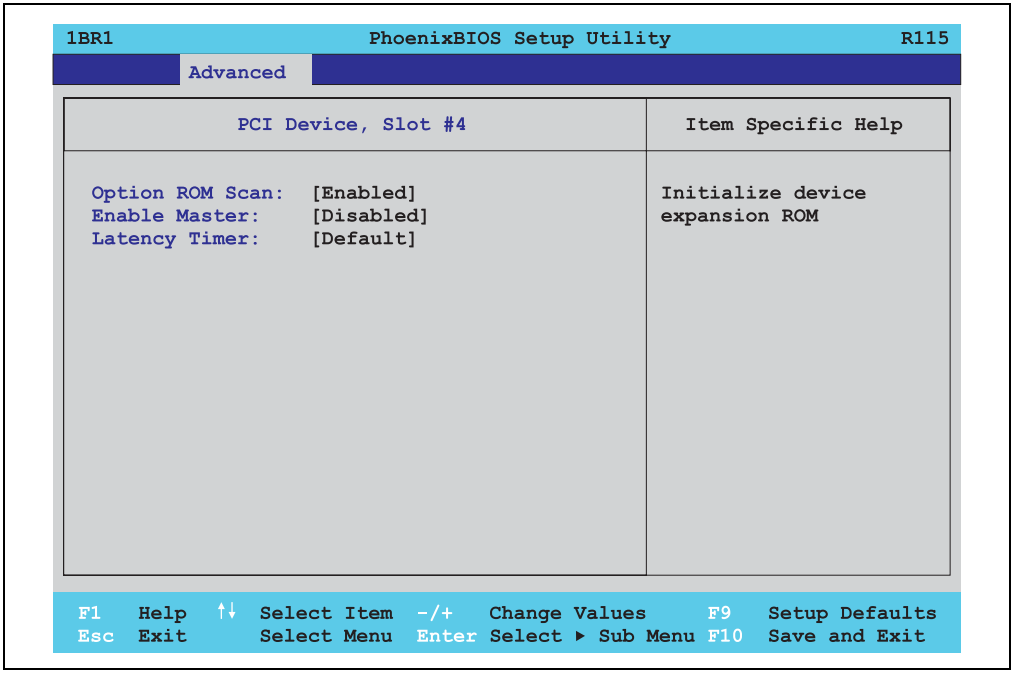


Figure 111: 855GME - PCI device, slot #4

BIOS setting	Description	Setting options	Effect
ROM scan option	Setting for the initialization of a device's ROM.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Enable master	Sets the PCI device to be treated as the PCI bus master. Not all PCI devices can function as PCI bus master! Check device description.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Latency timer	This option controls how long one card can continue to use the PCI bus master after another PCI card has requested access.	Default	Default setting. Standard.
		0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, 00E0h	Manual configuration of the setting.

Table 126: 855GME - PCI device, slot #4 - setting options

PCI/PNP ISA IRQ resource exclusion

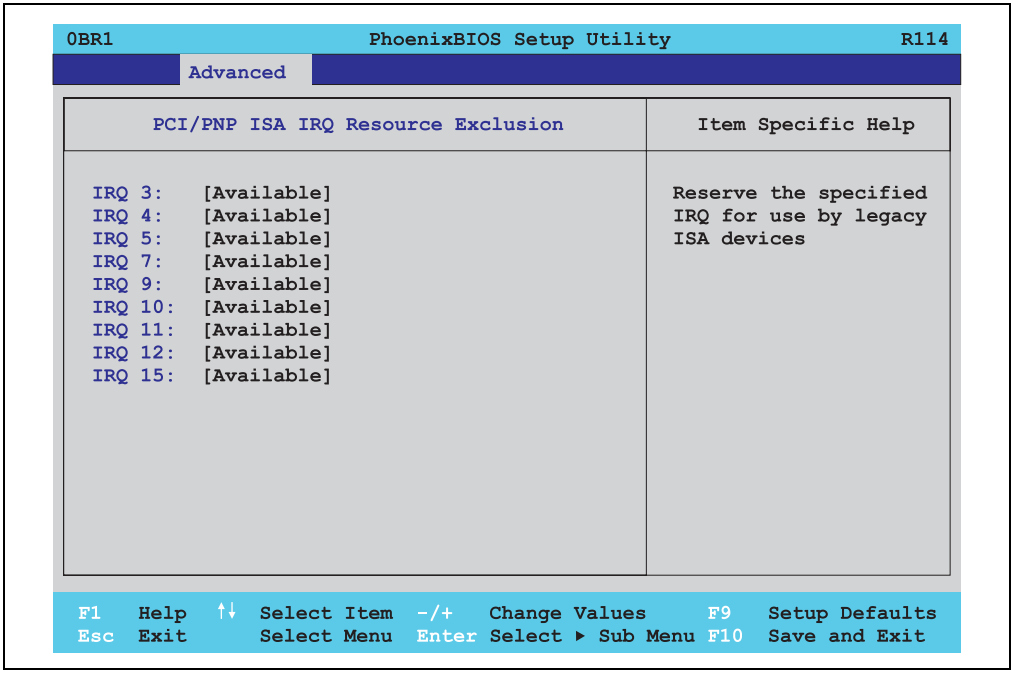


Figure 112: 855GME - PCI/PNP ISA IRQ resource exclusion

BIOS setting	Description	Setting options	Effect
IRQ 3	This setting determines whether the IRQ 3 is reserved for legacy ISA devices.	Available	It is available for PCI devices.
		Reserved	It is reserved for ISA devices.
IRQ 4	This setting determines whether the IRQ 4 is reserved for legacy ISA devices.	Available	It is available for PCI devices.
		Reserved	It is reserved for ISA devices.
IRQ 5	This setting determines whether the IRQ 5 is reserved for legacy ISA devices.	Available	It is available for PCI devices.
		Reserved	It is reserved for ISA devices.
IRQ 7	This setting determines whether the IRQ 7 is reserved for legacy ISA devices.	Available	It is available for PCI devices.
		Reserved	It is reserved for ISA devices.
IRQ 9	This setting determines whether the IRQ 9 is reserved for legacy ISA devices.	Available	It is available for PCI devices.
		Reserved	It is reserved for ISA devices.
IRQ 10	This setting determines whether the IRQ 10 is reserved for legacy ISA devices.	Available	It is available for PCI devices.
		Reserved	It is reserved for ISA devices.
IRQ 11	This setting determines whether the IRQ 11 is reserved for legacy ISA devices.	Available	It is available for PCI devices.
		Reserved	It is reserved for ISA devices.

Table 127: 855GME - PCI/PNP ISA IRQ resource exclusion - setting options

BIOS setting	Description	Setting options	Effect
IRQ 12	This setting determines whether the IRQ 12 is reserved for legacy ISA devices.	Available	It is available for PCI devices.
		Reserved	It is reserved for ISA devices.
IRQ 15	This setting determines whether the IRQ 15 is reserved for legacy ISA devices.	Available	It is available for PCI devices.
		Reserved	It is reserved for ISA devices.

Table 127: 855GME - PCI/PNP ISA IRQ resource exclusion - setting options (cont.)

2.5.3 Memory cache

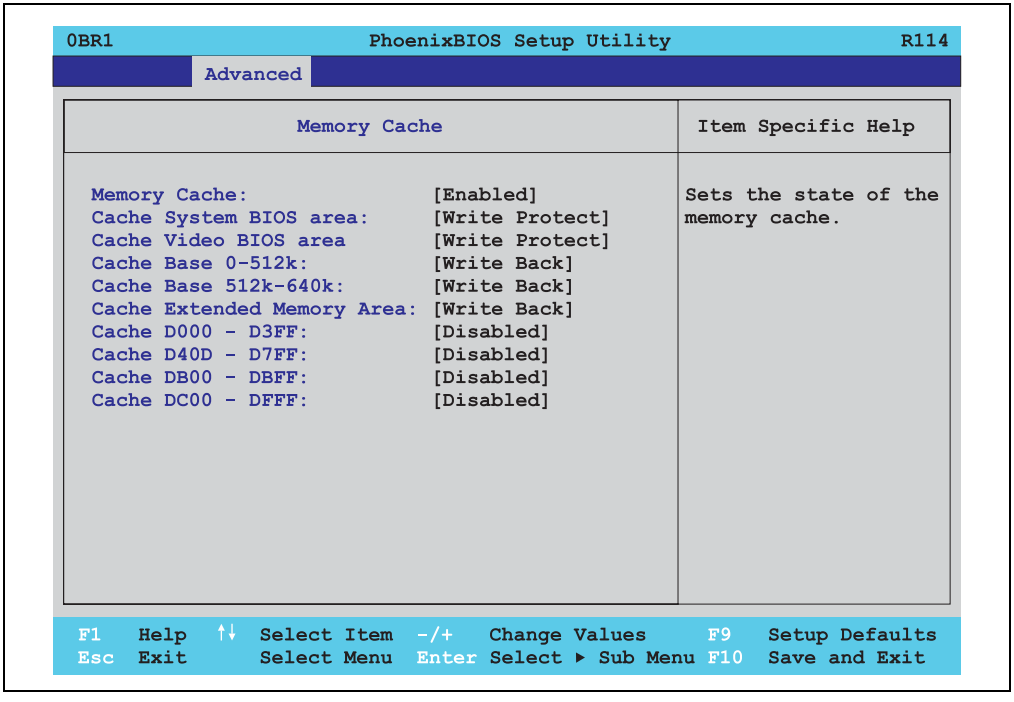


Figure 113: 855GME - memory cache

BIOS setting	Description	Setting options	Effect
Memory cache	Enable/ disable utilization of the L2 cache.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Cache system BIOS area	Set whether or not the system BIOS should be buffered.	Write protect	System BIOS is mapped in the cache.
		Uncached	System BIOS is not mapped in the cache.
Cache video BIOS area	Set whether or not the video BIOS should be buffered.	Write protect	Video BIOS is mapped in the cache.
		Uncached	Video BIOS is not mapped in the cache.

Table 128: 855GME - memory cache - setting options

BIOS setting	Description	Setting options	Effect
Cache base 0-512k	Set whether the memory content should be mapped in the cache (0-512k), and when necessary, written in the main memory.	Uncached	No mapping.
		Write through	Memory content is simultaneously mapped in the cache and written to the main memory.
		Write protect	Memory content is mapped in the cache.
		Write back	Memory content is mapped only when necessary.
Cache base 512-640k	Set whether the memory content should be mapped in the cache (512-640k), and when necessary, written in the main memory.	Uncached	No mapping.
		Write through	Memory content is simultaneously mapped in the cache and written to the main memory.
		Write protect	Memory content is mapped in the cache.
		Write back	Memory content is mapped only when necessary.
Cache extended memory area	Configure how the memory content of the system memory above 1MB should be mapped.	Uncached	No mapping.
		Write through	Memory content is simultaneously mapped in the cache and written to the main memory.
		Write protect	Memory content is mapped in the cache.
		Write back	Memory content is mapped only when necessary.
Cache D000 - D3FF	Configure how the memory content of D000-D3FF should be mapped.	Uncached	No mapping.
		Write through	Memory content is simultaneously mapped in the cache and written to the main memory.
		Write protect	Memory content is mapped in the cache.
		Write back	Memory content is mapped only when necessary.
Cache D400 - D7FF	Configure how the memory content of D400-D7FF should be mapped.	Uncached	No mapping.
		Write through	Memory content is simultaneously mapped in the cache and written to the main memory.
		Write protect	Memory content is mapped in the cache.
		Write back	Memory content is mapped only when necessary.
Cache D800 - DBFF	Configure how the memory content of D800-DBFF should be mapped.	Uncached	No mapping.
		Write through	Memory content is simultaneously mapped in the cache and written to the main memory.
		Write protect	Memory content is mapped in the cache.
		Write back	Memory content is mapped only when necessary.
Cache DC00 - DFFF	Configure how the memory content of DC00-DFFF should be mapped.	Uncached	No mapping.
		Write through	Memory content is simultaneously mapped in the cache and written to the main memory.
		Write protect	Memory content is mapped in the cache.
		Write back	Memory content is mapped only when necessary.

Table 128: 855GME - memory cache - setting options (cont.)

2.5.4 I/O device configuration

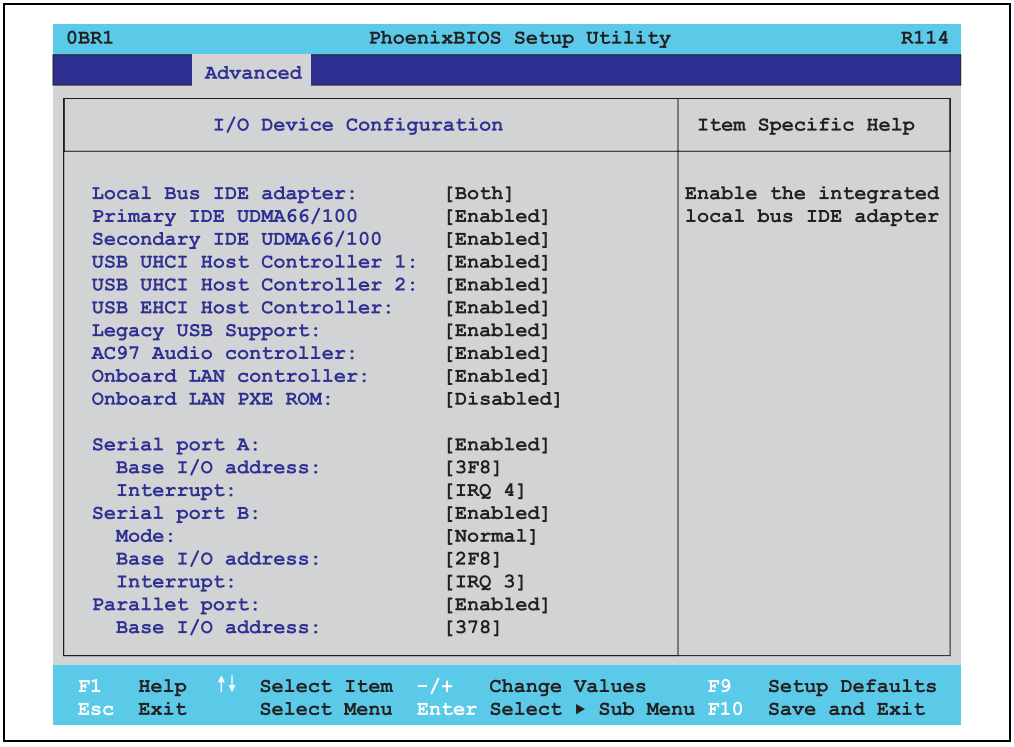


Figure 114: 855GME - I/O device configuration

BIOS setting	Description	Setting options	Effect
Local bus IDE adapter	Enable or disable one or both of the PCI IDE controllers (primary and secondary).	Disabled	Deactivates both PCI IDE controllers (primary and secondary).
		Primary	Activates the primary IDE controller only.
		Secondary	Activates the secondary IDE controller only.
		Both	Activates both PCI IDE controllers (primary and secondary).
Primary IDE UDMA66/100	Setup the data transfer rate for a device connected to the primary IDE channel. This option is only available when a primary IDE drive is connected.	Disabled	The maximum data transfer rate is UDMA33.
		Enabled	The maximum data transfer rate is UDMA66 or higher.
Secondary IDE UDMA66/100	Setup the data transfer rate for a device connected to the secondary IDE channel. This option is only available when a secondary IDE drive is connected.	Disabled	The maximum data transfer rate is UDMA33.
		Enabled	The maximum data transfer rate is UDMA66.
USB UHCI host controller 1	Configuration of the USB UHCI controller 1 for USB port 0 und 1.	Disabled	Deactivates the USB support.
		Enabled	Activates the USB support.

Table 129: 855GME - I/O device configuration - setting options

BIOS setting	Description	Setting options	Effect
USB UHCI host controller 2	Configuration of the USB UHCI controller 1 for USB port 2 and 3. Can only be configured if the USB UHCI controller 1 is activated.	Disabled	Deactivates the USB support.
		Enabled	Activates the USB support.
USB UHCI host controller	Configuration of the USB EHCI controller. Can only be configured if the USB UHCI controller 1 is activated.	Disabled	Deactivates the USB support.
		Enabled	When enabled, the USB 2.0 support is activated as soon as a USB 2.0 device is connected to the interface.
Legacy USB support	Here an IRQ is assigned to the USB connection.	Disabled	No IRQ assigned.
		Enabled	IRQ assigned.
AC97 audio controller	For turning the AC97 audio controller on and off.	Disabled	AC97 sound is deactivated.
		Enabled	AC97 sound is activated.
Onboard LAN controller	For turning the ICH4 on-board LAN controller (for ETH1) on and off.	Disabled	Deactivates the LAN controller or the ETH1 interface.
		Enabled	Activates the LAN controller or the ETH1 interface.
Onboard LAN PXE ROM	For turning the remote boot BIOS extension for the on-board LAN controller (ETH1) on and off.	Disabled	Deactivates the function.
		Enabled	Activates the function.
Serial port A	For the configuration of serial port A (COM1).	Disabled	Port A deactivated.
		Enabled	Port A activated. The base I/O addresses and the interrupt must then be configured manually.
		Auto	Either BIOS or the operating system configures the port automatically.
Base I/O address	Selection of the base I/O address for port A. A yellow star indicates a conflict with another device.	3F8, 2F8, 3E8, 2E8	Base I/O address is manually assigned.
Interrupt	Selection of the interrupt for port A. A yellow star indicates a conflict with another device.	IRQ 3, IRQ 4	Manual assignment of the interrupt.
Serial port B	For the configuration of serial port B (COM2).	Disabled	Port B deactivated.
		Enabled	Port A activated. The base I/O addresses and the interrupt must then be configured manually.
		Auto	Either BIOS or the operating system configures the port automatically.
Mode	This option is for setting the serial port B as either a standard interface or as an infrared interface.	Normal	Serial port B is used as a standard interface.
		IR	The serial interface is used as an infrared interface, and allows data transfers up to 115 kBit/s.
Base I/O address	Selection of the base I/O address for port B. A yellow star indicates a conflict with another device.	3F8, 2F8, 3E8, 2E8	Selected base I/O address is manually assigned.

Table 129: 855GME - I/O device configuration - setting options (cont.)

BIOS setting	Description	Setting options	Effect
Interrupt	Selection of the interrupt for port B. A yellow star indicates a conflict with another device.	IRQ 3, IRQ 4	Selected interrupt is assigned.
Parallel port	For configuring the hardware security key (dongle), which accessed internally through the parallel interface.	Disabled	Deactivates the port.
		Enabled	Activates the port. The base I/O address must then be set.
		Auto	First BIOS and then the operating system configure the port automatically.
Base I/O address	Selection of the base I/O address for the parallel port.	378, 278, 3BC	Base I/O address is manually assigned.

Table 129: 855GME - I/O device configuration - setting options (cont.)

2.5.5 Keyboard features

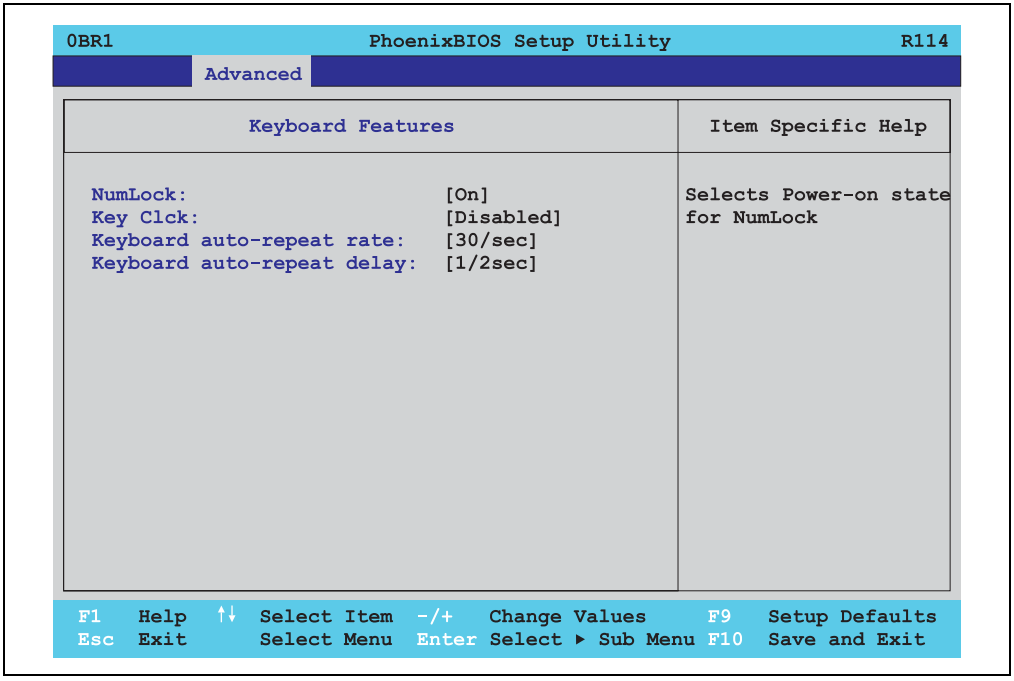


Figure 115: 855GME - keyboard features

BIOS setting	Description	Setting options	Effect
NumLock	This option sets the status of the numeric keypad when the the system is booted.	On	Numeric keypad is activated.
		Off	Only the cursor functions of the numerical keypad are activated.
		Auto	Numeric keypad is activated, if present.

