Panel PC 700

User's Manual

Version: **1.1 Preliminary (June/July 2005)**

Model No.: **---**

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Chapter 1 • General Information

1. Manual history

Version	Date	Help info
1.0	March 7, 2005	Changes / New Features - First version
1.1	24. June 2005	Changes / New Features - Technical data updated - New dimension diagrams (fan) - Cutout diagrams updated - Mounting chapter updated - Photos updated

Table 1: Manual history

2. Safety guidelines

2.1 Introduction

Programmable logic controllers (PLCs, etc.), operating and monitoring devices (industrial PCs, Power Panels, MobilePanels, etc.) as well as the B&R uninterruptible power supplies have been designed, developed or 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.

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 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 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 observed before installation and commissioning.

2.2 Intended use

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.

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 touch 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.

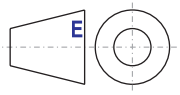
3. Safety notices

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: Safety guidelines

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, 0 PCI Slots T** 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, 2 PCI Slots T** 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, 0 PCI Slots T** 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, 0 PCI Slots T** 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, 2 PCI Slots T** 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, 1 PCI Slot T** 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, 0 PCI Slots FT** 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, 0 PCI Slots FT** 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, 0 PCI Slots FT** 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 CPU boards 815E

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

Table 4: Model numbers - CPU boards 815E

5.3 CPU boards 855GME

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

Table 5: Model numbers - CPU boards 855GME

5.4 Heat sink

Model number	Short description	Note
5AC700.HS01-00	**Panel PC 700 fan** for CPU boards with Celeron 3 400 MHz, Celeron 3 733 MHz, Celeron 3 1000 MHz.	
5AC700.HS01-01	**Panel PC 700 fan** for CPU boards with Celeron M 600 MHz, Pentium M 1100 MHz, Pentium M 1400 GHz.	
5AC700.HS01-02	**Panel PC 700 fan** for CPU boards with Pentium M 1600 and 1800 GHz.	In preparation

Table 6: Model numbers - heat sink

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.	
5MMSDR.0256-01	**SO-DIMM SDRAM 256 MB PC133** SO-DIMM SDRAM 256 MB PC133 for 815E CPU boards.	
5MMSDR.0512-01	**SO-DIMM SDRAM 512 MB PC133** SO-DIMM SDRAM 512 MB PC133 for 815E CPU boards.	
5MMDDR.0256-00	**SO-DIMM DDR-SDRAM 256 MB PC2700** SO-DIMM DDR-SDRAM 256 MB PC2700 for 855GME CPU boards.	
5MMDDR.0512-00	**SO-DIMM DDR-SDRAM 512 MB PC2700** SO-DIMM DDR-SDRAM 512 MB PC2700 for 855GME CPU boards.	

Table 7: Model numbers - main memory

Model number	Short description	Note
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 Compact Flash slot** Compact Flash 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 2Slot** Slide-In Compact Flash Adapter for 2 Compact Flash (via IDE and USB 2.0)	
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 - interfaces

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 2 PCI slots.	60 x 60 x 20

Table 10: Model numbers - fan kits

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, 1.5 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.	

Table 12: Model numbers - supply voltage connectors

5.9.3 Compact Flash cards

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

Table 13: Model numbers - Compact Flash cards

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

Table 13: Model numbers - Compact Flash 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 Cables

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** Cable SDL DVI-D/m:DVI-D/m 1.8 m	
5CASDL.0050-00	**SDL cable 5 m** Cable SDL DVI-D/m:DVI-D/m 5 m	
5CASDL.0100-00	**SDL cable 10 m** Cable SDL DVI-D/m:DVI-D/m 10 m	
5CASDL.0150-00	**SDL cable 15 m** Cable SDL DVI-D/m:DVI-D/m 15 m	
5CAUSB.0018-00	**Cable USB 2.0 A/m:B/m 1.8 m** USB 2.0 connection cable; Type A - Type B; 1.8 m	
5CAUSB.0050-00	**Cable USB 2.0 A/m:B/m 5 m** USB 2.0 connection cable; Type A - Type B; 5 m	
9A0014.02	**Cable RS232 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	**Cable RS232 DB9/f:DB9/m 5 m** RS232 extension cable for remote operation of a display unit with touch screen, length 5 m.	

Table 15: Model numbers - cables

Model number	Description	Note
9A0014.10	**Cable RS232 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, Compact Flash 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 Compact Flash with Windows XP embedded image for APC620 systems with a 815E CPU board. Only delivered with a new PC.	
9S0001.20-020	**OEM Microsoft Windows XP embedded APC620 855GME w/CF, English** 512 MB Compact Flash 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 Compact Flash with Windows XP embedded image including SP2 for APC620 systems with a 815E CPU board. Only delivered with a new PC.	

Table 17: Model numbers - software

Model number	Short description	Note
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

Chapter 2 • Technical Data

1. Introduction

1.1 Features

- Processors up to Pentium M 1.8 GHz
- Compact Flash slot (type I)
- Half-size PCI slots
- AC97 sound
- USB 2.0
- 24 VDC supply voltage
- 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)]
- BIOS (Phoenix)

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

- Real-time clock (battery-buffered)
- Up to 1 GB central memory
- Connection of various display devices to the "Monitor/Panel" video output (supports RGB, DVI, and SDL 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 Compact Flash card or hard disk) for the operating system
- Software

2. Device

2.1 General device interfaces

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 assignment - COM1

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 19: Pin assignment - COM2

2.1.3 Ethernet connection ETH1

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

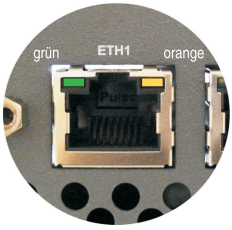
Ethernet connection (ETH1)		
Controller	Intel 82562	RJ45 Twisted Pair (10BaseT/100BaseT), female 
Cabling	S/STP (category 5)	
Transfer rate	10/100 MBit/s [1)]	
LED	**On**	**Off**
Green	100 MBit/s	10 MBit/s
Orange	Link (Ethernet network connection available)	Activity (blinking) (Data transfer in progress)

Table 20: 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.

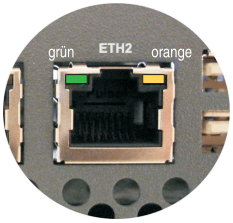
Ethernet connection (ETH2)			
Controller	Intel 82551ER		RJ45 Twisted Pair (10BaseT/100BaseT), female 
Cabling	S/STP (category 5)		
Transfer rate	10/100 MBit/s [1]		
LED	**On**	**Off**	
Green	100 MBit/s	10 MBit/s	
Orange	Link (Ethernet network connection available)	Activity (blinking) (Data transfer in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

Table 21: 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.

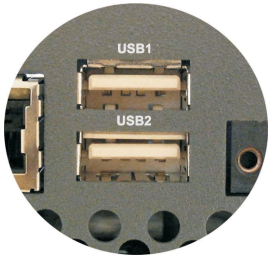
Universal Serial Bus		
Transfer rate	Low speed (1.5 MBit/s), full speed (12 MBit/s), to high speed (480 Mbit/s)	2x USB Type A, female 
Power supply	Max. 500 mA per Port[1)]	
Maximum cable length	5 m (not including hub)	

Table 22: 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.

Warning!

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&Rs 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	

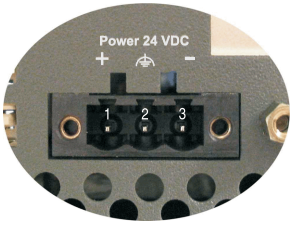


Figure 1: Supply voltage connection

Warning!

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) will vary depending on the system unit and CPU board.

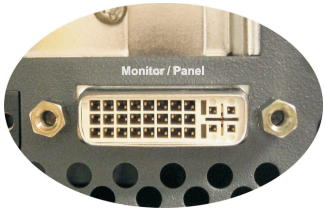
Monitor / Panel		
The following will provide an overview of the video signals available with different system units and CPU boards.		24-pin DVI-I with special functions, female 
System unit	**815E Board**	**855GME Board**
5PC720.1043-00	RGB	RGB, DVI, SDL
5PC720.1043-01	RGB	RGB, DVI, SDL
5PC720.1214-00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

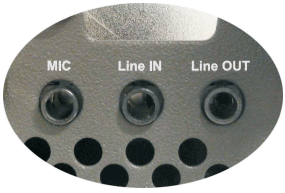
MIC, Line IN and Line OUT		
MIC	Connection of a mono microphone with a 3.5 mm stereo (headphone) jack.	3.5 mm socket, female 
Line IN	Stereo Line IN signal supplied via 3.5 mm plug.	
Line OUT	Connection of a stereo sound reader (e.g. amplifier) via a 3.5 mm plug.	

Table 23: 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 Section3.7 "Interface options" on page 120.

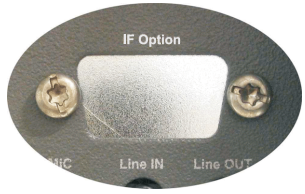
Add-on interface slot		
		
Available add-on interfaces		
5AC600.CANI-00	Add-on CAN interface	
5AC600.485I-00	Add-on RS232/422/485 interface	

Table 24: 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. Cards that comply with the PCI half-size standard 2.2 and do not exceed the following dimensions can be inserted.

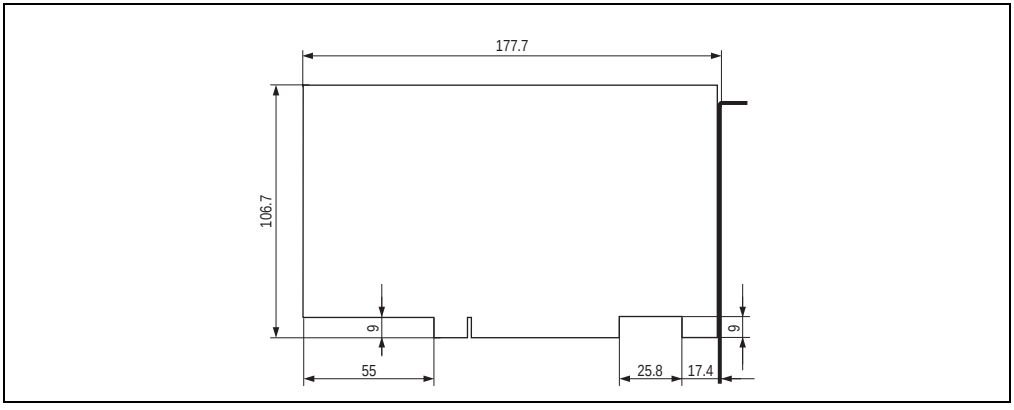


Figure 4: Dimensions of standard half-size PCI cards.

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.
		blinking	An active SDL connection has been interrupted by a loss of power in the display unit.
Link 2	Yellow	-	In preparation

Table 25: Status LEDs

2.1.12 Compact Flash slot (CF1)

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

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

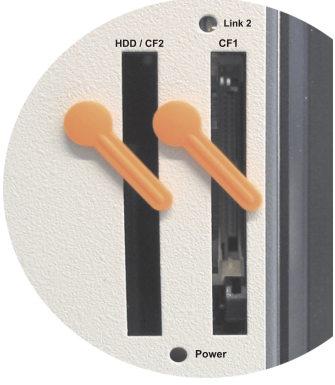


Table 26: Compact Flash slot (CF1)

Warning!

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

2.1.13 Hard disk / Compact Flash slot (HDD/CF2)

This slot allows for installation of a hard disk or a second Compact Flash 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.

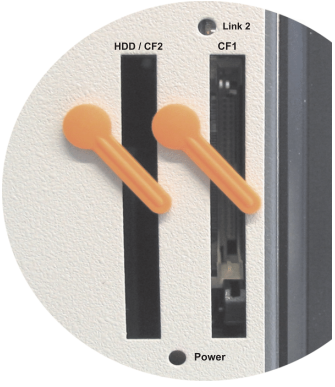
Hard disk / Compact Flash slot (HDD/CF2)		
Connection	Primary slave IDE device	
Add-on hard disks 2.5" drive (internal)		
5AC600.HDDI-00	Add-on hard disk 30 GB 24/7	
5AC600.HDDI-01	Add-on hard disk 20 GB ET	
Add-on Compact Flash slot		
5AC600.CFSI-00	Add-on Compact Flash slot	
Compact Flash type	Type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

Table 27: Hard disk / Compact Flash slot (HDD/CF2)

Warning!

Inserting and removing the Compact Flash 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 169 for 815E CPU boards, or section "Power", on page 223 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 28: 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 29: Reset button

Warning!

A reset triggered by actuating 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!).

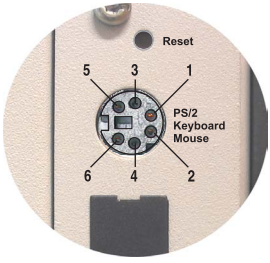
Connection for keyboard/mouse (PS/2)		
Pin	**Assignment**	PS/2 socket, female
1	DATA 0	
2	DATA 1	
3	GND	
4	+5 V [1)]	
5	CLK 0	
6	CLK 1	

Table 30: Connection for external keyboard/mouse (PS/2)

1) The PS/2 keyboard/mouse interface is secured 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.

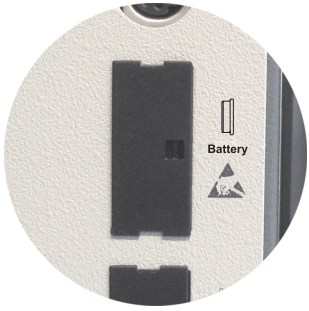
Battery		
Battery Type Exchangeable Lifespan	 Renata 950 mAh Yes, accessible from the outside. 4 years at 25 °C	

Table 31: 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 32: 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.**

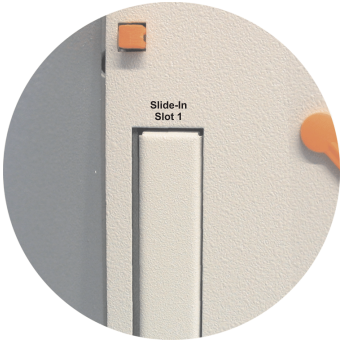
Slide-in slot 1		
Connection	Secondary slave IDE device	
Accessories	**Short description**	
5AC600.CDXS-00	Slide-in CD-ROM	
5AC600.CFSS-00	Slide-In CF 2Slot	
5AC600.DVDS-00	Slide-in DVD-ROM/CD-RW	
5AC600.FDDS-00	Slide-in USB FDD	
5AC600.HDDS-00	Slide-in hard disk 30 GB 24x7	
5AC600.HDDS-01	Slide-in hard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

Table 33: 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

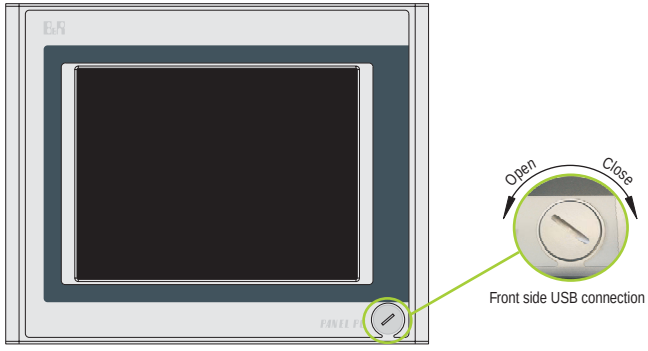


Figure 5: Front view 5PC720.1043-00

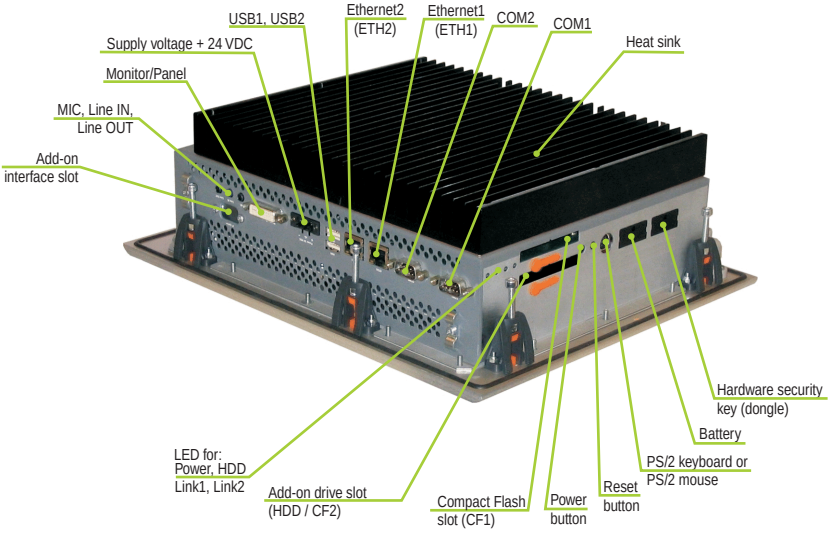


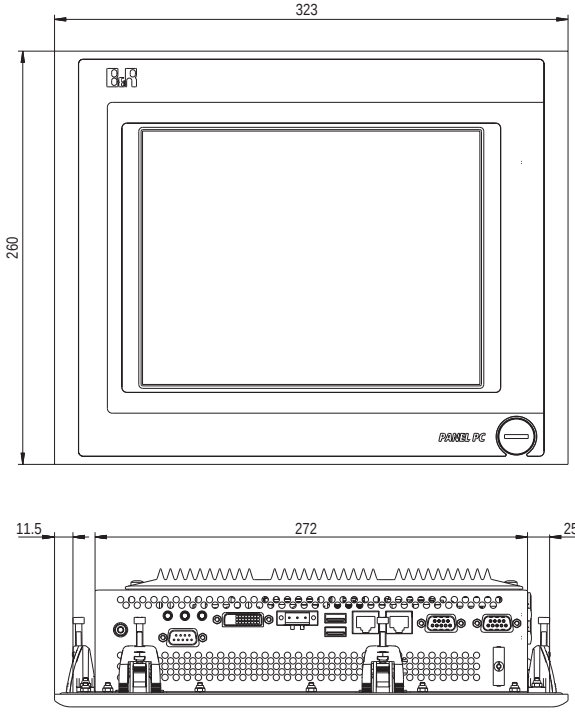
Figure 6: Rear view 5PC720.1043-00

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



Information:

Measurement "A" depends on the PPC700 heat sink used!

PPC700 heat sink model number	Thickness in mm
5AC700.HS01-00	12.8
5AC700.HS01-01	12.8
5AC700.HS01-02	30

Figure 7: Dimensions 5PC720.1043-00

Technical data

Features	5PC720.1043-00
Serial interfaces Type Amount UART Transfer rate Connection	See "Serial interfaces COM1", on page 27 and "Serial interfaces COM2", on page 28 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 29 and "Ethernet connection ETH2", on page 30 10/100 Mbit/s RJ45 Twisted Pair (10 BaseT / 100 BaseT)
USB interfaces Type Amount Transfer rate Connection	See also "USB port", on page 31 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 33 DVI-I, female
AC97 sound Inputs Outputs	See also "MIC, Line IN and Line OUT Port", on page 33 Microphone, Line in Line out
Add-on interface slot Amount	See also "Add-on interface slot", on page 34 1
PCI slots Type Standard	-
Compact Flash slot 1 (CF1) Internal organization	Yes, also see "Compact Flash slot (CF1)", on page 35 Primary master
Compact Flash slot 2 / hard disk (HDD/CF2) Type Internal organization	Yes, also see "Hard disk / Compact Flash slot (HDD/CF2)", on page 36 Combined Primary slave
Insert for slide-in drive 1 Internal organization	-
Reset button	Yes, also see "Power button", on page 37
Power button	Yes, also see "Reset button", on page 37
PS/2 keyboard/mouse Type	Yes, also see "PS/2 keyboard / mouse", on page 38 Combined, will be automatically detected
Battery compartment	Yes, also see "Battery", on page 39
Hardware security key compartment Optimized for	Yes, also see "Hardware security key", on page 39 DS1425 from MAXIM/Dallas)
Fan insert for fan kit	Yes
Automation Panel link slot	-
LED Amount	See also "Status LEDs", on page 35 4 (Power, HDD, Link 1, Link 2)

Table 34: Technical data - 5PC720.1043-00

Features	5PC720.1043-00
Touch screen	
Technology	Analog, resistive
Controller	Elo, serial, 12-bit
Transmission degree	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	50000 hours
Keys	-
Function keys	
Softkeys	
Cursor pad	
Number block	
Other keys	
Electrical characteristics	
Power supply	See also "Supply voltage", on page 32
Rated voltage	24 VDC ±25%
Starting current	TBD
Power consumption	Depends on the components used (see Power Management)
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 42
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	Depending on the components used
Storage	TBD
Transport	TBD
Humidity	TBD
Operation	
Storage	
Transport	

Table 34: 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 Compact Flash card) IP65 / NEMA 250 type 4X, dust and sprayed water protection (from front)
Altitude	Max. 3000 m

Table 34: 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 clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

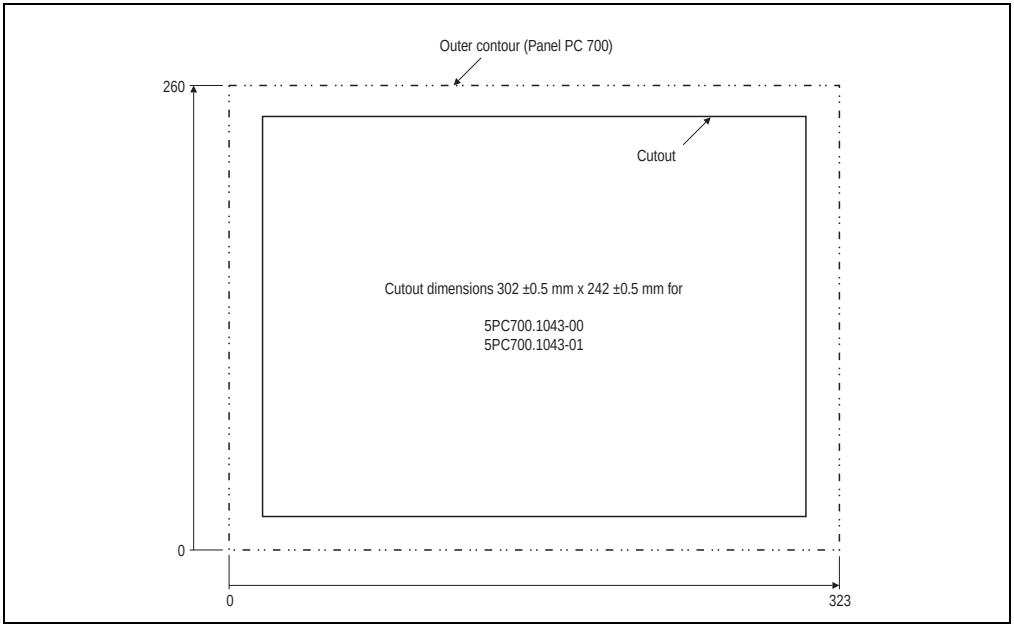


Figure 8: Cutout installation 5PC700.1043-00

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

3.1.2 Panel PC 5PC720.1043-01

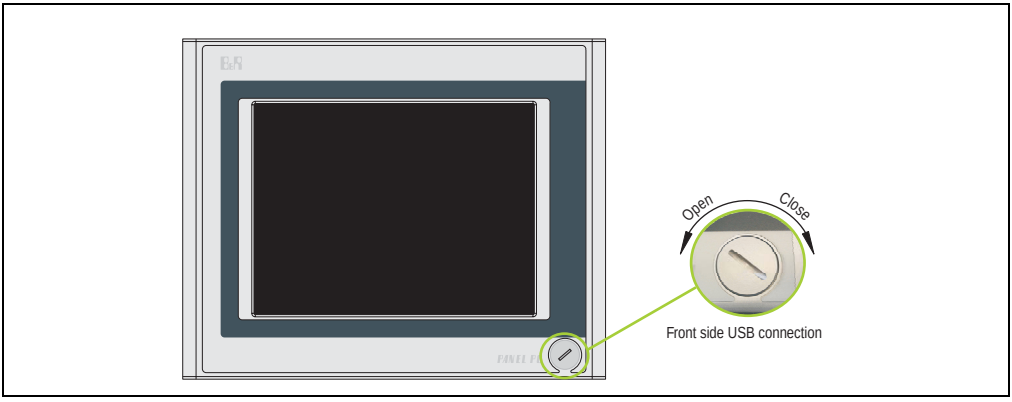


Figure 9: Front view 5PC720.1043-01

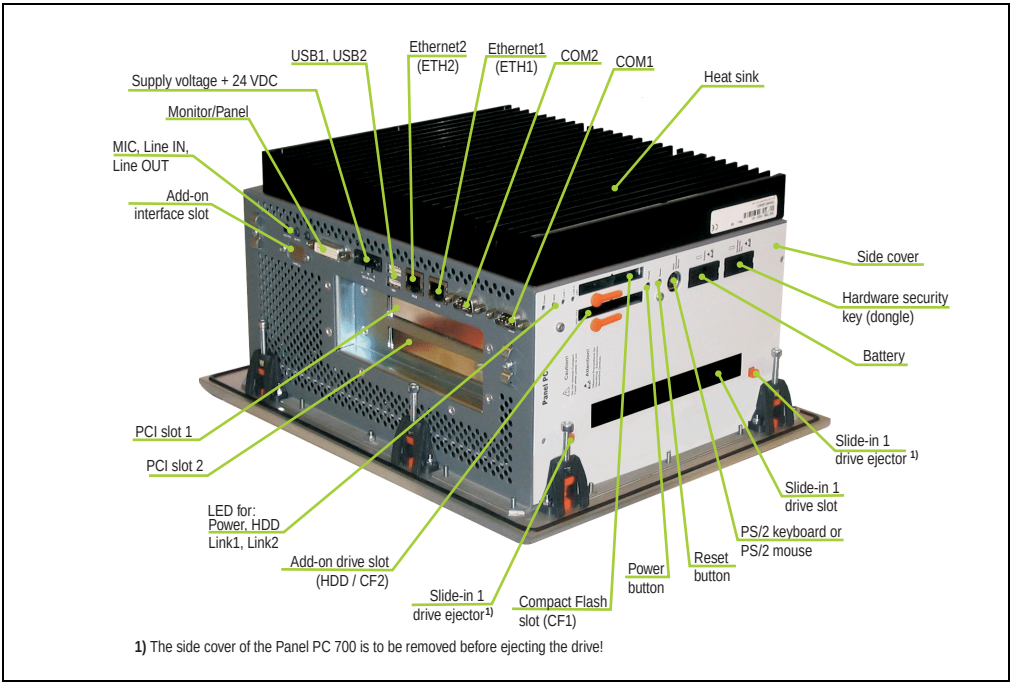


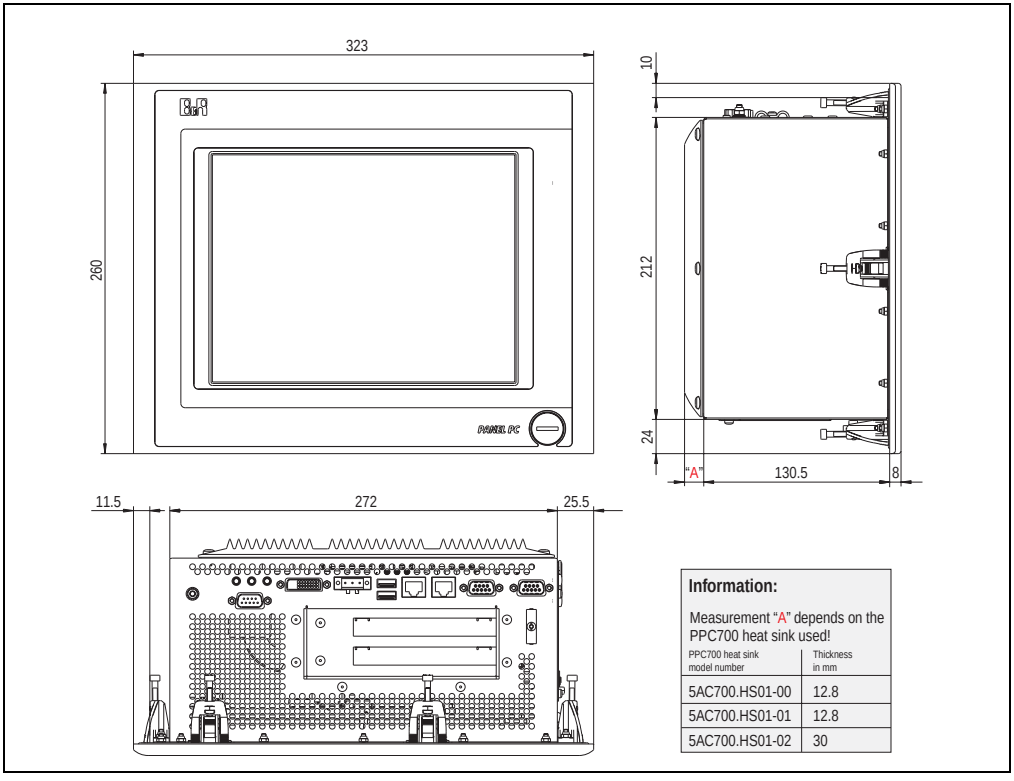
Figure 10: Rear view 5PC720.1043-01

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, voids all warranty.

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

Dimensions



Information:

Measurement "A" depends on the PPC700 heat sink used!