Table 130: 855GME - keyboard features - setting options

BIOS setting	Description	Setting options	Effect
Key click	Using this option, the clicking of the keys can be turned on or off.	Disabled	Deactivates the function.
		Enabled	Activates the function.
Keyboard auto-repeat rate	For setting the speed of repetition when a key is held down.	30/sec, 26.7/sec, 21.8/sec, 18.5/sec, 13.3/sec, 10/sec, 6/sec, 2/sec	Settings from 2 to 30 characters per second.
Keyboard auto-repeat delay	For setting the amount of delay after the key is pressed before the auto-repeat begins.	1/4 sec, 1/2 sec, 3/4 sec, 1 sec	Setting of the desired delay.

Table 130: 855GME - keyboard features - setting options (cont.)

2.5.6 CPU board monitor

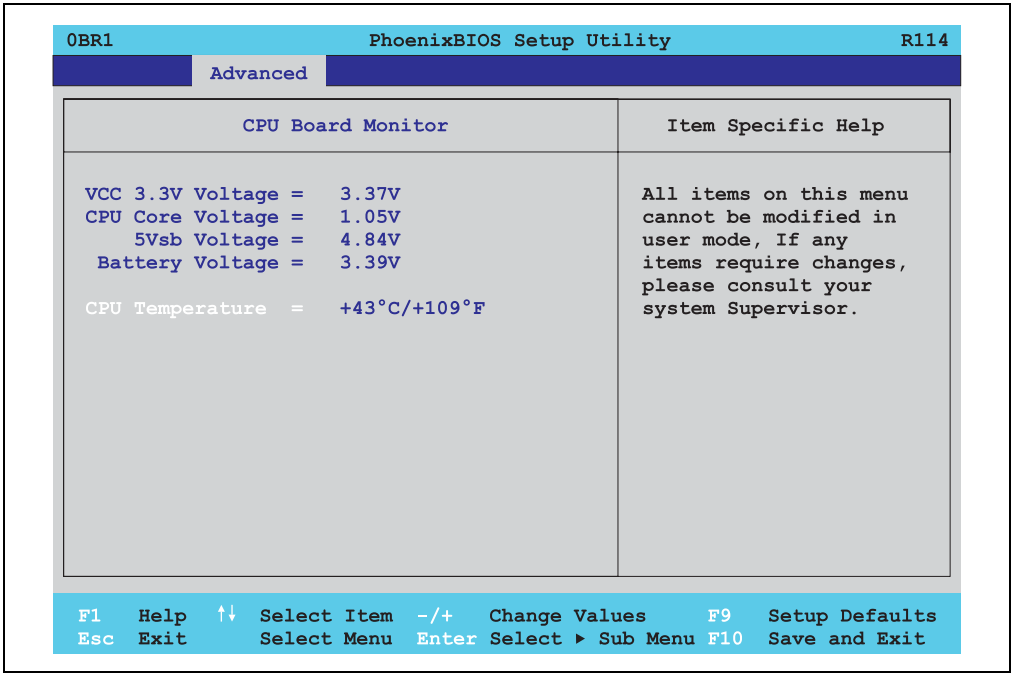


Figure 116: 855GME - CPU board monitor

BIOS setting	Description	Setting options	Effect
VCC 3.3V voltage	Displays the current voltage of the 3.3 volt supply (in volts).	None	
CPU core voltage	Displays the processor's core voltage (in volts).	None	
5Vsb voltage	Displays the 5 V standby voltage (in volts).	None	
Battery voltage	Displays the battery voltage (in volt).	None	

Table 131: 855GME - CPU board monitor - setting options

BIOS setting	Description	Setting options	Effect
CPU temperature	Displays the processor's temperature (in degrees Celsius and Fahrenheit).	None	

Table 131: 855GME - CPU board monitor - setting options

2.5.7 Miscellaneous

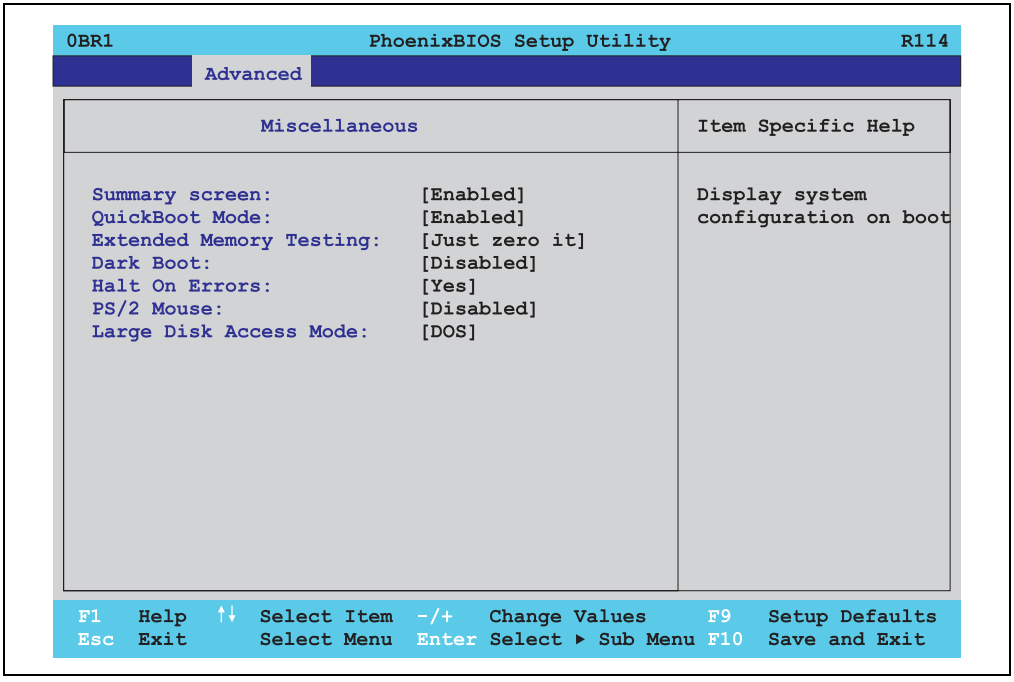


Figure 117: 855GME - miscellaneous

BIOS setting	Description	Setting options	Effect
Summary screen	Set whether or not the system summary screen should open when the system is started (see figure 99 "855GME - BIOS summary screen" on page 185).	Enabled	Activates the function.
		Disabled	Deactivates the function.
QuickBoot mode	Speeds up the booting process by skipping several tests.	Enabled	Activates the function.
		Disabled	Deactivates the function.
Extended memory testing	This function determines the method by which the main memory over 1 MB is tested.	Just zero it	The main memory is quickly tested.
		None	The main memory is not tested at all.
		Normal	This option is only available when the function "QuickBoot mode" has been set to "disabled." The main memory is tested more slowly than with "Just zero It."

Table 132: 855GME - miscellaneous - setting options

BIOS setting	Description	Setting options	Effect
Dark boot	Sets whether the diagnostics screen (see figure 98 "855GME - BIOS diagnostics screen" on page 185) should be displayed when the system is started.	Enabled	Activates the function. The diagnostics screen is displayed.
		Disabled	Deactivates the function. The diagnostics screen is not displayed.
Halt on errors	This option sets whether the system should pause the Power On Self Test (POST) when it encounters an error.	Yes	The system pauses. The system pauses every time an error is encountered.
		No	The system does not pause. All errors are ignored.
PS/2 mouse	Sets whether the PS/2 mouse port should be activated.	Disabled	Deactivates the port.
		Enabled	Activates the port. The IRQ12 is reserved, and is not available for other components.
Large disk access mode	This option is intended for hard discs with more than 1024 cylinders, 16 heads, and more than 63 sectors per track. Setting options: DOS	Other	For non-compatible access (e.g. Novell, SCO Unix.)
		DOS	For MS DOS compatible access.

Table 132: 855GME - miscellaneous - setting options

2.5.8 Baseboard/panel features

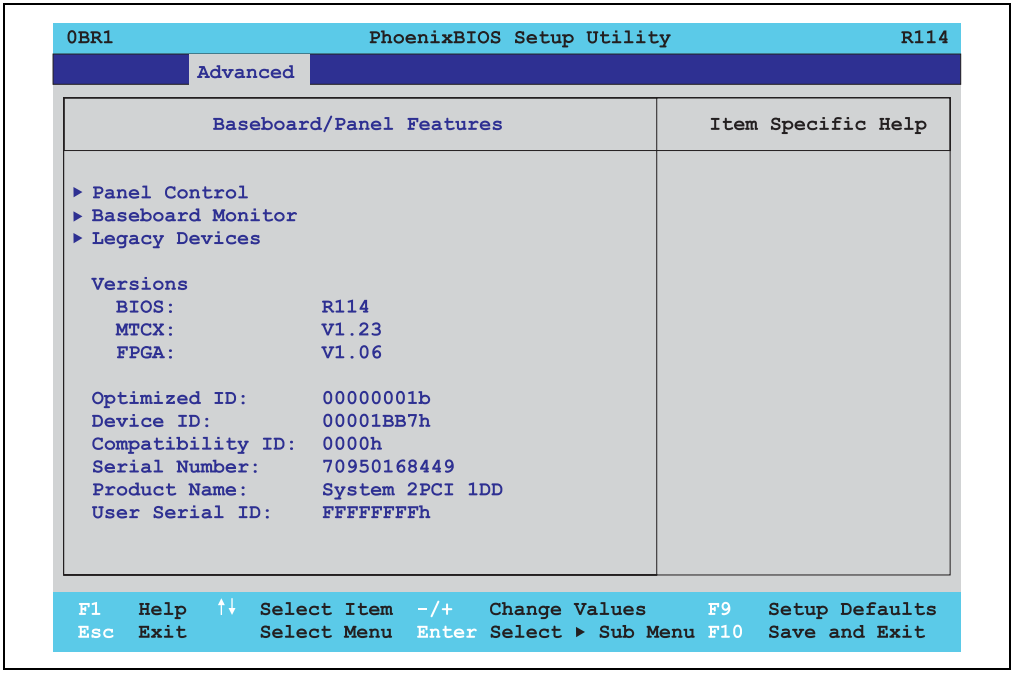


Figure 118: 855GME - baseboard/panel features

BIOS setting	Description	Setting options	Effect
Panel control	For special setup of connected panels.	Enter	Opens submenu see "Panel control", on page 213.
Baseboard monitor	Display of various temperatures and fan RPMs.	Enter	Opens submenu see "Baseboard monitor", on page 214.
Legacy devices		Enter	Opens submenu see "Legacy devices", on page 215.
BIOS	Displays the BIOS version.	None	
MTCX PX32	Displays the MTCX PX32 firmware version.	None	
MTCX FPGA	Displays the MTCX FPGA firmware version.	None	
Optimized ID	Displays the DIP switch setting of the configuration switch.	None	
Device ID	Displays the hexadecimal value of the hardware device ID.	None	
Compatibility ID	Displays the version of the device within the same B&R device code. This ID is needed for Automation Runtime.	None	
Serial number	Displays the B&R serial number.	None	
Product name	Displays the B&R model number.	None	
User serial ID	Displays the hexadecimal value of the user serial ID number. This number can only be changed with "control center," available from B&R.	None	

Table 133: 855GME - baseboard/panel features - setting options

Panel control

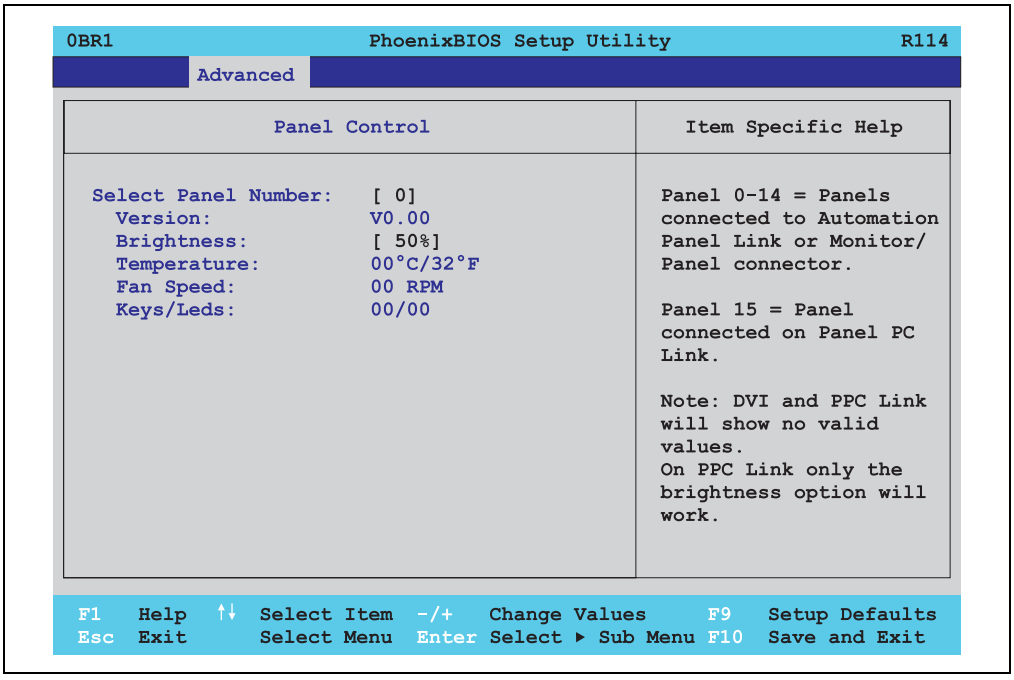


Figure 119: 855GME - panel control

BIOS setting	Description	Setting options	Effect
Select panel number	Selection of the panel number for which the values should be read out and/or changed.	0 ... 15	Selection of panel 0 ... 15. Panel 15 is specifically intended for panel PC 700 systems.
Version	Display of the firmware version of the SDLR controller.	None	
Brightness	For setting the brightness of the selected panel.	0%, 25%, 50%, 75%, 100%	For setting the brightness in % of the selected panel. Changes take effect after saving and restarting the system (e.g. by pressing <F10>).
Temperature	Displays the selected panel's temperature (in degrees Celsius and Fahrenheit).	None	
Fan speed	Displays fan RPMs of the selected panel.	None	
Keys/LEDs	Displays the available keys and LEDs on the selected panel.	None	

Table 134: 855GME - panel control - setting options

Baseboard monitor

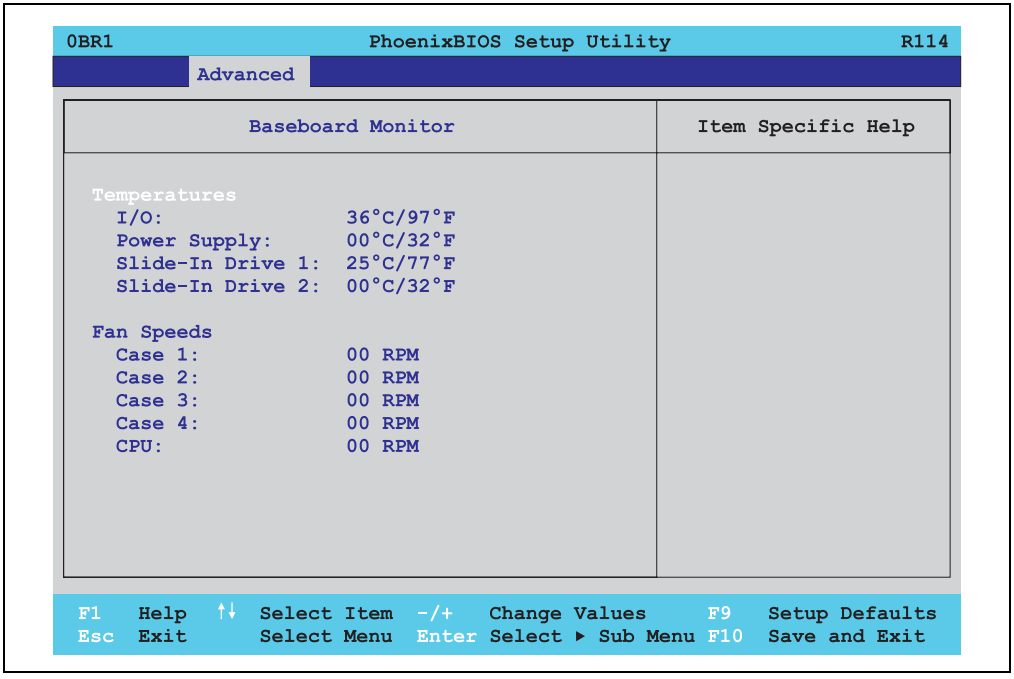


Figure 120: 855GME - baseboard monitor

BIOS setting	Description	Setting options	Effect
I/O	Displays the temperature in the I/O area in degrees Celsius and Fahrenheit.	None	
Power supply	Displays the temperature in the power supply area in degrees Celsius and Fahrenheit.	None	
Slide-in drive 1	Displays the temperature of the slide-in drive 1 in degrees Celsius and Fahrenheit.	None	
Slide-in drive 2	Displays the temperature of the slide-in drive 2 in degrees Celsius and Fahrenheit.	None	
Case 1	Displays the fan RPMs of housing fan 1.	None	
Case 2	Displays the fan RPMs of housing fan 2.	None	
Case 3	Displays the fan RPMs of housing fan 3.	None	
Case 4	Displays the fan RPMs of housing fan 4.	None	
CPU	Displays the fan RPMs of the processor fan.	None	

Table 135: 855GME - baseboard monitor - setting options

Legacy devices

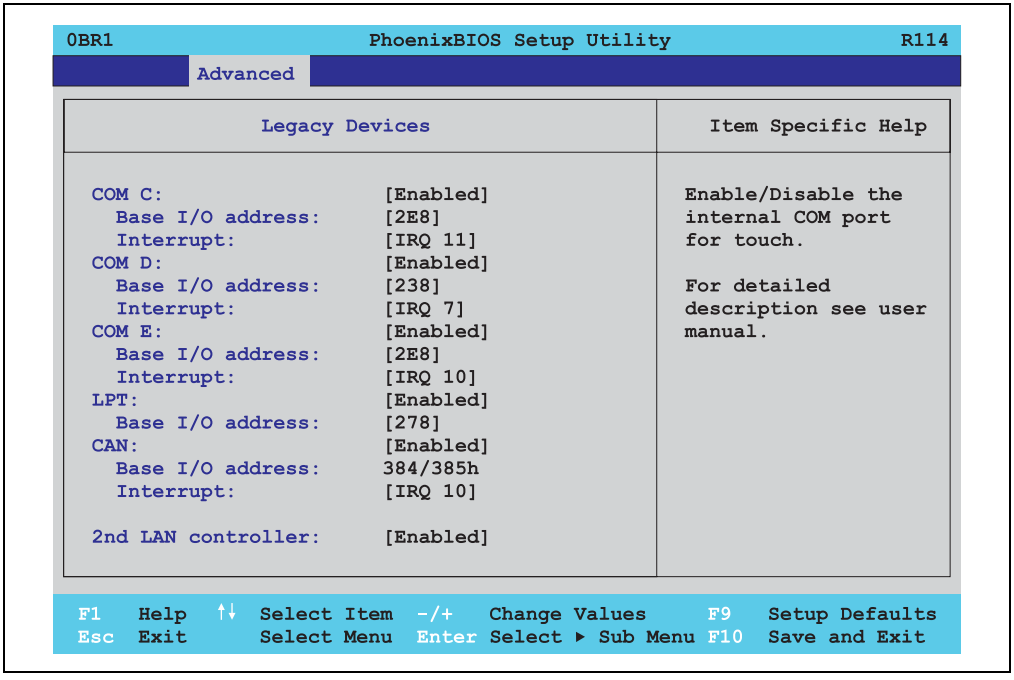


Figure 121: 855GME - Legacy devices

BIOS setting	Description	Setting options	Effect
COM C	Settings for the internal serial interfaces in the system. This setting activates the touch screen in panel PC 700 systems, and, using SDL and LDL transfer technology, also in Automation Panel 900 display units.	Disabled	Deactivates the interface.
		Enabled	Activates the interface.
Base I/O address	Selection of the base I/O address for the COM C port. A yellow star indicates a conflict with another device.	238, 2E8, 2F8, 328, 338, 3E8, 3F8	Selected base I/O address is assigned.
Interrupt	Selection of the interrupt for the COM C port. A yellow star indicates a conflict with another device.	IRQ 3, IRQ 4, IRQ 5, IRQ 10, IRQ 11, IRQ 12, IRQ 15	Selected interrupt is assigned.
COM D	Configuration of the COM D port for the serial interface of an automation panel link slot.	Disabled	Deactivates the interface.
		Enabled	Activates the interface.
Base I/O address	Configuration of the base I/O address for the serial COM D port. A yellow star indicates a conflict with another device.	238, 2E8, 2F8, 328, 338, 3E8, 3F8	Selected base I/O address is assigned.

Table 136: 855GME - Legacy devices - setting options

BIOS setting	Description	Setting options	Effect
Interrupt	Selection of the interrupt for the COM D port. A yellow star indicates a conflict with another device.	IRQ 3, IRQ 4, IRQ 5, IRQ 10, IRQ 11, IRQ 12, IRQ 15	Selected interrupt is assigned.
COM E	Configuration of the optional COM E port of a B&R add-on interface option (IF option).	Disabled	Deactivates the interface.
		Enabled	Activates the interface.
Base I/O address	Configuration of the base I/O address for the serial COM E port. A yellow star indicates a conflict with another device.	238, 2E8, 2F8, 328, 338, 3E8, 3F8	Selected base I/O address is assigned.
Interrupt	Selection of the interrupt for the COM E port. A yellow star indicates a conflict with another device.	IRQ 3, IRQ 4, IRQ 5, IRQ 10, IRQ 11, IRQ 12, IRQ 15	Selected interrupt is assigned.
LPT	This setting is specific to B&R and should not be changed.	Disabled	Deactivates the interface.
		Enabled	Activates the interface.
Base I/O address	Configuration of the base I/O address for the optional LPT. A yellow star indicates a conflict with another device.	278, 378, 3BC	Selected base I/O address is assigned.
CAN	Configuration of the CAN port of a B&R add-on interface card.	Disabled	Deactivates the interface.
		Enabled	Activates the interface.
Base I/O address	384/385h	None	-
Interrupt	Selection of the interrupt for the CAN port.	IRQ 10	Selected interrupt is assigned.
		NMI	NMI interrupt is assigned.
2nd LAN controller	For turning the on-board LAN controller (ETH2) on and off.	Disabled	Deactivates the controller.
		Enabled	Activates the controller.

Table 136: 855GME - Legacy devices - setting options (cont.)

2.6 Security

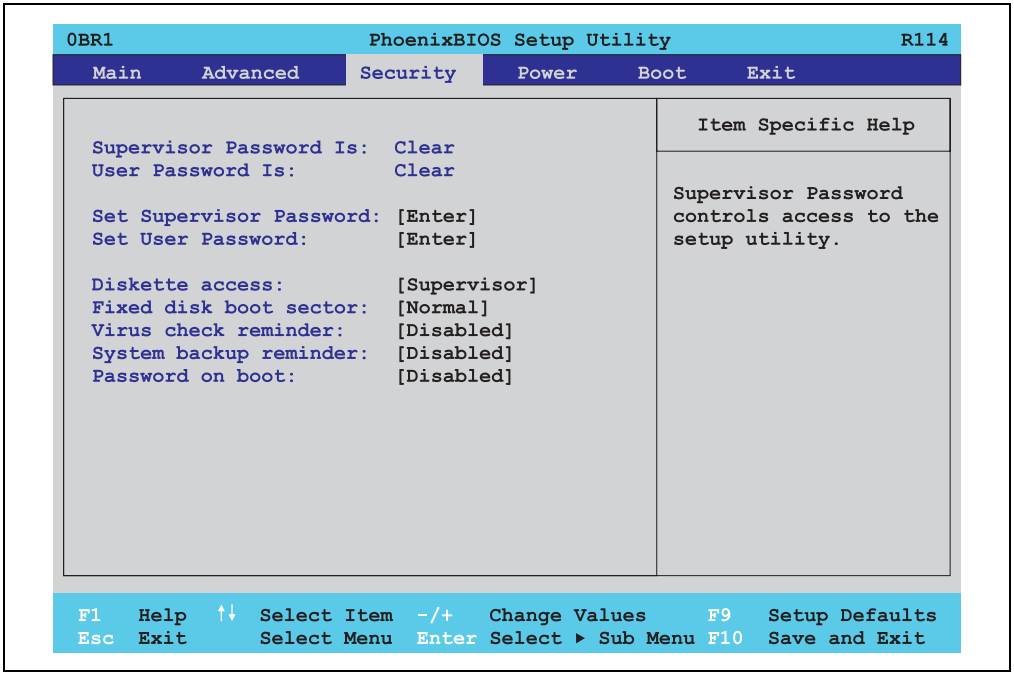


Figure 122: 855GME - security menu

BIOS setting	Description	Setting options	Effect
Supervisor password is	Displays whether or not a supervisor password has been set.	None	Display **set**: A supervisor password has been set. Display **clear**: No supervisor password has been set.
User password is	Displays whether or not a user password has been set.	None	Display **set**: A user password has been set. Display **clear**: No user password has been set.
Set supervisor password	To enter/change a supervisor password. A supervisor password is necessary to edit all BIOS settings.	Enter maximum 7 alphanumeric characters - not case sensitive.	Press Enter and enter password two times. The password must be 7 alphanumeric characters or less. Needed to enter BIOS setup. To change the password, enter the old password once and then the new password twice.
Set user password	To enter/change a user password. A user password allows the user to edit only certain BIOS settings.	Enter maximum 7 alphanumeric characters - not case sensitive.	Press Enter and enter password two times. The password must be 7 alphanumeric characters or less. Needed to enter BIOS setup. To change the password, enter the old password once and then the new password twice.

Table 137: 855GME - security - setting options

BIOS setting	Description	Setting options	Effect
Diskette access	Access to the diskette drive is controlled here. Either or the supervisor or the user has access to it. Does not work with USB diskette drives.	Supervisor	Supervisor password is needed to access a diskette drive.
		User	User password is needed to access a diskette drive.
Fixed disk boot sector	The boot sector of the primary hard drive can be write protected against viruses with this option.	Normal	Write access allowed.
		Write protect	Boot sector is write protected.
Virus check reminder	This function opens a reminder when the system is started to scan for viruses.	Disabled	Deactivates the function.
		Daily	A reminder appears every day when the system is started.
		Weekly	A reminder appears the first time the system is started after every Sunday.
		Monthly	A reminder appears the first time the system is started each month.
System backup reminder	This function opens a reminder when the system is started to create a system backup.	Disabled	Deactivates the function.
		Daily	A reminder appears every day when the system is started.
		Weekly	A reminder appears the first time the system is started after every Sunday.
		Monthly	A reminder appears the first time the system is started each month.
Password at boot	This function requires a supervisor or user password when the system is started. Only possible when a supervisor or user password is enabled.	Disabled	Deactivates the function.
		Enabled	Activates the function.

Table 137: 855GME - security - setting options (cont.)

2.7 Power

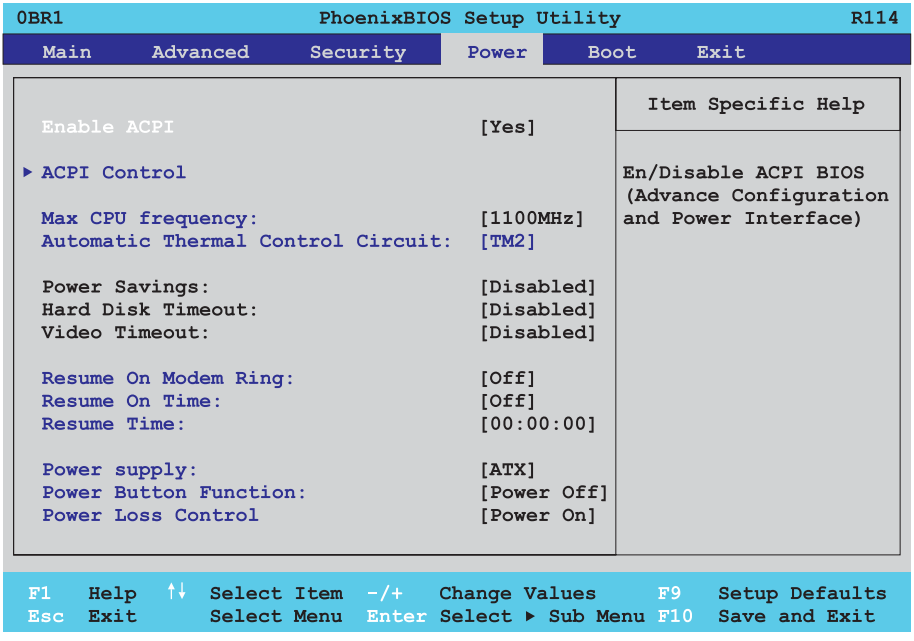


Figure 123: 855GME - power menu

BIOS setting	Description	Setting options	Effect
Enable ACPI	This option turns the ACPI function (Advanced Configuration and Power Interface) on or off. This is an advanced plug & play and power management functionality.	Yes	Activates the function.
		No	Deactivates the function.
ACPI control	Configuration of specific limits.	Enter	Opens submenu See "ACPI control", on page 221
Automatic thermal control circuit	This function monitors the CPUs temperature. If the maximum operating temperature of the CPU is exceeded, the performance of the processor is throttled.	Disabled	Deactivates the function.
		TM1	Operation with 50 % load.
		TM2	Operation in accordance with Intel's Geyserville specifications.
Power savings	This function determines if and how the power save function is used.	Disabled	Deactivates the power save function.
		Customized	Power management is configured by adjusting the individual settings.
		Maximum power Savings	Maximum power savings function.
		Maximum performance	Energy savings function to maximize performance.

Table 138: 855GME - power - setting options

BIOS setting	Description	Setting options	Effect
Standby timeout	Set here when the system should enter standby mode. During standby, various devices and the display will be deactivated. This option only available when "power savings" is set to customized.	Off	No standby.
		1, 2, 4, 8 minutes	Time in minutes until standby.
Auto suspend timeout	Set here when the system should enter suspend mode to save electricity. This option only available when "power savings" is set to customized.	Off	No standby.
		5, 10, 15, 20, 30, 40, 60 Minutes	Time in minutes until standby.
Hard disk timeout	Set here how long after the last access the hard disk should enter standby mode. This option only available when "power savings" is set to customized.	Disabled	Deactivates the function.
		10, 15, 30, 45 seconds	Time in seconds until standby.
		1, 2, 4, 6, 8, 10, 15 minutes	Time in minutes until standby.
Video timeout		Disabled	
Resume on modem ring	If an external modem is connected to a serial port and the telephone rings, the system starts up.	Off	Deactivates the function.
		On	Activates the function.
Resume on time	This function enables the system to start at the time set under "resume time."	Off	Deactivates the function.
		On	Activates the function.
Resume time	Time setting for the option "resume on time" (when the system should start up).	[00:00:00]	Personal setting of the time in the format (hh:mm:ss).
Power supply	The type of power supply being used can be entered here.	ATX	An ATX compatible power supply is being used.
		AT	An AT compatible power supply is being used.
Power button Function	This option determines the function of the power button.	Power off	Shuts down the system.
		Sleep	The system enters sleep mode.
Power loss control	This option determines how the system reacts to a power outage.	Stay off	The system does not turn back on. The system remains off until the power button is pressed.
		Power-on	The system turns back on.
		Last state	The system resumes the last state it was in before the power outage.

Table 138: 855GME - power - setting options (cont.)

2.7.1 ACPI control

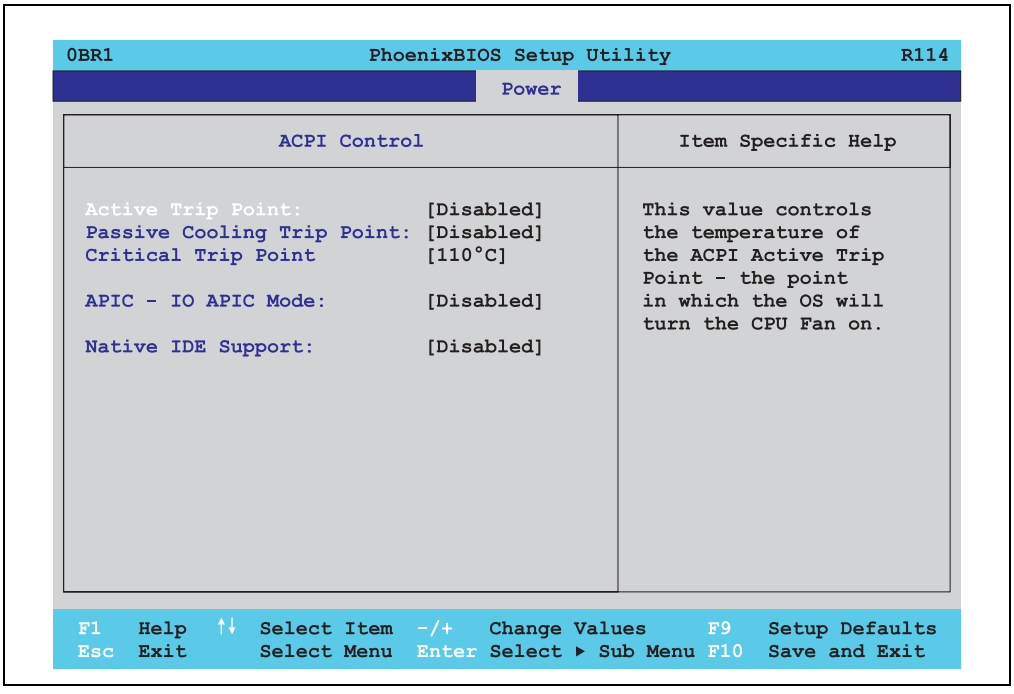


Figure 124: 855GME - ACPI control

BIOS setting	Description	Setting options	Effect
Active trip point	With this function, an optional CPU fan above the operating system can be set to turn on when the CPU reaches the set temperature.	Disabled	Deactivates the function.
		40°... 100°C	Temperature setting for the active trip point. Can be set in 5 degree increments.
Passive cooling trip point	With this function, a temperature can be set at which the CPU automatically reduces its speed.	Disabled	Deactivates the function.
		40°... 100°C	Temperature setting for the passive cooling trip point. Can be set in 5 degree increments.
Critical trip point	With this function, a temperature can be set at which the operating system automatically shuts itself down. **Warning!** **This function should never be deactivated, as this would allow the CPU to rise above the temperature specifications.**	Disabled	Deactivates the function.
		40°... 110°C	Temperature setting for the critical trip point. Can be set in 5 degree increments.

Table 139: 855GME - ACPI control - setting options

BIOS setting	Description	Setting options	Effect
APIC - I/O APIC mode	This option controls the functionality of the advanced interrupt controller in the processor.	Disabled	Deactivates the function
		Enabled	Activates the function. The activation of this option is only effective if it takes place before the operating system (Windows XP) is activated. There are then 23 IRQs available.
Native IDE support	The native IDE support offers the possibility to make 4 hard disk controllers (2 x primary ATA for a total of 4 devices, and 2 x secondary ATA for another 2 devices) accessible through Windows XP.	Disabled	Deactivates the function.
		Enabled	Activates the function.

Table 139: 855GME - ACPI control - setting options

2.8 Boot

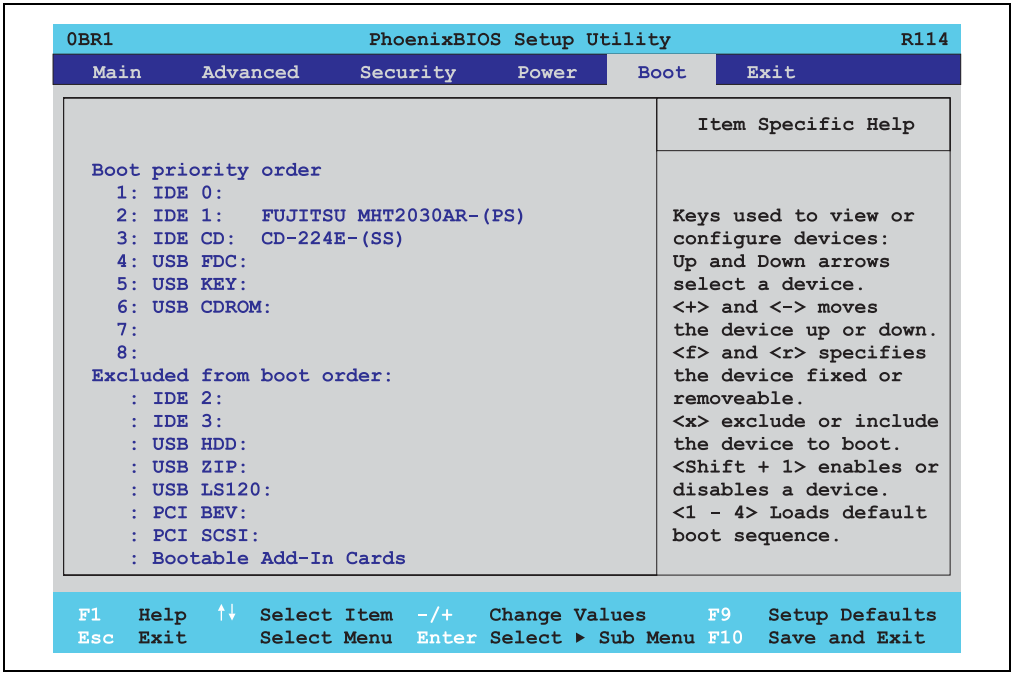


Figure 125: 855GME - boot menu

BIOS setting	Description	Setting options	Effect
1:		IDE 0, IDE 1, IDE 2, IDE 3, IDE CD USB FDC, USB KEY USB CDROM USB HDD, USB ZIP USB LS120, PCI BEV, PCI SCSI, bootable add-in cards	Use the up arrow ↑ and down arrow ↓ , to select a device. Then, use the <+> und <-> keys to change the boot priority of the drive. To add a device to the "boot priority order" list from the "excluded from boot order" list, use the <x> key. In the same way, the <x> key can move boot devices down out of the boot priority order. The keys 1 - 4 can load preset boot sequences.
2:			
3:			
4:			
5:			
6:			
7:			
8:			

Table 140: 855GME - boot - setting options

2.9 Exit

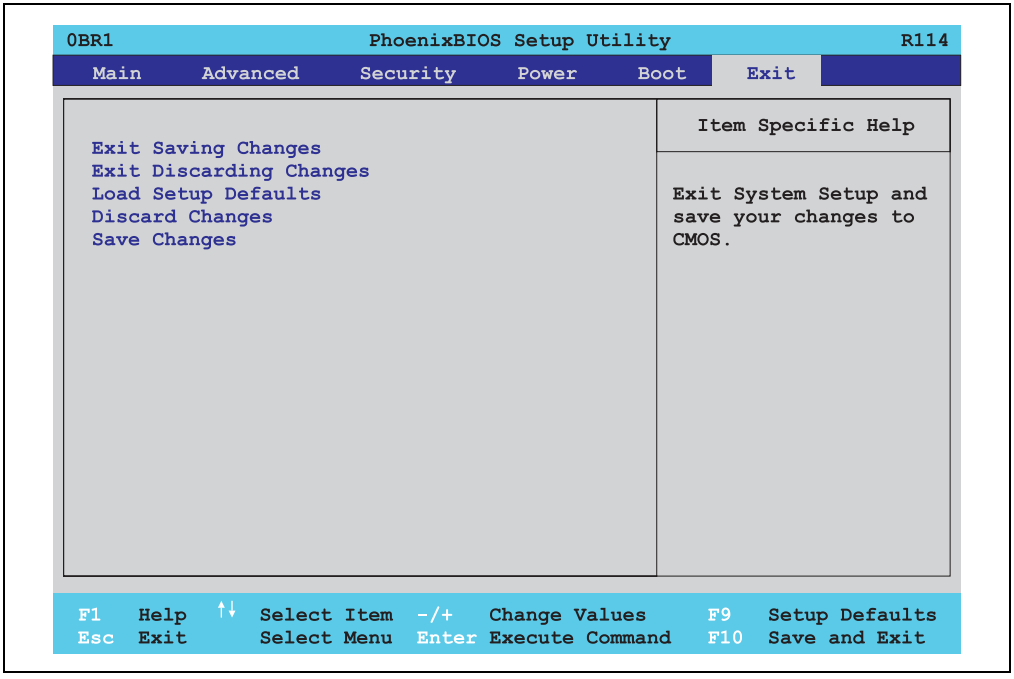


Figure 126: 855GME - exit menu

BIOS setting	Description	Setting options	Effect
Exit saving changes	BIOS setup is closed with this item. Changes made are saved in CMOS after confirmation, and the system is rebooted.	Yes / No	

Table 141: 855GME - exit menu - setting options

BIOS setting	Description	Setting options	Effect
Exit discarding changes	With this item you can close BIOS setup without saving the changes made. The system is then rebooted.	Yes / No	
Load setup defaults	This item loads the BIOS setup defaults, which are defined by the DIP switch settings. These settings are loaded for all BIOS configurations.	Yes / No	
Discard changes	Should unknown changes have been made and not yet saved, they can be discarded.	Yes / No	
Save changes	Settings are saved, and the system is not restarted.	Yes / No	

Table 141: 855GME - exit menu - setting options

2.10 Profile overview

If the function "load setup defaults" is chosen in the main BIOS setup menu, or if exit is selected (or <F9> is pressed) in the individual setup screens, the following BIOS settings are the optimized values that will be used.