PPC700 heat sink model number	Thickness in mm
5AC700.HS01-00	12.8
5AC700.HS01-01	12.8
5AC700.HS01-02	30

Figure 11: Dimensions 5PC720.1043-01

Technical data

Features	5PC720.1043-01
Serial interfaces Type Amount UART Transfer rate Connection	See "Serial interfaces COM1", on page 27 and "Serial interfaces COM2", on page 28 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 29 and "Ethernet connection ETH2", on page 30 10/100 Mbit/s RJ45 Twisted Pair (10 BaseT / 100 BaseT)
USB interfaces Type Amount Transfer rate Connection	See also "USB port", on page 31 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 33 DVI-I, female
AC97 sound Inputs Outputs	See also "MIC, Line IN and Line OUT Port", on page 33 Microphone, Line in Line out
Add-on interface slot Amount	See also "Add-on interface slot", on page 34 1
PCI slots Amount Type Standard	See also "PCI slots", on page 34 2 Half-size According to PCI Half Size Standard 2.2
Compact Flash slot 1 (CF1) Internal organization	Yes, also see "Compact Flash slot (CF1)", on page 35 Primary master
Compact Flash slot 2 / hard disk (HDD/CF2) Type Internal organization	Yes, also see "Hard disk / Compact Flash slot (HDD/CF2)", on page 36 Combined Primary slave
Insert for slide-in drive 1 Internal organization	Yes, also see "Slide-in slot 1 drive slot", on page 40 Secondary slave
Reset button	Yes, also see "Power button", on page 37
Power button	Yes, also see "Reset button", on page 37
PS/2 keyboard / mouse Type	Yes, also see "PS/2 keyboard / mouse", on page 38 Combined, will be automatically detected
Battery compartment	Yes, also see "Battery", on page 39
Hardware security key compartment Optimized for	Yes, also see "Hardware security key", on page 39 DS1425 from MAXIM/Dallas)
Fan insert for fan kit	Yes
Automation Panel link slot	-
LED Amount	See also "Status LEDs", on page 35 4 (Power, HDD, Link 1, Link 2)

Table 35: Technical data - 5PC720.1043-01

Features	5PC720.1043-01
Touch screen	
Technology	Analog, resistive
Controller	Elo, serial, 12-bit
Transmission degree	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	50000 hours
Keys	-
Function keys	
Softkeys	
Cursor pad	
Number block	
Other keys	
Electrical characteristics	
Power supply	See also "Supply voltage", on page 32
Rated voltage	24 VDC ±25%
Starting current	TBD
Power consumption	Depends on the components used (see Power Management)
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 47
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	Depending on the components used
Storage	TBD
Transport	TBD
Humidity	TBD
Operation	
Storage	
Transport	

Table 35: 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 Compact Flash card) IP65 / NEMA 250 type 4X, dust and sprayed water protection (from front)
Altitude	Max. 3000 m

Table 35: 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 clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

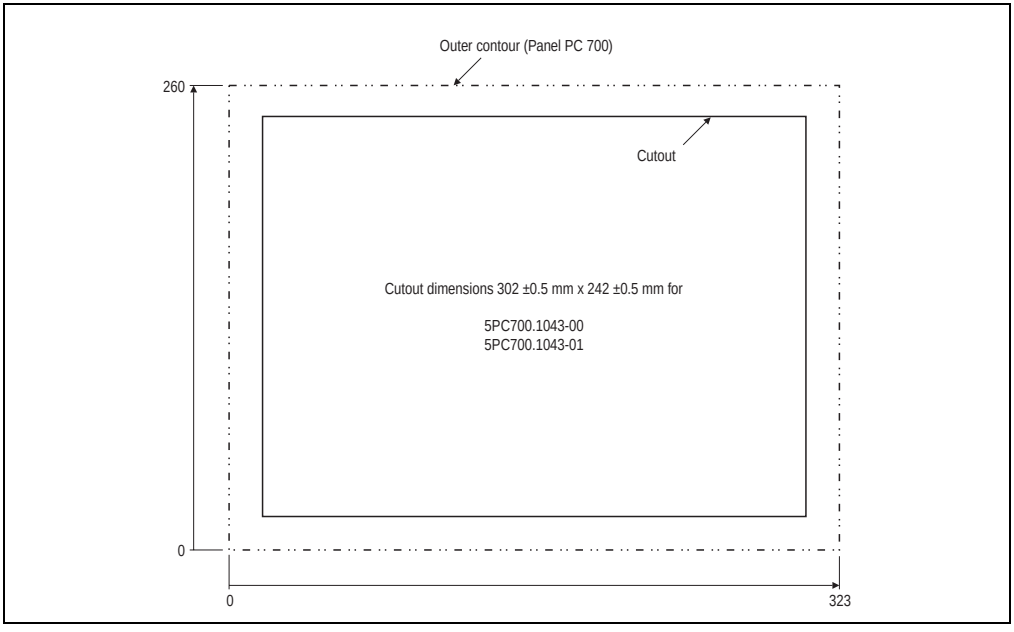


Figure 12: Cutout installation 5PC700.1043-01

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

3.1.3 Panel PC 5PC720.1214-00

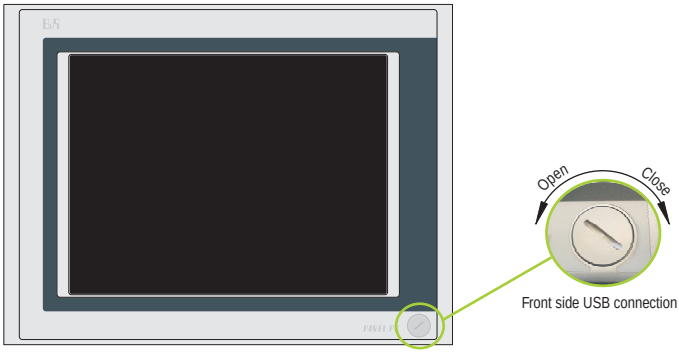


Figure 13: Front view 5PC720.1214-00

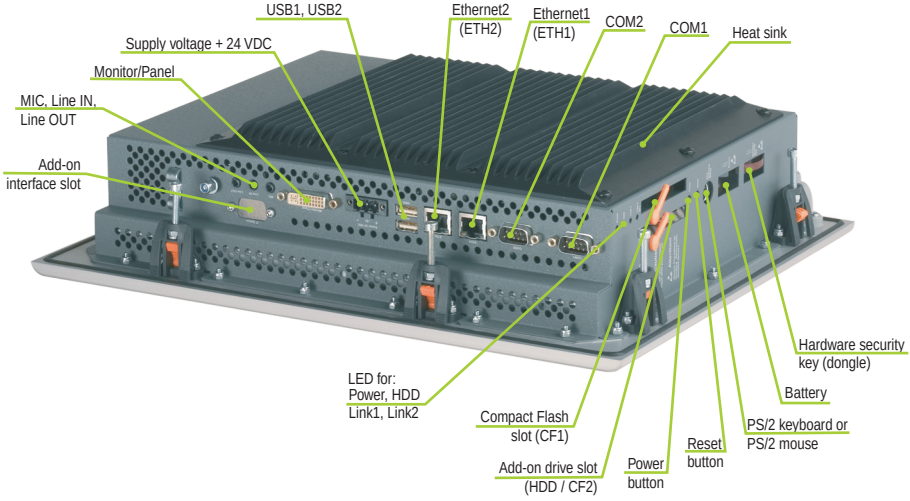


Figure 14: Rear view 5PC720.1214-00

Warning!

Do not remove the 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

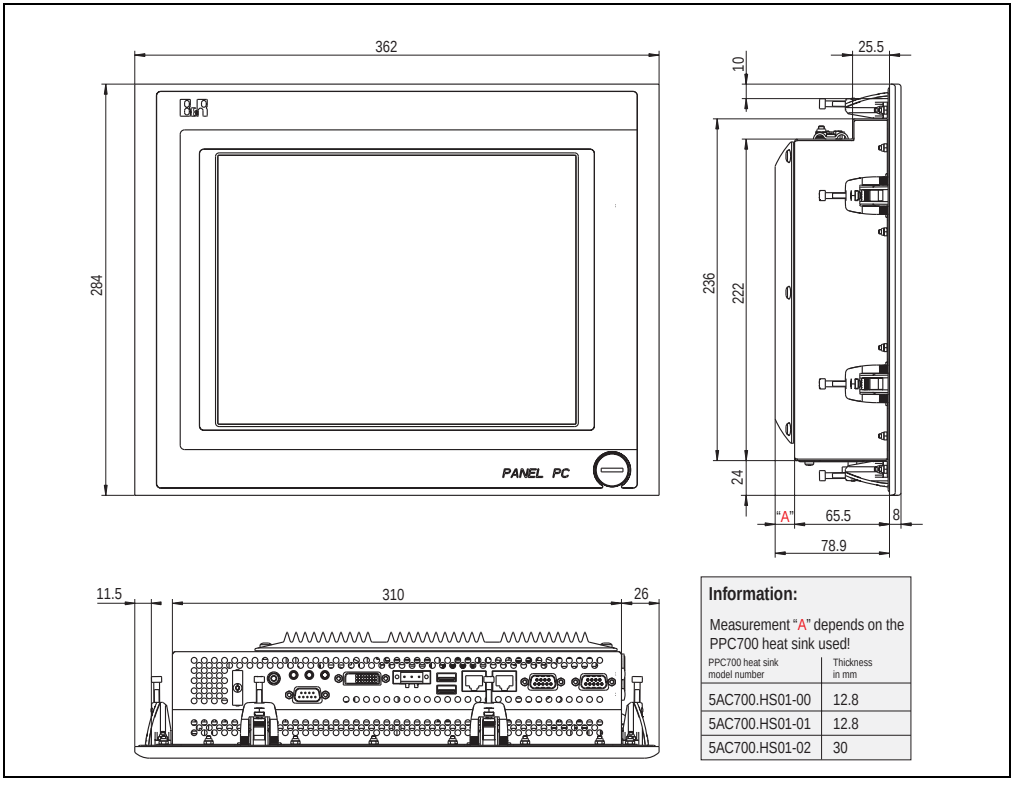


Figure 15: Dimensions 5PC720.1214-00

Technical data

Features	5PC720.1214-00
Serial interfaces	See "Serial interfaces COM1", on page 27 and "Serial interfaces COM2", on page 28
Type	RS232, modem capable
Amount	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 29 and "Ethernet connection ETH2", on page 30
Transfer rate	10/100 Mbit/s
Connection	RJ45 Twisted Pair (10 BaseT / 100 BaseT)

Table 36: Technical data - 5PC720.1214-00

USB interfaces Type Amount Transfer rate Connection	See also "USB port", on page 31 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 33 DVI-I, female
AC97 sound Inputs Outputs	See also "MIC, Line IN and Line OUT Port", on page 33 Microphone, Line in Line out
Add-on interface slot Amount	See also "Add-on interface slot", on page 34 1
PCI slots Type Standard	-
Compact Flash slot 1 (CF1) Internal organization	Yes, also see "Compact Flash slot (CF1)", on page 35 Primary master
Compact Flash slot 2 / hard disk (HDD/CF2) Type Internal organization	Yes, also see "Hard disk / Compact Flash slot (HDD/CF2)", on page 36 Combined Primary slave
Insert for slide-in drive 1 Internal organization	-
Reset button	Yes, also see "Power button", on page 37
Power button	Yes, also see "Reset button", on page 37
PS/2 keyboard/mouse Type	Yes, also see "PS/2 keyboard / mouse", on page 38 Combined, will be automatically detected
Battery compartment	Yes, also see "Battery", on page 39
Hardware security key compartment Optimized for	Yes, also see "Hardware security key", on page 39 DS1425 from MAXIM/Dallas)
Fan insert for fan kit	Yes
Automation Panel link slot	-
LED Amount	See also "Status LEDs", on page 35 4 (Power, HDD, Link 1, Link 2)
Features	**5PC720.1214-00**
Touch screen Technology Controller Transmission degree	 Analog, resistive Elo, serial, 12-bit Up to 78 %

Table 36: Technical data - 5PC720.1214-00 (cont.)

Display	
Type	Color TFT
Diagonal	12.1 inch (307 mm)
Colors	262144 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 32
Rated voltage	24 VDC ±25%
Starting current	TBD
Power consumption	Depends on the components used (see Power Management)
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 52
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	Depending on the components used
Storage	TBD
Transport	TBD
Humidity	TBD
Operation	
Storage	
Transport	
Environmental characteristics	**5PC720.1214-00**
Vibration	TBD
Operation (continuous)	
Operation (occasional)	
Storage	
Transport	

Table 36: Technical data - 5PC720.1214-00 (cont.)

Shock Operation Storage Transport	TBD
Protection	IP20 back side (only with installed Compact Flash card) IP65 / NEMA 250 type 4X, dust and sprayed water protection (from front)
Altitude	Max. 3,000 m

Table 36: 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 clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

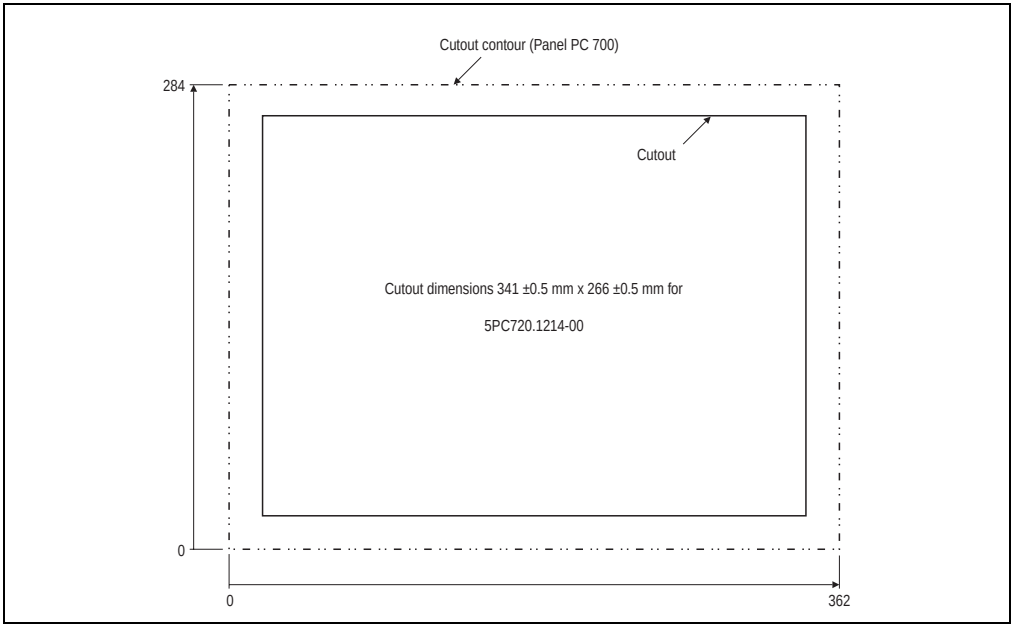


Figure 16: Cutout installation 5PC700.1214-00

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

3.1.4 Panel PC 5PC720.1505-00

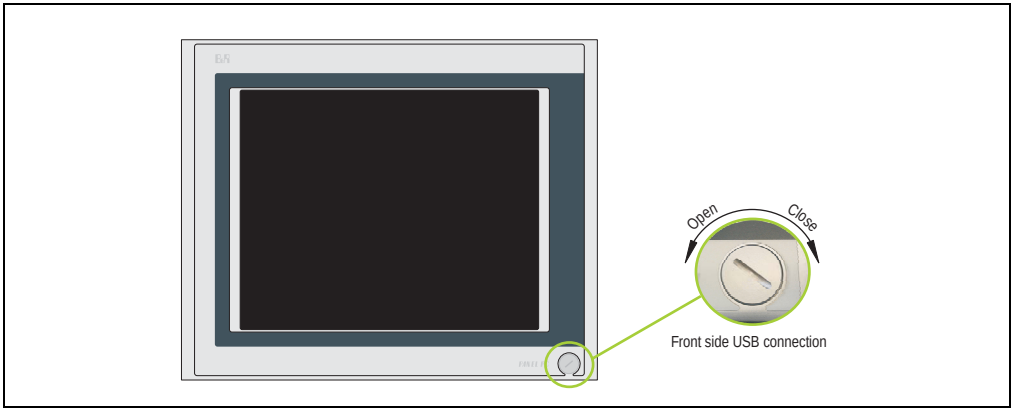


Figure 17: Front view 5PC720.1505-00

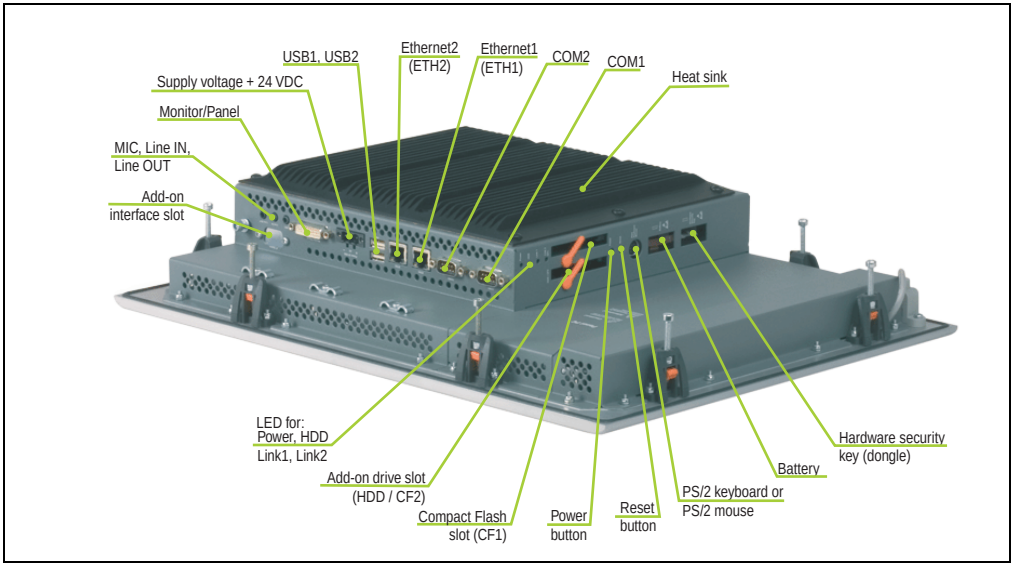


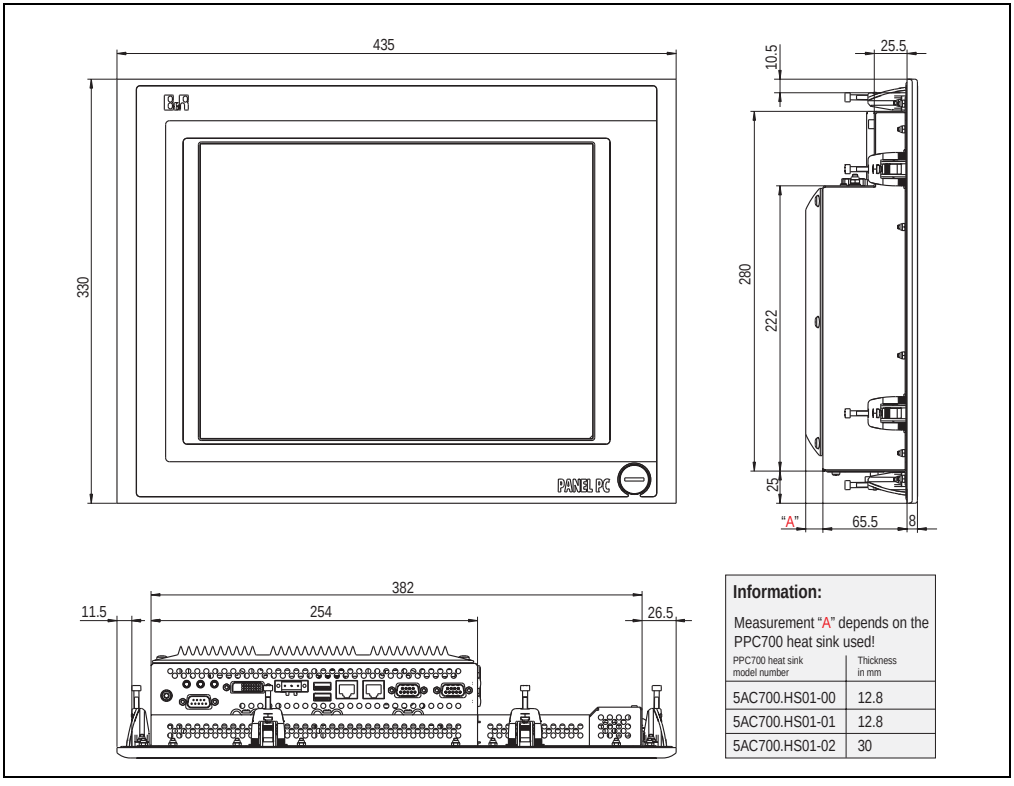
Figure 18: Rear view 5PC720.1505-00

Warning!

Do not remove the 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



Information:

Measurement "A" depends on the PPC700 heat sink used!

PPC700 heat sink model number	Thickness in mm
5AC700.HS01-00	12.8
5AC700.HS01-01	12.8
5AC700.HS01-02	30

Figure 19: Dimensions 5PC720.1505-00

Technical data

Features	5PC720.1505-00
Serial interfaces Type Amount UART Transfer rate Connection	See "Serial interfaces COM1", on page 27 and "Serial interfaces COM2", on page 28 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 29 and "Ethernet connection ETH2", on page 30 10/100 Mbit/s RJ45 Twisted Pair (10 BaseT / 100 BaseT)
USB interfaces Type Amount Transfer rate Connection	See also "USB port", on page 31 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 33 DVI-I, female
AC97 sound Inputs Outputs	See also "MIC, Line IN and Line OUT Port", on page 33 Microphone, Line in Line out
Add-on interface slot Amount	See also "Add-on interface slot", on page 34 1
PCI slots Type Standard	-
Compact Flash slot 1 (CF1) Internal organization	Yes, also see "Compact Flash slot (CF1)", on page 35 Primary master
Compact Flash slot 2 / hard disk (HDD/CF2) Type Internal organization	Yes, also see "Hard disk / Compact Flash slot (HDD/CF2)", on page 36 Combined Primary slave
Insert for slide-in drive 1 Internal organization	-
Reset button	Yes, also see "Power button", on page 37
Power button	Yes, also see "Reset button", on page 37
PS/2 keyboard/mouse Type	Yes, also see "PS/2 keyboard / mouse", on page 38 Combined, will be automatically detected
Battery compartment	Yes, also see "Battery", on page 39
Hardware security key compartment Optimized for	Yes, also see "Hardware security key", on page 39 DS1425 from MAXIM/Dallas)
Fan insert for fan kit	Yes
Automation Panel link slot	-

Table 37: Technical data - 5PC720.1505-00

LED Amount	See also "Status LEDs", on page 35 4 (Power, HDD, Link 1, Link 2)
Features	**5PC720.1505-00**
Touch screen Technology Controller Transmission degree	 Analog, resistive Elo, serial, 12-bit Up to 78 %
Display Type Diagonal Colors Resolution Contrast Viewing angle horizontal / vertical Background lighting Brightness Half-brightness time	 Color TFT 15 inch (381 mm) 16 million XGA, 1024 x 768 pixels 400:1 85° / 85° 250 cd/m² 50000 hours
Keys Function keys Softkeys Cursor pad Number block Other keys	-
Electrical characteristics	
Power supply Rated voltage Starting current Power consumption Electrical isolation	See also "Supply voltage", on page 32 24 VDC ±25% TBD Depends on the components used (see Power Management) Yes
Mechanical characteristics	
Front Frame Mylar Design Gasket	 Naturally anodized aluminum Polyester Gray Flat gasket around display front
Display design / colors Dark gray border around the display Bright background	 Similar Pantone 432CV Similar Pantone 427CV
Housing	Metal
Outer dimensions Width Height Depth	Also see drawing "Dimensions 5PC720.1505-00", on page 57 435 mm 330 mm 86.3 or 103.5 mm (depending on the heat sink)
Weight	Approx. 6 kg
Environmental characteristics	
Environmental temperature Operation Storage Transport	 Depending on the components used TBD TBD

Table 37: Technical data - 5PC720.1505-00 (cont.)

Humidity Operation Storage Transport	TBD
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 Compact Flash card) IP65 / NEMA 250 type 4X, dust and sprayed water protection (from front)
Altitude	Max. 3000 m

Table 37: 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 clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

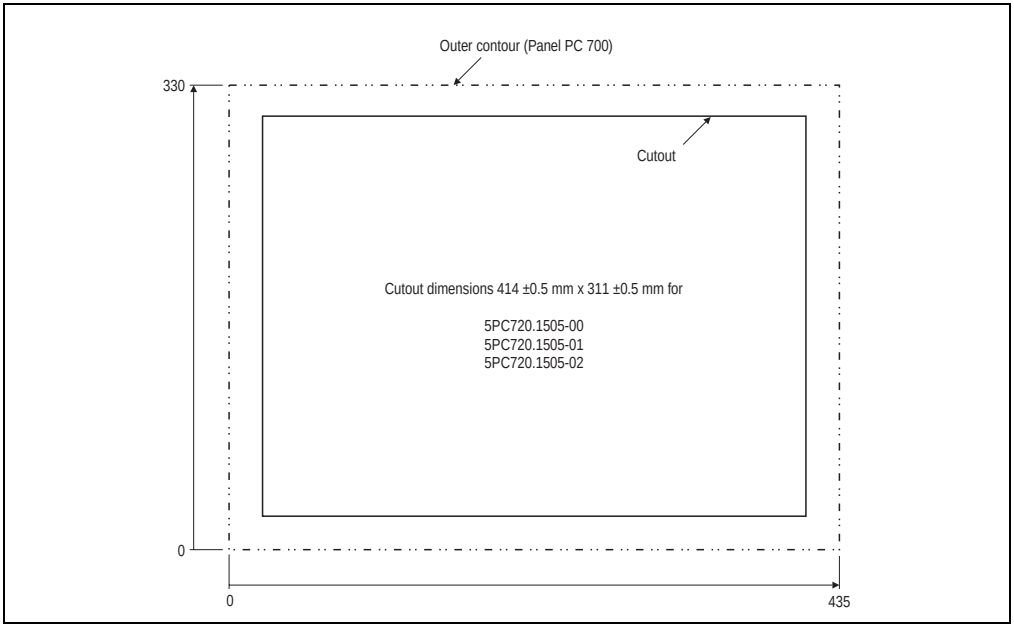


Figure 20: Cutout installation 5PC720.1505-00

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

3.1.5 Panel PC 5PC720.1505-01

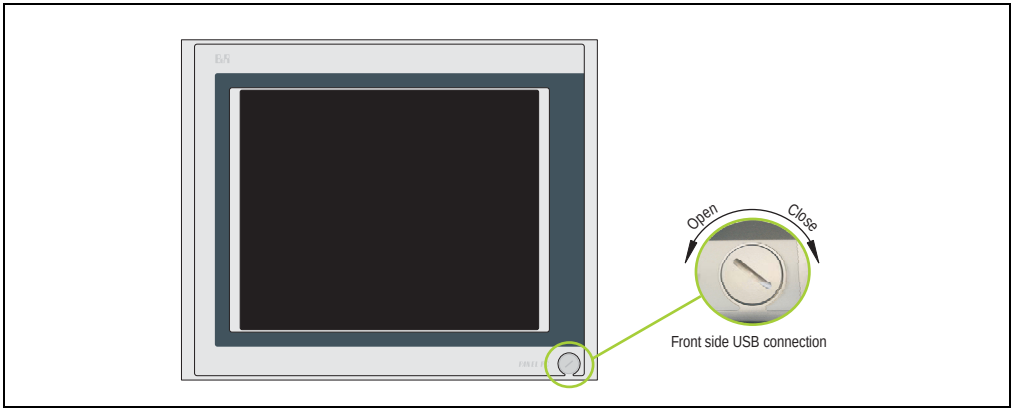
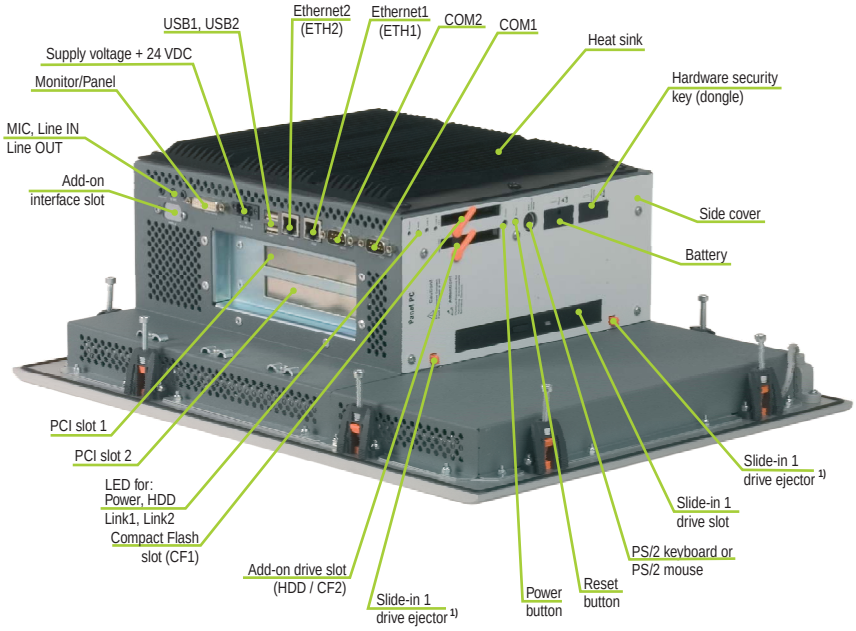


Figure 21: Front view 5PC720.1505-01



1) The side cover of the Panel PC 700 is to be removed before ejecting the drive!

Figure 22: Rear view 5PC720.1505-01

Warning!