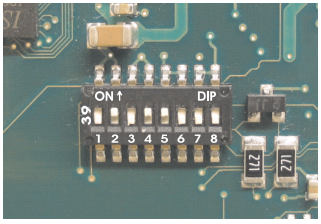


Figure 127: DIP switch on system unit

The first six DIP switches (1-6) are used to set the profiles. The rest (7,8) are reserved.

Number	Optimized for	DIP switch setting							
		1	2	3	4	5	6	7[1)]	8[1)]
Profile 0	Automation PC 620 system units 5PC600.SX01-00.	Off	Off	Off	Off	Off	Off	-	-
Profile 1	Reserved	On	Off	Off	Off	Off	Off	-	-
Profile 2	Automation PC 620 system units 5PC600.SX02-00, 5PC600.SX02-01, 5PC600.SX05-00 and 5PC600.SX05-01.	Off	On	Off	Off	Off	Off	-	-
Profile 3	Panel PC 700 system unit 5PC720.1043-00, 5PC720.1214-00, 5PC720.1505-00, 5PC781.1043-00, 5PC781.1505-00 and 5PC782.1043-00.	On	On	Off	Off	Off	Off	-	-
Profile 4	Panel PC 700 system unit 5PC720.1043-01, 5PC720.1505-01 and 5PC720.1505-02.	Off	Off	On	Off	Off	Off	-	-

Table 142: 855GME - profile overview

1) Reserved.

The following pages provide an overview of the BIOS default settings for the different DIP switch configurations.

Personal settings

If changes have been made to the BIOS defaults, they can be entered in the personal settings column of following tables for backup.

2.10.1 Main

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
System time	-	-	-	-	-	
System date	-	-	-	-	-	
SMART device monitoring	Enabled	Enabled	Enabled	Enabled	Enabled	
Primary master						
Type	Auto	Auto	Auto	Auto	Auto	
Multi-sector transfer	-	-	-	-	-	
LBA mode control	-	-	-	-	-	
32-bit I/O	Disabled	Disabled	Disabled	Disabled	Disabled	
Transfer mode	-	-	-	-	-	
Ultra DMA mode	-	-	-	-	-	
SMART monitoring	Disabled	Disabled	Disabled	Disabled	Disabled	
Primary slave						
Type	Auto	Auto	Auto	Auto	Auto	
Multi-sector transfer	-	-	-	-	-	
LBA mode control	-	-	-	-	-	
32-bit I/O	Disabled	Disabled	Disabled	Disabled	Disabled	
Transfer mode	-	-	-	-	-	
Ultra DMA mode	-	-	-	-	-	
SMART monitoring	Disabled	Disabled	Disabled	Disabled	Disabled	
Secondary master						
Type	Auto	Auto	Auto	Auto	Auto	
Multi-sector transfer	-	-	-	-	-	
LBA mode control	-	-	-	-	-	
32-bit I/O	Disabled	Disabled	Disabled	Disabled	Disabled	
Transfer mode	-	-	-	-	-	
Ultra DMA mode	-	-	-	-	-	
SMART monitoring	Disabled	Disabled	Disabled	Disabled	Disabled	
Secondary slave						
Type	Auto	Auto	Auto	Auto	Auto	
Multi-sector transfer	-	-	-	-	-	
LBA mode control	-	-	-	-	-	
32-bit I/O	Disabled	Disabled	Disabled	Disabled	Disabled	
Transfer mode	-	-	-	-	-	
Ultra DMA mode	-	-	-	-	-	
SMART monitoring	Disabled	Disabled	Disabled	Disabled	Disabled	

Table 143: 855GME - main - profile setting overview

2.10.2 Advanced

Advanced chipset/graphics control

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
Graphics engine 1	Auto	Auto	Auto	Auto	Auto	
Default flat panel	XGA	XGA	XGA	None	None	
Flat panel scaling	Stretched	Stretched	Stretched	Stretched	Stretched	
Graphics engine 2	Auto	Auto	Auto	Auto	Auto	
Graphics engine	Graphics engine 1	Graphics engine 1	Graphics engine 1	Graphics engine 1	Graphics engine 1	
Graphics memory size	UMA = 8 MB	UMA = 8 MB	UMA = 8 MB	UMA = 8 MB	UMA = 8 MB	
Enable memory gap	Disabled	Disabled	Disabled	Disabled	Disabled	

Table 144: 855GME - advanced chipset/graphics control - profile settings overview

PCI/PNP configuration

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
PNP OS installed	Yes	Yes	Yes	Yes	Yes	
Reset configuration data	No	No	No	No	No	
Secured setup configuration	Yes	Yes	Yes	Yes	Yes	
PCI IRQ line 1	Auto-select	Auto-select	Auto-select	Auto-select	Auto-select	
PCI IRQ line 2	Auto-select	Auto-select	Auto-select	Auto-select	Auto-select	
PCI IRQ line 3	Auto-select	Auto-select	Auto-select	Auto-select	Auto-select	
PCI IRQ line 4	Auto-select	Auto-select	Auto-select	Auto-select	Auto-select	
Onboard LAN IRQ line	Auto-select	Auto-select	Auto-select	Auto-select	Auto-select	
Onboard USB EHCI IRQ line	Auto-select	Auto-select	Auto-select	Auto-select	Auto-select	
Default primary video adapter	PCI	PCI	PCI	PCI	PCI	
Assign IRQ to SMB	Enabled	Enabled	Enabled	Enabled	Enabled	
PCI device, slot #1						
ROM scan option	Enabled	Enabled	Enabled	Enabled	Enabled	
Enable master	Disabled	Disabled	Disabled	Disabled	Disabled	
Latency timer	Default	Default	Default	Default	Default	
PCI device, slot #2						
ROM scan option	Enabled	Enabled	Enabled	Enabled	Enabled	
Enable master	Disabled	Disabled	Disabled	Disabled	Disabled	
Latency timer	Default	Default	Default	Default	Default	

Table 145: 855GME - PCI/PNP configuration - profile setting overview

PCI device, slot #3	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
ROM scan option	Enabled	Enabled	Enabled	Enabled	Enabled	
Enable master	Disabled	Disabled	Disabled	Disabled	Disabled	
Latency timer	Default	Default	Default	Default	Default	
PCI device, slot #4						
ROM scan option	Enabled	Enabled	Enabled	Enabled	Enabled	
Enable master	Disabled	Disabled	Disabled	Disabled	Disabled	
Latency timer	Default	Default	Default	Default	Default	
PCI/PNP ISA IRQ resource exclusion						
IRQ 3	Available	Available	Available	Available	Available	
IRQ 4	Available	Available	Available	Available	Available	
IRQ 5	Available	Available	Available	Available	Available	
IRQ 7	Available	Available	Available	Available	Available	
IRQ 9	Available	Available	Available	Available	Available	
IRQ 10	Available	Available	Available	Available	Available	
IRQ 11	Available	Available	Available	Available	Available	
IRQ 12	Available	Available	Available	Available	Available	
IRQ 15	Available	Available	Available	Available	Available	

Table 145: 855GME - PCI/PNP configuration - profile setting overview (cont.)

Memory cache

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
Memory cache	Enabled	Enabled	Enabled	Enabled	Enabled	
Cache system BIOS area	Write protect	Write protect	Write protect	Write protect	Write protect	
Cache video BIOS area	Write protect	Write protect	Write protect	Write protect	Write protect	
Cache base 0-512k	Write back	Write back	Write back	Write back	Write back	
Cache base 512-640k	Write back	Write back	Write back	Write back	Write back	
Cache extended memory area	Write back	Write back	Write back	Write back	Write back	
Cache D000 - D3FF	Disabled	Disabled	Disabled	Disabled	Disabled	
Cache D400 - D7FF	Disabled	Disabled	Disabled	Disabled	Disabled	
Cache D800 - DBFF	Disabled	Disabled	Disabled	Disabled	Disabled	
Cache DC00 - DFFF	Disabled	Disabled	Disabled	Disabled	Disabled	

Table 146: 855GME - memory cache - profile setting overview

I/O device configuration

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
Local bus IDE adapter	Primary	**Both**	**Both**	Primary	**Both**	
Primary IDE UDMA66/100	Enabled	Enabled	Enabled	Enabled	Enabled	
Secondary IDE UDMA66/100	Enabled	Enabled	Enabled	Enabled	Enabled	
USB UHCI host controller 1	Enabled	Enabled	Enabled	Enabled	Enabled	
USB UHCI host controller 2	Enabled	Enabled	Enabled	Enabled	Enabled	
USB UHCI host controller	Enabled	Enabled	Enabled	Enabled	Enabled	
Legacy USB support	Enabled	Enabled	Enabled	Enabled	Enabled	
AC97 audio controller	Enabled	Enabled	Enabled	Enabled	Enabled	
Onboard LAN controller	Enabled	Enabled	Enabled	Enabled	Enabled	
Onboard LAN PXE ROM	Disabled	**Enabled**	Disabled	Disabled	Disabled	
Serial port A	Enabled	Enabled	Enabled	Enabled	Enabled	
Base I/O address	3F8	3F8	3F8	3F8	3F8	
Interrupt	IRQ 4	IRQ 4	IRQ 4	IRQ 4	IRQ 4	
Serial port B	Enabled	Enabled	Enabled	Enabled	Enabled	
Mode	Normal	Normal	Normal	Normal	Normal	
Base I/O address	3F8	3F8	3F8	3F8	3F8	
Interrupt	IRQ 3	IRQ 3	IRQ 3	IRQ 3	IRQ 3	
Parallel port	Enabled	Enabled	Enabled	Enabled	Enabled	
Base I/O address	378	378	378	378	378	

Table 147: 855GME - I/O device configuration - profile setting overview

Keyboard features

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
NumLock	On	On	On	On	On	
Key click	Disabled	Disabled	Disabled	Disabled	Disabled	
Keyboard auto-repeat rate	30/sec	30/sec	30/sec	30/sec	30/sec	
Keyboard auto-repeat delay	1/2 sec	1/2 sec	1/2 sec	1/2 sec	1/2 sec	

Table 148: 855GME - keyboard features - profile setting overview

CPU board monitor

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
VCC 3.3V voltage	-	-	-	-	-	
CPU core voltage	-	-	-	-	-	
5Vsb voltage	-	-	-	-	-	
Battery voltage	-	-	-	-	-	
CPU temperature	-	-	-	-	-	

Table 149: 855GME - CPU board monitor - profile setting overview

Miscellaneous

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
Summary screen	Enabled	Enabled	Enabled	Enabled	Enabled	
QuickBoot mode	Enabled	Enabled	Enabled	Enabled	Enabled	
Extended memory testing	Just zero it	Just zero it	Just zero it	Just zero it	Just zero it	
Dark boot	Disabled	Disabled	Disabled	Disabled	Disabled	
Halt on errors	Yes	Yes	Yes	Yes	Yes	
PS/2 mouse	Disabled	**Enabled**	Disabled	Disabled	Disabled	
Large disk access mode	DOS	DOS	DOS	DOS	DOS	

Table 150: 855GME - miscellaneous - profile setting overview

Baseboard/panel features

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
Versions	-	-	-	-	-	
BIOS	-	-	-	-	-	
MTCX	-	-	-	-	-	
FPGA	-	-	-	-	-	
Optimized ID	-	-	-	-	-	
Device ID	-	-	-	-	-	
Compatibility ID	-	-	-	-	-	
Serial number	-	-	-	-	-	
Product name	-	-	-	-	-	
User serial ID	-	-	-	-	-	
Panel control	**Profile 0**	**Profile 1**	**Profile 2**	**Profile 3**	**Profile 4**	**Personal settings**
Select panel number	0	0	0	0	0	
Version	-	-	-	-	-	
Brightness	100 %	100 %	100 %	100 %	100 %	
Temperature	-	-	-	-	-	

Table 151: 855GME - baseboard/panel features - profile setting overview

Fan speed	-	-	-	-	-	
Keys/LEDs	-	-	-	-	-	
Baseboard monitor						
Temperatures	-	-	-	-	-	
I/O	-	-	-	-	-	
Power supply	-	-	-	-	-	
Slide-in drive 1	-	-	-	-	-	
Slide-in drive 2	-	-	-	-	-	
Fan speeds	-	-	-	-	-	
Case 1	-	-	-	-	-	
Case 2	-	-	-	-	-	
Case 3	-	-	-	-	-	
Case 4	-	-	-	-	-	
CPU	-	-	-	-	-	
Legacy devices						
COM C	Disabled	Disabled	Disabled	**Enabled**	**Enabled**	
Base I/O address	-	-	-	**3E8h**	**3E8h**	
Interrupt	-	-	-	**11**	**11**	
COM D	Disabled	Disabled	Disabled	Disabled	Disabled	
Base I/O address	-	-	-	-	-	
Interrupt	-	-	-	-	-	
COM E	Disabled	Disabled	Disabled	Disabled	Disabled	
Base I/O address	-	-	-	-	-	
Interrupt	-	-	-	-	-	
LPT	Disabled	Disabled	Disabled	Disabled	Disabled	
Base I/O address	-	-	-	-	-	
CAN	Disabled	Disabled	Disabled	Disabled	Disabled	
Base I/O address	-	-	-	-	-	
Interrupt	-	-	-	-	-	
2nd LAN controller	Enabled	Enabled	Enabled	Enabled	Enabled	

Table 151: 855GME - baseboard/panel features - profile setting overview (cont.)

2.10.3 Security

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
Supervisor password is	Clear	Clear	Clear	Clear	Clear	
User password is	Clear	Clear	Clear	Clear	Clear	
Set supervisor password	-	-	-	-	-	
Set user password	-	-	-	-	-	

Table 152: 855GME - security - profile setting overview

Diskette access	Supervisor	Supervisor	Supervisor	Supervisor	Supervisor	
Fixed disk boot sector	Normal	Normal	Normal	Normal	Normal	
Virus check reminder	Disabled	Disabled	Disabled	Disabled	Disabled	
System backup reminder	Disabled	Disabled	Disabled	Disabled	Disabled	
Password at boot	Disabled	Disabled	Disabled	Disabled	Disabled	

Table 152: 855GME - security - profile setting overview (cont.)

2.10.4 Power

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
Enable ACPI	Yes	Yes	Yes	Yes	Yes	
Max CPU frequency	Dependant on processor	Dependant on processor	Dependant on processor	Dependant on processor	Dependant on processor	
Automatic thermal control circuit	TM2	TM2	TM2	TM2	TM2	
Power savings	Disabled	Disabled	Disabled	Disabled	Disabled	
Standby timeout	-	-	-	-	-	
Auto suspend timeout	-	-	-	-	-	
Hard disk timeout	Disabled	Disabled	Disabled	Disabled	Disabled	
Video timeout	Disabled	Disabled	Disabled	Disabled	Disabled	
Resume on modem ring	Off	Off	Off	Off	Off	
Resume on time	Off	Off	Off	Off	Off	
Resume time	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	
Power supply	ATX	ATX	ATX	ATX	ATX	
Power button function	Power off	Power off	Power off	Power off	Power off	
Power loss control	Power-on	Power-on	Power-on	Power-on	Power-on	
ACPI control						
Active trip point	Disabled	Disabled	Disabled	Disabled	Disabled	
Passive cooling trip point	Disabled	Disabled	Disabled	Disabled	Disabled	
Critical trip point	110°C	110°C	110°C	110°C	110°C	
APIC - I/O APIC mode	Disabled	**Enabled**	Disabled	Disabled	Disabled	
Native IDE support	Disabled	Disabled	Disabled	Disabled	Disabled	

Table 153: 855GME - power - profile setting overview

2.10.5 Boot

	Profile 0	Profile 1	Profile 2	Profile 3	Profile 4	Personal settings
Boot priority order						
1:	IDE 0	**PCI BEV**	IDE 0	IDE 0	IDE 0	
2:	IDE 1	**IDE 0**	IDE 1	IDE 1	IDE 1	
3:	IDE CD	**IDE 1**	IDE CD	IDE CD	IDE CD	
4:	USB FDC	**IDE CD**	USB FDC	USB FDC	USB FDC	
5:	USB KEY	**USB FDC**	USB KEY	USB KEY	USB KEY	
6:	USB CDROM	**USB KEY**	USB CDROM	USB CDROM	USB CDROM	
7:	-	**USB CDROM**	-	**IDE 2**	**IDE 2**	
8:	-	-	-	**IDE 3**	**IDE 3**	
Excluded from boot order						
:	IDE 2	IDE 2	IDE 2	**USB HDD**	**USB HDD**	
:	IDE 3	IDE 3	IDE 3	**USB ZIP**	**USB ZIP**	
:	USB HDD	USB HDD	USB HDD	**USB LS120**	**USB LS120**	
:	USB ZIP	USB ZIP	USB ZIP	**PCI BEV**	**PCI BEV**	
:	USB LS120	USB LS120	USB LS120	**PCI SCSI**	**PCI SCSI**	
:	PCI BEV	**PCI SCSI**	PCI BEV	**Bootable add-in cards**	**Bootable add-in cards**	
:	PCI SCSI	**Bootable add-in cards**	PCI SCSI			
:	Bootable add-in cards		Bootable add-in cards			

Table 154: 855GME - boot - profile setting overview

3. BIOS upgrade

Warning!

The upgrade procedures described in the following pages must be carried out for all PPC700 systems with software versions lower than those listed in the following table.

CPU board software	815E	855GME
BIOS	< R017	< R007
MTCX PX32 firmware	< V1.19	< V1.19
MTCX FPGA firmware	< V1.06	< V1.06

Table 155: CPU board software versions

Automation Panel Link	Transceiver (5DLSDL.1000-01)	Receiver (5DLSDL.1000-00)
SDLR version	< V0.03	< V0.03

Table 156: Automation panel link software versions

3.1 Requirements

The following peripheral devices are needed for a software upgrade:

- USB floppy drive or USB memory stick
- 1.44MB HDD diskette(s) (max. 3 diskettes)
- PS/2 or USB keyboard
- B&R upgrade software (www.br-automation.com)

3.2 What information do I need?

Before starting the upgrade, you should know the CPU board type (815E or 855GME) and the various software versions.

3.2.1 Which CPU board do I have?

After switching on the PPC700, the installed CPU board can be identified by the letters "B" and "C".