Do not remove the 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

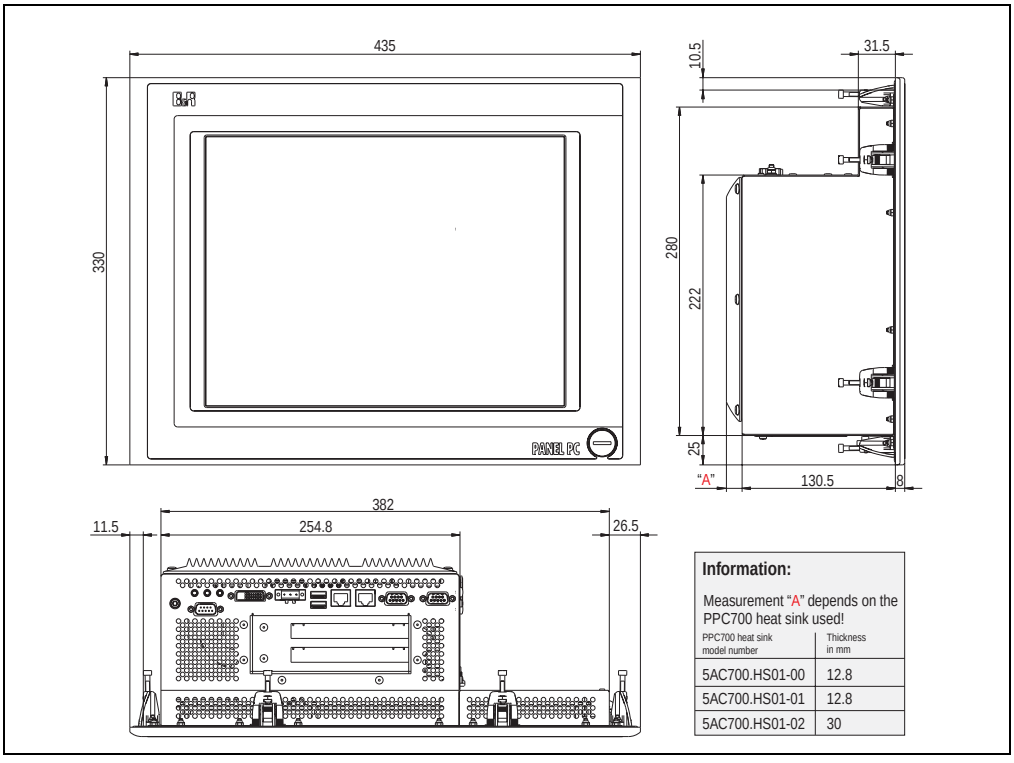


Figure 23: Dimensions 5PC720.1505-01

Technical data

Features	5PC720.1505-01
Serial interfaces	See "Serial interfaces COM1", on page 27 and "Serial interfaces COM2", on page 28
Type	RS232, modem capable
Amount	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 29 and "Ethernet connection ETH2", on page 30
Transfer rate	10/100 Mbit/s
Connection	RJ45 Twisted Pair (10 BaseT / 100 BaseT)

Table 38: Technical data - 5PC720.1505-01

USB interfaces Type Amount Transfer rate Connection	See also "USB port", on page 31 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 33 DVI-I, female
AC97 sound Inputs Outputs	See also "MIC, Line IN and Line OUT Port", on page 33 Microphone, Line in Line out
Add-on interface slot Amount	See also "Add-on interface slot", on page 34 1
PCI slots Amount Type Standard	See also "PCI slots", on page 34 2 Half-size According to PCI half-Size Standard 2.2
Compact Flash slot 1 (CF1) Internal organization	Yes, also see "Compact Flash slot (CF1)", on page 35 Primary master
Compact Flash slot 2 / hard disk (HDD/CF2) Type Internal organization	Yes, also see "Hard disk / Compact Flash slot (HDD/CF2)", on page 36 Combined Primary slave
Insert for slide-in drive 1 Internal organization	Yes, also see "Slide-in slot 1 drive slot", on page 40 Secondary slave
Reset button	Yes, also see "Power button", on page 37
Power button	Yes, also see "Reset button", on page 37
PS/2 keyboard/mouse Type	Yes, also see "PS/2 keyboard / mouse", on page 38 Combined, will be automatically detected
Battery compartment	Yes, also see "Battery", on page 39
Hardware security key compartment Optimized for	Yes, also see "Hardware security key", on page 39 DS1425 from MAXIM/Dallas)
Fan insert for fan kit	Yes
Automation Panel link slot	-
LED Amount	See also "Status LEDs", on page 35 4 (Power, HDD, Link 1, Link 2)
Features	**5PC720.1505-01**
Touch screen Technology Controller Transmission degree	 Analog, resistive Elo, serial, 12-bit Up to 78 %

Table 38: Technical data - 5PC720.1505-01 (cont.)

Display	
Type	Color TFT
Diagonal	15 inch (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 32
Rated voltage	24 VDC ±25%
Starting current	TBD
Power consumption	Depends on the components used (see Power Management)
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 63
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	Depending on the components used
Storage	TBD
Transport	TBD
Humidity	TBD
Operation	
Storage	
Transport	
Environmental characteristics	**5PC720.1505-01**
Vibration	TBD
Operation (continuous)	
Operation (occasional)	
Storage	
Transport	

Table 38: Technical data - 5PC720.1505-01 (cont.)

Shock Operation Storage Transport	TBD
Protection	IP20 back side (only with installed Compact Flash card) IP65 / NEMA 250 type 4X, dust and sprayed water protection (from front)
Altitude	Max. 3000 m

Table 38: 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 clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

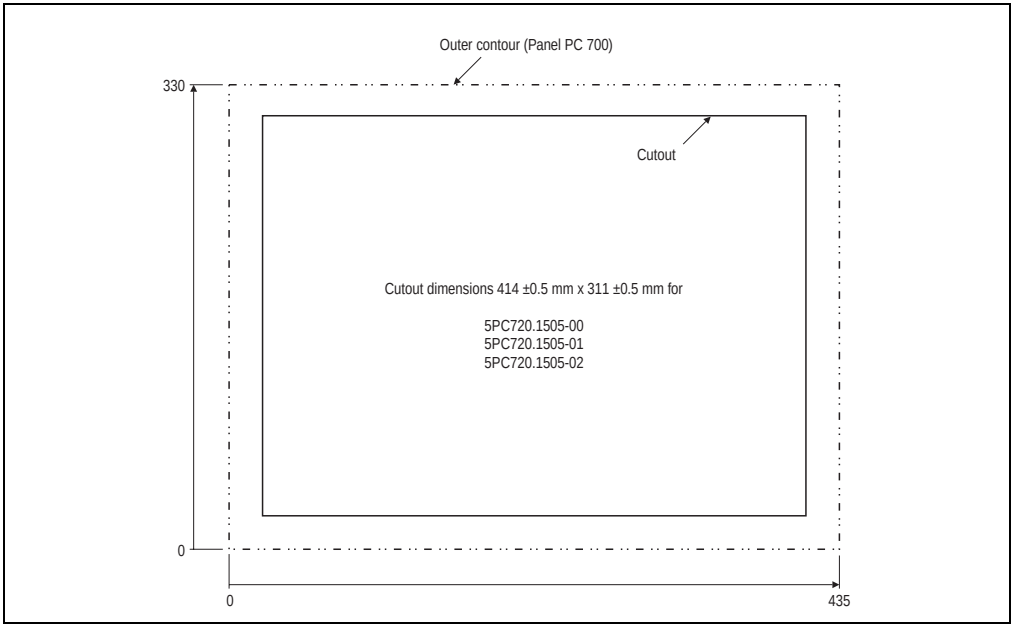


Figure 24: Cutout installation 5PC720.1505-01

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

3.1.6 Panel PC 5PC720.1505-02

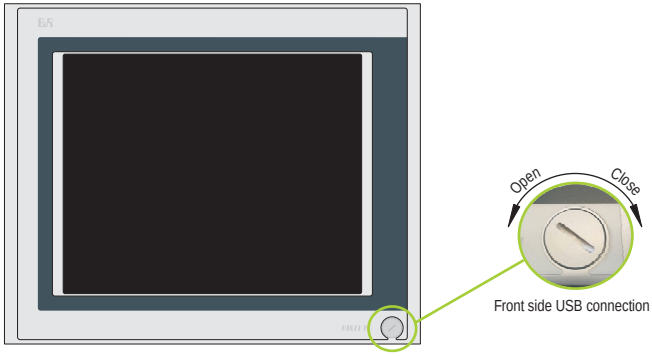


Figure 25: Front view 5PC720.1505-02

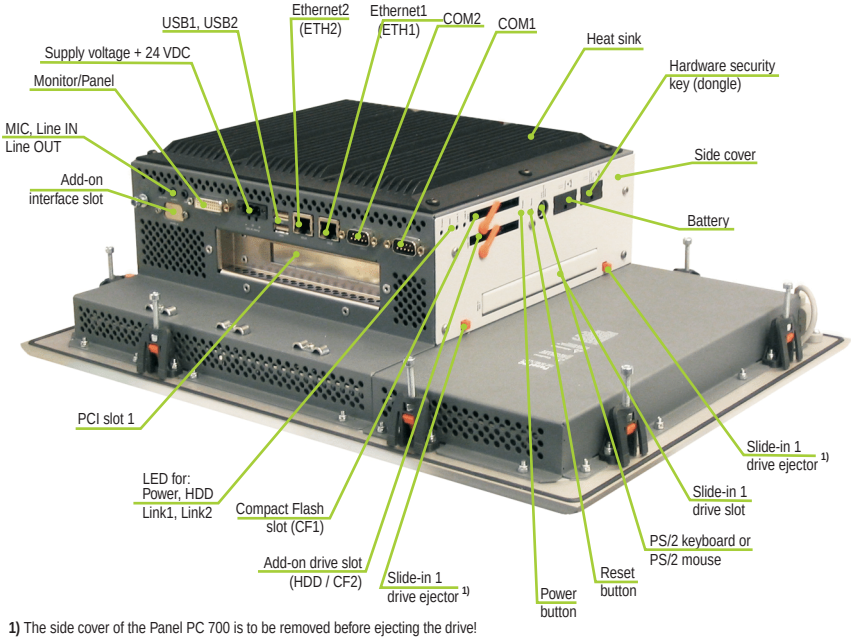


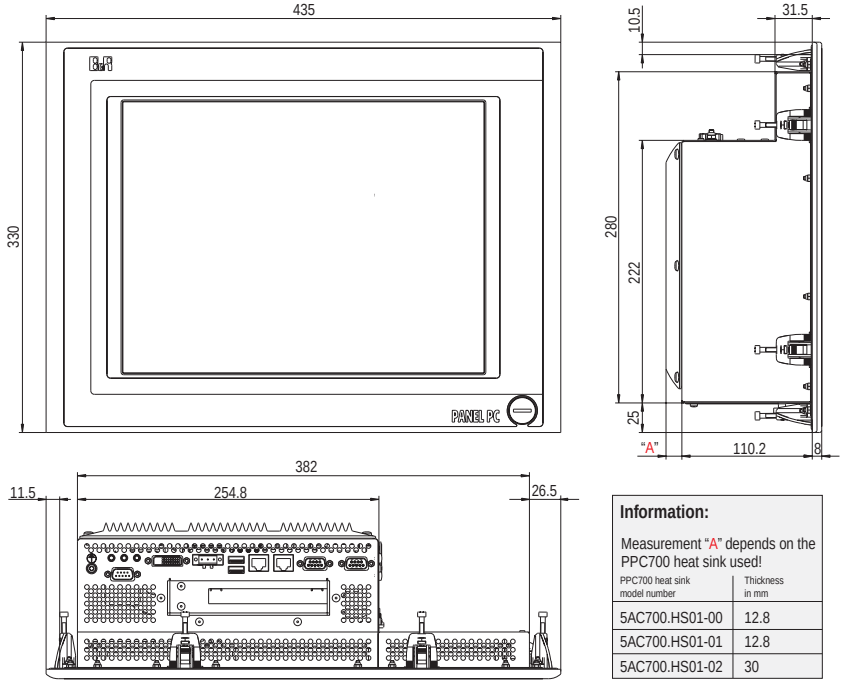
Figure 26: Rear view 5PC720.1505-02

Warning!

Do not remove the 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



Information:

Measurement "A" depends on the PPC700 heat sink used!

PPC700 heat sink model number	Thickness in mm
5AC700.HS01-00	12.8
5AC700.HS01-01	12.8
5AC700.HS01-02	30

Figure 27: Dimensions 5PC720.1505-02

Technical data

Features	5PC720.1505-02
Serial interfaces Type Amount UART Transfer rate Connection	See "Serial interfaces COM1", on page 27 and "Serial interfaces COM2", on page 28 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 29 and "Ethernet connection ETH2", on page 30 10/100 Mbit/s RJ45 Twisted Pair (10 BaseT / 100 BaseT)
USB interfaces Type Amount Transfer rate Connection	See also "USB port", on page 31 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 33 DVI-I, female
AC97 sound Inputs Outputs	See also "MIC, Line IN and Line OUT Port", on page 33 Microphone, Line in Line out
Add-on interface slot Amount	See also "Add-on interface slot", on page 34 1
PCI slots Amount Type Standard	See also "PCI slots", on page 34 1 Half-size According to PCI Half Size Standard 2.2
Compact Flash slot 1 (CF1) Internal organization	Yes, also see "Compact Flash slot (CF1)", on page 35 Primary master
Compact Flash slot 2 / hard disk (HDD/CF2) Type Internal organization	Yes, also see "Hard disk / Compact Flash slot (HDD/CF2)", on page 36 Combined Primary slave
Insert for slide-in drive 1 Internal organization	Yes, also see "Slide-in slot 1 drive slot", on page 40 Secondary slave
Reset button	Yes, also see "Power button", on page 37
Power button	Yes, also see "Reset button", on page 37
PS/2 keyboard/mouse Type	Yes, also see "PS/2 keyboard / mouse", on page 38 Combined, will be automatically detected
Battery compartment	Yes, also see "Battery", on page 39
Hardware security key compartment Optimized for	Yes, also see "Hardware security key", on page 39 DS1425 from MAXIM/Dallas)
Fan insert for fan kit	Yes

Table 39: Technical data - 5PC720.1505-02

Automation Panel link slot	-
LED Amount	See also "Status LEDs", on page 35 4 (Power, HDD, Link 1, Link 2)
Features	**5PC720.1505-02**
Touch screen Technology Controller Transmission degree	 Analog, resistive Elo, serial, 12-bit Up to 78 %
Display Type Diagonal Colors Resolution Contrast Viewing angle horizontal / vertical Background lighting Brightness Half-brightness time	 Color TFT 15 inch (381 mm) 16 million XGA, 1024 x 768 pixels 400:1 85° / 85° 250 cd/m² 50,000 hours
Keys Function keys Softkeys Cursor pad Number block Other keys	-
Electrical characteristics	
Power supply Rated voltage Starting current Power consumption Electrical isolation	See also "Supply voltage", on page 32 24 VDC ±25% TBD Depends on the components used (see Power Management) Yes
Mechanical characteristics	
Front Frame Mylar Design Gasket	 Naturally anodized aluminum Polyester Gray Flat gasket around display front
Display design / colors Dark gray border around the display Bright background	 Similar Pantone 432CV Similar Pantone 427CV
Housing	Metal
Outer dimensions Width Height Depth	Also see drawing "Dimensions 5PC720.1505-02", on page 68 435 mm 330 mm 86.3 or 103.5 mm (depending on the heat sink)
Weight	Approx. 6.5 kg
Environmental characteristics	
Environmental temperature Operation Storage Transport	 Depending on the components used TBD TBD

Table 39: Technical data - 5PC720.1505-02 (cont.)

Humidity Operation Storage Transport	TBD
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 Compact Flash card) IP65 / NEMA 250 type 4X, dust and sprayed water protection (from front)
Altitude	Max. 3000 m

Table 39: 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 clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

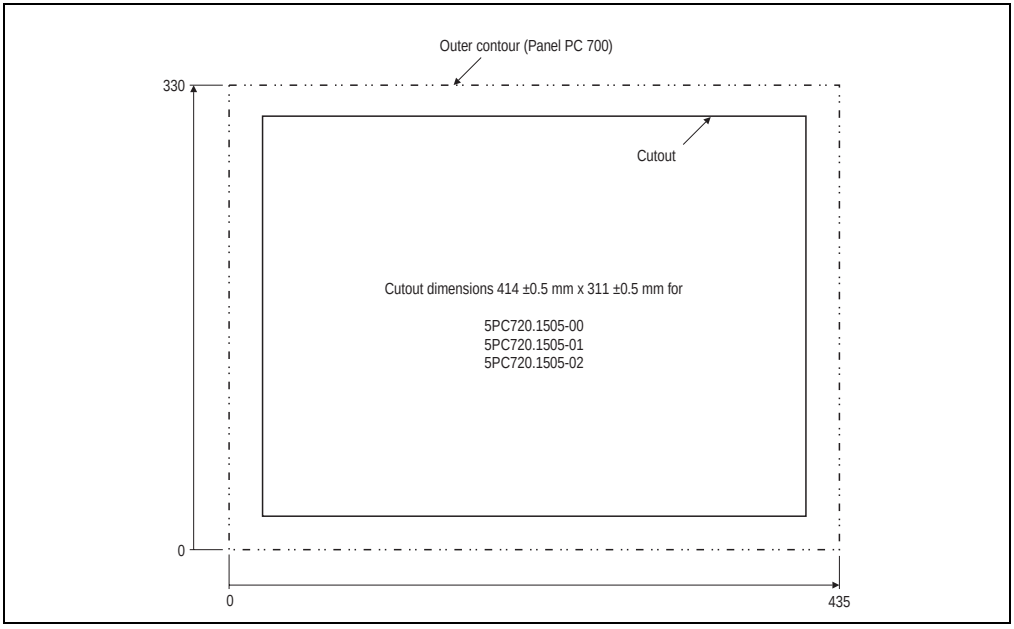


Figure 28: Cutout installation 5PC720.1505-02

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

3.1.7 Panel PC 5PC781.1043-00

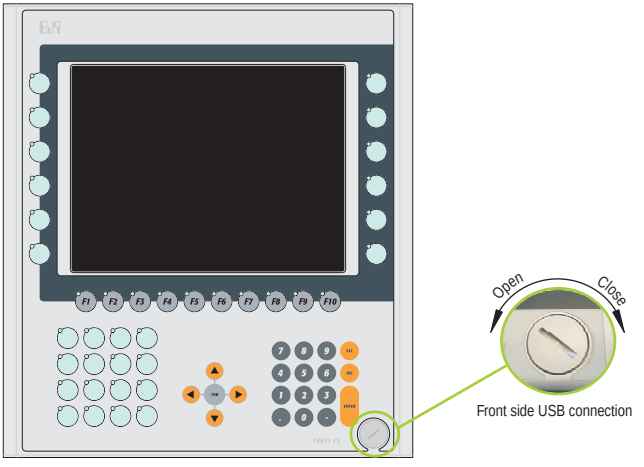


Figure 29: Front view 5PC781.1043-00

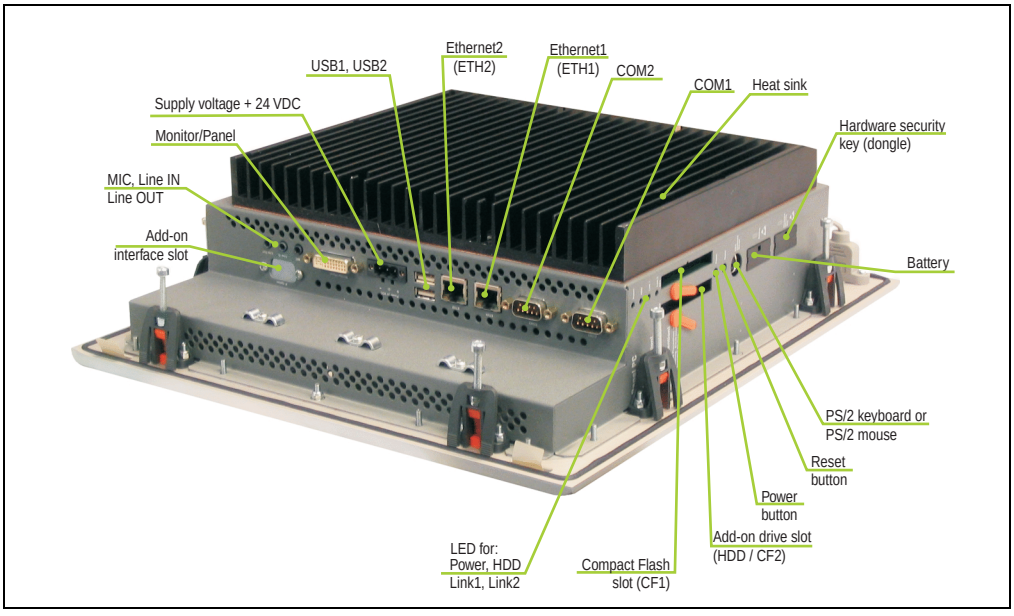


Figure 30: Rear view 5PC781.1043-00

Warning!

Do not remove the 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

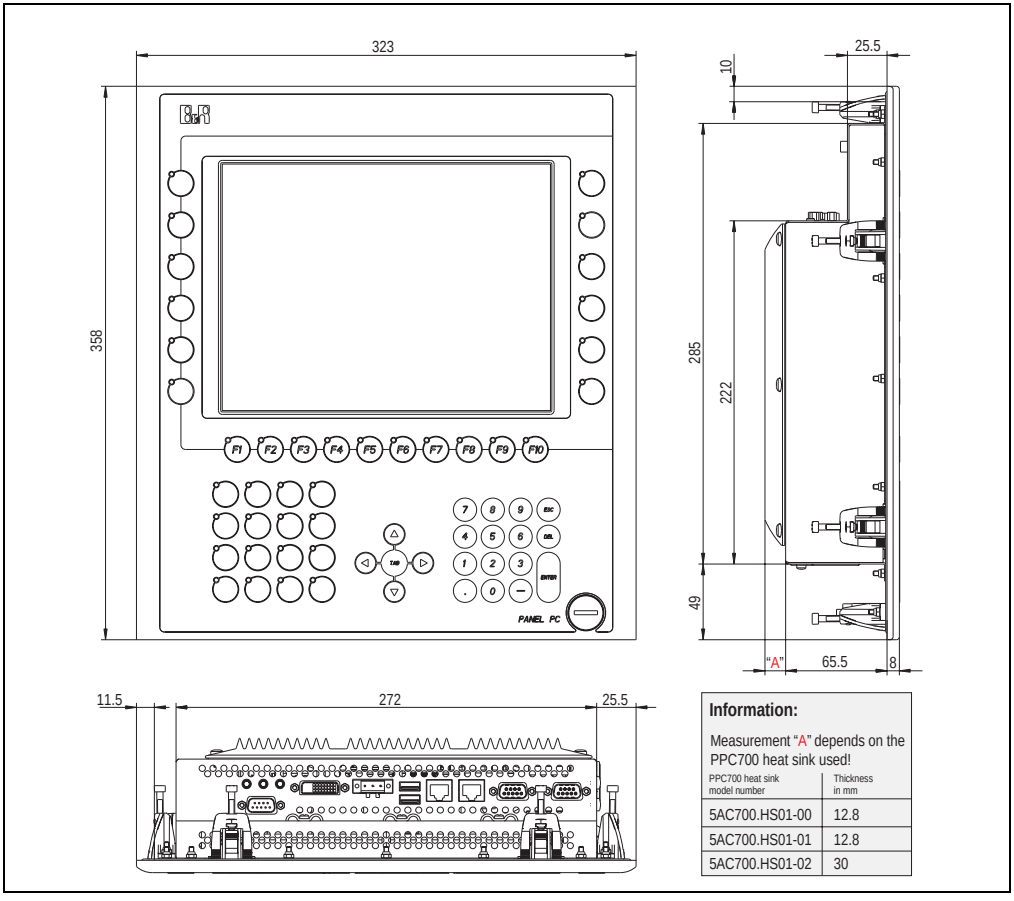


Figure 31: Dimensions 5PC781.1043-00

Technical data

Features	5PC781.1043-00
Serial interfaces	See "Serial interfaces COM1", on page 27 and "Serial interfaces COM2", on page 28
Type	RS232, modem capable
Amount	2
UART	16550 compatible, 16 byte FIFO
Transfer rate	max. 115 kBaud
Connection	9-pin DSUB, male

Table 40: Technical data - 5PC781.1043-00

Ethernet Controller Transfer rate Connection	 See "Ethernet connection ETH1", on page 29 and "Ethernet connection ETH2", on page 30 10/100 Mbit/s RJ45 Twisted Pair (10 BaseT / 100 BaseT)
USB interfaces Type Amount Transfer rate Connection	See also "USB port", on page 31 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 33 DVI-I, female
AC97 sound Inputs Outputs	See also "MIC, Line IN and Line OUT Port", on page 33 Microphone, Line in Line out
Add-on interface slot Amount	See also "Add-on interface slot", on page 34 1
PCI slots Type Standard	-
Compact Flash slot 1 (CF1) Internal organization	Yes, also see "Compact Flash slot (CF1)", on page 35 Primary master
Compact Flash slot 2 / hard disk (HDD/CF2) Type Internal organization	Yes, also see "Hard disk / Compact Flash slot (HDD/CF2)", on page 36 Combined Primary slave
Insert for slide-in drive 1 Internal organization	-
Reset button	Yes, also see "Power button", on page 37
Power button	Yes, also see "Reset button", on page 37
PS/2 keyboard/mouse Type	Yes, also see "PS/2 keyboard / mouse", on page 38 Combined, will be automatically detected
Battery compartment	Yes, also see "Battery", on page 39
Hardware security key compartment Optimized for	Yes, also see "Hardware security key", on page 39 DS1425 from MAXIM/Dallas)
Fan insert for fan kit	Yes
Automation Panel link slot	-
LED Amount	See also "Status LEDs", on page 35 4 (Power, HDD, Link 1, Link 2)
Features	**5PC781.1043-00**
Touch screen Technology Controller Transmission degree	 Analog, resistive Elo, serial, 12-bit Up to 78 %

Table 40: Technical data - 5PC781.1043-00 (cont.)

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	50000 hours
Keys	
Function keys	28 with LED
Softkeys	10 with LED
Cursor pad	-
Number block	15 without LED
Other keys	5 without LED
Electrical characteristics	
Power supply	See also "Supply voltage", on page 32
Rated voltage	24 VDC ±25%
Starting current	TBD
Power consumption	Depends on the components used (see Power Management)
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 5PC781.1043-00", 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	
Environmental temperature	
Operation	Depending on the components used
Storage	TBD
Transport	TBD
Environmental characteristics	**5PC781.1043-00**
Humidity	TBD
Operation	
Storage	
Transport	

Table 40: Technical data - 5PC781.1043-00 (cont.)

Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP20 back side (only with installed Compact Flash card) IP65 / NEMA 250 type 4X, dust and sprayed water protection (from front)
Altitude	Max. 3000 m

Table 40: 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 clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

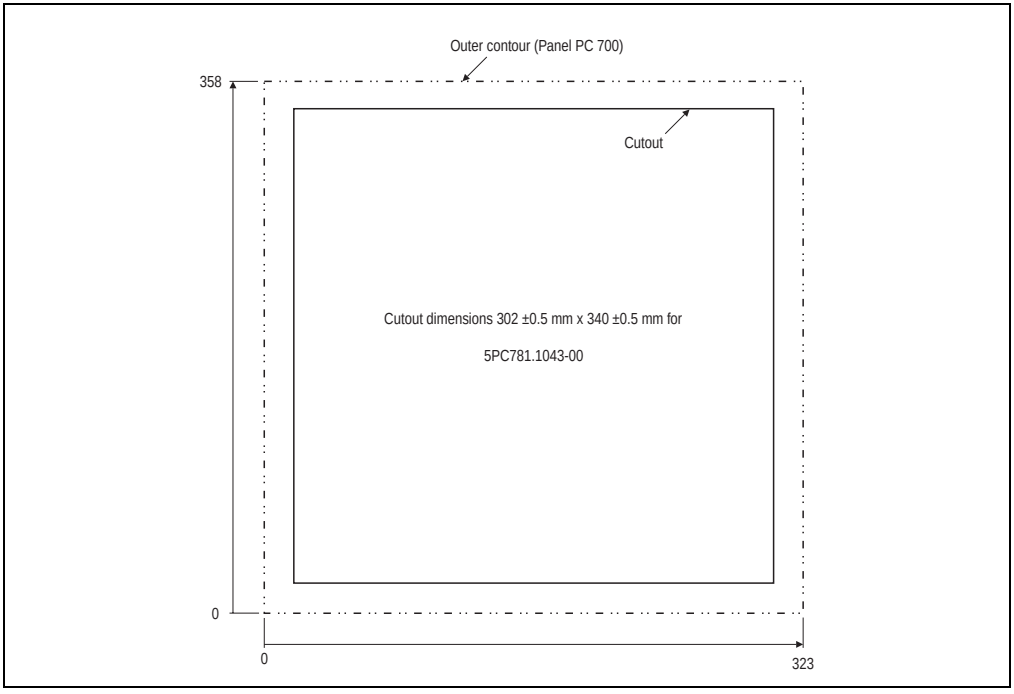


Figure 32: Cutout installation 5PC781.1043-00

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

3.1.8 Panel PC 5PC781.1505-00

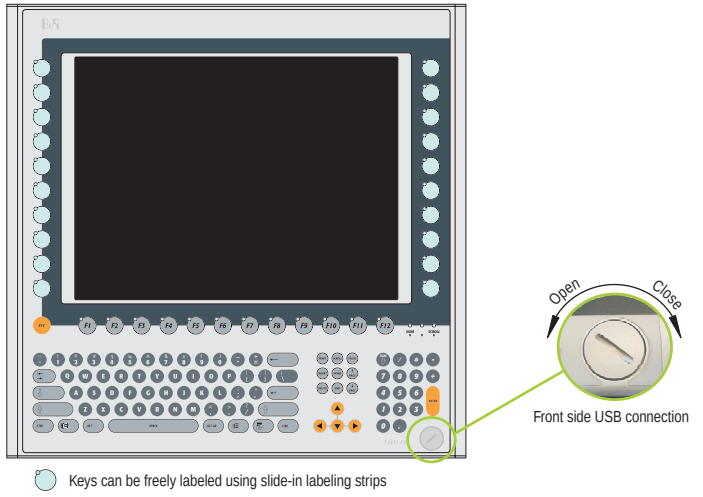


Figure 33: Front view 5PC781.1505-00

TBD

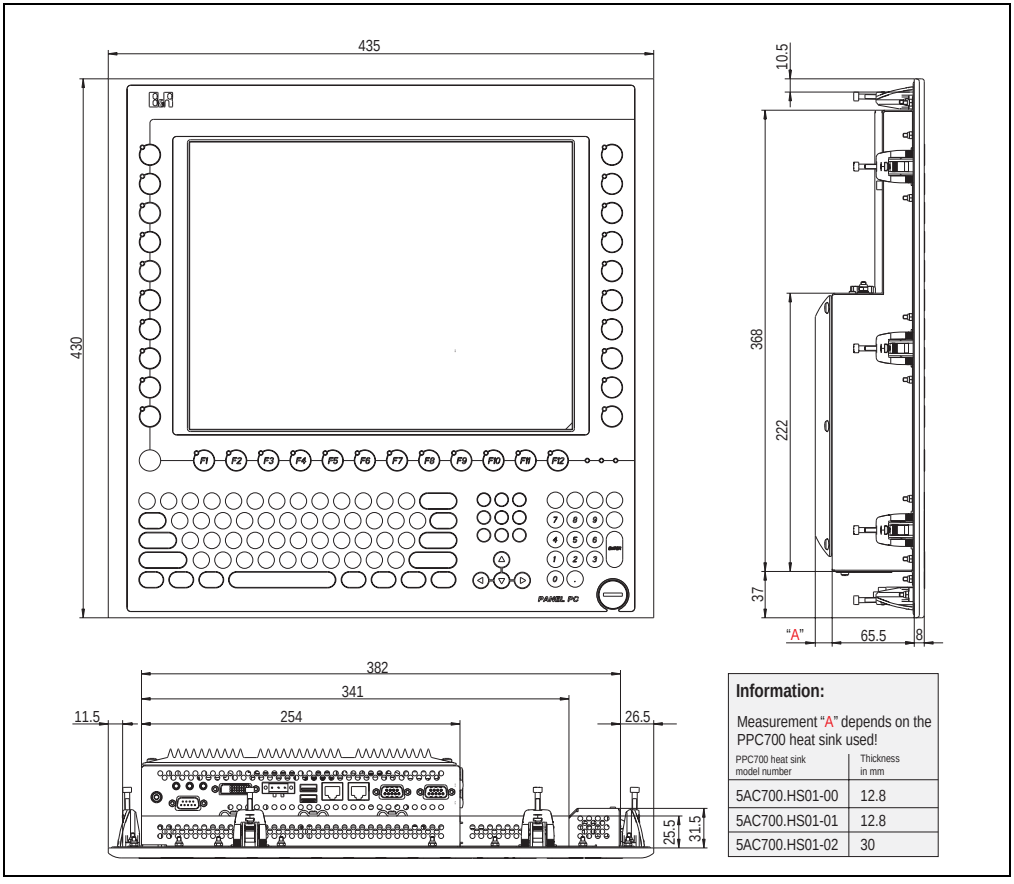
Figure 34: Rear view 5PC781.1505-00

Warning!

Do not remove the 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



Information:

Measurement "A" depends on the PPC700 heat sink used!

PPC700 heat sink model number	Thickness in mm
5AC700.HS01-00	12.8
5AC700.HS01-01	12.8
5AC700.HS01-02	30

Figure 35: Dimensions 5PC781.1505-00

Technical data

Features	5PC781.1505-00
Serial interfaces Type Amount UART Transfer rate Connection	See "Serial interfaces COM1", on page 27 and "Serial interfaces COM2", on page 28 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 29 and "Ethernet connection ETH2", on page 30 10/100 Mbit/s RJ45 Twisted Pair (10 BaseT / 100 BaseT)
USB interfaces Type Amount Transfer rate Connection	See also "USB port", on page 31 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 33 DVI-I, female
AC97 sound Inputs Outputs	See also "MIC, Line IN and Line OUT Port", on page 33 Microphone, Line in Line out
Add-on interface slot Amount	See also "Add-on interface slot", on page 34 1
PCI slots Amount Type Standard	-
Compact Flash slot 1 (CF1) Internal organization	Yes, also see "Compact Flash slot (CF1)", on page 35 Primary master
Compact Flash slot 2 / hard disk (HDD/CF2) Type Internal organization	Yes, also see "Hard disk / Compact Flash slot (HDD/CF2)", on page 36 Combined Primary slave
Insert for slide-in drive 1 Internal organization	-
Reset button	Yes, also see "Power button", on page 37
Power button	Yes, also see "Reset button", on page 37
PS/2 keyboard/mouse Type	Yes, also see "PS/2 keyboard / mouse", on page 38 Combined, will be automatically detected
Battery compartment	Yes, also see "Battery", on page 39
Hardware security key compartment Optimized for	Yes, also see "Hardware security key", on page 39 DS1425 from MAXIM/Dallas)
Fan insert for fan kit	Yes
Automation Panel link slot	-
LED Amount	See also "Status LEDs", on page 35 4 (Power, HDD, Link 1, Link 2)

Table 41: Technical data - 5PC781.1505-00

Features	5PC781.1505-00
Touch screen	
Technology	Analog, resistive
Controller	Elo, serial, 12-bit
Transmission degree	Up to 78 %
Display	
Type	Color TFT
Diagonal	15 inch (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
Electrical characteristics	
Power supply	See also "Supply voltage", on page 32
Rated voltage	24 VDC ±25%
Starting current	TBD
Power consumption	Depends on the components used (see Power Management)
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 79
Width	435 mm
Height	430 mm
Depth	86.3 or 103.5 mm (depending on the heat sink)
Weight	Approx. 7.5 kg
Environmental characteristics	
Environmental temperature	
Operation	Depending on the components used
Storage	TBD
Transport	TBD

Table 41: Technical data - 5PC781.1505-00 (cont.)

Humidity Operation Storage Transport	TBD
Environmental characteristics	**5PC781.1505-00**
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP20 back side (only with installed Compact Flash card) IP65 / NEMA 250 type 4X, dust and sprayed water protection (from front)
Altitude	Max. 3000 m

Table 41: 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 clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

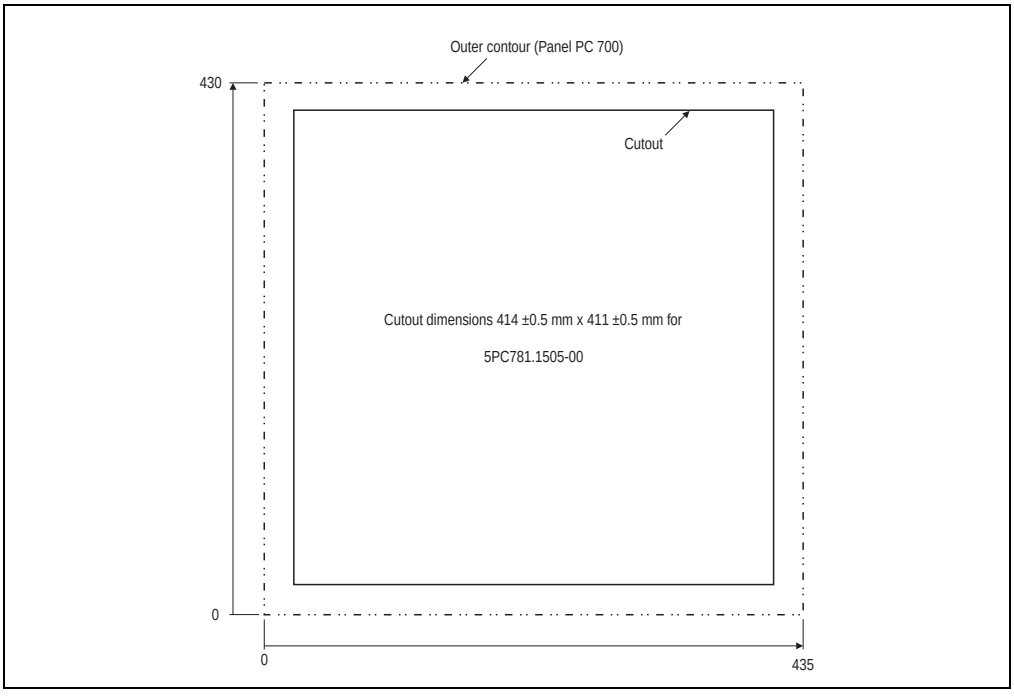


Figure 36: Cutout installation 5PC781.1505-00

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

3.1.9 Panel PC 5PC782.1043-00

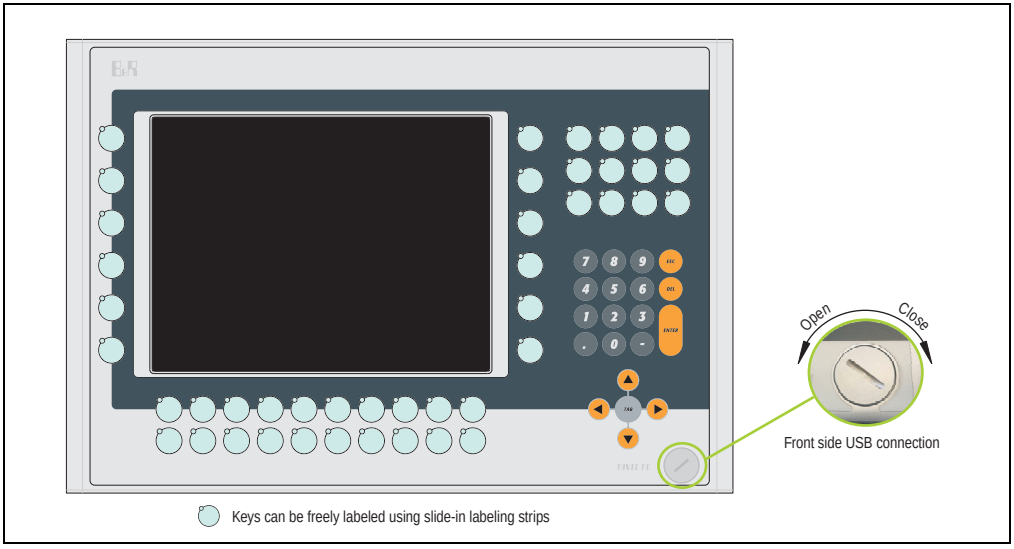


Figure 37: Front view 5PC782.1043-00

TBD

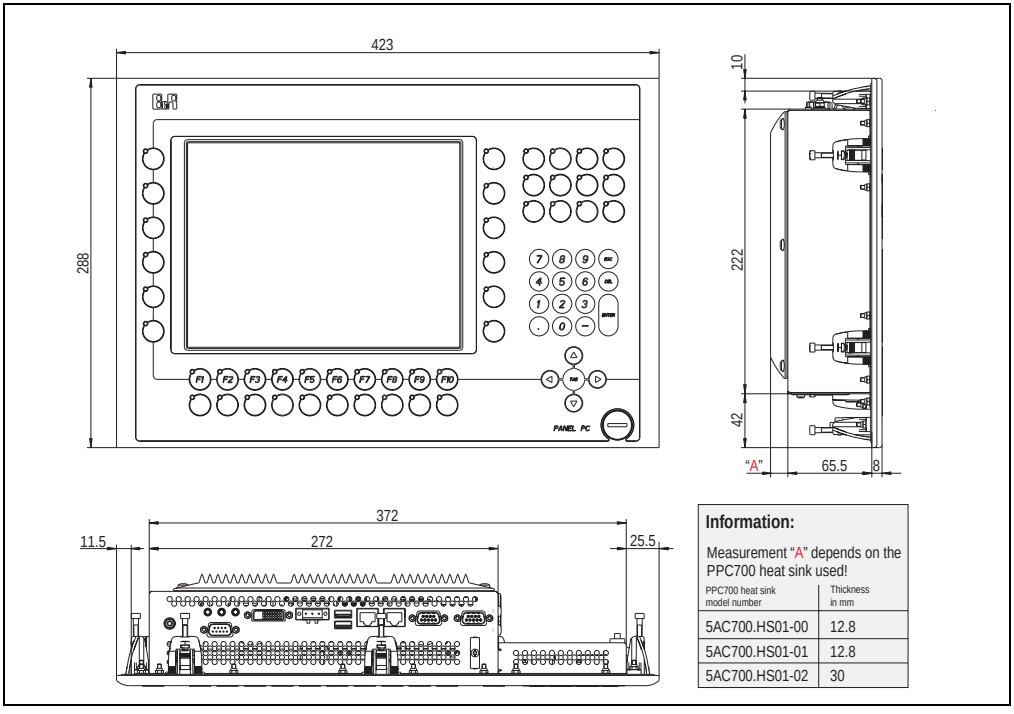
Figure 38: Rear view 5PC782.1043-00

Warning!

Do not remove the 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



Information:

Measurement "A" depends on the PPC700 heat sink used!

PPC700 heat sink model number	Thickness in mm
5AC700.HS01-00	12.8
5AC700.HS01-01	12.8
5AC700.HS01-02	30

Figure 39: Dimensions 5PC782.1043-00

Technical data

Features	5PC782.1043-00
Serial interfaces Type Amount UART Transfer rate Connection	See "Serial interfaces COM1", on page 27 and "Serial interfaces COM2", on page 28 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 29 and "Ethernet connection ETH2", on page 30 10/100 Mbit/s RJ45 Twisted Pair (10 BaseT / 100 BaseT)
USB interfaces Type Amount Transfer rate Connection	See also "USB port", on page 31 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 33 DVI-I, female
AC97 sound Inputs Outputs	See also "MIC, Line IN and Line OUT Port", on page 33 Microphone, Line in Line out
Add-on interface slot Amount	See also "Add-on interface slot", on page 34 1
PCI slots Amount Type Standard	-
Compact Flash slot 1 (CF1) Internal organization	Yes, also see "Compact Flash slot (CF1)", on page 35 Primary master
Compact Flash slot 2 / hard disk (HDD/CF2) Type Internal organization	Yes, also see "Hard disk / Compact Flash slot (HDD/CF2)", on page 36 Combined Primary slave
Insert for slide-in drive 1 Internal organization	-
Reset button	Yes, also see "Power button", on page 37
Power button	Yes, also see "Reset button", on page 37
PS/2 keyboard/mouse Type	Yes, also see "PS/2 keyboard / mouse", on page 38 Combined, will be automatically detected
Battery compartment	Yes, also see "Battery", on page 39
Hardware security key compartment Optimized for	Yes, also see "Hardware security key", on page 39 DS1425 from MAXIM/Dallas)
Fan insert for fan kit	Yes
Automation Panel link slot	-
LED Amount	See also "Status LEDs", on page 35 4 (Power, HDD, Link 1, Link 2)

Table 42: Technical data - 5PC782.1043-00

Features	5PC782.1043-00
Touch screen	
Technology	Analog, resistive
Controller	Elo, serial, 12-bit
Transmission degree	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	44 with LED
Softkeys	-
Cursor pad	-
Number block	15 without LED
Other keys	5 without LED
Electrical characteristics	
Power supply	See also "Supply voltage", on page 32
Rated voltage	24 VDC ±25%
Starting current	TBD
Power consumption	Depends on the components used (see Power Management)
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	104
Bright background	Similar Pantone 432CV
Orange keys	Similar Pantone 427CV
Dark gray keys	Similar Pantone 151CV
Legend strips	Similar Pantone 431CV
	Similar Pantone 429CV
Housing	Metal
Outer dimensions	Also see drawing "Dimensions 5PC782.1043-00", on page 85
Width	423 mm
Height	288 mm
Depth	86.3 or 103.5 mm (depending on the heat sink)
Weight	Approx. 7.5 kg
Environmental characteristics	
Environmental temperature	
Operation	Depending on the components used
Storage	TBD
Transport	TBD

Table 42: Technical data - 5PC782.1043-00 (cont.)

Humidity Operation Storage Transport	TBD
Environmental characteristics	**5PC782.1043-00**
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP20 back side (only with installed Compact Flash card) IP65 / NEMA 250 type 4X, dust and sprayed water protection (from front)
Altitude	Max. 3000 m

Table 42: 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 clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

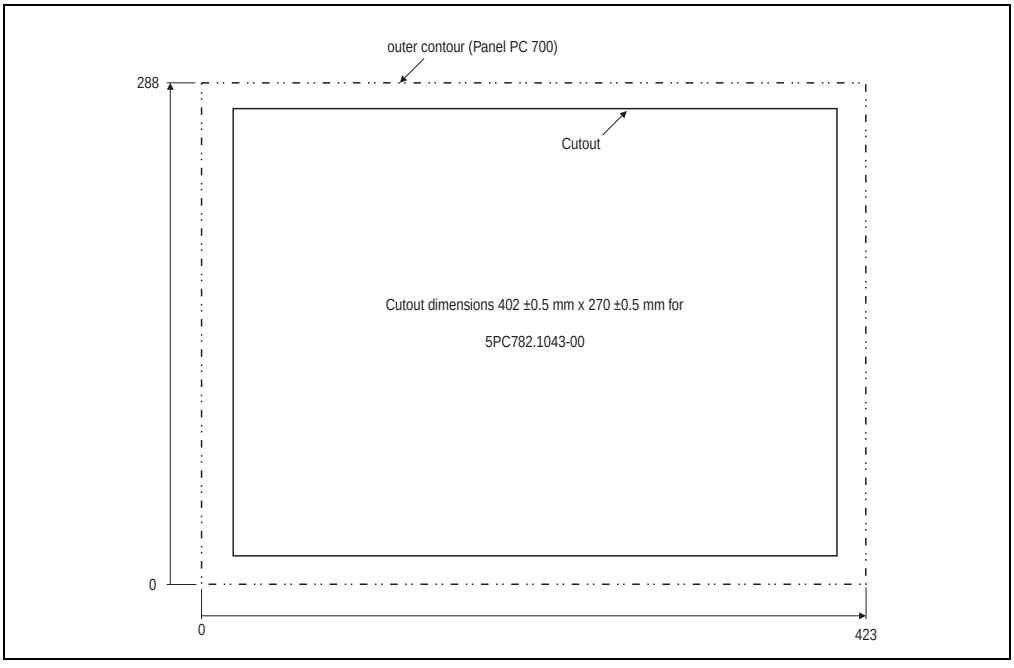


Figure 40: Cutout installation 5PC782.1043-00

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

3.2 CPU boards 815E

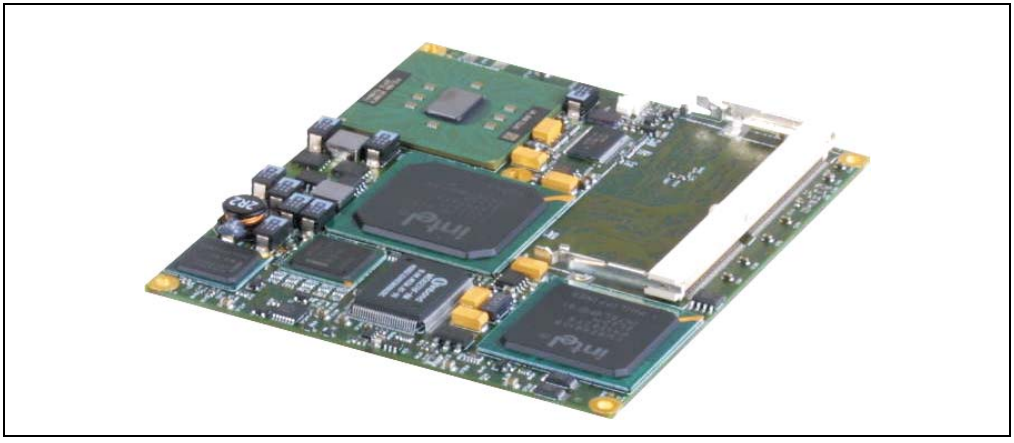


Figure 41: CPU boards 815E

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 43: Technical data - CPU boards 815E

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 43: Technical data - CPU boards 815E (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 CPU boards 855GME

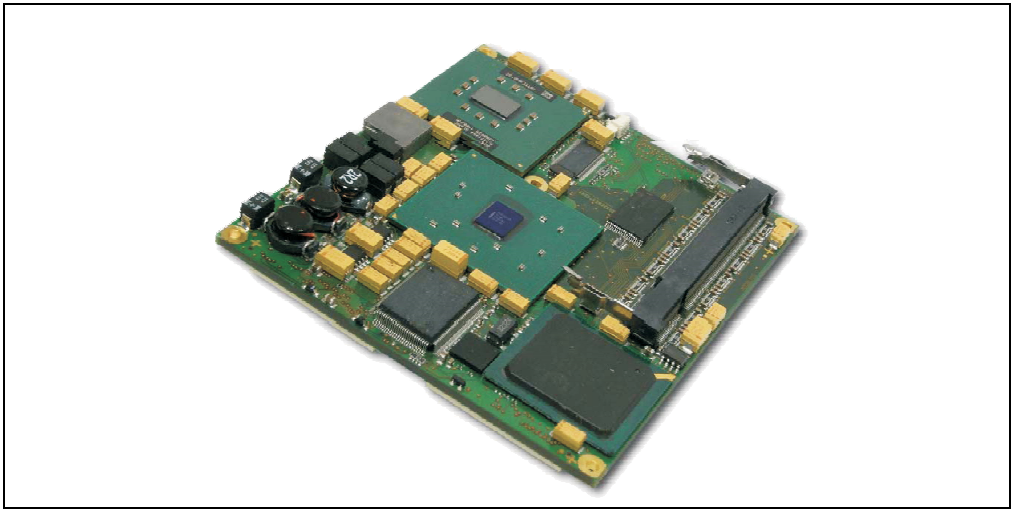


Figure 42: CPU boards 855GME

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
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	DDRAM					
Size	Max. 1 GB					
Socket	SO-DIMM 200-pin					
Graphics						
Controller	Intel Extreme Graphics 2 (integrated in the chipset)					
Memory	64 MB shared memory (reserved in the main memory)					
Color depth	Max. 32 bit					

Table 44: Technical data - CPU boards 855GME

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 graphic 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 in different CPU boards.

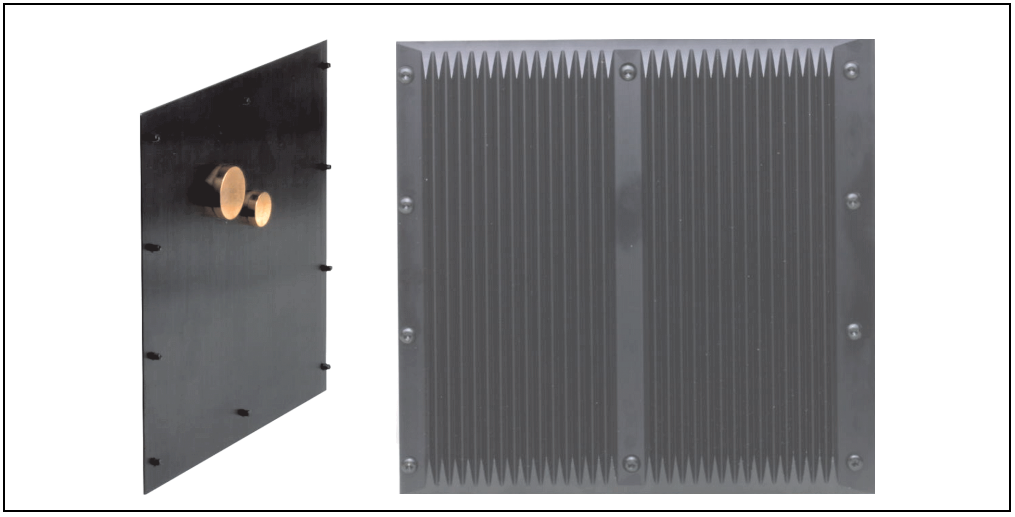


Figure 43: Heat sink

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.E855-00 5PC600.E855-01 5PC600.E855-02 5PC600.E855-03 5PC600.E855-04 5PC600.E855-05
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 45: 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.

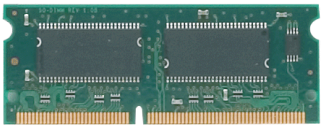


Figure 44: Main memory module

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 46: Technical data - main memory

Information:

A main memory 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.

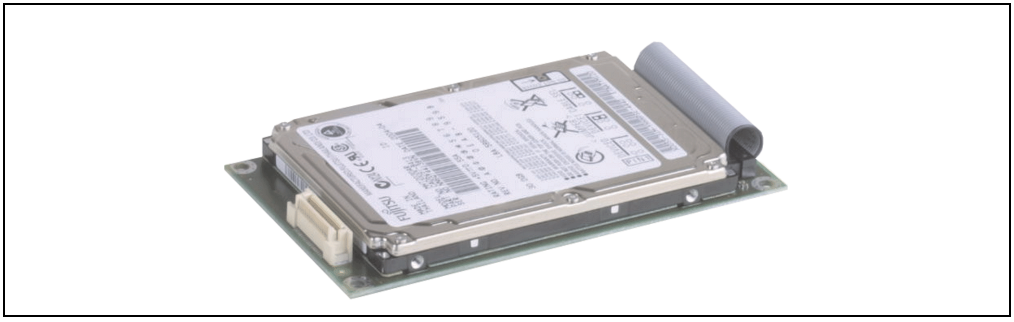


Figure 45: Add-on hard disk 30 GB 24/7

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 47: 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	300000 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 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 47: Technical data - add-on hard disk 5AC600.HDDI-00 (cont.)

1) "Standard operation" of a hard disk assumes that it is turned on or off once every 12 hours.

3.6.2 Add-on hard disk 20 GB ET

This hard disk has an expanded temperature specification, but is not permitted to be used 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.

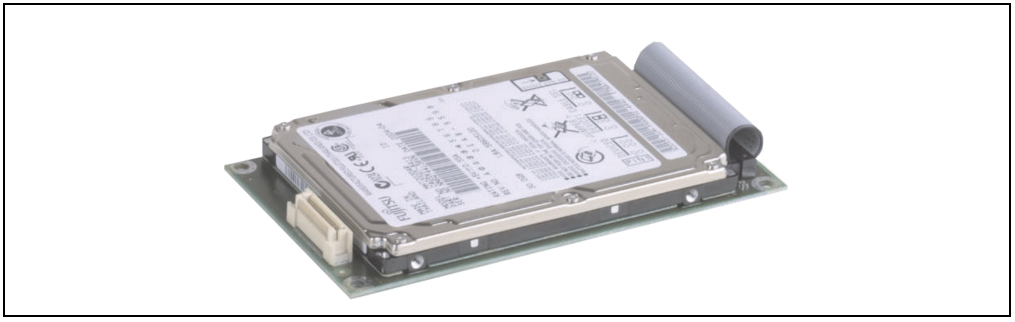


Figure 46: Add-on hard disk 20 GB

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 48: 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 48: Technical data - add-on hard disk 5AC600.HDDI-01 (cont.)

1) Surface temperature of the hard disk.

3.6.3 Add-on Compact Flash slot

A Compact Flash 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.

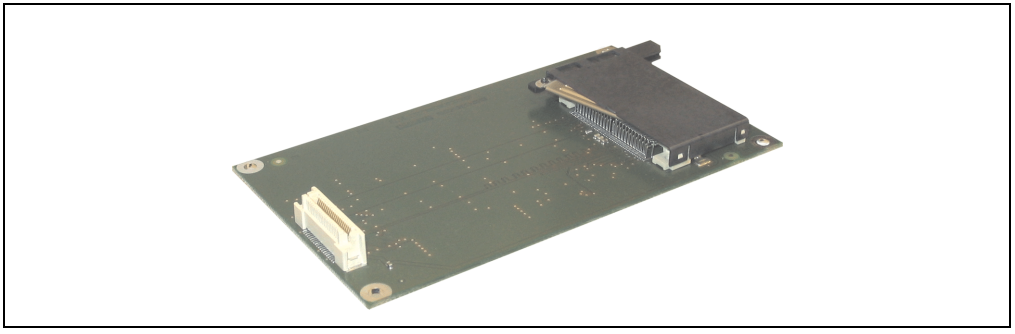


Figure 47: Add-on Compact Flash slot

Technical data

Features	5AC600.CFSI-00
Compact Flash Type Amount Connection	 Type I 1 slot Primary slave
Weight	100 g

Table 49: Technical data - add-on Compact Flash slot 5AC600.CFSI-00

Warning!

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

3.6.4 Slide-in CD-ROM

The slide-in drive can be used in system units with 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 48: 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 MBytes/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 50: 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 2 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 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 MBytes/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)	about 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 51: 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 51: 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 2 slots. When inserted in slide-in slot 1, Compact Flash slot CF3 is referred to internally as "secondary slave". Compact Flash 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!

Inserting and removing the Compact Flash card in the CF3 IDE Compact Flash slot can only take place without power applied to the PPC700!