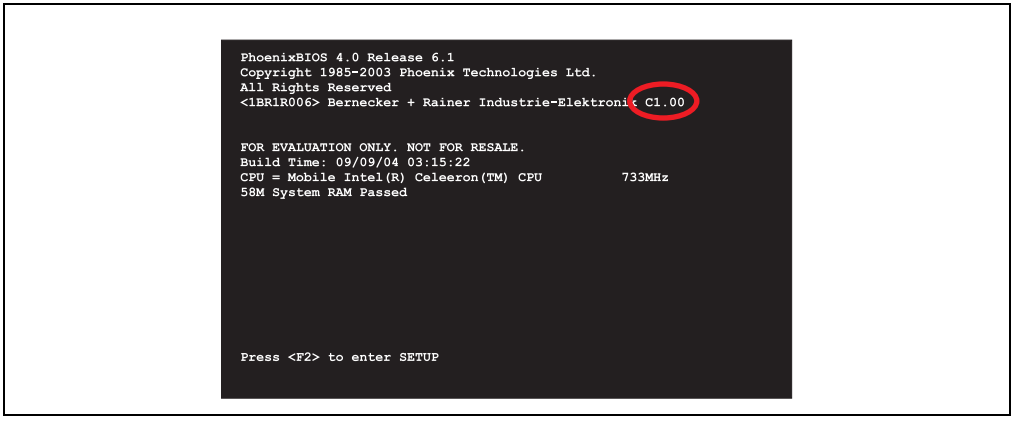


Figure 128: Differentiating between 815E and 855GME CPU boards

Letter	CPU board	Model number
B	855GME	5PC600.E855-00
C	815E	5PC600.E815-00, 5PC600.E815-02, 5PC600.E815-03

Table 157: Differentiating between 815E and 855GME CPU boards

3.2.2 Which BIOS version and firmware are already installed on the PPC700?

This information can be found on the same BIOS setup page for both the 815E and the 855GME CPU boards:

- After switching on the PPC700, you can get to the BIOS setup by pressing "F2".
- From the BIOS main menu "advanced" (top), select "baseboard/panel features" (bottom):

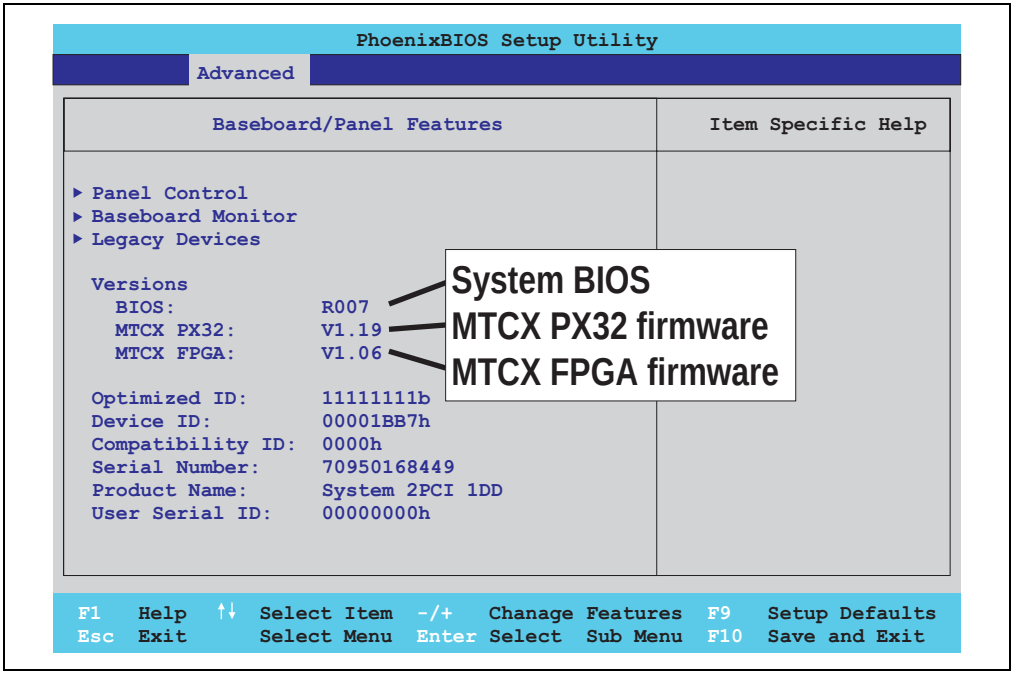


Figure 129: Software versions

3.2.3 Which firmware is installed on the Automation Panel Link transceiver/receiver?

This information can be found on the same BIOS setup page for both the 815E and the 855GME CPU boards:

- After switching on the PPC700, you can get to the BIOS setup by pressing "F2".
- From the BIOS main menu "advanced" (top), select "baseboard/panel features" (bottom) and then "panel control":

Information:

The version can only be shown if an Automation Panel with Automation Panel Link SDL transceiver (5DLSDL.1000-01) and Automation Panel Link SDL receiver (5DLSDL.1000-00) is connected.

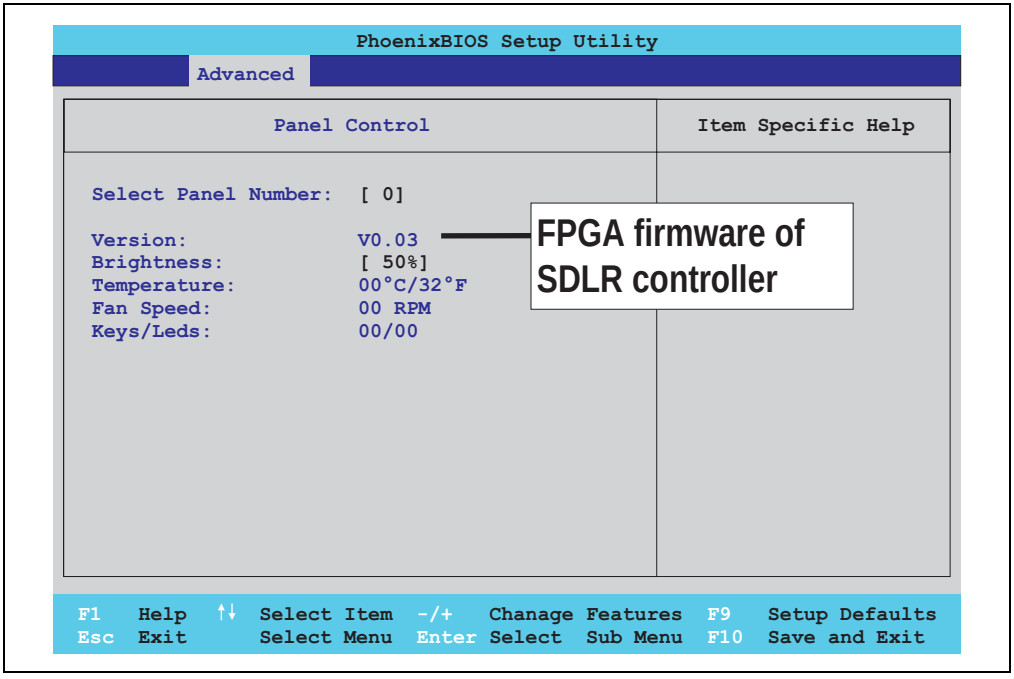


Figure 130: Firmware version of Automation Panel Link SDL transceiver/receiver

3.3 Upgrade BIOS for 815E

- Download and unzip the zip file from the B&R homepage.
- Copy the files to an MS-DOS startup disk (information about creating a bootable disk can be found in section 3.8 "Creating a DOS boot diskette in Windows XP" on page 243).
- Place the diskette in the USB floppy drive and reboot the PPC700.
- The following boot menu will be shown after startup

```
1. Upgrade PHOENIX BIOS for 815E

2. Exit
```

Concerning point 1:
BIOS is automatically upgraded (default after 5 seconds).

Concerning point 2:
Return to the shell (MS-DOS).

- The system must be rebooted after a successful upgrade.

Information:

When the system has rebooted, setup default values must be reloaded after the Checksum error message (press F1 or select "load setup defaults" in the BIOS setup "exit" menu). Afterwards, the time and date must be set again.

When using a system unit with 2 PCI slots, the DIP switches on the system unit must be set to profile position 2. When using a system unit with 1 PCI slot, the DIP switches do not have to be changed.

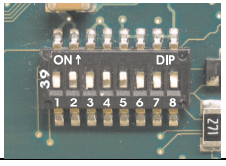


Figure 131: DIP switch on system unit (example)

Number	Optimized for device	DIP switch setting							
		1	2	3	4	5	6	7[1)]	8[1)]
Profile 0	Automation PC 620 system units 5PC600.SX01-00.	Off	Off	Off	Off	Off	Off	-	-
Profile 1	Reserved	On	Off	Off	Off	Off	Off	-	-

Table 158: Profile overview

Number	Optimized for device	DIP switch setting							
		1	2	3	4	5	6	7[1)]	8[1)]
Profile 2	Automation PC 620 system units 5PC600.SX02-00, 5PC600.SX02-01, 5PC600.SX05-00 and 5PC600.SX05-01.	Off	On	Off	Off	Off	Off	-	-
Profile 3	Panel PC 700 system unit 5PC720.1043-00, 5PC720.1214-00, 5PC720.1505-00, 5PC781.1043-00, 5PC781.1505-00 and 5PC782.1043-00.	On	On	Off	Off	Off	Off	-	-
Profile 4	Panel PC 700 system unit 5PC720.1043-01, 5PC720.1505-01 and 5PC720.1505-02.	Off	Off	On	Off	Off	Off	-	-

Table 158: Profile overview (cont.)

1) Not required. Free.

3.4 Upgrade BIOS for 855GME

- Download and unzip the zip file from the B&R homepage.
- Copy the files to an MS-DOS startup disk (information about creating a bootable disk can be found in section 3.8 "Creating a DOS boot diskette in Windows XP" on page 243).
- Place the diskette in the USB floppy drive and reboot the PPC700.
- The following boot menu will be shown after startup

```
1. Upgrade PHOENIX BIOS for 855GME

2. Exit
```

Concerning point 1:
BIOS is automatically upgraded (default after 5 seconds).

Concerning point 2:
Return to the shell (MS-DOS).

- The system must be rebooted after a successful upgrade.

Information:

When the system has rebooted, Load Setup Default values must be reloaded after the Checksum error message (press F1 or select "Load Setup Defaults" in the BIOS setup "Exit" menu). Afterwards, the time and date must be set again.

When using a system unit with 2 PCI slots, the DIP switches on the system unit must be set to profile position 2. When using a system unit with 1 PCI slot, the DIP switches do not have to be changed.

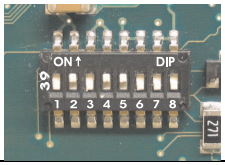


Figure 132: DIP switch on system unit (example)

Number	Optimized for device	DIP switch setting							
		1	2	3	4	5	6	7[1)]	8[1)]
Profile 0	Automation PC 620 system units 5PC600.SX01-00.	Off	Off	Off	Off	Off	Off	-	-
Profile 1	Reserved	On	Off	Off	Off	Off	Off	-	-
Profile 2	Automation PC 620 system units 5PC600.SX02-00, 5PC600.SX02-01, 5PC600.SX05-00 and 5PC600.SX05-01.	Off	On	Off	Off	Off	Off	-	-
Profile 3	Panel PC 700 system unit 5PC720.1043-00, 5PC720.1214-00, 5PC720.1505-00, 5PC781.1043-00, 5PC781.1505-00 and 5PC782.1043-00.	On	On	Off	Off	Off	Off	-	-
Profile 4	Panel PC 700 system unit 5PC720.1043-01, 5PC720.1505-01 and 5PC720.1505-02.	Off	Off	On	Off	Off	Off	-	-

Table 159: Profile overview

1) Not required. Free.

3.5 Upgrade the firmware

Depending on the design, a PPC700 system is equipped with several controllers (MTCX, SDLR). The firmware can be upgraded individually.

- Download and unzip the zip file from the B&R homepage.
- Copy the files to an MS-DOS startup disk (information about creating a bootable disk can be found in section 3.8 "Creating a DOS boot diskette in Windows XP" on page 243).
- Place the diskette in the USB floppy drive and reboot the PPC700.
- The following boot menu will be shown after startup

```
1. Upgrade MTCX PX32 and FPGA

2. Upgrade MTCX PX32 only

3. Upgrade MTCX FPGA only

4. Upgrade SDLR on Panel 0 only

5. Exit
```

Concerning point 1:
Automatically upgrade PX32 and FPGA for MTCX (default after 5 seconds).

Concerning point 2:
Automatically upgrade PX32 for MTCX.

Concerning point 3:
Automatically upgrade FPGA for MTCX.

Concerning point 4:
Automatically upgrade FPGA firmware for SDLR controller on Panel 0.

Warning!

The SDLR firmware can only be updated if an Automation Panel with Automation Panel Link SDL Transceiver (5DLSDL.1000-01) and Automation Panel Link SDL Receiver (5DLSDL.1000-00) is connected. This update is only permitted in an office environment (clean environment - no disturbances) because a software error in versions older than V0.03 can cause errors. This error can cause the Automation Panel to remain off after an update. If this error occurs, the Automation Panel Link SDL Transceiver (5DLSDL.1000-01) or Automation Panel Link SDL Receiver (5DLSDL.1000-00) must be exchanged or sent in for repair.

Concerning point 5:
Return to the shell (MS-DOS).

3.6 Installing the graphic chip driver for 815E CPU boards

The following must be observed when installing the graphic chip driver for the graphic chip integrated in the 815E chip set:

- The driver available from Intel is NOT permitted to be used, only the driver available from B&R(www.br-automation.com).
- After unpacking the *.zip file, the driver must be updated using the Windows Device Manager "Start - Control Panel - System - Hardware - Device Manager - Update Driver". When doing this, use the file **i81xnt5.inf**.
- The initial installation of the driver can only be carried out with an external monitor connected. After successfully installing the B&R driver, an Automation Panel be operated without problems.

Caution!

Presently, this driver is only approved for the Windows XP Professional and Windows XP embedded operating systems.

3.7 Windows XP Embedded and BIOS upgrade

If the following error message appears after upgrading BIOS:

```
"Copy Error"
```

```
"Setup cannot copy the file Audio3d.dll"
```

then the audio drive must be reinstalled.

To do this, use the audio driver from the B&R Homepage (www.br-automation.com).

During the installation of the audio driver, the following 2 files must be hand selected from the following directories.

`ksuser.dll` `in the directory ...\Windows\system32`

`ks.sys` `in the directory ...\Windows\system32\drivers`

This applies to 815E and 855ME CPU boards.

In order to be able to set up all possible resolutions when using an 815E CPU board, the graphics driver must be installed (see 3.6 "Installing the graphic chip driver for 815E CPU boards").

3.8 Creating a DOS boot diskette in Windows XP

- Place an empty 1.44MB HDD diskette in the disk drive
- Open Windows Explorer
- Right-click on the 3 1/2" Floppy icon and select **"Format..."**.

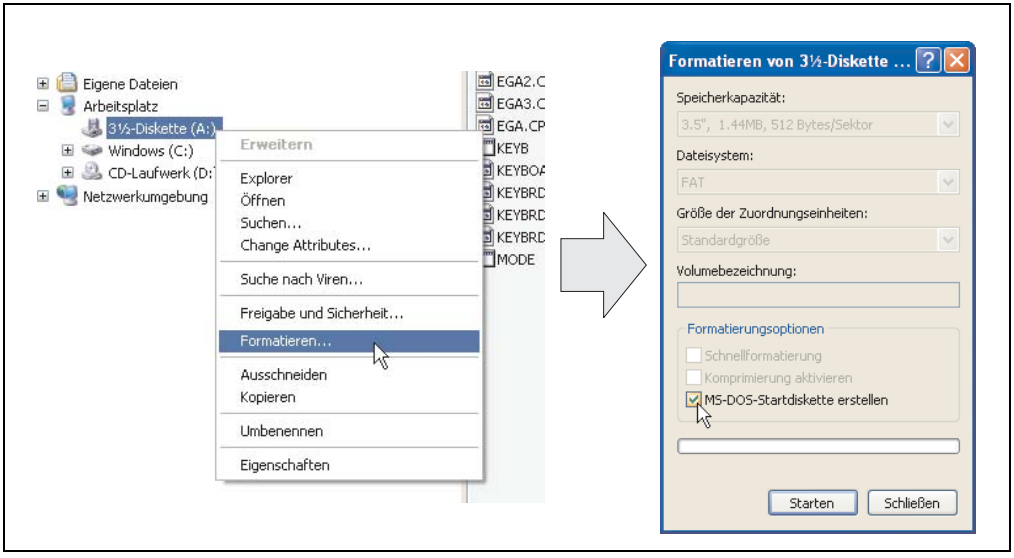


Figure 133: Creating a bootable diskette in Windows XP - step 1

- Then select the checkbox **"Create an MS-DOS startup disk"**, press **"Start"** and acknowledge the warning message with "OK".

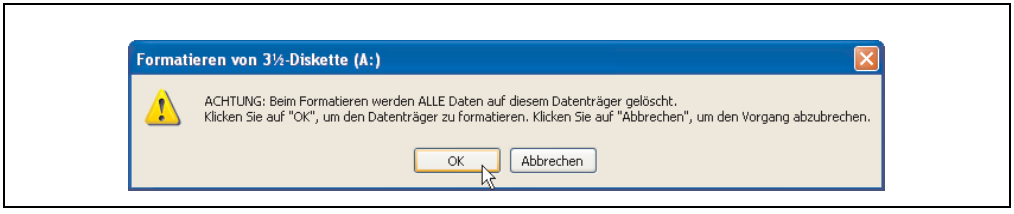


Figure 134: Creating a bootable diskette in Windows XP - step 2

Figure 135: Creating a bootable diskette in Windows XP - step 3

After creating the startup disk, some of the files must be deleted because of the size of the update.

When doing this, all files (hidden, system files, etc.) must be shown on the diskette.

In Explorer, go to the "tools" menu, select "folder options..." and open the "view" tab - now uncheck the option "hide protected operating system files (recommended)" (checked as default) and check the option "show hidden files and folders".

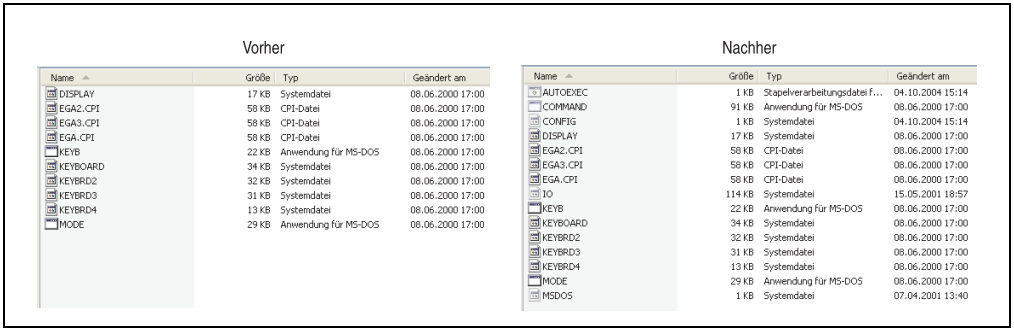


Figure 136: Creating a bootable diskette in Windows XP - step 4

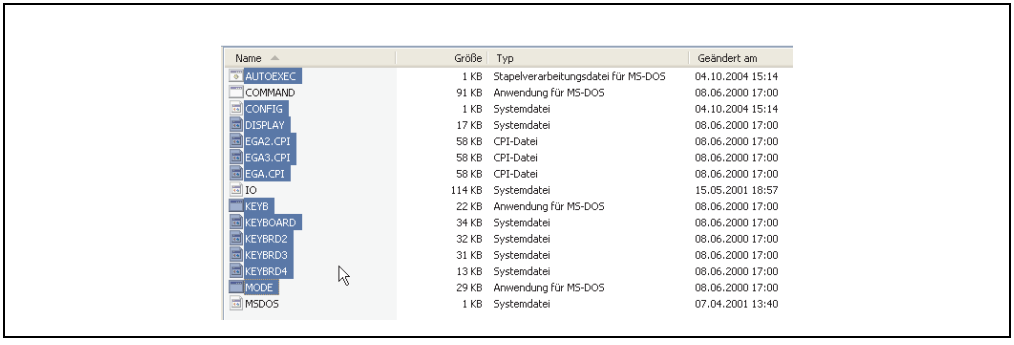


Figure 137: Creating a bootable diskette in Windows XP - step 5

Now all files (marked) except Command.com, IO.sys and MSDOS.sys can be deleted.