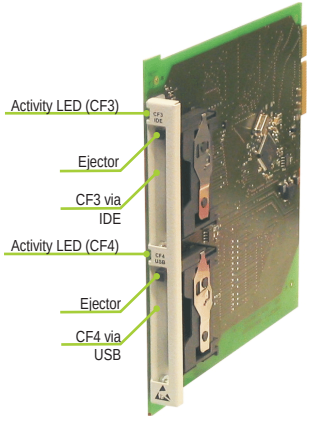


Figure 50: Slide-in CF 2 slot

Technical data

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

Table 52: 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 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 51: 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 53: Technical data - slide-in USB diskette drive 5AC600.FDDS-00

3.6.8 Slide-in hard disk 30 GB 24x7

This hard disk is specified for 24-hour operation. The slide-in drive can be used in system units with 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.

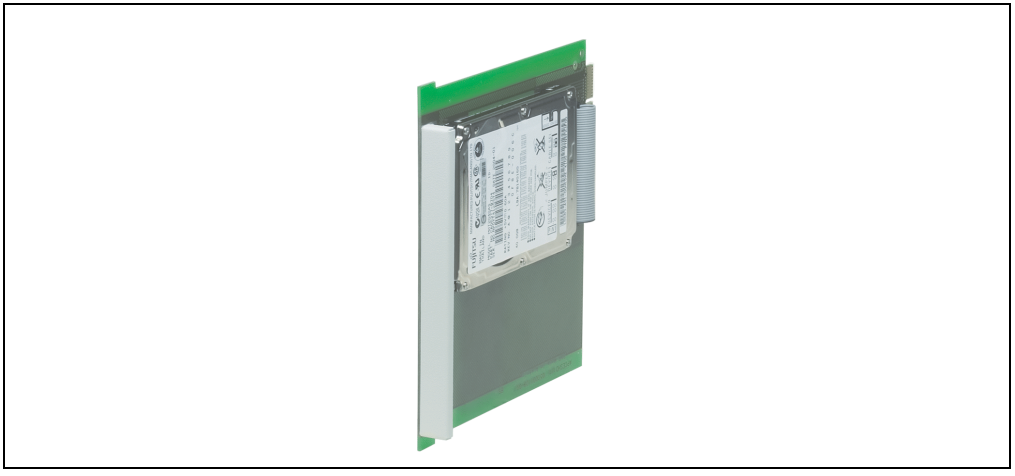


Figure 52: Slide-in hard disk 30 GB

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	30,0000 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 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 54: 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 (8820 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 54: Technical data - add-on hard disk 5AC600.HDDS-00 (cont.)

1) "Standard operation" of a hard disk assumes that it is turned on or off once every 12 hours.

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 2 or 5 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 53: 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)	about 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 55: 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 55: 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.

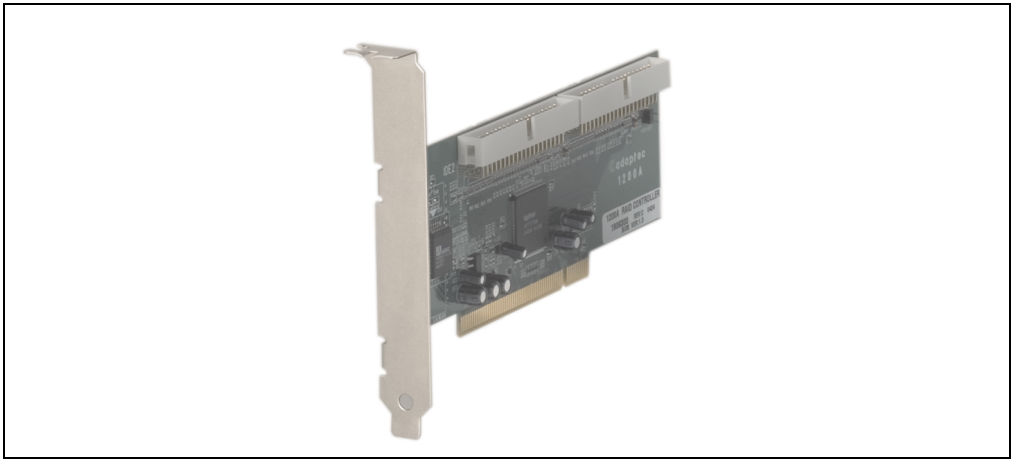


Figure 54: RAID controller 5ACPCI.RAIC-00

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 56: 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.

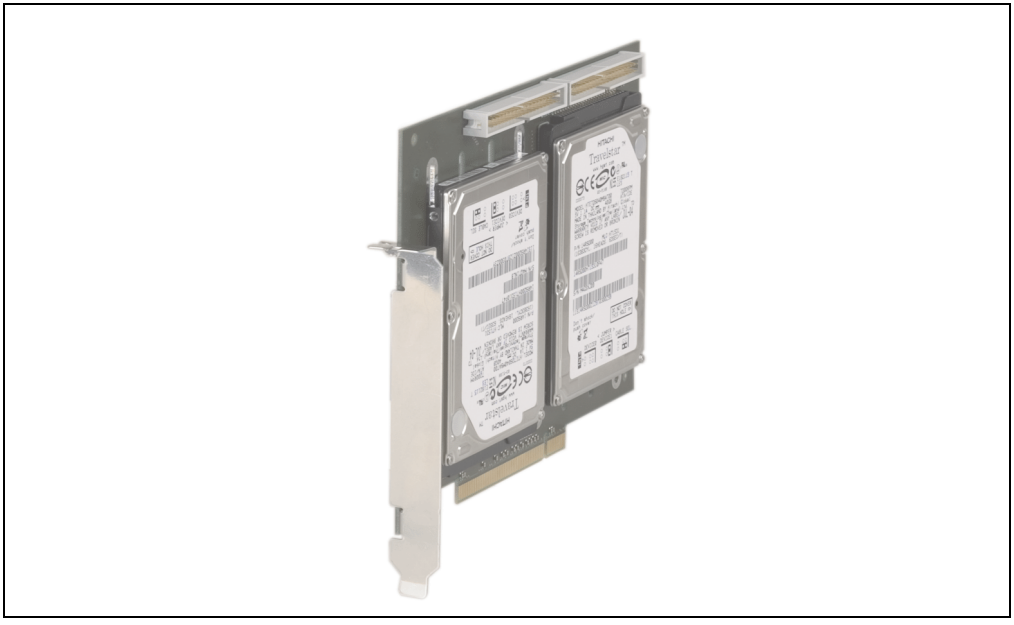


Figure 55: PCI RAID storage 5ACPCI.RAIS-00

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 57: 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 57: 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

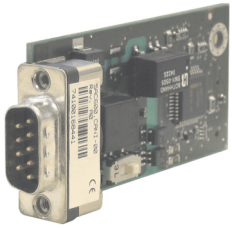
Model number	Description	Image
5AC600.CANI-00	**Add-on CAN interface** CAN interface for installation in an APC620 or PPC700.	

Table 58: Add-on CAN interface 5AC600.CANI-00

Technical data

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

Table 59: Technical data - add-on CAN interface 5AC600.CANI-00

Pin assignments

Add-On CAN		
Electrically isolated		9-pin DSUB plug 1 5 6 9
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 60: 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.

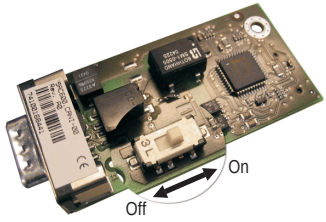


Figure 56: Terminating resistor for add-on CAN interface 5AC600.CANI-00

Contents of the delivery / mounting material

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

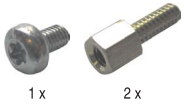


Figure 57: Contents of the delivery / mounting material 5AC600.CANI-00

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

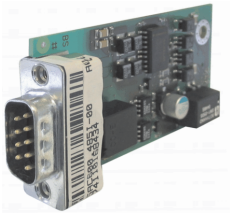
Model number	Description	Image
5AC600.485I-00	**Add-on RS232/422/485 interface** Add-On RS232/422/485 interface for installation in an APC620 and PPC700.	

Table 61: Add-on RS232/422/485 interface 5AC600.485I-00

Pin assignments

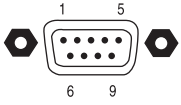
Add-On RS232/422/485			
RS232/RS422 interface electrically isolated RS232 up to 115 kBaud, RS422/485 up to Mode 115.2 kBaud			9-pin DSUB plug 
Pin	**Assignment RS232**	**Assignment RS232**	
1	n.c.	$\overline{\text{TXD}}$	
2	RXD	n.c.	
3	TXD	n.c.	
4	n.c.	TXD	
5	GND	GND	
6	n.c.	$\overline{\text{RXD}}$	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

Table 62: 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).

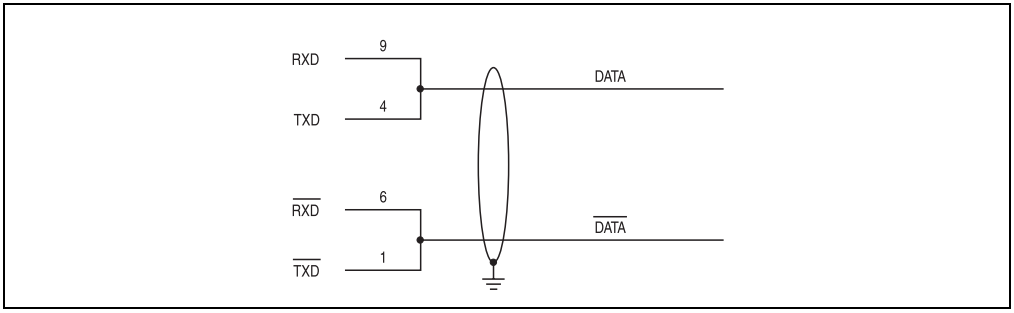


Figure 58: Add-on RS232/422/485 interface - operated in RS485 mode

Contents of the delivery / mounting material

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

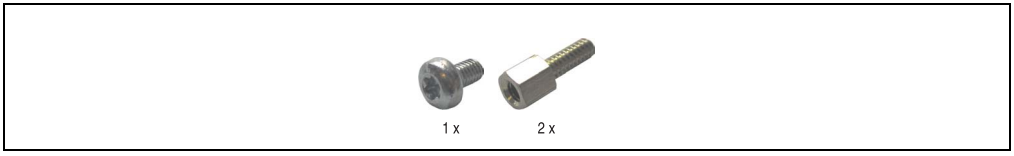


Figure 59: Contents of the delivery / mounting material 5AC600.485I-00

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.

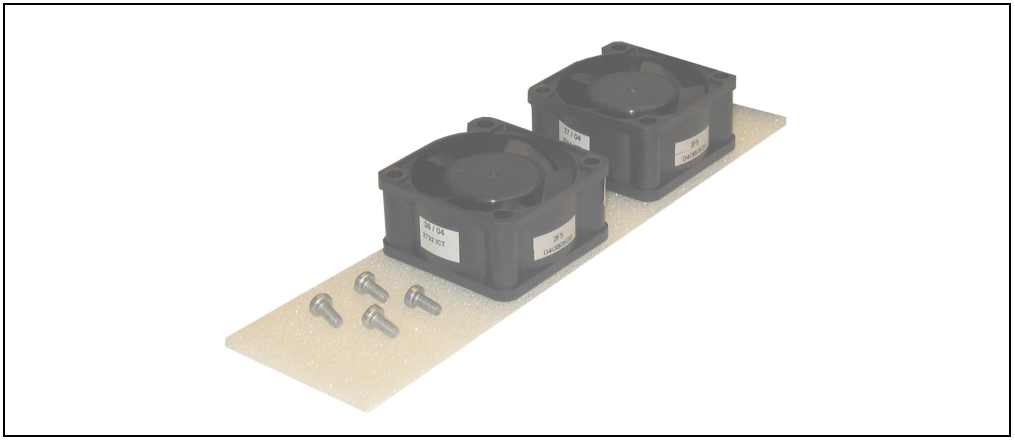


Figure 60: Fan kit 5PC700.FA00-01

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 63: Technical data - 5PC700.FA00-01

Contents of delivery

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

Mounting

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.

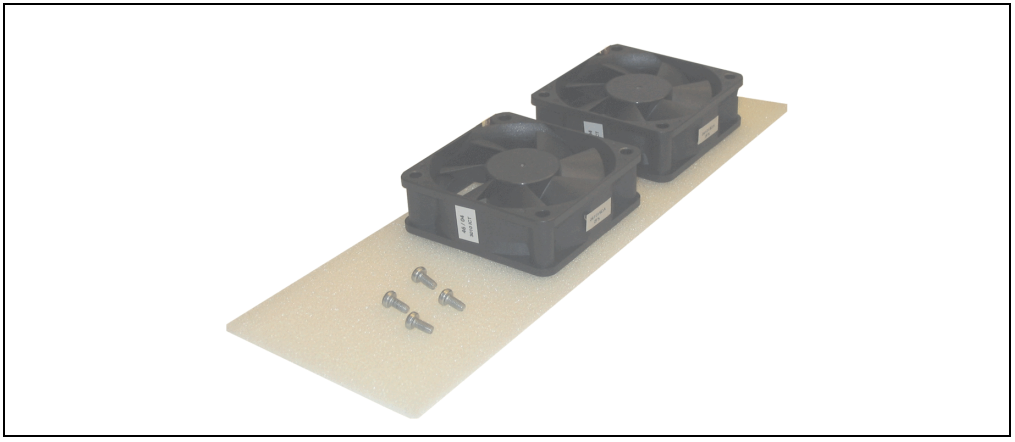


Figure 61: Fan kit 5PC700.FA02-00

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 64: Technical data - 5PC700.FA02-00

Contents of delivery

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

Mounting

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.

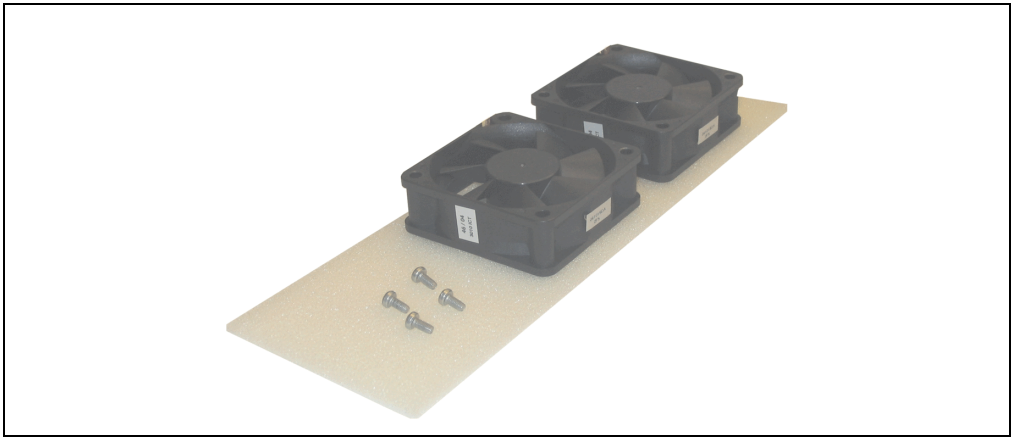


Figure 62: Fan kit 5PC700.FA02-01

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 65: Technical data - 5PC700.FA02-01

Contents of delivery

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

Mounting

TBD

Chapter 3 • Mounting

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 usits (see chapter 2 "Technical Data" starting on page 25).

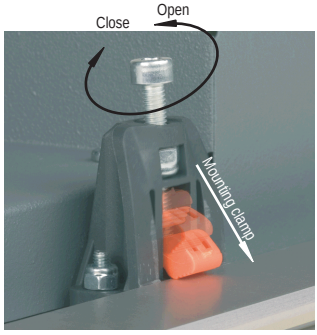


Figure 63: Clamp

The 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.

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 176).**

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

The BIOS is immediately activated when you switch on the power supply of the Panel PC 700 system. The 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 on 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"

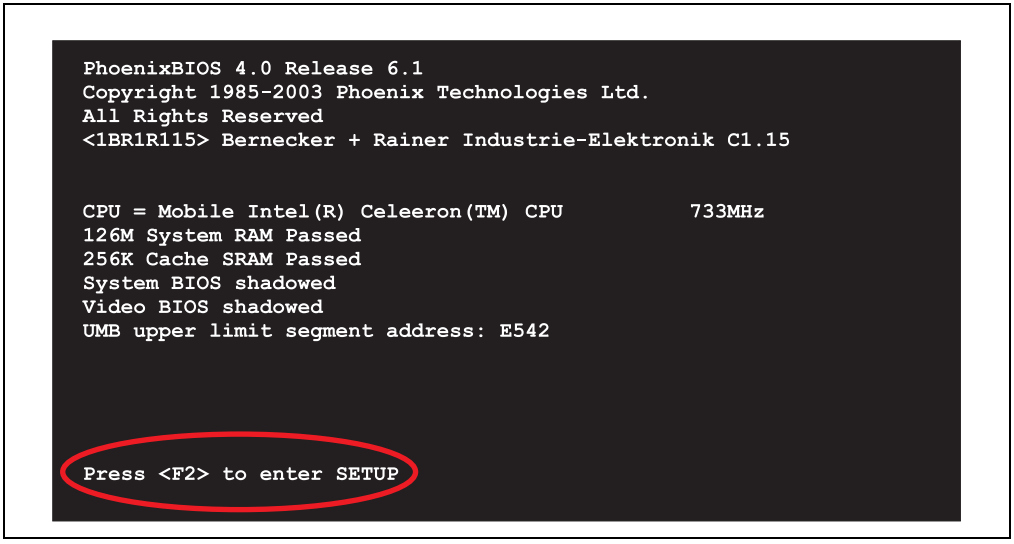


Figure 64: 815E BIOS diagnostic screen

1.2.1 Summary screen

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

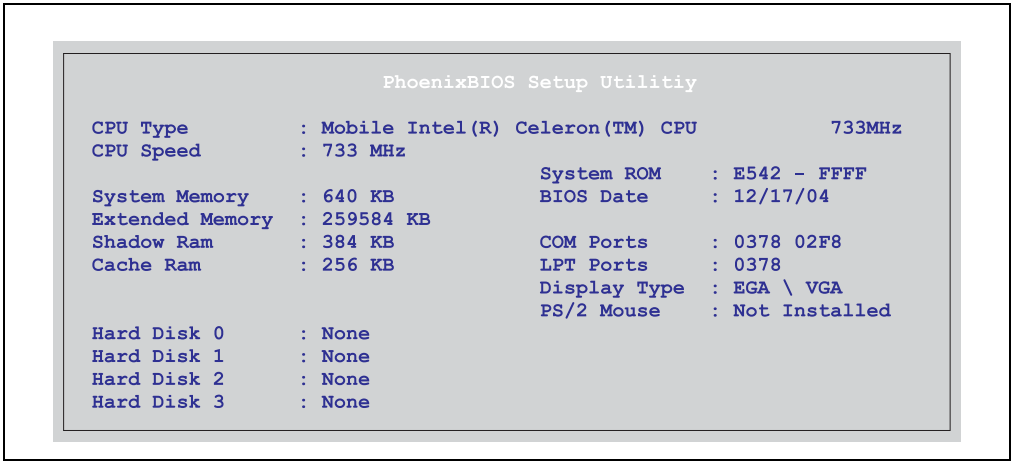


Figure 65: 815E BIOS summary screen

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 66: 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 67: 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.	134
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.	167
Power	Setup of various APM (Advanced Power Management) options.	169
Boot	The boot order can be set here.	174
Exit	To end the BIOS setup.	175

Table 68: Overview of BIOS menu items

1.4 Main

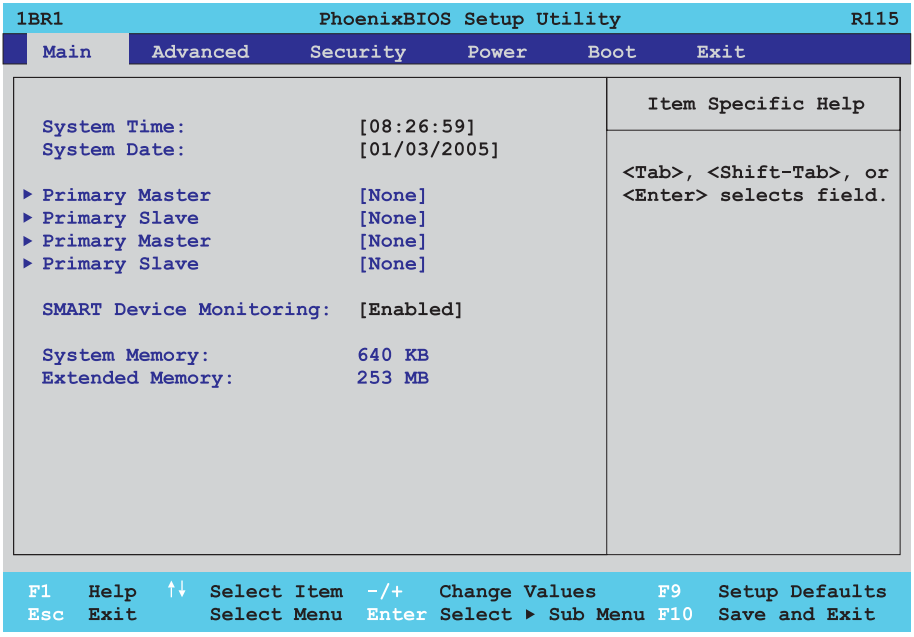


Figure 66: 815E Main menu

BIOS setting	Description	Configuration possibilities	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	Personal system time setting 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	Personal system date setting 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 135.
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 137.
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 139.

Table 69: 815E Main configuration options

BIOS setting	Description	Configuration possibilities	Effect
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 141.
Smart device monitoring	S.M.A.R.T. (Self Monitoring Analysis and Reporting Technology) is implemented for modern hard drives. This technology allows you to determine problems with reading or spinning 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 69: 815E Main configuration options (cont.)

1.4.1 Primary master

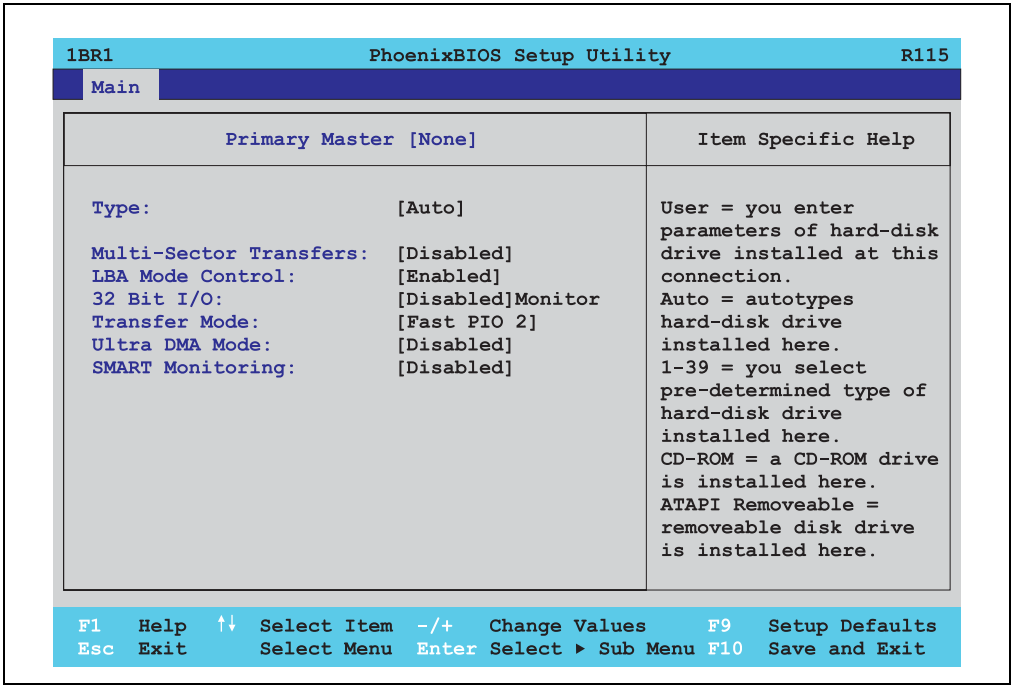


Figure 67: 815E Primary master setup

BIOS setting	Description	Configuration possibilities	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 or floppy drive.
Multi-sector transfer	This option determines the number of sectors per block. Only possible when manually setting up the drive (user option).	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 (user option).	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 (user option).	Standard	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 (user option).	Disabled	Deactivates the function. Do not use UDMA mode.
		Mode 0 - Mode 5	Manual configuration option for UDMA mode.
SMART monitoring	Indicates whether the primary master drive supports SMART technology.	Disabled	No drive support, and function is deactivated.
		Enabled	Dive support present, and function is activated.

Table 70: 815E Primary master configuration options

1.4.2 Primary slave

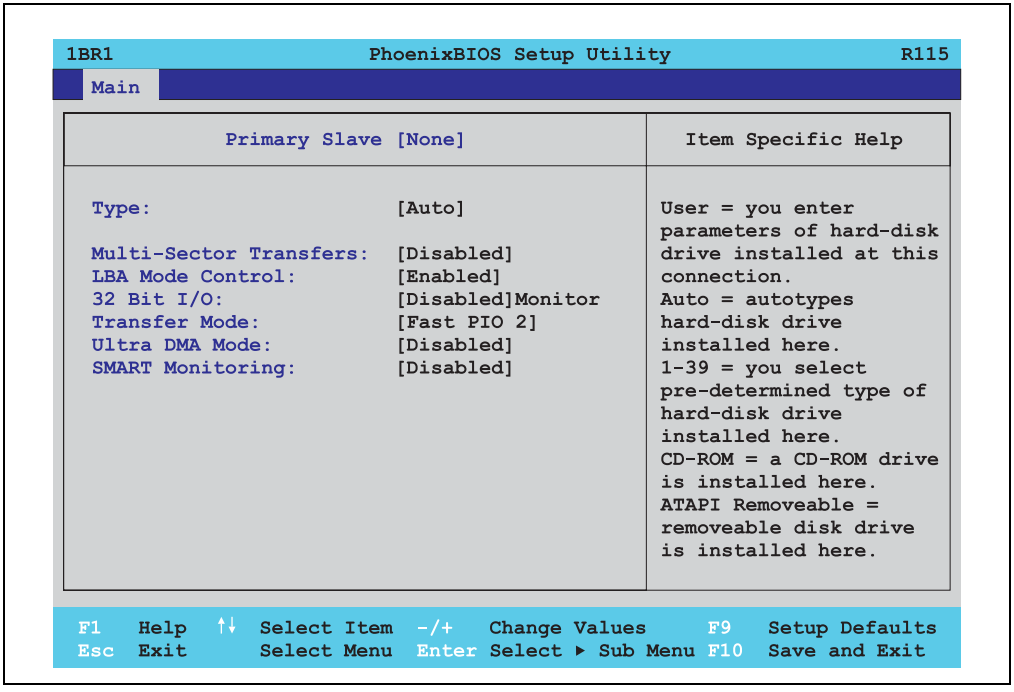


Figure 68: 815E Primary slave setup

BIOS setting	Description	Configuration possibilities	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 or floppy drive.
Multi-sector transfer	This option determines the number of sectors per block. Only possible when manually setting up the drive (user option).	Disabled	Deactivates the function.
		2, 4, 8 or 16 sectors	Number of sectors per block.

Table 71: 815E Primary slave configuration options

BIOS setting	Description	Configuration possibilities	Effect
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 (user option).	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 slave drive and the system memory is defined here. Only possible when manually setting up the drive (user option).	Standard	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 (user option).	Disabled	Deactivates the function. Do not use UDMA mode.
		Mode 0 - Mode 5	Manual configuration option for UDMA mode.
SMART monitoring	Indicates whether the primary slave drive supports SMART technology.	Disabled	No drive support, and function is deactivated.
		Enabled	Dive support present, and function is activated.

Table 71: 815E Primary slave configuration options (cont.)

1.4.3 Secondary master

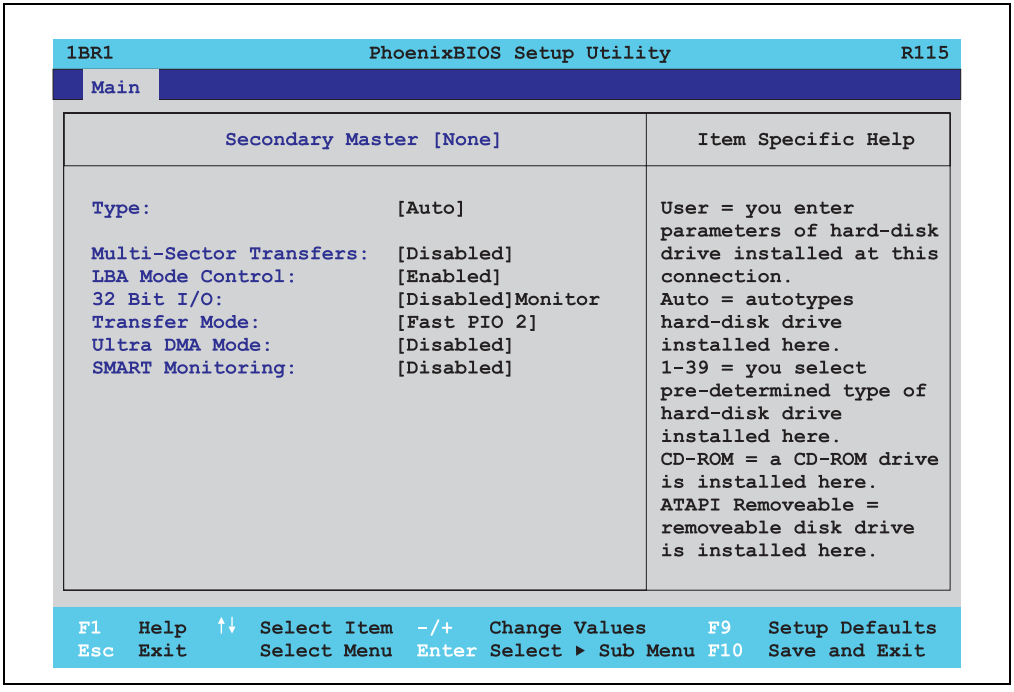


Figure 69: 815E Secondary master setup

BIOS setting	Description	Configuration possibilities	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 or floppy drive.
Multi-sector transfer	This option determines the number of sectors per block. Only possible when manually setting up the drive (user option).	Disabled	Deactivates the function.
		2, 4, 8 or 16 sectors	Number of sectors per block.