Chapter 5 • Accessories

1. Overview

Model number	Short description	Note
0AC201.9	**Lithium batteries (5x)** Lithium batteries, 5 pcs., 3 V / 950 mAh, button cell	
0TB103.9	**Plug 24V 5.08 3p screw clamps** 24 VDC 3-pin connector, female. Screw clamp, 2.5 mm², protected against vibration by the screw flange.	
0TB103.91	**Plug 24V 5.08 3p cage clamps** 24 VDC 3-pin connector, female. Cage clamps, 2.5 mm², protected against vibration by the screw flange.	
4A0006.00-000	**Lithium battery (1x)** Lithium battery, 1 piece, 3 V / 950 mAh, button cell	
5A5003.03	**Front cover** Front cover appropriate for the USB 2.0 Media Drive 5MD900.USB2-00.	
5AC600.ICOV-00	**Interface covers** Interface covers for APC620 and PPC700 devices; 5 pieces	
5AC900.1000-00	**Adapter DVI-A/m to CRT DB15HD/f** Adapter DVI (plug) to CRT (socket), for connecting a standard monitor to a DVI-I interface.	
5AC900.1200-00	**USB interface cover (cannot be lost)** Front side USB interface cover (cannot be lost) for Automation Panel 900 and Panel PC 700 devices.	
5CADVI.0018-00	**DVI-D cable 1.8 m / single** Cable (single) DVI-D/m:DVI-D/m 1.8 m	
5CADVI.0050-00	**DVI-D cable 5 m / single** Cable (single) DVI-D/m:DVI-D/m 5 m	
5CADVI.0100-00	**DVI-D cable 10 m / single** Cable (single) DVI-D/m:DVI-D/m 10 m	
5CASDL.0018-00	**SDL cable (1.8 m)** SDL cable DVI-D/m:DVI-D/m 1.8 m	
5CASDL.0050-00	**SDL cable (5 m)** SDL cable DVI-D/m:DVI-D/m 5 m	
5CASDL.0100-00	**SDL cable (10 m)** SDL cable DVI-D/m:DVI-D/m 10 m	
5CASDL.0150-00	**SDL cable (15 m)** SDL cable DVI-D/m:DVI-D/m 15 m	
5CASDL.0200-00	**SDL cable (20 m)** SDL cable DVI-D/m:DVI-D/m 20 m	

Table 160: Model numbers - accessories

Model number	Short description	Note
5CASDL.0250-00	**SDL cable (25 m)** SDL cable DVI-D/m:DVI-D/m 25 m	
5CASDL.0300-00	**SDL cable (30 m)** SDL cable DVI-D/m:DVI-D/m 30 m	
5CAUSB.0018-00	**USB 2.0 cable A/m:B/m 1.8 m** USB 2.0 connection cable; Type A - Type B; 1.8 m	
5CAUSB.0050-00	**USB 2.0 cable A/m:B/m 5 m** USB 2.0 connection cable; Type A - Type B; 5 m	
5CFCRD.0032-02	**CompactFlash 32 MB True IDE SanDisk/A** CompactFlash card with 32 MB Flash PROM, and true IDE/ATA interface.	
5CFCRD.0064-02	**CompactFlash 64 MB True IDE SanDisk/A** CompactFlash card with 64 MB Flash PROM, and true IDE/ATA interface.	
5CFCRD.0128-02	**CompactFlash 128 MB True IDE SanDisk/A** CompactFlash card with 128 MB Flash PROM, and true IDE/ATA interface	
5CFCRD.0256-02	**CompactFlash 256 MB True IDE SanDisk/A** CompactFlash card with 256 MB Flash PROM, and true IDE/ATA interface	
5CFCRD.0512-02	**CompactFlash 512 MB True IDE SanDisk/A** CompactFlash card with 512 MB Flash PROM, and true IDE/ATA interface	
5CFCRD.1024-02	**CompactFlash 1024 MB True IDE SanDisk/A** CompactFlash card with 1024 MB Flash PROM, and true IDE/ATA interface	
5CFCRD.2048-02	**CompactFlash 2048 MB True IDE SanDisk/A** CompactFlash card with 2048 MB Flash PROM, and true IDE/ATA interface	
5MD900.USB2-00	**USB 2.0 drive DVD-ROM/CD-RW FDD CF USB** USB 2.0 drive combination, consists of DVD-ROM/CD-RW, FDD, CompactFlash slot (type II), USB connection (type A front, type B back); 24 V DC.	
5MMUSB.0128-00	**USB memory stick 128 MB SanDisk** USB 2.0 memory stick 128 MB	
5MMUSB.0256-00	**USB memory stick 256 MB SanDisk** USB 2.0 memory stick 256 MB	
5MMUSB.0512-00	**USB memory stick 512 MB SanDisk** USB 2.0 memory stick 512 MB	
9A0014.02	**RS232 cable DB9/f:DB9/m 1.8 m** RS232 extension cable for remote operation of a display unit with touch screen, length 1.8 m.	
9A0014.05	**RS232 cable DB9/f:DB9/m 5 m** RS232 extension cable for remote operation of a display unit with touch screen, length 5 m.	
9A0014.10	**RS232 cable DB9/f:DB9/m 10 m** RS232 extension cable for remote operation of a display unit with touch screen, length 10 m.	

Table 160: Model numbers - accessories

2. Replacement CMOS batteries

The lithium battery is needed for buffering the BIOS, the real-time clock, and SRAM data.

Model number and accessory table

2.1 Order data

Model number	Description	Image
0AC201.9	Lithium batteries, 5 pcs., 3 V / 950 mAh button cell	
4A0006.00-000	Lithium battery, 1 piece, 3 V / 950 mAh button cell	

Table 161: Order data - Lithium battery

2.2 Technical data

Information:

The following defined characteristics, features and limit values are only valid for this accessory and can deviate from the entire device. For the entire device where this accessory is installed, refer to the data given specifically for the entire device.

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

Features	0AC201.9	4A0006.00-000
Capacity	950 mAh	
Voltage	3 V	
Self discharge at 23°C	< 1% per year	
Storage time	Max. 3 years at 30° C	
Environment		
Storage temperature	-20 °C to +60 °C	
Humidity	0 to 95 % (non-condensing)	

Table 162: Technical data - lithium batteries

3. Supply voltage connector (TB103 3-pin)

3.1 General information

This single row 3-pin terminal block is mainly used to connect the supply voltage.

3.2 Order data

Model number	Description	Image
0TB103.9	Plug for the 24 V supply voltage (screw clamps)	 0TB103.9
0TB103.91	Plug for the 24 V supply voltage (cage clamps)	 0TB103.91

Table 163: Order data - TB103

3.3 Technical data

Information:

The following defined characteristics, features and limit values are only valid for this accessory and can deviate from the entire device. For the entire device where this accessory is installed, refer to the data given specifically for the entire device.

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

ID	0TB103.9	0TB103.91
Number of pins	3	

Table 164: Technical data - TB103

ID	0TB103.9	0TB103.91
Type of terminal	Screw clamps	Cage clamps
Distance between contacts	5.08 mm	
Resistance between contacts	≤ 5 mΩ	
Nominal voltage according to VDE / UL,CSA	250 V / 300 V	
Current load according to VDE / UL,CSA	14.5 A / 10 A per contact	
Terminal size	0.08 mm² - 3.31 mm²	
Cable type	Only copper wires (no aluminum wires!)	

Table 164: Technical data - TB103 (cont.)

4. Front cover for the USB Media Drive

This front cover can also be mounted on the front of the USB media drive (model number 5MD900.USB2-00 - see Section 9 "USB Media Drive DVD-ROM/CD-RW FDD CF USB" on page 262) to protect the interface.

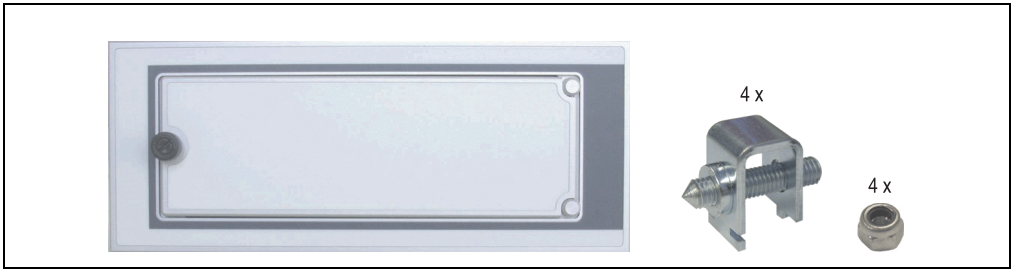


Figure 138: Front cover 5A5003.03

4.1 Technical data

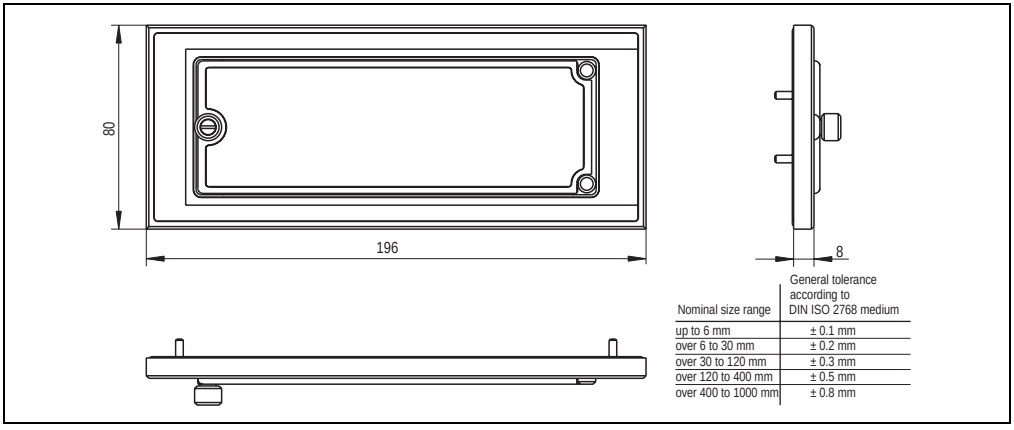
Information:

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

Features	5A5003.03
Front cover design / colors	
Dark gray border around the cover	Pantone 432CV
Light gray background	Pantone 427CV

Table 165: Technical data - 5A5003.03

4.2 Dimensions



Nominal size range	General tolerance according to DIN ISO 2768 medium
up to 6 mm	± 0.1 mm
over 6 to 30 mm	± 0.2 mm
over 30 to 120 mm	± 0.3 mm
over 120 to 400 mm	± 0.5 mm
over 400 to 1000 mm	± 0.8 mm

Figure 139: Dimensions - 5A5003.03

4.3 Installation

The front cover is attached with 2 mounting rail brackets (included with USB Media Drive) and 4 M3 locknuts. The USB media drive and front cover can be mounted as a whole in (for example) a switching cabinet door.

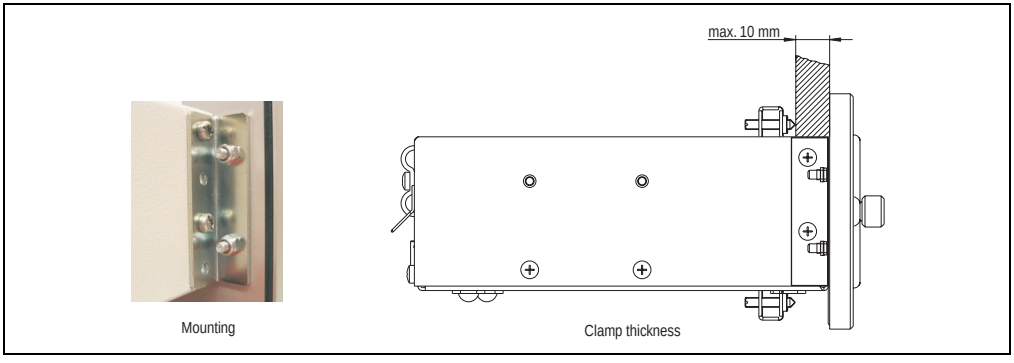


Figure 140: Front cover mounting and installation size

5. interface cover 5AC600.ICOV-00

The interface cover protects interfaces from dirt and dust when not in use.

5.1 Order data

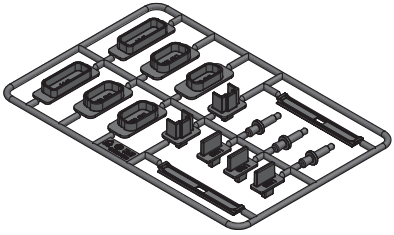
Model number	Description	Image
5AC600.ICOV-00	**Interface covers** Interface covers for APC620 and PPC700 devices; 5 pieces	

Table 166: PPC700 interface cover order data

5.2 Contents of delivery

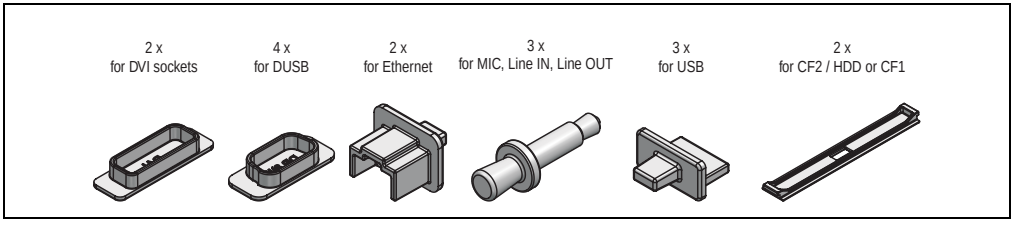


Figure 141: Interface cover - contents of delivery

6. DVI - monitor adapter 5AC900.1000-00

This adapter enables a standard monitor to be connected to the DVI-I interface.

6.1 Order data

Model number	Description	Image
5AC900.1000-00	**Adapter DVI-A/m to CRT DB15HD/f** Adapter DVI (plug) to CRT (socket), for connecting a standard monitor to a DVI-I interface.	

Table 167: Order data - DVI - CRT adapter

7. USB interface cover (cannot be lost)

Front side USB interface cover (cannot be lost) for Automation Panel 900 and Panel PC 700 devices.

7.1 Order data

Model number	Description	Image
5AC900.1200-00	**USB interface cover (cannot be lost)** Front side USB interface cover (cannot be lost) for Automation Panel 900 and Panel PC 700 devices.	

Table 168: Order data for USB interface cover (cannot be lost)

7.2 Installation

- Remove old cover.
- Feed the USB interface cover through the small opening (see red markings).

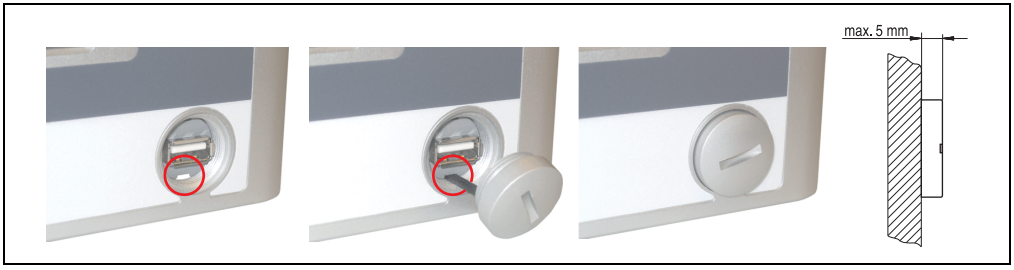


Figure 142: Front side USB interface cover - installation

- With the cover screwed on, the front side of the display is raised a maximum of 5 mm.

8. CompactFlash cards 5CFCRD.xxxx-02

8.1 General information

CompactFlash cards are easy-to-exchange memory media. Due to their robustness against environmental influences (e.g. temperature, shock, vibration, etc.), CompactFlash cards are ideal for use as memory media in industrial environments.

8.2 Order data

Model number	Description	Image
5CFCRD.0032-02	CompactFlash 32 MB True IDE SanDisk/A	
5CFCRD.0064-02	CompactFlash 64 MB True IDE SanDisk/A	
5CFCRD.0128-02	CompactFlash 128 MB True IDE SanDisk/A	
5CFCRD.0256-02	CompactFlash 256 MB True IDE SanDisk/A	
5CFCRD.0512-02	CompactFlash 512 MB True IDE SanDisk/A	
5CFCRD.1024-02	CompactFlash 1024 MB True IDE SanDisk/A	
5CFCRD.2048-02	CompactFlash 2048 MB True IDE SanDisk/A	

Table 169: Order data - CompactFlash cards

8.3 Technical data

Information:

The following defined characteristics, features and limit values are only valid for this accessory and can deviate from the entire device. For the entire device where this accessory is installed, refer to the data given specifically for the entire device.

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

Features	5CFCRD.xxxx-02
MTBF (@ 25°C)	> 3,000,000 hours
Maintenance	None
Data reliability	< 1 unrecoverable error in 10^{14} bit read accesses < 1 faulty correction in 10^{20} bit read accesses
Clear/write procedures	> 2,000,000 times

Table 170: Technical data - CompactFlash cards 5CFCRD.xxxx-02

Mechanics	5CFCRD.xxxx-02
Dimensions Length Width Thickness	 36.4 ± 0.15 mm 42.8 ± 0.10 mm 3.3 mm ± 0.10 mm
Weight	11.4 g
Environment	
Environmental temperature Operation Storage Transport	 0 °C to +70 °C -25 °C to +85 °C -25 °C to +85 °C
Humidity Operation/Storage	 8% to 95%, non-condensing
Vibration Operation/Storage	 Maximum 30 G (point to point)
Shock Operation/Storage	 Maximum 3,000 G
Altitude	24,000 meters

Table 170: Technical data - CompactFlash cards 5CFCRD.xxxx-02 (cont.)