Table 72: 815E Secondary master configuration options

BIOS setting	Description	Configuration possibilities	Effect
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 (user option).	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 (user option).	Standard	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 (user option).	Disabled	Deactivates the function. Do not use UDMA mode.
		Mode 0 - Mode 5	Manual configuration option for UDMA mode.
SMART monitoring	Indicates whether the secondary master drive supports SMART technology.	Disabled	No drive support, and function is deactivated.
		Enabled	Dive support present, and function is activated.

Table 72: 815E Secondary master configuration options (cont.)

1.4.4 Secondary slave

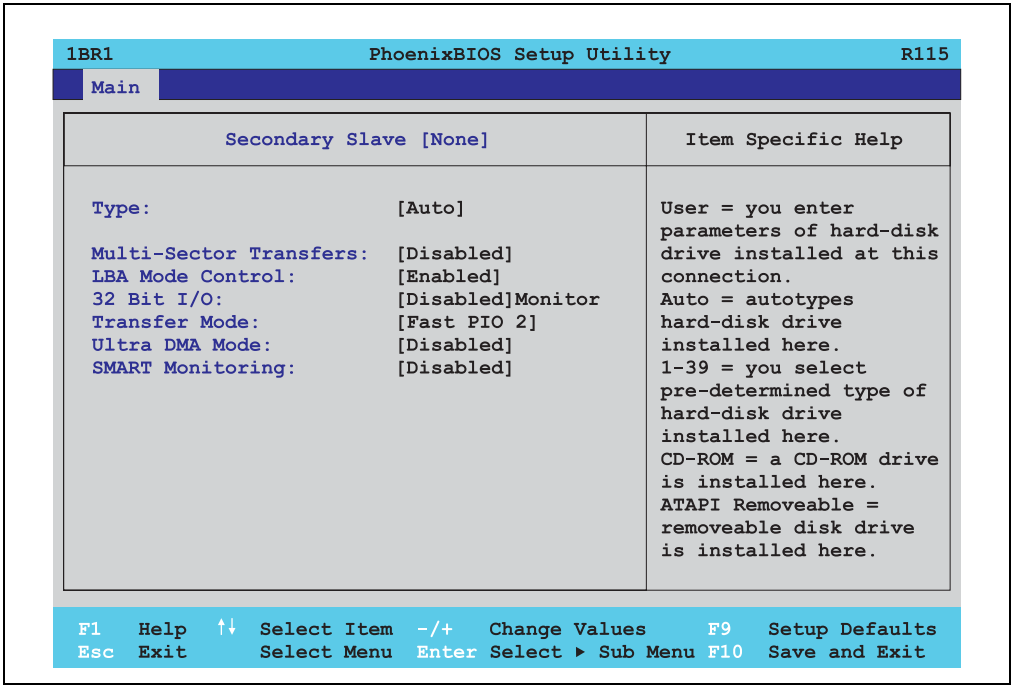


Figure 70: 815E Secondary slave setup

BIOS setting	Description	Configuration possibilities	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 or floppy drive.
Multi-sector transfer	This option determines the number of sectors per block. Only possible when manually setting up the drive (user option).	Disabled	Deactivates the function.
		2, 4, 8 or 16 sectors	Number of sectors per block.

Table 73: 815E Secondary slave configuration options

BIOS setting	Description	Configuration possibilities	Effect
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 (user option).	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 slave drive and the system memory is defined here. Only possible when manually setting up the drive (user option).	Standard	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 (user option).	Disabled	Deactivates the function. Do not use UDMA mode.
		Mode 0 - Mode 5	Manual configuration option for UDMA mode.
SMART monitoring	Indicates whether the secondary slave drive supports SMART technology.	Disabled	No drive support, and function is deactivated.
		Enabled	Dive support present, and function is activated.

Table 73: 815E Secondary slave configuration options (cont.)

1.5 Advanced

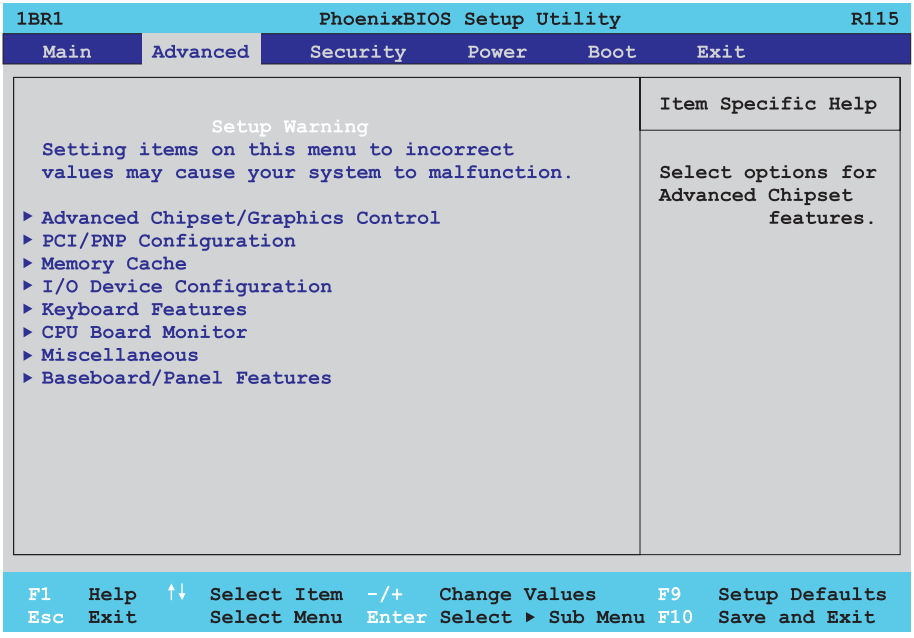


Figure 71: 815E Advanced menu

BIOS setup menu	Description	Configuration possibilities	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 145.
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 161.

Table 74: 815E Advanced menu configuration possibilities

1.5.1 Advanced chipset / graphics control

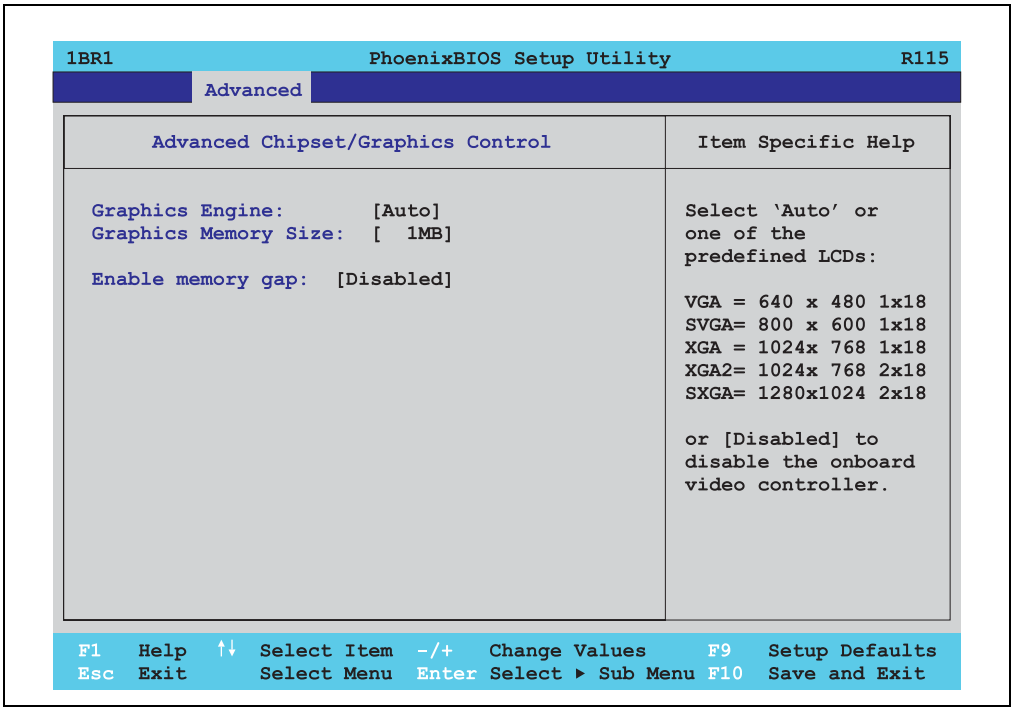


Figure 72: 815E Advanced chipset / graphics control

BIOS setting	Description	Configuration possibilities	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	**Warning!** **The onboard video controller 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 on 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 kB main memory is reserved for the onboard video controller.

Table 75: 815E Advanced chipset / graphics control configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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 75: 815E Advanced chipset / graphics control configuration possibilities

1.5.2 PCI / PNP configuration

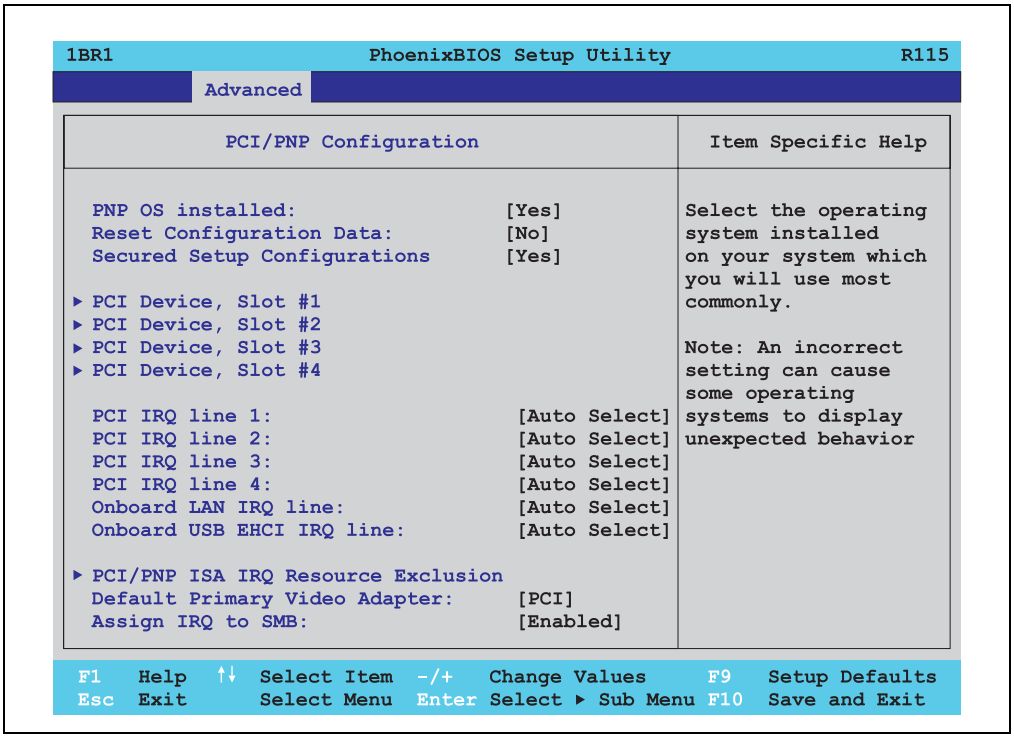


Figure 73: 815E PCI / PNP configuration

BIOS setting	Description	Configuration possibilities	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

Table 76: 815E PCI / PNP configuration options

BIOS setting	Description	Configuration possibilities	Effect
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.
PCI device, slot #1	Advanced configuration of the PCI slot number 1.	Enter	Opens submenu See "PCI device, slot #1", on page 147
PCI device, slot #2	Advanced configuration of the PCI slot number 2.	Enter	Opens submenu See "PCI device, slot #2", on page 148
PCI device, slot #3	Advanced configuration of the PCI slot number 3.	Enter	Opens submenu See "PCI device, slot #3", on page 149
PCI device, slot #4	Advanced configuration of the PCI slot number 4.	Enter	Opens submenu See "PCI device, slot #4", on page 150
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.

Table 76: 815E PCI / PNP configuration options (cont.)

BIOS setting	Description	Configuration possibilities	Effect
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 151
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.
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 76: 815E PCI / PNP configuration options (cont.)

PCI device, slot #1

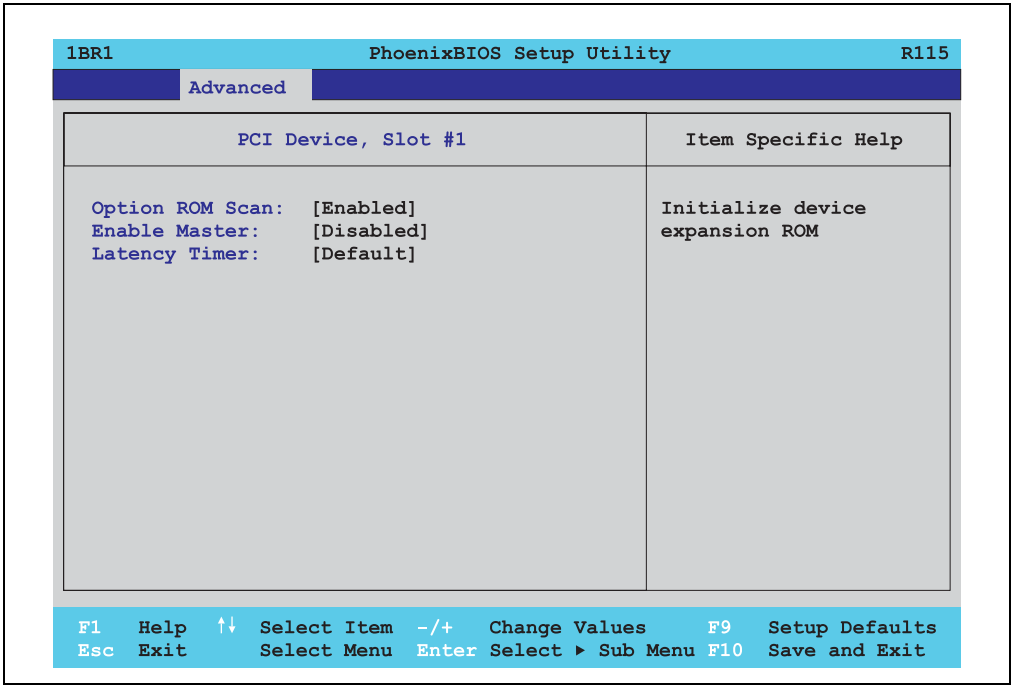


Figure 74: 815E PCI device, slot #1

BIOS setting	Description	Configuration possibilities	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 77: 815E PCI device, slot #1 configuration possibilities

PCI device, slot #2

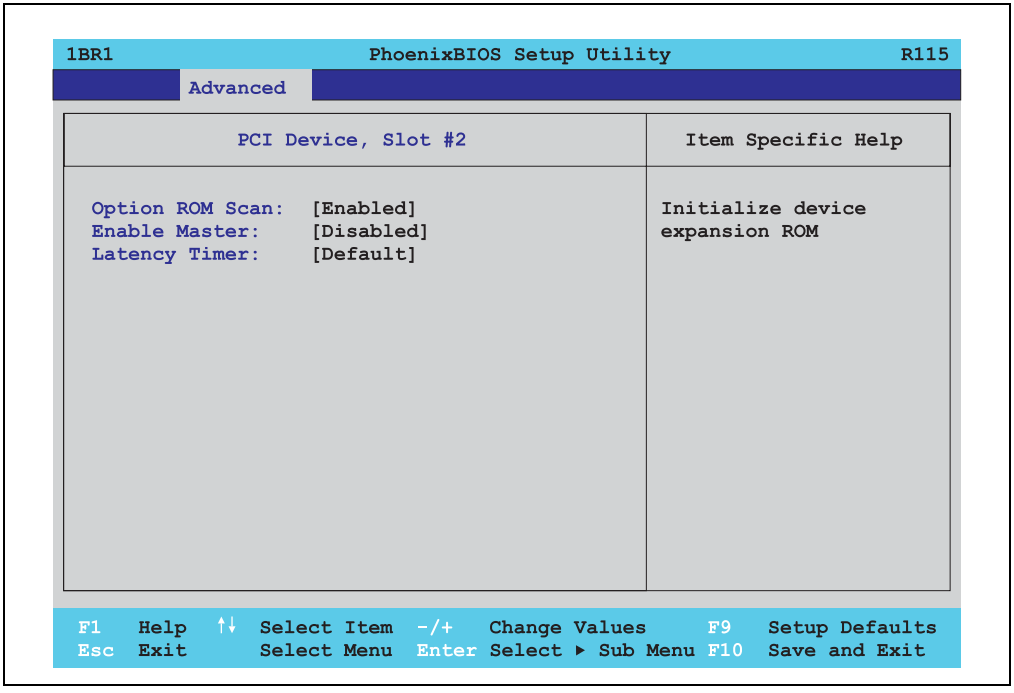


Figure 75: 815E PCI device, slot #2

BIOS setting	Description	Configuration possibilities	Effect
ROM scan option	Setting for the initialization of a device's ROM.	Enabled	Activates the function.
		Disabled	Deactivates the function.

Table 78: 815E PCI device, slot #2 configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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 78: 815E PCI device, slot #2 configuration possibilities (cont.)

PCI device, slot #3

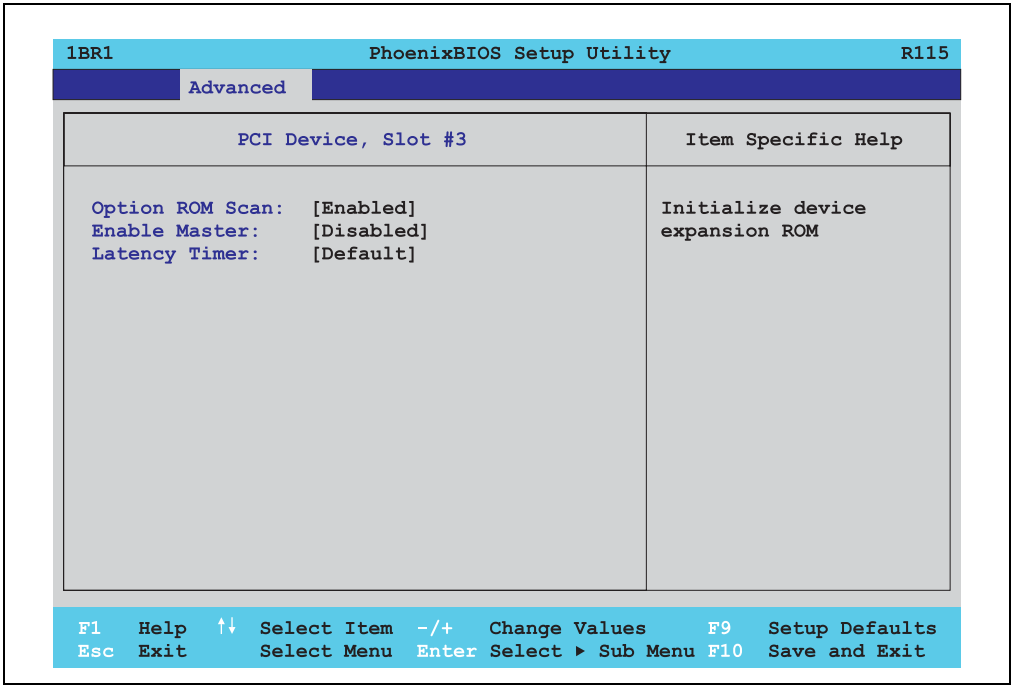


Figure 76: 815E PCI device, slot #3

BIOS setting	Description	Configuration possibilities	Effect
ROM scan option	Setting for the initialization of a device's ROM.	Enabled	Activates the function.
		Disabled	Deactivates the function.

Table 79: 815E PCI device, slot #3 configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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 #3 configuration possibilities (cont.)

PCI device, slot #4

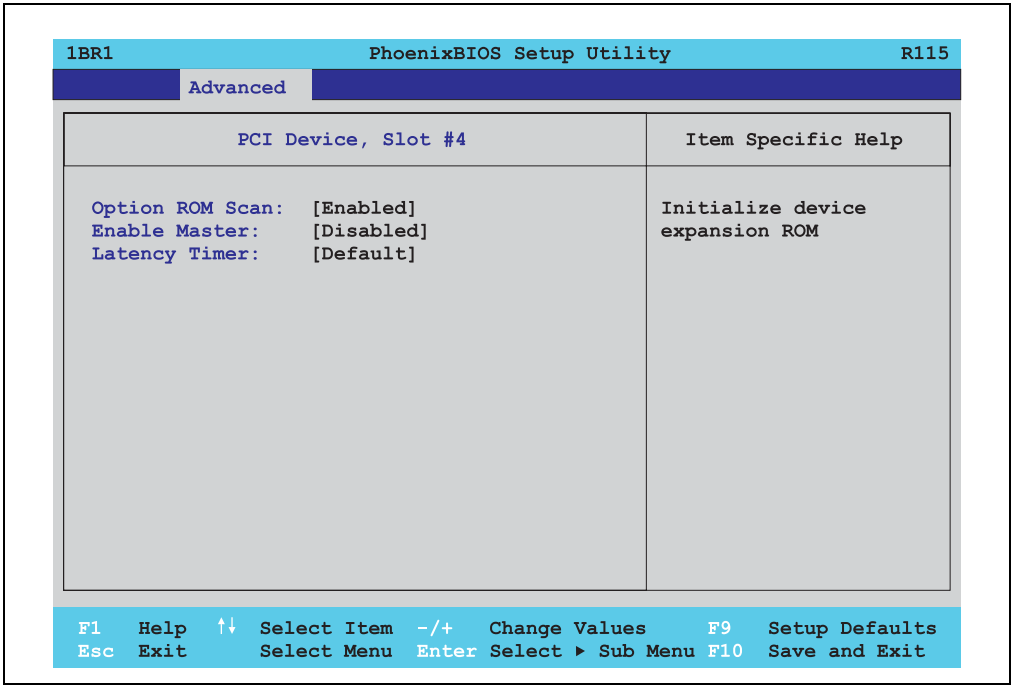


Figure 77: 815E PCI device, slot #4

BIOS setting	Description	Configuration possibilities	Effect
ROM scan option	Setting for the initialization of a device's ROM.	Enabled	Activates the function.
		Disabled	Deactivates the function.

Table 80: 815E PCI device, slot #4 configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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 #4 configuration possibilities (cont.)

PCI / PNP ISA IRQ resource exclusion

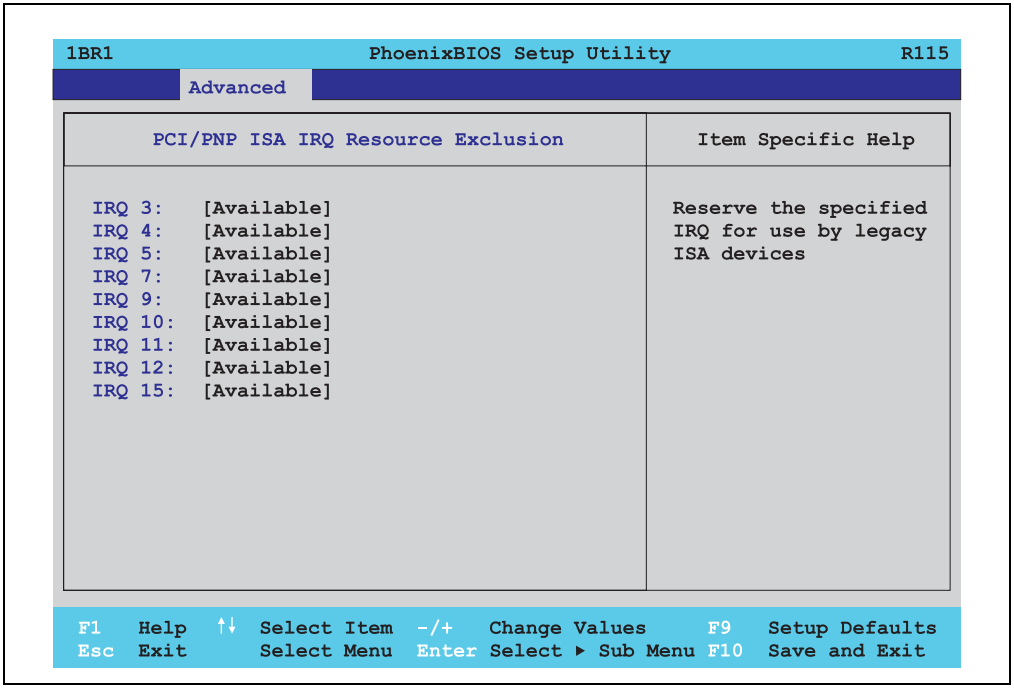


Figure 78: 815E PCI / PNP ISA IRQ resource exclusion

BIOS setting	Description	Configuration possibilities	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.

Table 81: 815E PCI / PNP ISA IRQ resource exclusion configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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.
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 81: 815E PCI / PNP ISA IRQ resource exclusion configuration possibilities (cont.)

1.5.3 Memory cache

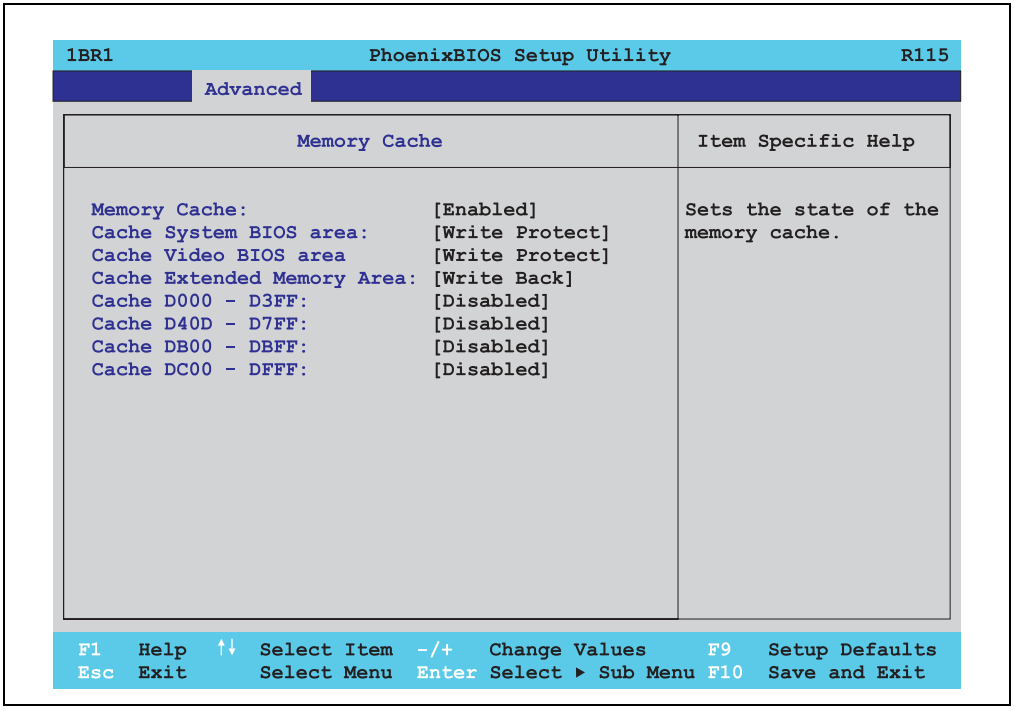


Figure 79: 815E Memory cache

BIOS setting	Description	Configuration possibilities	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.
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.

Table 82: 815E Memory cache configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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 82: 815E Memory cache configuration possibilities (cont.)

1.5.4 I/O device configuration

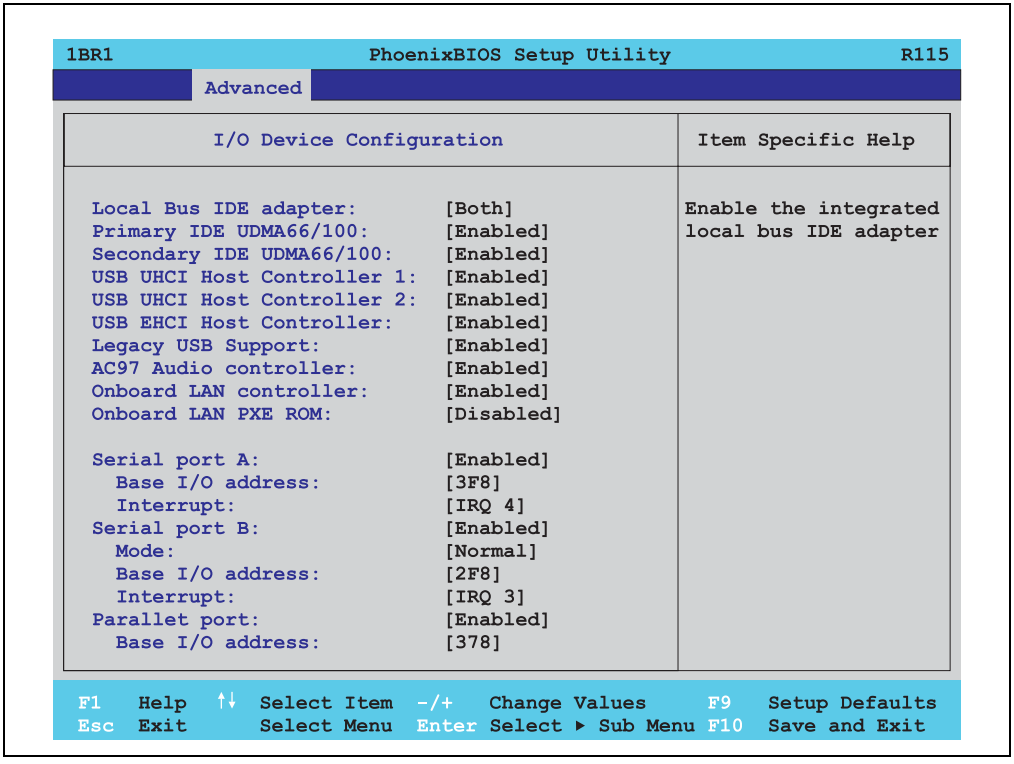


Figure 80: 815E I/O device configuration

BIOS setting	Description	Configuration possibilities	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.