8.4 Dimensions

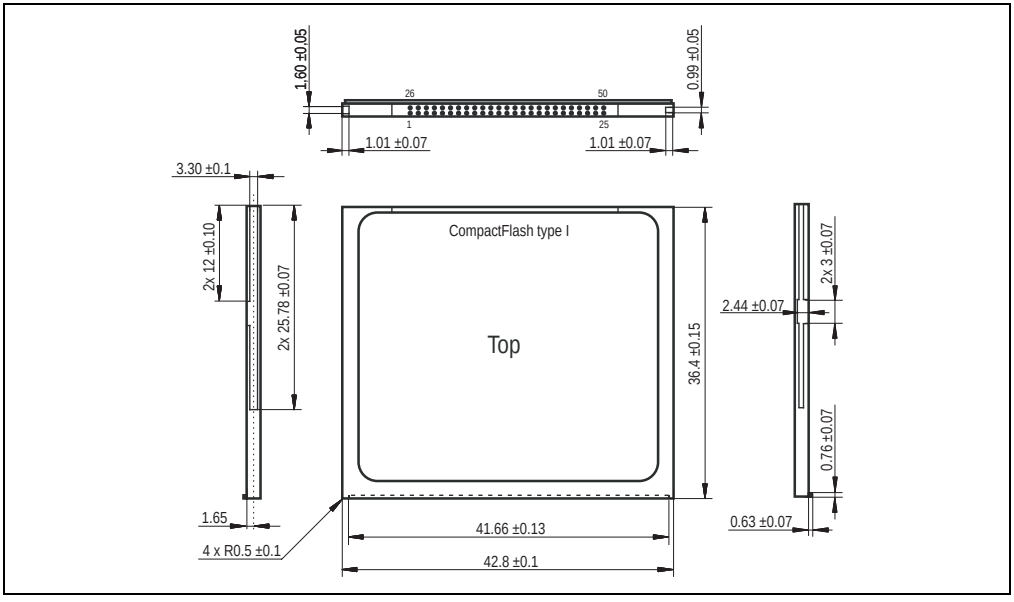
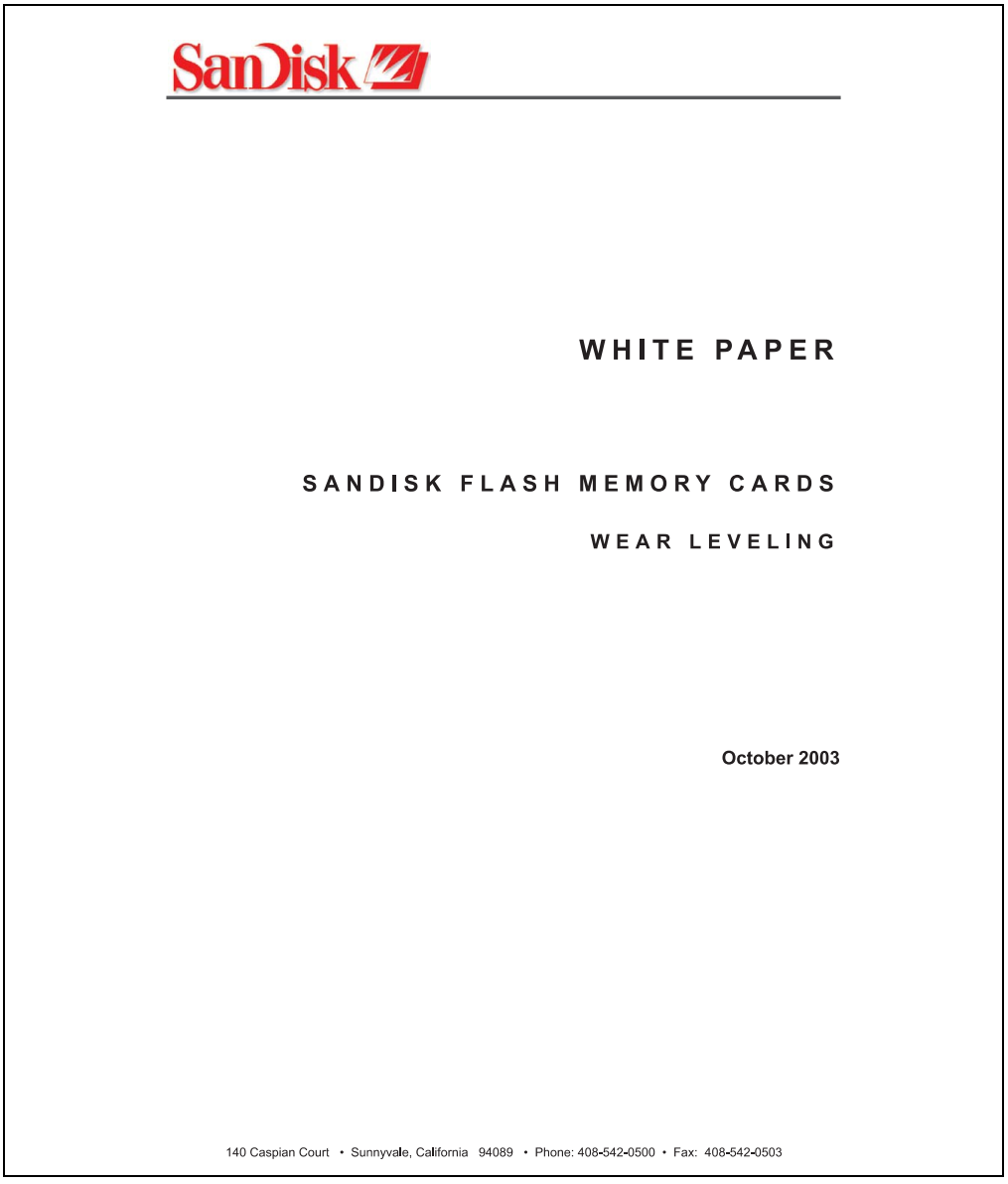


Figure 143: Dimensions for CompactFlash card type I

8.5 Calculating the lifespan

SanDisk provides a 6-page "white paper" for the lifespan calculation for CompactFlash cards (see following pages). This document can also be found on the SanDisk homepage.



SanDisk

WHITE PAPER

SANDISK FLASH MEMORY CARDS

WEAR LEVELING

October 2003

140 Caspian Court • Sunnyvale, California 94089 • Phone: 408-542-0500 • Fax: 408-542-0503

Figure 144: SanDisk white paper - page 1

SanDisk® Corporation general policy does not recommend the use of its products in life support applications where in a failure or malfunction of the product may directly threaten life or injury. Per SanDisk Terms and Conditions of Sale, the user of SanDisk products in life support applications assumes all risk of such use and indemnifies SanDisk against all damages.

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Lit. No. 80-36-00278 10/03 Printed in U.S.A.

Figure 145: SanDisk white paper - page 2

OVERVIEW

This purpose of this white paper is to help SanDisk customers understand the benefits of wear leveling and to assist customers in calculating life expectancy of SanDisk cards in specific applications.

Flash memory is susceptible to wear as a result of the repeated program and erase cycles that are inherent in typical data storage applications. Applications in which this is a major concern include hard disk replacement applications where write operations occur frequently. How a storage system manages the wear of the memory is key to understanding the extended reliability of the host that relies on these storage systems.

WEAR LEVELING METHODOLOGY

Current products available in the industrial channel use NAND flash memory. It is important to understand the NAND memory architecture to gain insight into the wear leveling mechanism.

Each memory chip is divided into blocks. A block is an array of memory cells organized as sectors. The number of blocks and sectors vary from product to product. The minimum unit for a write or read operation is a page (or sector). The minimum unit for an erase operation is a block. Physical blocks are logically grouped into zones. For the current technology, a typical zone size is 4 MB. However, this may change from product to product. Wear leveling is done within a zone. The current firmware does not spread the wear across the capacity of the card. Each zone has about 3% additional “spare blocks” beyond what is assigned to meet the logical capacity of the flash card. This group of blocks is commonly referred to as the “Erase Pool”.

With the introduction of SanDisk’s Write-before-Erase architecture, each time a host writes data to the same logical address (CHS or LBA), data is written into a newly assigned, empty physical block from the “Erase Pool”. The intrinsic nature of writing to a new physical location each time a logical address is written to is the basis for wear leveling found in SanDisk cards. This action spreads the writes over the zone, thus greatly extending the overall life of the card. The methodology of using a large number of physical addresses to manage a smaller logical address table allows for rotation of the physical addresses among the entire group of physical blocks within a zone. The resulting wear leveling optimizes the effective life of the media and avoids prematurely reaching the end of life on frequently written to host addresses.

When a card detects that a block has reached the end of its useful life, it removes that block from the blocks that are available for write operations. The result is a reduction of the size of the erase pool. This does not affect the capacity of the card as seen by the host. When the pool of blocks available for write operations has been exhausted due to wear, the card will reach the end of its useful life for write operations.

Figure 146: SanDisk white paper - page 3

Current SanDisk products do not preempt wear leveling events during normal operation of the card. Applications typically don't require such management beyond the natural wear leveling that occurs during normal host operations. As a result, the effectiveness of wear leveling in current SanDisk products is dependent upon host usage. It is important for customers whose applications do not fall into this typical usage pattern to understand how their applications will affect the lifetime of the card.

LIFE EXPECTANCY SCENARIOS

►best case analysis

In a typical application, large data files are written to the card occupying contiguous sequential logical address space. This results in optimal wear leveling and provides card life exceeding the specification for card endurance. This increased endurance is achieved as follows: The 2,000,000 endurance cycles specification (I-Grade only) is a result of large amounts of test data collected from a very large sample set that accounts for the extreme limits of the test population. With the 3% additional erase pool being used in an ideal fashion, the distribution is narrowed and the card will survive beyond its specified lifetime.

►worst case analysis

In the worst-case application, data will be written as single sectors to random addresses across the card. These single sector writes will exercise the erase pool more rapidly, requiring the system to perform a "garbage collection" operation to free up new blocks for subsequent write operations. At the extreme, each single sector write would cause one block to be programmed and erased. As a typical block size is 16kB or 32 sectors, the amount of wear is increased by a factor of 31 since 32 physical sectors are written and erased for each sector the host writes. Spreading this wear across the erase pool results in an effective 1/30 usable lifetime. This case is an extreme example and is only included to show the range of application dependence. This result is comparable to other vendor's cards based on memory with a 16kB erase block.

►analysis of host dependence

In assessing the life expectancy of a card in a given system several factors need to be understood. These factors include the types of files and their corresponding sizes, frequency of card write operations and file system behavior (including data structures). The types of files must be considered since some files, such as operating systems or executable files, typically remain in fixed locations once they are stored in the card. This limits the number of physical blocks available for circulation into the erase pool. The remaining capacity after these files have been accounted for can then be divided by the typical size of files that will be updated over the lifetime of the card. Related to this calculation is how the file system overwrites existing files. Typical operating system behavior, such as DOS, will allocate new blocks from the file allocation table, or FAT, and so repeated file writes will occupy a new set of addresses on the card. This is very beneficial in spreading wear across the card since it forces the card to cycle the entire physical

Figure 147: SanDisk white paper - page 4

area being used for such files. Special cases to consider include those where the files being updated are very small. Typically an operating system uses a minimum number of sectors to store a file, referred to as a cluster. Typical cluster sizes range from 8 to 64 sectors in size. The cluster size is important for files that are the same or smaller than the 32-sector block since these may trigger garbage collection operations. If these updates happen in a random fashion (sequential updates would not be affected by cluster size) lifetime may be reduced as a result. Finally, the frequency of such updates is then used to determine how long it will take before the card reaches its statistical limit for endurance. These factors can be combined in an equation that can be used to calculate the minimum time a card will function in that application:

$$lifetime = 2{,}000{,}000 \times \frac{\left(C_{tzone} - C_{fixed}\right) \times \left(1 - k_r \times \frac{32 - N_{cluster}}{32}\right)}{FS_{typ}} \times \frac{1}{f_w}$$

where Czone is the total capacity of the zone, Cfixed is the capacity used by fixed files, Ncluster is the cluster size, FStyp is the average file size and fw is the average frequency at which files are updated. kr is a factor that is 0 for file sizes that are typically over 16kB or for applications that are not random in the order in which such files are updated.

Example 1

In this example 128 KB of data is updated once a day. The zone has 500 KB worth of fixed files. A 4 MB zone size is assumed.

$$lifetime = 2{,}000{,}000 \times \frac{(4000 - 500) \times (1 - 0)}{128} \times \frac{1}{1/day}$$

$$lifetime = 149828\,years$$

Example 2

This example is a data logging operation using a 1GB card where a 4kB file is updated every five seconds. This would result in sequential address being written.

$$lifetime = 2{,}000{,}000 \times \frac{4000}{4} \times \frac{1}{1/5\,\mathrm{sec}}$$

$$lifetime = 317\,years$$

Figure 148: SanDisk white paper - page 5

Example 3

This example is a data logging operation using the same 1GB card where a new 4kB file is written every five seconds. But in this case the cluster size is 4kB and it is expected that, due to file system fragmentation, the logical addresses will be written randomly.

$$lifetime = 2{,}000{,}000 \times \frac{4 \times \left(1 - 1 \times \frac{32-8}{32}\right)}{.004} \times \frac{1}{1/5\,\text{sec}}$$

$$lifetime = 79.3\,years$$

CONCLUSION

These examples are general in nature but show how the equation can be used as a guideline for calculating card lifetime in different applications. They also demonstrate that SanDisk card architecture exceeds reasonable life expectancy in typical applications. If a particular applications behaves in such a way that this equation cannot be applied, the SanDisk Applications Engineering group can assist in performing card lifetime analysis.

For more information, please visit the SanDisk Web site at: www.sandisk.com

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Figure 149: SanDisk white paper - page 6

9. USB Media Drive DVD-ROM/CD-RW FDD CF USB

Data carriers not included in delivery

Figure 150: USB Media Drive 5MD900.USB2-00

9.1 Features

- +24 VDC supply (back side)
- USB/B 2.0 connection (back side)
- Desk-top or rack-mount operation (mounting rail brackets)
- Integrated USB diskette drive
- Integrated DVD-ROM/CD-RW drive
- Integrated CompactFlash slot IDE/ATAPI (Hot Plug capable)
- Integrated USB 2.0 connection (up to 480 MBit high speed)
- Optional front cover (model number 5A5003.03 see also section 4 "Front cover for the USB Media Drive" on page 249)

Information:

The following defined characteristics, features and limit values are only valid for this accessory and can deviate from the entire device. For the entire device where this accessory is installed, refer to the data given specifically for the entire device.

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

9.2 Technical data

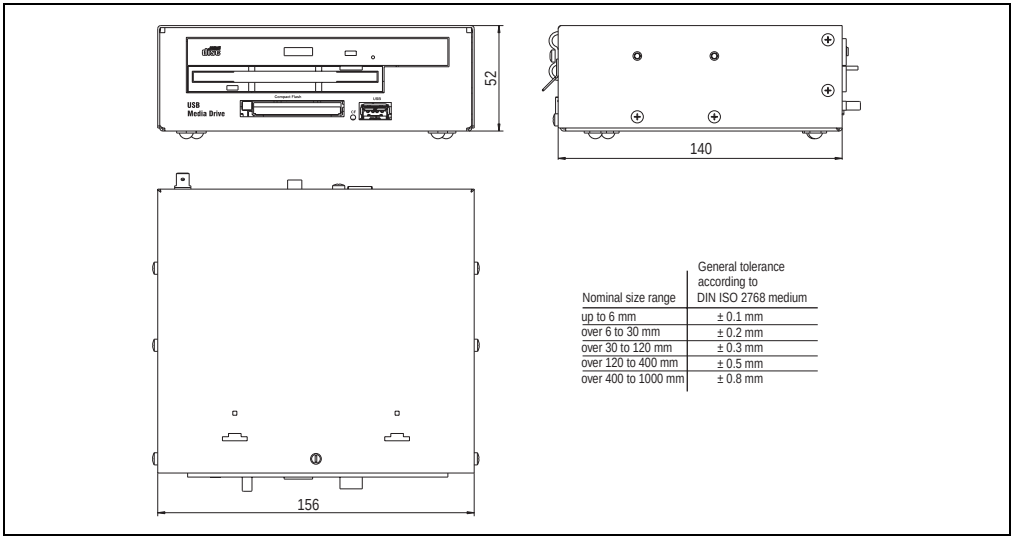
Features - entire device	5MD900.USB2-00
Transfer rate	Low speed (1.5 MBit/s), full speed (12 MBit/s), to high speed (480 Mbit/s)
Maximum cable length	5 m (not including hub)
Power supply Rated voltage	 24 VDC ±25%
Features - diskette drive	
Data capacity	720 KB / 1.25 MB / 1.44 MB (formatted)
Data transfer rate	250 kbits (720 KB) or 500 kbits (1.25 MB and 1.44 MB)
Rotation speed	Up to 360 rpm
Diskette media	High density (2HD) or normal density (2DD) 3.5" diskettes
MTBF	30,000 POH (Power-On Hours)
Features DVD-ROM/CD-RW drive	
Write speed CD-R CD-RW	 24x, 16x, 10x and 4x 10x and 4x
Reading rate CD DVD	 24x 8x
Data transfer rate	max. 33.3 MByte/sec.
Access time (average) CD DVD	 85 ms 110 ms
Revolution speed	max. 5,136 rpm ± 1%
Starting time (0 rpm to read access)	19 seconds (maximum)
Host interface	IDE (ATAPI)
Readable media CD DVD	 CD/CD-ROM (12 cm, 8 cm), CD-R, CD-RW DVD-ROM, DVD-R, DVD-RW, DVD-RAM
Non-write protected media CD	 CD-R, CD-RW
Compatible formats	CD-DA, CD-ROM mode 1/mode 2 CD-ROM XA mode 2 (form 1, form 2) Photo CD (single/multi-session) Enhanced CD, CD-text DVD-ROM, DVD-R, DVD-Video (double layer) DVD-RAM (4.7 GB, 2.6 GB)
Write-methods	Disc at once, session at once, packet write, track at once
Laser class	Class 1 laser
Data buffer capacity	2 MB
Noise level (complete read access)	Approx. 45 dBA at 50 cm
lifespan Opening/closing the drawer	60,000 POH (Power-On Hours) > 10,000 times

Table 171: Technical data - USB Media Drive 5MD900.USB2-00

Features - CompactFlash slot	5MD900.USB2-00
CompactFlash Type Number Connection	 Type I 1 slot IDE / ATAPI
CompactFlash LED	Signals read or write access to a CompactFlash card.
Hot Plug capable	Yes
Features - USB connections	
USB A on the front side Power supply	Connection of further peripheral devices Max. 500 mA
USB B back side	connection to the system
Mechanical characteristics	
Outer dimensions (without slide-in) Width Length Height	 70 mm 100 mm 9.5 mm
Weight	Approx. 1.1 kg (without front cover)
Environmental characteristics	
Environmental temperature Operation Storage Transport	 5 °C .. +45°C -20 °C .. +60 °C -40 °C .. +60 °C
Environmental characteristics	
Humidity Operation Storage Transport	 20 - 80 % non-condensing 5 - 90 % non-condensing 5 - 95 % non-condensing
Vibration Operation Storage Transport	 at max. 5 - 500 Hz and 0.3 g at max. 10 - 100 Hz and 2 g at max. 10 - 100 Hz and 2 g
Shock (pulse with a sinus half-wave) Operation Storage (packed) Transport (packed)	 at max. 5 g for 11 ms at max. 60 g for 11 ms at max. 60 g for 11 ms
Altitude	Max. 3,000 meters

Table 171: Technical data - USB Media Drive 5MD900.USB2-00 (cont.)

9.3 Dimensions



Nominal size range	General tolerance according to DIN ISO 2768 medium
up to 6 mm	± 0.1 mm
over 6 to 30 mm	± 0.2 mm
over 30 to 120 mm	± 0.3 mm
over 120 to 400 mm	± 0.5 mm
over 400 to 1000 mm	± 0.8 mm

Figure 151: Dimensions - 5MD900.USB2-00

9.4 Interfaces

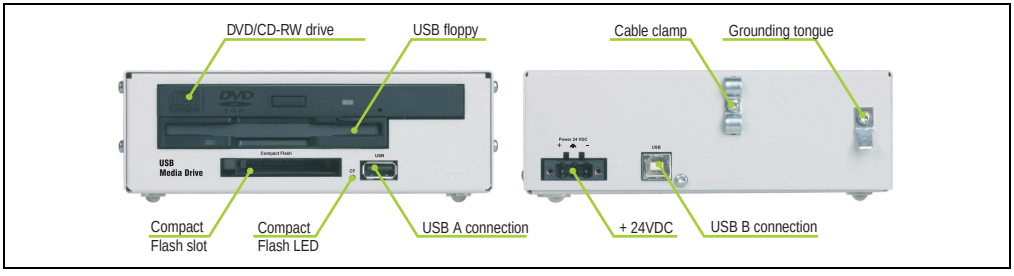


Figure 152: Interfaces - 5MD900.USB2-00

9.5 Installation

The USB Media Drive can be operated as a desk-top device (rubber feet) or as a rack-mount device (2 mounting rail brackets included).

9.5.1 Mounting position

Because of limits to the mounting position with the components used (floppy, DVD-CDRW drive), the USB media drive is only permitted to be mounted and operated as shown in the following figure.

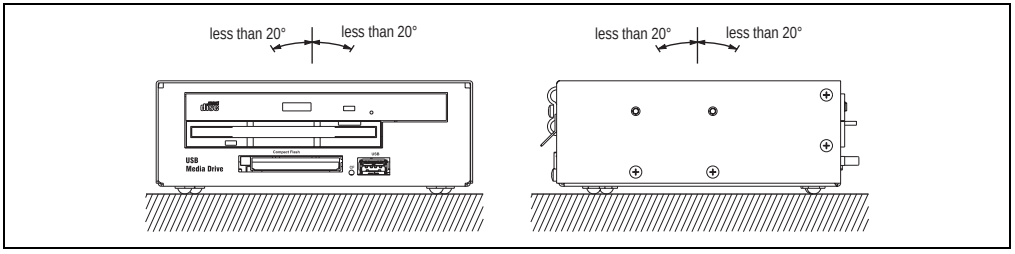


Figure 153: Installation position - 5MD900.USB2-00

10. USB memory stick

10.1 General information

USB memory sticks are easy-to-exchange memory media. Because of the fast data transfer provided by USB 2.0, the USB memory sticks are ideal for use as a portable memory medium. "Hot PLUG & PLAY" - without requiring additional drivers (except with Windows 98SE), the USB memory stick can be converted immediately into an additional drive, in which data can be read from or written to. Only USB memory sticks from the memory specialists SanDisk are being used.

10.2 Order data

Model number	Description	Image
5MMUSB.0128-00	USB memory stick 128 MB SanDisk	
5MMUSB.0256-00	USB memory stick 256 MB SanDisk	
5MMUSB.0512-00	USB memory stick 512 MB SanDisk	

Table 172: Order data - USB memory stick

10.3 Technical data

Information:

The following defined characteristics, features and limit values are only valid for this accessory and can deviate from the entire device. For the entire device where this accessory is installed, refer to the data given specifically for the entire device.