Table 83: 815E I/O device configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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.
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.
Interrupts	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.

Table 83: 815E I/O device configuration possibilities (cont.)

BIOS setting	Description	Configuration possibilities	Effect
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.
Interrupts	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 83: 815E I/O device configuration possibilities (cont.)

1.5.5 Keyboard features

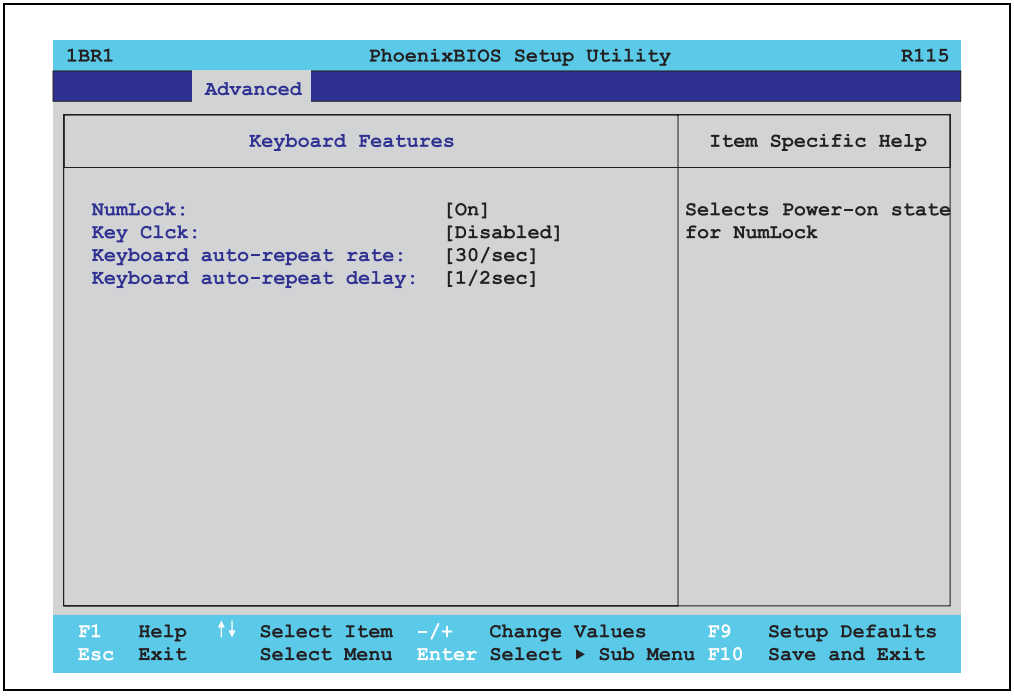


Figure 81: 815E Keyboard features

BIOS setting	Description	Configuration possibilities	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.
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 84: 815E Keyboard features configuration possibilities

1.5.6 CPU board monitor

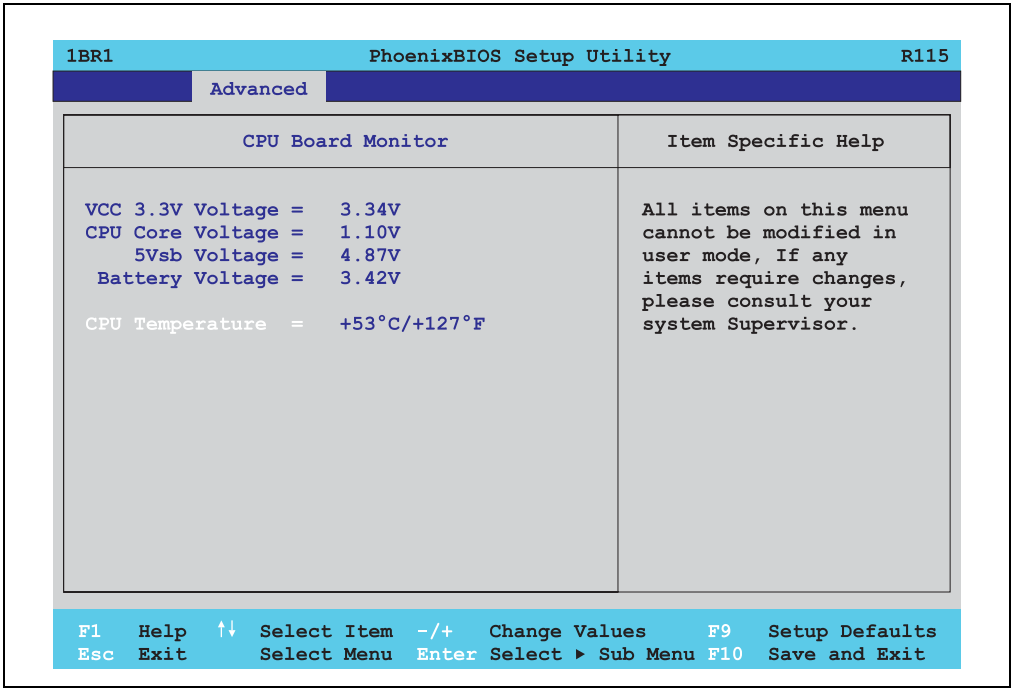


Figure 82: 815E CPU board monitor

BIOS setting	Description	Configuration possibilities	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	
5V sb voltage	Displays the 5 V standby voltage (in volts).	None	
Battery voltage	Displays the battery voltage (in volt).	None	
CPU temperature	Displays the processor's temperature (in degrees Celsius and Fahrenheit).	None	

Table 85: 815E CPU board monitor configuration possibilities

1.5.7 Miscellaneous

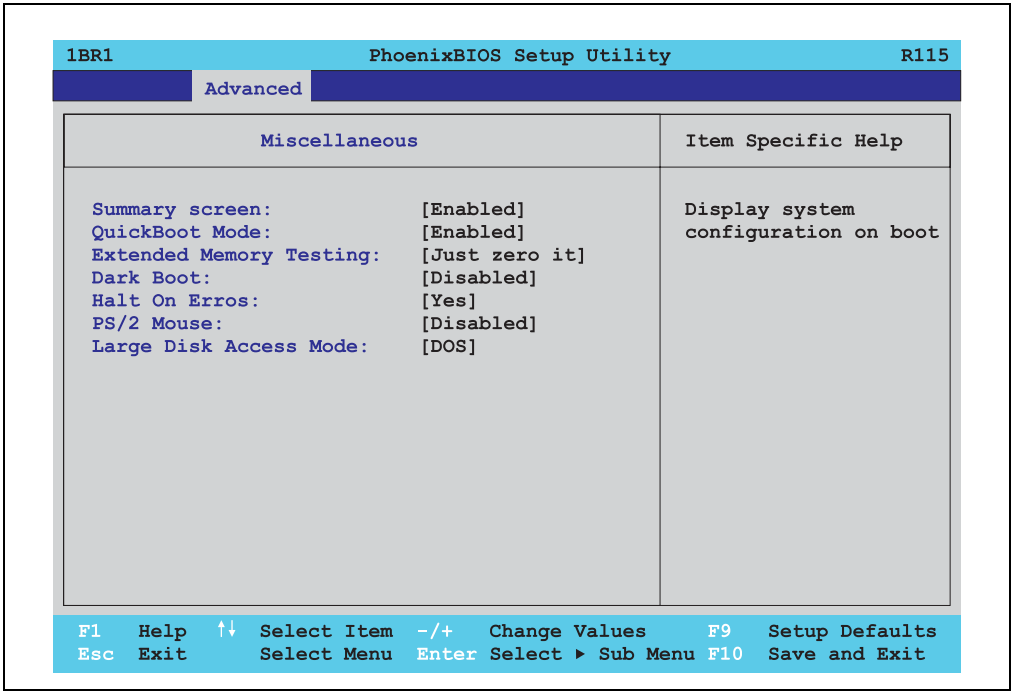


Figure 83: 815E Miscellaneous

BIOS setting	Description	Configuration possibilities	Effect
Summary screen	Set whether or not the system summary screen should open when the system is started (see figure 65 "815E BIOS summary screen" on page 132).	Enabled	Activates the function.
		Disabled	Deactivates the function.

Table 86: 815E Miscellaneous configuration options

BIOS setting	Description	Configuration possibilities	Effect
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."
Dark boot	Sets whether the diagnostic screen (see figure 64 "815E BIOS diagnostic screen" on page 132) should be displayed when the system is started.	Enabled	Activates the function. The diagnostic screen is displayed.
		Disabled	Deactivates the function. The diagnostic 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 disks with more than 1024 cylinders, 16 heads, and more than 63 sectors per track. Configuration possibilities: DOS	Other	For non-compatible access (e.g. Novell, SCO Unix.)
		DOS	For MS DOS compatible access.

Table 86: 815E Miscellaneous configuration options (cont.)

1.5.8 Baseboard / panel features

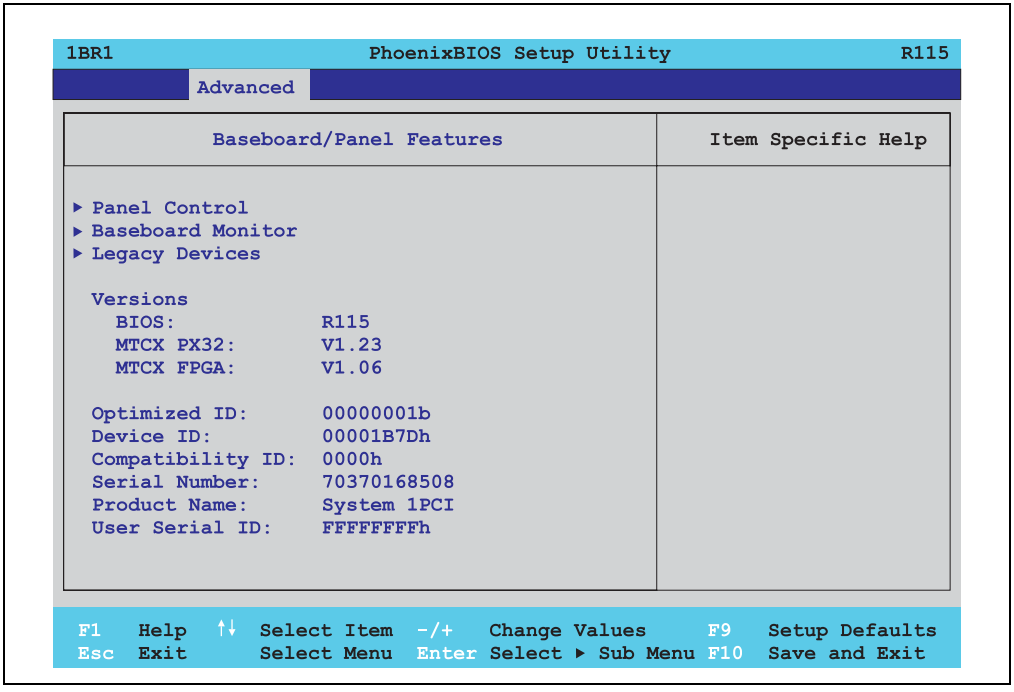


Figure 84: 815E Baseboard / panel features

BIOS setting	Description	Configuration possibilities	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	

Table 87: 815E Baseboard / panel features configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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 87: 815E Baseboard / panel features configuration possibilities

Panel control

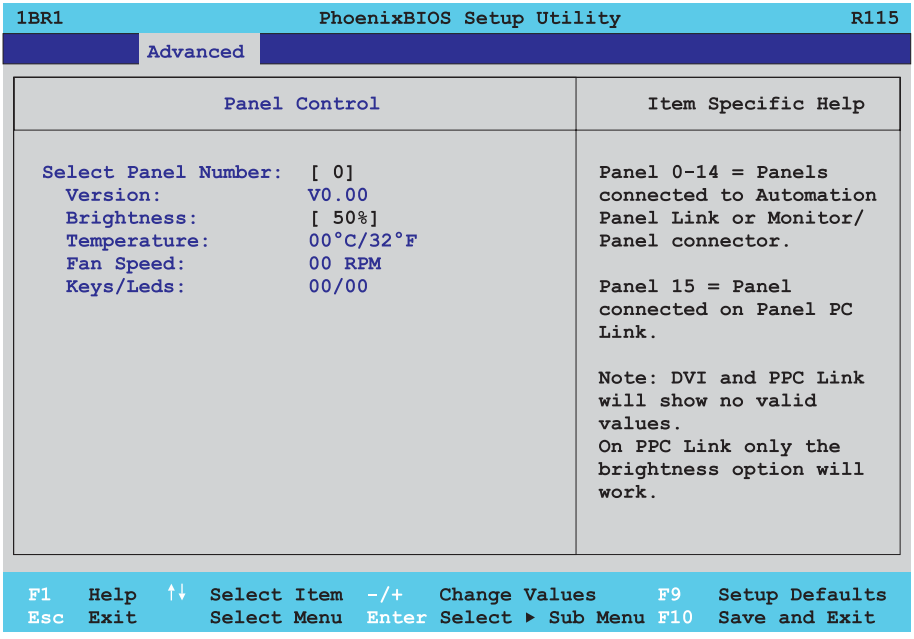


Figure 85: 815E Panel control

BIOS setting	Description	Configuration possibilities	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.

Table 88: 815E Panel control configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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 88: 815E Panel control configuration possibilities (cont.)

Baseboard monitor

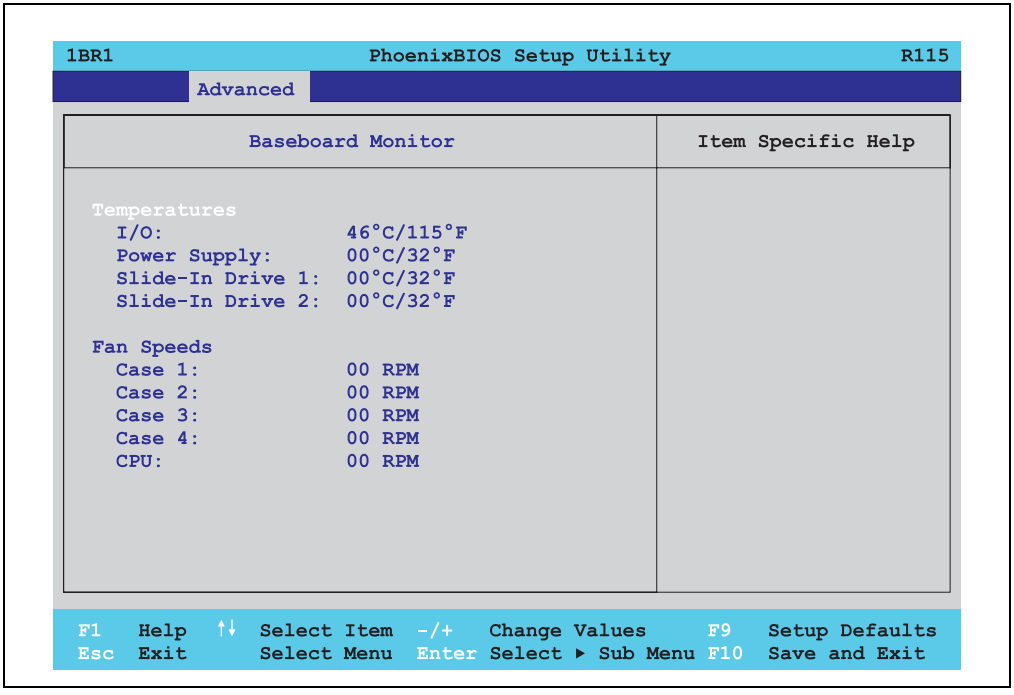


Figure 86: 815E Baseboard monitor

BIOS setting	Description	Configuration possibilities	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 89: 815E Baseboard monitor configuration possibilities

Legacy devices

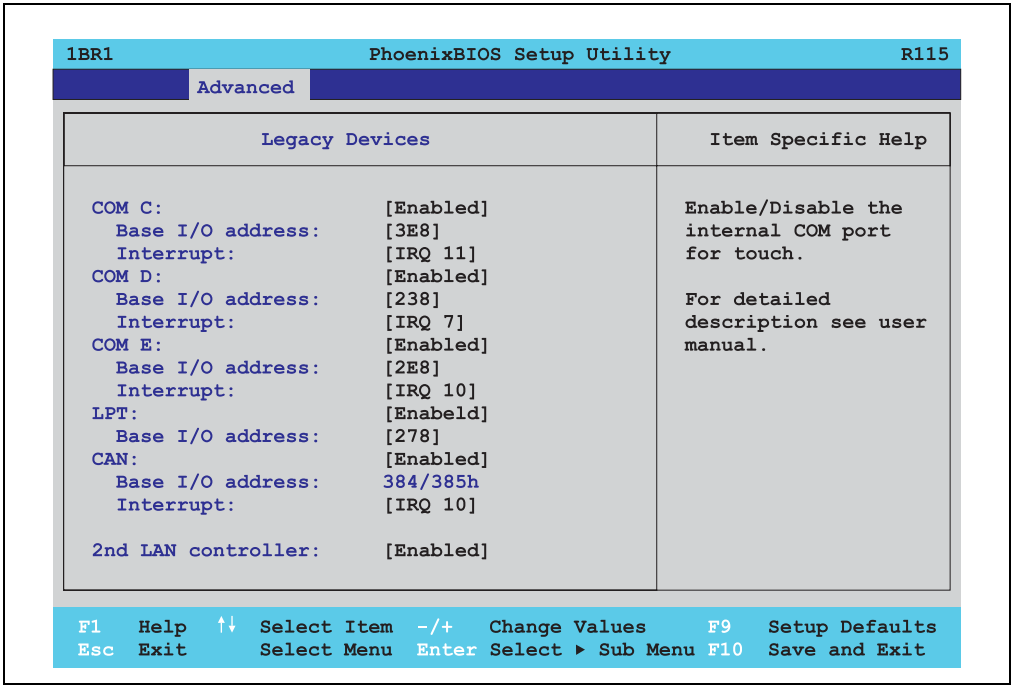


Figure 87: 815E Legacy devices

BIOS setting	Description	Configuration possibilities	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.
Interrupts	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.
Interrupts	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.
Interrupts	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	-
Interrupts	Selection of the interrupt for the CAN port.	IRQ 10	Selected interrupt is assigned.
		NMI	NMI interrupt is assigned.

Table 90: 815E Legacy devices configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
2nd LAN controller	For turning the on-board LAN controller (ETH2) on and off.	Disabled	Deactivates the controller.
		Enabled	Activates the controller.

Table 90: 815E Legacy devices configuration possibilities (cont.)

1.6 Security

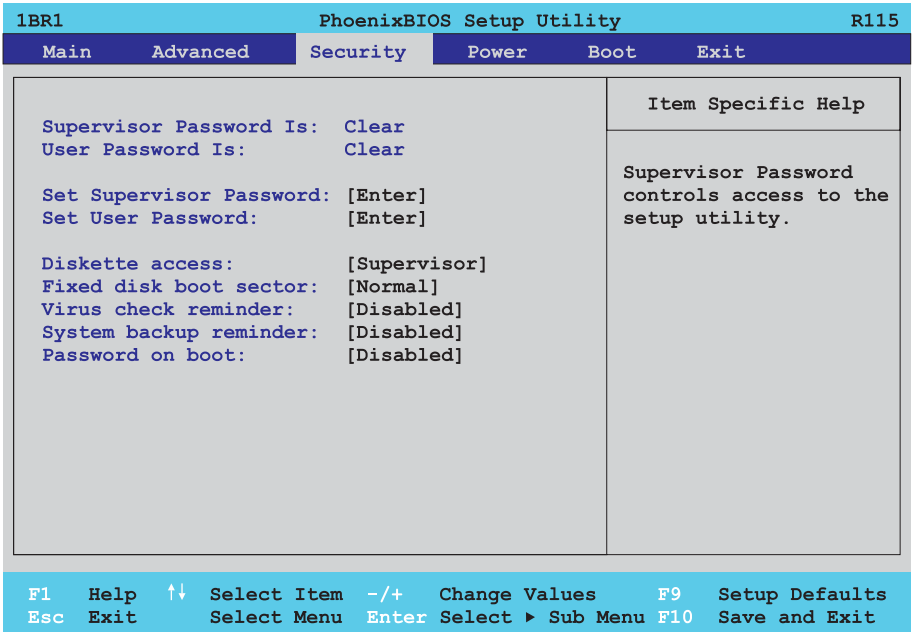


Figure 88: 815E Security menu

BIOS setting	Description	Configuration possibilities	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 the BIOS setup menu. To change password, enter 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 the BIOS setup menu. To change password, enter old password once and then the new password twice.

Table 91: 815E Security configuration options

BIOS setting	Description	Configuration possibilities	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 91: 815E Security configuration options (cont.)

1.7 Power

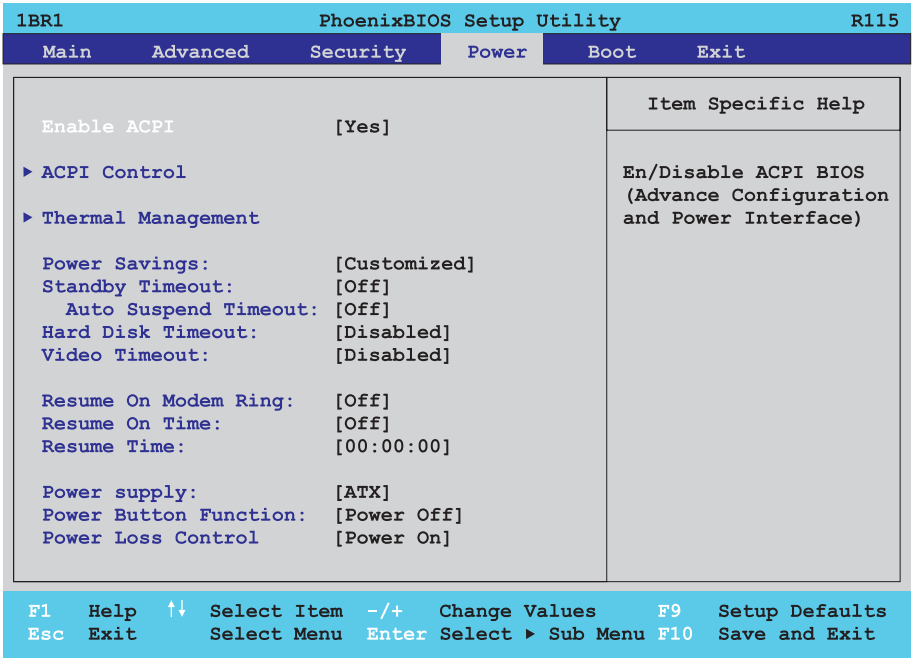


Figure 89: 815E Power menu

BIOS setting	Description	Configuration possibilities	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 171
Thermal management	Configuration of specific CPU limits.	Enter	Opens submenu See "Thermal management", on page 172
Power savings	This function determines if and how the power save function is used.	Disabled	Deactivates the power save function.
		Customized	Power management is custom configured by adjusting the individual settings.
		Maximum power Savings	Maximum power savings function.
		Maximum performance	Energy savings function to maximize performance.

Table 92: 815E Power configuration options

BIOS setting	Description	Configuration possibilities	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 92: 815E Power configuration options (cont.)

1.7.1 ACPI control

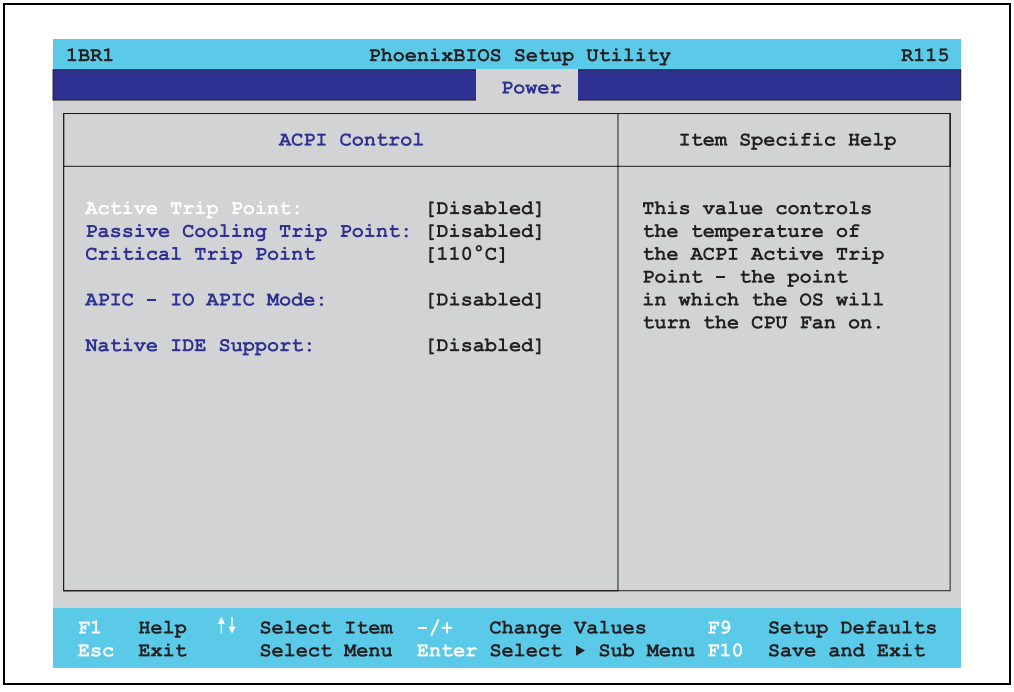


Figure 90: 815E ACPI control

BIOS setting	Description	Configuration possibilities	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 93: 815E ACPI control configuration possibilities

BIOS setting	Description	Configuration possibilities	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 93: 815E ACPI control configuration possibilities (cont.)