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

Features	5MMUSB.0xxx-00
LED	1 LED (green), signals data transfer (send and receive)
Power supply Current requirements	via the USB port < 650 µA in sleep mode, < 150 mA read/write

Table 173: Technical data - USB memory stick 5MMUSB.0xxx-00

Features	5MMUSB.0xxx-00
Interface	USB specification 2.0 high speed device, mass storage class, USB-IF and WHQL certified
Type	USB 1.1 and 2.0 compatible
Transfer rate	up to 480 MBit (high speed)
Sequential reading	Max. 8.7 MB/second
Sequential writing	Max. 1.7 MB/second
Connection	to each USB type A interface
MTBF (@ 25°C)	> 100,000 hours
Data preservation	10 years
Maintenance	None
Operating system support	Windows CE 4.1, CE 4.2, 98SE[1)] , ME, 2000, XP Mac OS 9.1 and 10.1.2+
Mechanics	
Dimensions	
Length	62 mm
Width	19 mm
Thickness	11 mm
Environment	
Environmental temperature	
Operation	0 °C to +45 °C
Storage	-20 °C to +60 °C
Transport	-20 °C to +60 °C
Humidity	
Operation	10 % to 90 %, non-condensing
Storage	5 % to 90 %, non-condensing
Transport	5 % to 90 %, non-condensing
Vibration	
Operation	2 G (10 to 500 Hz), oscillation rate 1/minute
Storage	4 G (10 to 500 Hz), oscillation rate 1/minute
Transport	4 G (10 to 500 Hz), oscillation rate 1/minute
Shock	
Operation	40 G and 11 ms duration (all axes)
Storage	80 G and 11 ms duration (all axes)
Transport	80 G and 11 ms duration (all axes)
Altitude	
Operation	3,048 meters
Storage	12,192 meters
Transport	12,192 meters

Table 173: Technical data - USB memory stick 5MMUSB.0xxx-00 (cont.)

1) For Win 98SE, a driver can be downloaded from the SanDisk homepage.

11. Cable

11.1 DVI cable

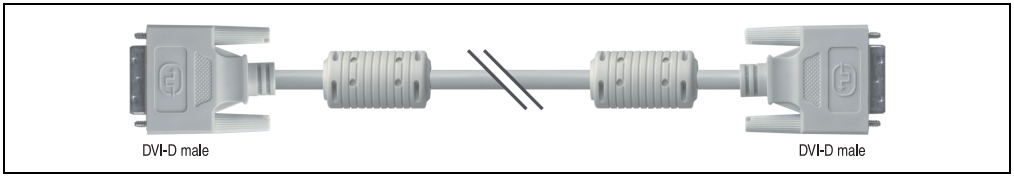


Figure 154: DVI extension cable (similar)

11.1.1 Order data

Model number	Description	Note
5CADVI.0018-00	**DVI-D cable 1.8 m / single** Cable (single) DVI-D/m:DVI-D/m 1.8 m	
5CADVI.0050-00	**DVI-D cable 5 m / single** Cable (single) DVI-D/m:DVI-D/m 5 m	
5CADVI.0100-00	**DVI-D cable 10 m / single** Cable (single) DVI-D/m:DVI-D/m 10 m	

Table 174: Model numbers - DVI cables

11.1.2 Technical data

Information:

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

Features	5CADVI.0018-00	5CADVI.0050-00	5CADVI.0100-00
Length	1.8 m ± 30 mm	5 m ± 50 mm	10 m ± 100 mm
Outer diameter	Max. 8.5 mm		
Shielding	Individual cable pairs and entire cable		
Connector type	2x DVI-D (18+1), male		
Wire cross section	AWG 28		
Wave impedance	Max. 237 Ω/km		
Insulation resistance	Min. 100 MΩ/km		
Mobility	Flexible		
Flex radius	Min. 146 mm		

Table 175: Technical data - DVI cables

11.1.3 Cable specifications

The following figure shows the cable assignments for the DVI cable available at B&R. If you want to build a suitable cable yourself, it should be wired according to these assignments.

Warning!

If a self-built cable is used, B&R cannot guarantee that it will function properly. The DVI cables provided by B&R are guaranteed to function properly.

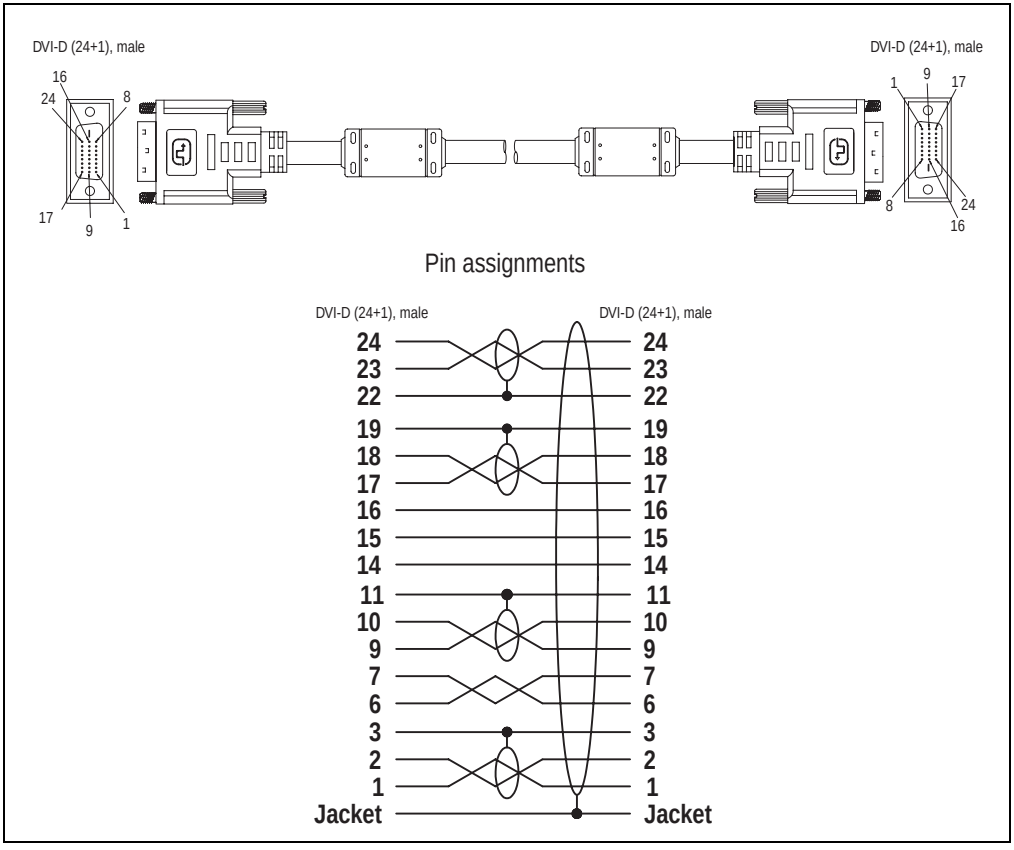


Figure 155: DVI cable assignments

11.2 SDL cable

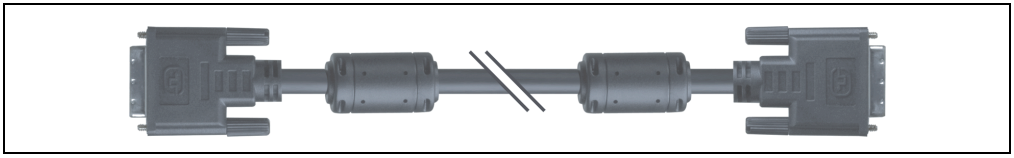


Figure 156: SDL extension cable (similar)

11.2.1 Order data

Model number	Description	Note
5CASDL.0018-00	**SDL cable (1.8 m)** SDL cable DVI-D/m:DVI-D/m 1.8 m	
5CASDL.0050-00	**SDL cable (5 m)** SDL cable DVI-D/m:DVI-D/m 5 m	
5CASDL.0100-00	**SDL cable (10 m)** SDL cable DVI-D/m:DVI-D/m 10 m	
5CASDL.0150-00	**SDL cable (15 m)** SDL cable DVI-D/m:DVI-D/m 15 m	
5CASDL.0200-00	**SDL cable (20 m)** SDL cable DVI-D/m:DVI-D/m 20 m	
5CASDL.0250-00	**SDL cable (25 m)** SDL cable DVI-D/m:DVI-D/m 25 m	
5CASDL.0300-00	**SDL cable (30 m)** SDL cable DVI-D/m:DVI-D/m 30 m	

Table 176: Model numbers - SDL cables

11.2.2 Technical data

Information:

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

Features	5CASDL.0018-00	5CASDL.0050-00	5CASDL.0100-00	5CASDL.0150-00	5CASDL.0200-00	5CASDL.0250-00	5CASDL.0300-00
Length	1,8 m ± 50 mm	5 m ± 80 mm	10 m ± 100 mm	15 m ± 120 mm	20 m ± 100 mm	25 m ± 100 mm	30 m ± 100 mm
Outer diameter	Max. 9 mm		Max. 11.5 mm				
Shielding	Individual cable pairs and entire cable						
Connector type	2x DVI-D (24+1), male						
Wire cross section	AWG 28		AWG 24				
Line resistance	Max. 237 Ω/km		Max. 93 Ω/km				

Table 177: Technical data - SDL cables

Features	5CASDL.0018-00	5CASDL.0050-00	5CASDL.0100-00	5CASDL.0150-00	5CASDL.0200-00	5CASDL.0250-00	5CASDL.0300-00
Insulation resistance	Min. 10 MΩ/km						
Mobility	flexible (not for use in drag chain installations)						
Flex radius	Min. 172 mm		Min. 220 mm				
Weight	Approx. 300 g	Approx. 590 g	Approx. 2100 g	Approx. 3000 g	Approx. 4100 g	Approx. 5100 g	Approx. 6100 g

Table 177: Technical data - SDL cables (cont.)

11.2.3 Cable specifications

The following figure shows the cable assignments for the SDL cable available at B&R. If you want to build a suitable cable yourself, it should be wired according to these assignments.

Warning!

If a self-built cable is used, B&R cannot guarantee that it will function properly. The SDL cables provided by B&R are guaranteed to function properly.

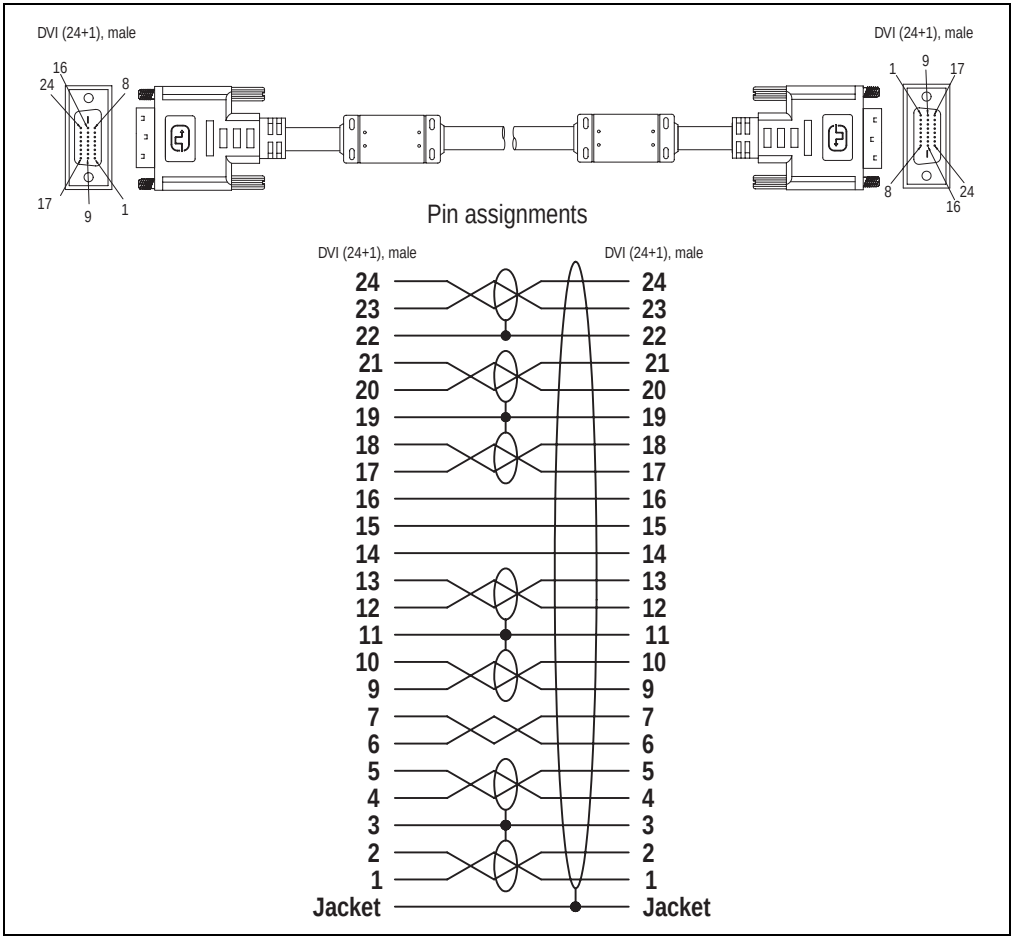


Figure 157: SDL cable assignments

11.3 RS232 cable

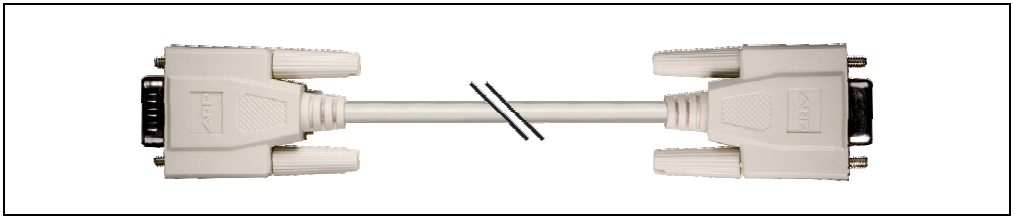


Figure 158: RS232 extension cable (similar)

11.3.1 Order data

Model number	Description	Note
9A0014.02	**RS232 cable DB9/f:DB9/m 1.8 m** RS232 extension cable for remote operation of a display unit with touch screen, length 1.8 m.	
9A0014.05	**RS232 cable DB9/f:DB9/m 5 m** RS232 extension cable for remote operation of a display unit with touch screen, length 5 m.	
9A0014.10	**RS232 cable DB9/f:DB9/m 10 m** RS232 extension cable for remote operation of a display unit with touch screen, length 10 m.	

Table 178: Model numbers - RS232 cables

11.3.2 Technical data

Information:

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

Features	9A0014.02	9A0014.05	9A0014.10
Length	1.8 m ± 50 mm	5 m ± 80 mm	10 m ± 100 mm
Outer diameter	Max. 5 mm		
Shielding	Entire cable		
Connector type	DSUB (9-pin), male / female		
Wire cross section	AWG 26		
Mobility	Flexible		
Flex radius	Min. 70 mm		

Table 179: Technical data - RS232 cables

11.3.3 Cable specifications

The following figure shows the cable assignments for the RS232 cable available at B&R. If you want to build a suitable cable yourself, it should be wired according to these assignments.

Warning!

If a self-built cable is used, B&R cannot guarantee that it will function properly. The RS232 cables provided by B&R are guaranteed to function properly.

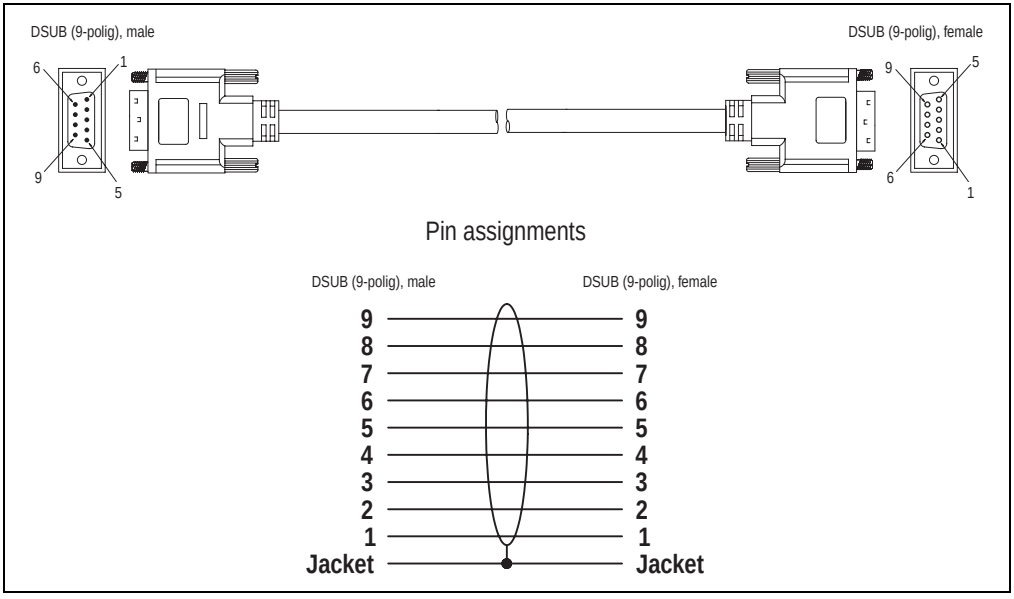


Figure 159: RS232 cable assignments

11.4 USB cable

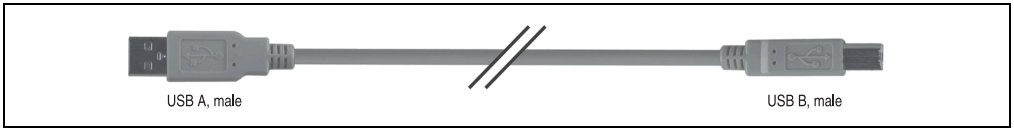


Figure 160: USB extension cable (similar)

11.4.1 Order data

Model number	Description	Note
5CAUSB.0018-00	**USB 2.0 cable A/m:B/m 1.8 m** USB 2.0 connection cable; Type A - Type B; 1.8 m	
5CAUSB.0050-00	**USB 2.0 cable A/m:B/m 5 m** USB 2.0 connection cable; Type A - Type B; 5 m	

Table 180: Model numbers - USB cables

11.4.2 Technical data

Information:

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

Features	5CAUSB.0018-00	5CAUSB.0050-00
Length	1.8 m ± 30 mm	5 m ± 50 mm
Outer diameter	Max. 5 mm	
Shielding	Entire cable	
Connector type	USB type A male and USB type B male	
Wire cross section	AWG 24, 28	
Mobility	Flexible	
Flex radius	Min. 100 mm	

Table 181: Technical data - USB cables

11.4.3 Cable specifications

The following figure shows the cable assignments for the USB cable available at B&R. If you want to build a suitable cable yourself, it should be wired according to these assignments.

Warning!

If a self-built cable is used, B&R cannot guarantee that it will function properly. The USB cables provided by B&R are guaranteed to function properly.

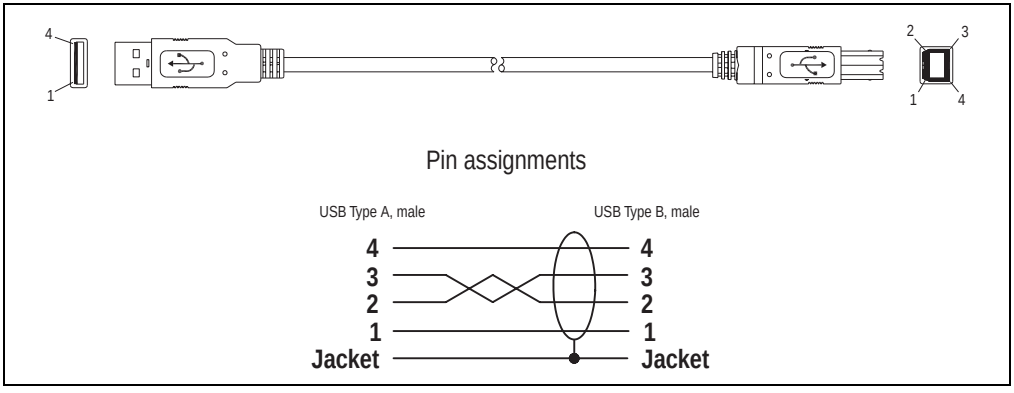


Figure 161: USB cable assignments

Numbers

A

B

C

D

E

F

H

K

L

M

P

R

S

U

0

4

5

9