1.7.2 Thermal management

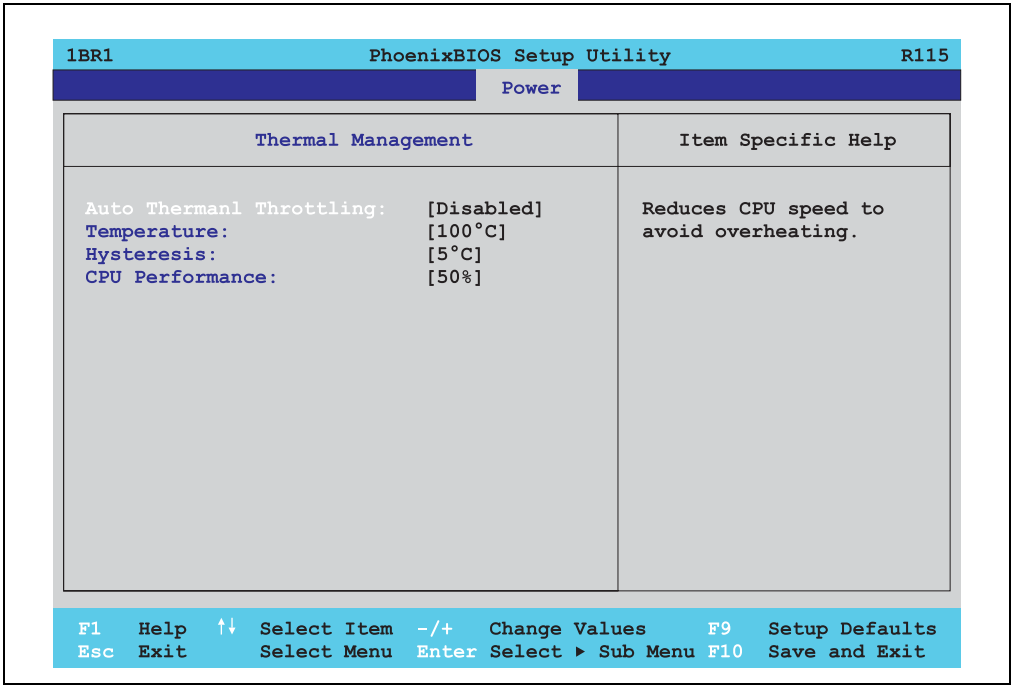


Figure 91: 815E Thermal management

BIOS setting	Description	Configuration possibilities	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.
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 94: 815E Thermal management

1.8 Boot

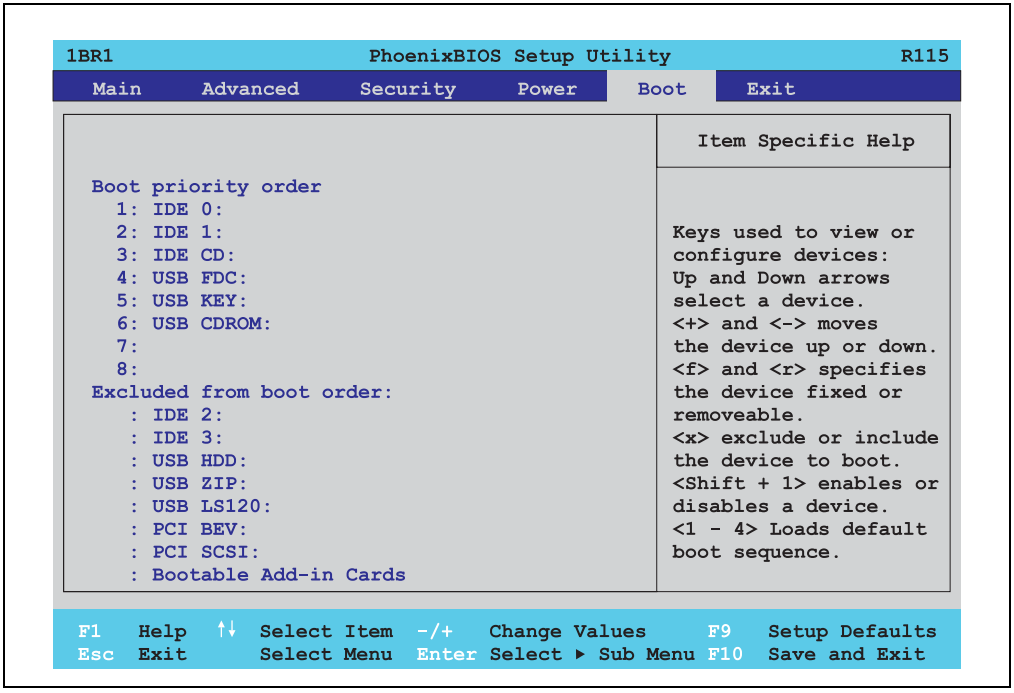


Figure 92: 815E Boot menu

BIOS setting	Description	Configuration possibilities	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 95: 815E Boot configuration options

1.9 Exit

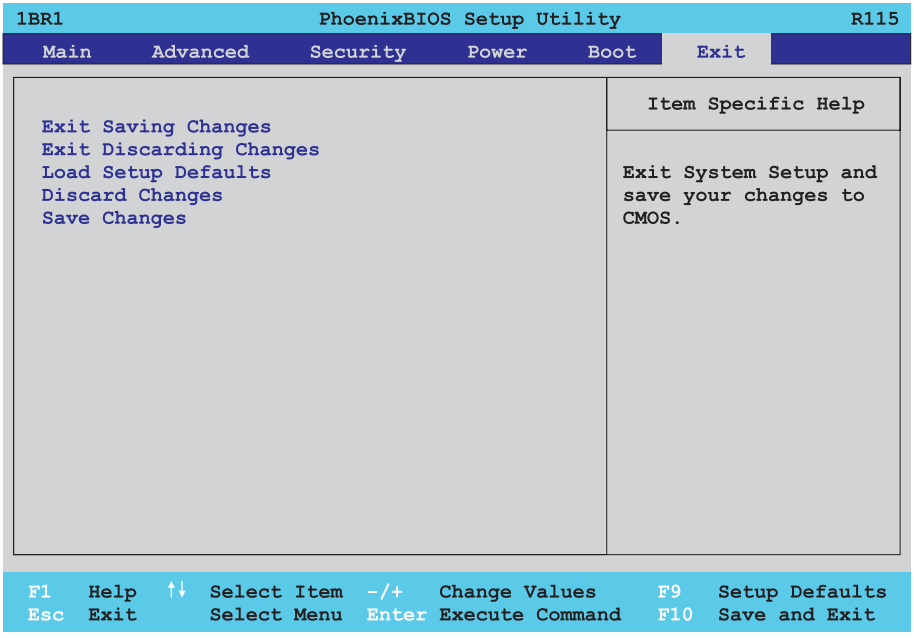


Figure 93: 815E Exit menu

BIOS setting	Description	Configuration possibilities	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	
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 96: 815E Exit configuration options

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.

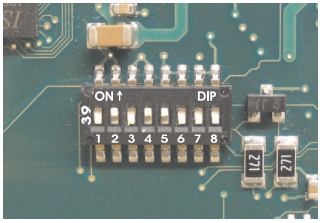


Figure 94: DIP switch on system unit

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 97: 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 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 98: 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 99: 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 100: 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 100: 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 101: 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	
Interrupts	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	
Interrupts	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 102: 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 103: 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	-	-	-	-	-	
5V sb voltage	-	-	-	-	-	
Battery voltage	-	-	-	-	-	
CPU temperature	-	-	-	-	-	

Table 104: 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 105: 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 106: 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**	
Interrupts	-	-	-	**11**	**11**	
COM D	Disabled	Disabled	Disabled	Disabled	Disabled	
Base I/O address	-	-	-	-	-	
Interrupts	-	-	-	-	-	
COM E	Disabled	Disabled	Disabled	Disabled	Disabled	
Base I/O address	-	-	-	-	-	
Interrupts	-	-	-	-	-	
LPT	Disabled	Disabled	Disabled	Disabled	Disabled	
Base I/O address	-	-	-	-	-	
CAN	Disabled	Disabled	Disabled	Disabled	Disabled	
Base I/O address	-	-	-	-	-	
Interrupts	-	-	-	-	-	
2nd LAN controller	Enabled	Enabled	Enabled	Enabled	Enabled	

Table 106: 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 107: 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 108: 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 109: 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 229).**

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

The BIOS is immediately activated when you switch on the power supply of the Panel PC 700 system. The 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 seeks 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"

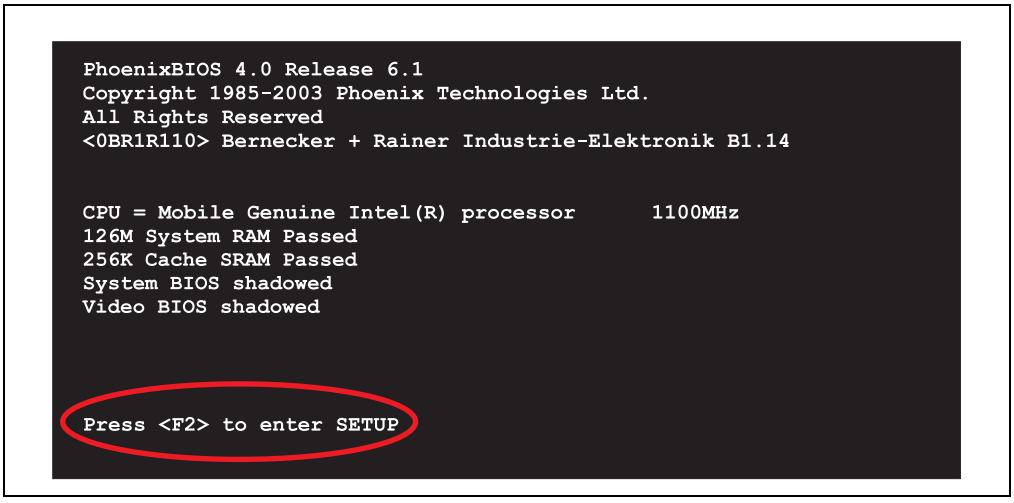


Figure 95: 855GME BIOS diagnostic screen

2.2.1 Summary screen

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

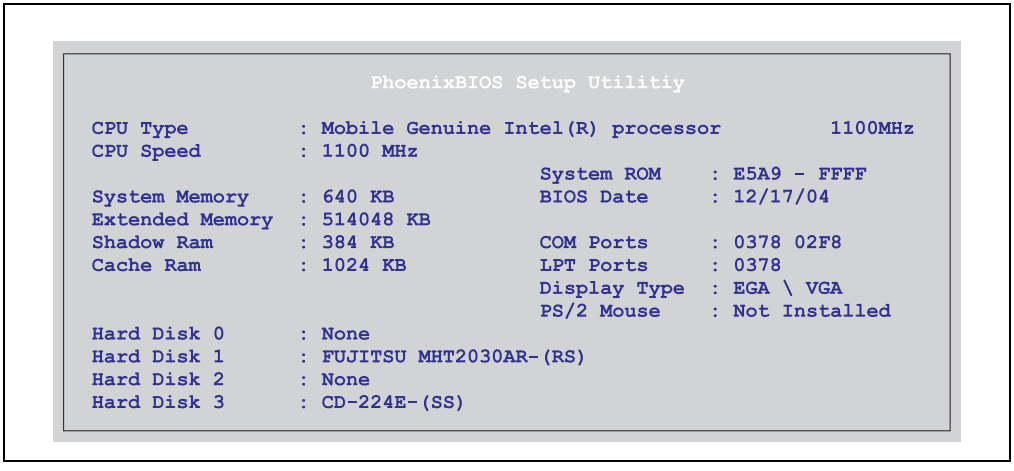


Figure 96: 855GME BIOS summary screen

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 110: 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 111: 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.	188
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.	197
Security	For setting up the system's security functions.	221
Power	Setup of various APM (Advanced Power Management) options.	223
Boot	The boot order can be set here.	227
Exit	To end the BIOS setup.	228

Table 112: Overview of BIOS menu items

2.4 Main

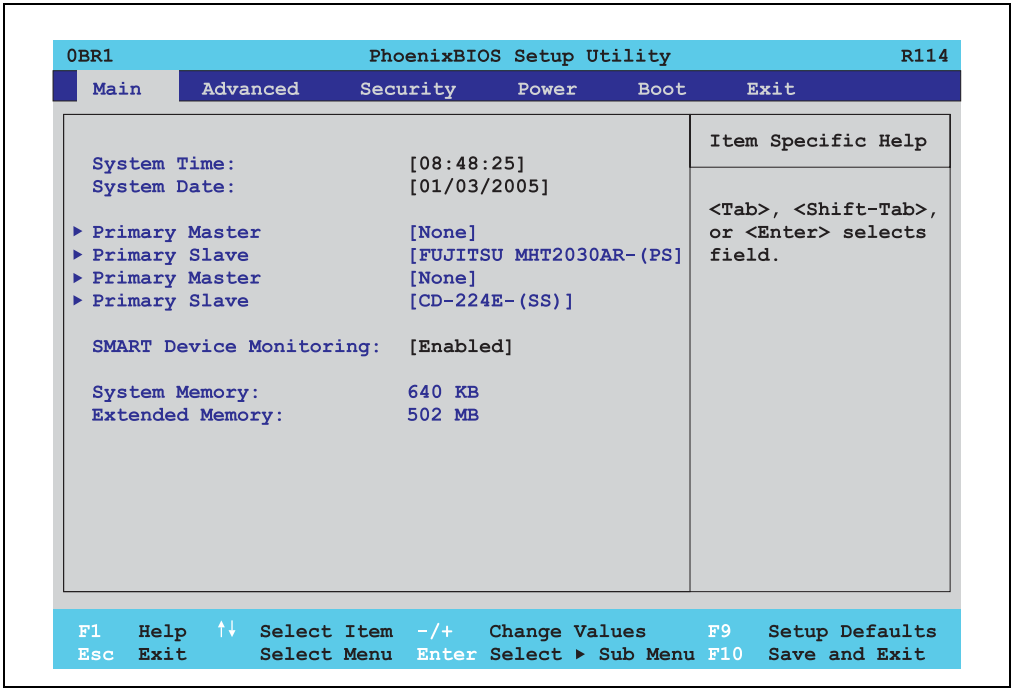


Figure 97: 855GME Main

BIOS setting	Description	Configuration possibilities	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	Personal system time setting 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	Personal system date setting 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 189.
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 191.
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 193.

Table 113: 855GME Main configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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 195.
Smart device monitoring	S.M.A.R.T. (Self Monitoring Analysis and Reporting Technology) is implemented in modern hard drives. This technology allows you to determine problems with reading or spinning 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 113: 855GME Main configuration possibilities (cont.)

2.4.1 Primary master

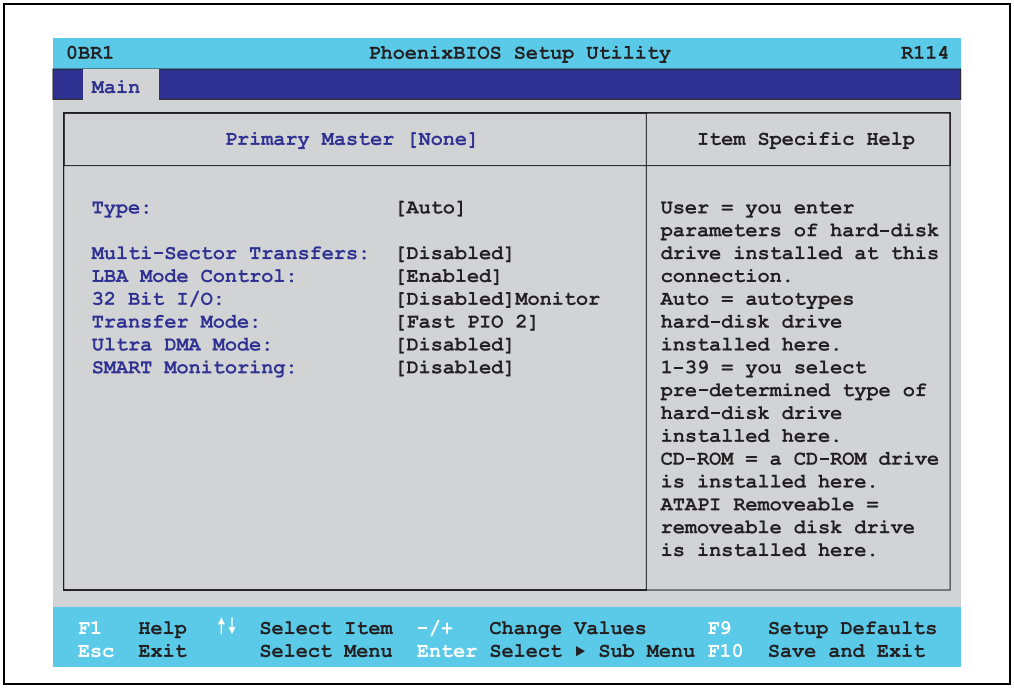


Figure 98: 855GME Primary master setup

BIOS setting	Description	Configuration possibilities	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 or floppy drive.
Multi-sector transfer	This option determines the number of sectors per block. Only possible when manually setting up the drive (user option).	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 (user option).	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 (user option).	Standard	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 (user option).	Disabled	Deactivates the function. Do not use UDMA mode.
		Mode 0 - Mode 5	Manual configuration option for UDMA mode.
SMART monitoring	Indicates whether the primary master drive supports SMART technology.	Disabled	No drive support, and function is deactivated.
		Enabled	Dive support present, and function is activated.

Table 114: 855GME Primary master configuration possibilities

2.4.2 Primary slave

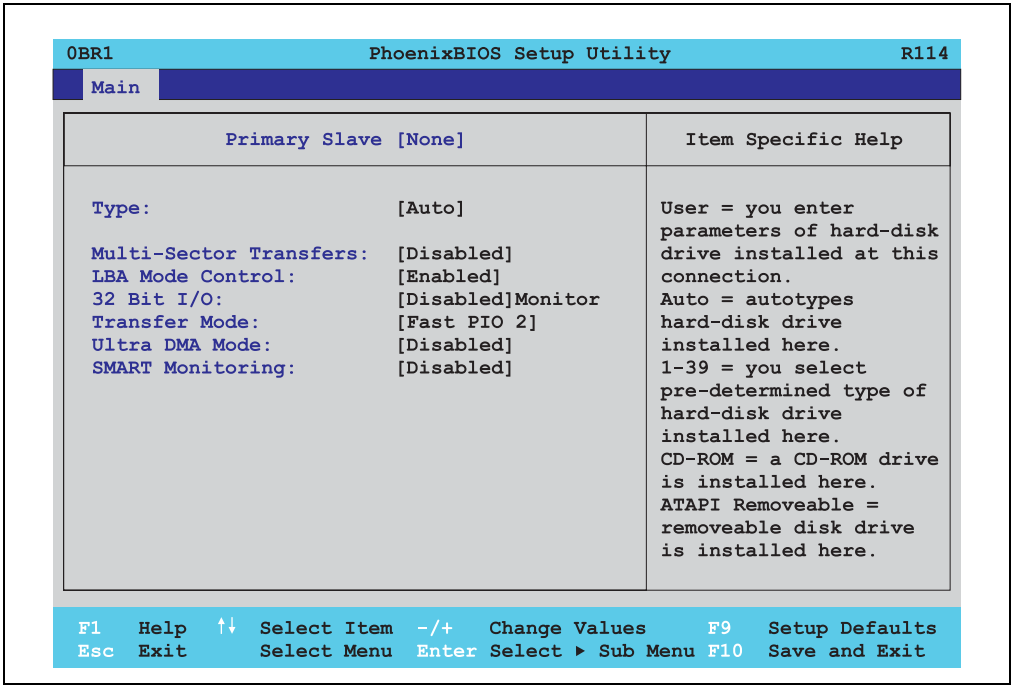


Figure 99: 855GME Primary slave setup

BIOS setting	Description	Configuration possibilities	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 or floppy drive.
Multi-sector transfer	This option determines the number of sectors per block. Only possible when manually setting up the drive (user option).	Disabled	Deactivates the function.
		2, 4, 8 or 16 sectors	Number of sectors per block.

Table 115: 855GME Primary slave configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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 (user option).	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 slave drive and the system memory is defined here. Only possible when manually setting up the drive (user option).	Standard	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 (user option).	Disabled	Deactivates the function. Do not use UDMA mode.
		Mode 0 - Mode 5	Manual configuration option for UDMA mode.
SMART monitoring	Indicates whether the primary slave drive supports SMART technology.	Disabled	No drive support, and function is deactivated.
		Enabled	Dive support present, and function is activated.

Table 115: 855GME Primary slave configuration possibilities (cont.)

2.4.3 Secondary master

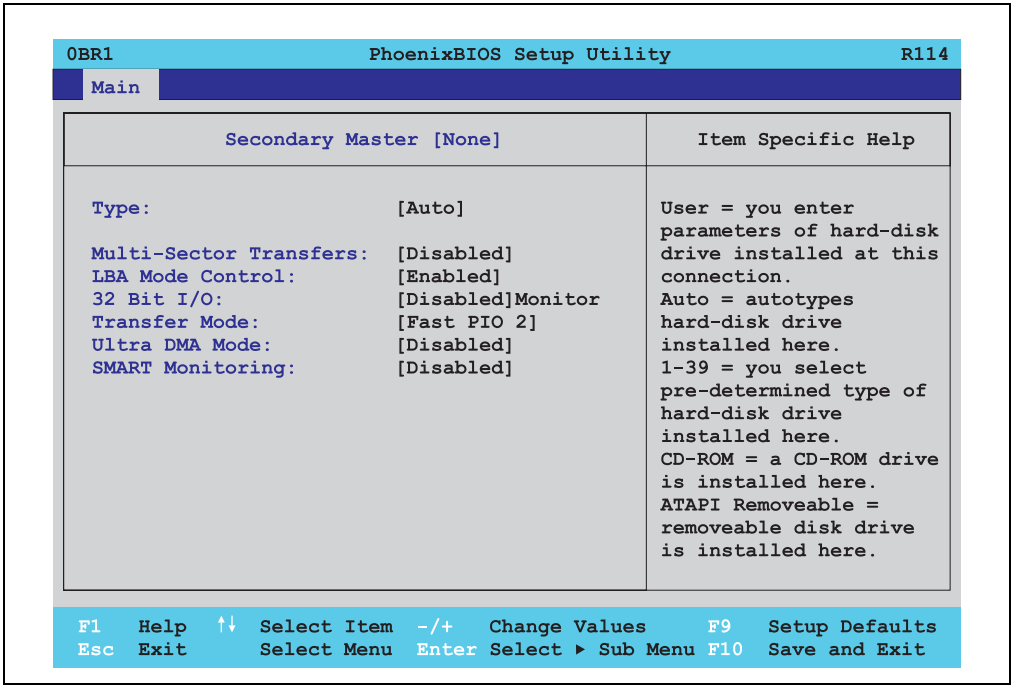


Figure 100: 855GME Secondary master setup

BIOS setting	Description	Configuration possibilities	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 or floppy drive.
Multi-sector transfer	This option determines the number of sectors per block. Only possible when manually setting up the drive (user option).	Disabled	Deactivates the function.
		2, 4, 8 or 16 sectors	Number of sectors per block.

Table 116: 855GME Secondary master configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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 (user option).	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 (user option).	Standard	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 (user option).	Disabled	Deactivates the function. Do not use UDMA mode.
		Mode 0 - Mode 5	Manual configuration option for UDMA mode.
SMART monitoring	Indicates whether the secondary master drive supports SMART technology.	Disabled	No drive support, and function is deactivated.
		Enabled	Dive support present, and function is activated.

Table 116: 855GME Secondary master configuration possibilities (cont.)

2.4.4 Secondary slave

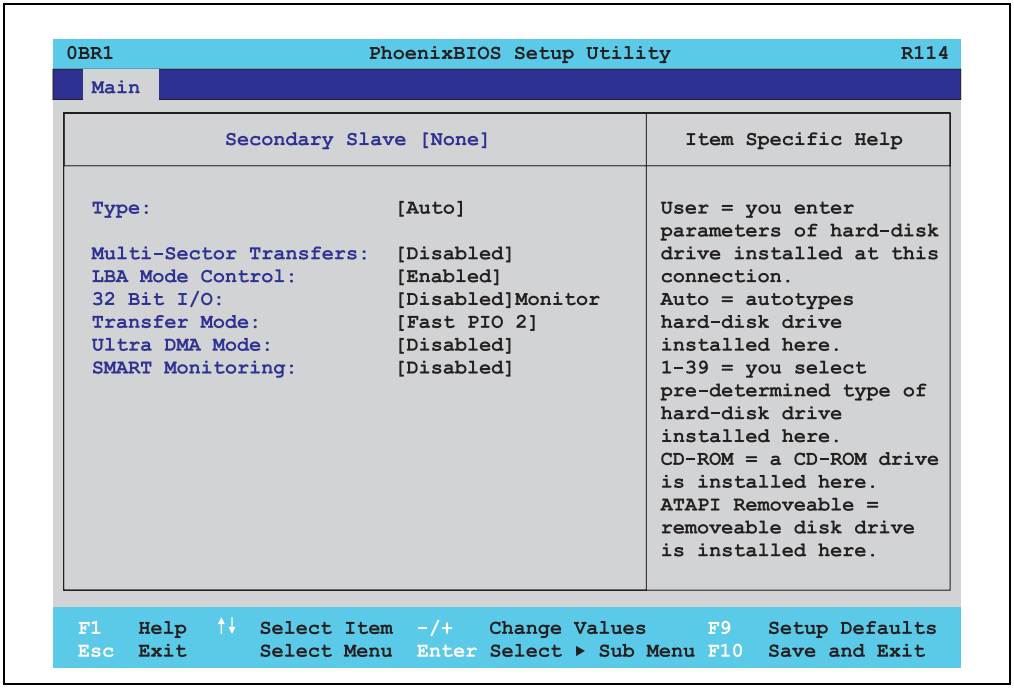


Figure 101: 855GME Secondary slave setup

BIOS setting	Description	Configuration possibilities	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 or floppy drive.
Multi-sector transfer	This option determines the number of sectors per block. Only possible when manually setting up the drive (user option).	Disabled	Deactivates the function.
		2, 4, 8 or 16 sectors	Number of sectors per block.

Table 117: 855GME Secondary slave configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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 (user option).	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 slave drive and the system memory is defined here. Only possible when manually setting up the drive (user option).	Standard	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 (user option).	Disabled	Deactivates the function. Do not use UDMA mode.
		Mode 0 - Mode 5	Manual configuration option for UDMA mode.
SMART monitoring	Indicates whether the secondary slave drive supports SMART technology.	Disabled	No drive support, and function is deactivated.
		Enabled	Dive support present, and function is activated.

Table 117: 855GME Secondary slave configuration possibilities (cont.)

2.5 Advanced

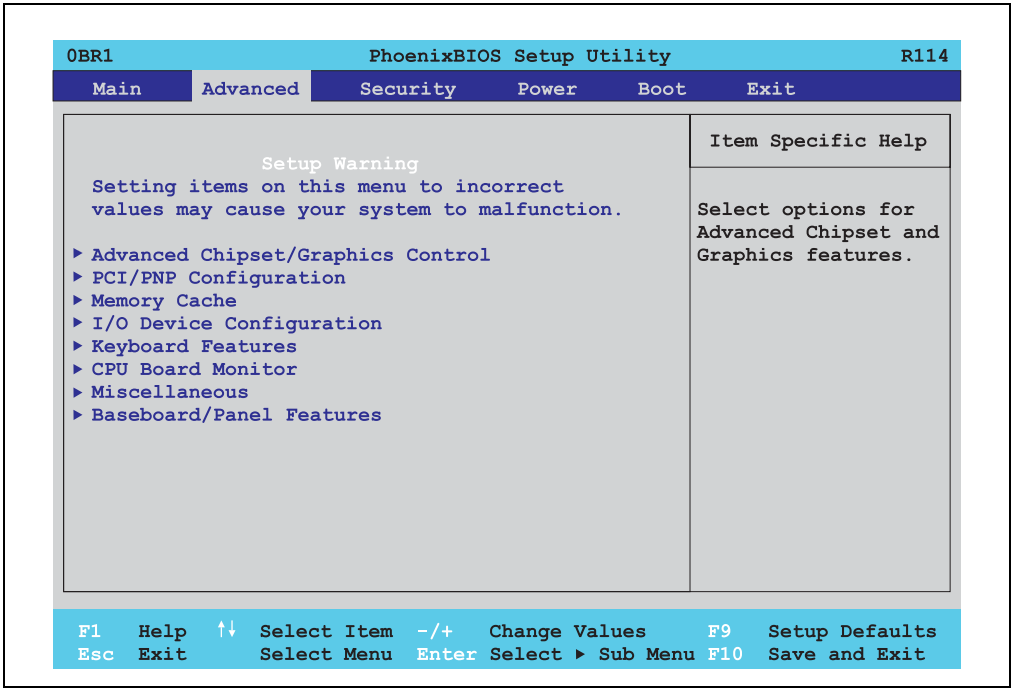


Figure 102: 855GME Advanced setup menu overview

BIOS setup menu	Description	Configuration possibilities	Effect
Advanced chipset / graphics control	Setup of advanced chipset and graphics functions.	Enter	Opens submenu see "Advanced chipset / graphics control", on page 198.
PCI / PNP configuration	Configures PCI devices.	Enter	Opens submenu see "PCI / PNP configuration", on page 200.
Memory cache	Configuration of the memory cache resources.	Enter	Opens submenu see "Memory cache", on page 207.
I/O device configuration	Configuration of the I/O devices.	Enter	Opens submenu see "I/O device configuration", on page 209.
Keyboard features	Configuration of the keyboard options.	Enter	Opens submenu see "Keyboard features", on page 212.
CPU board monitor	Displays the current voltages and temperature of the processor in use.	Enter	Opens submenu see "CPU board monitor", on page 213.
Miscellaneous	Configuration of various BIOS settings (summary screen, halt on errors, etc...).	Enter	Opens submenu see "Miscellaneous", on page 214.
Baseboard / panel features	Display of device specific information and setup of device specific values.	Enter	Opens submenu see "Baseboard / panel features", on page 215.

Table 118: 855GME Advanced menu configuration possibilities

2.5.1 Advanced chipset / graphics control

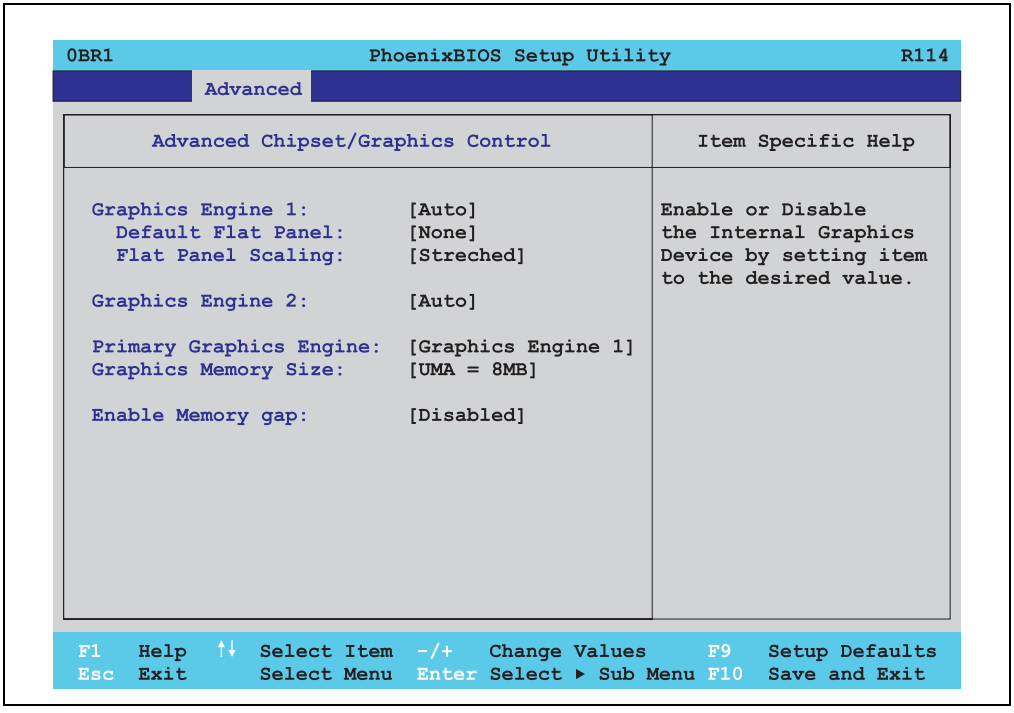


Figure 103: 855GME Advanced chipset control

BIOS setting	Description	Configuration possibilities	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. **Warning!** **The onboard video controller must be activated 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

Table 119: 855GME Advanced chipset control configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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 119: 855GME Advanced chipset control configuration possibilities

2.5.2 PCI / PNP configuration

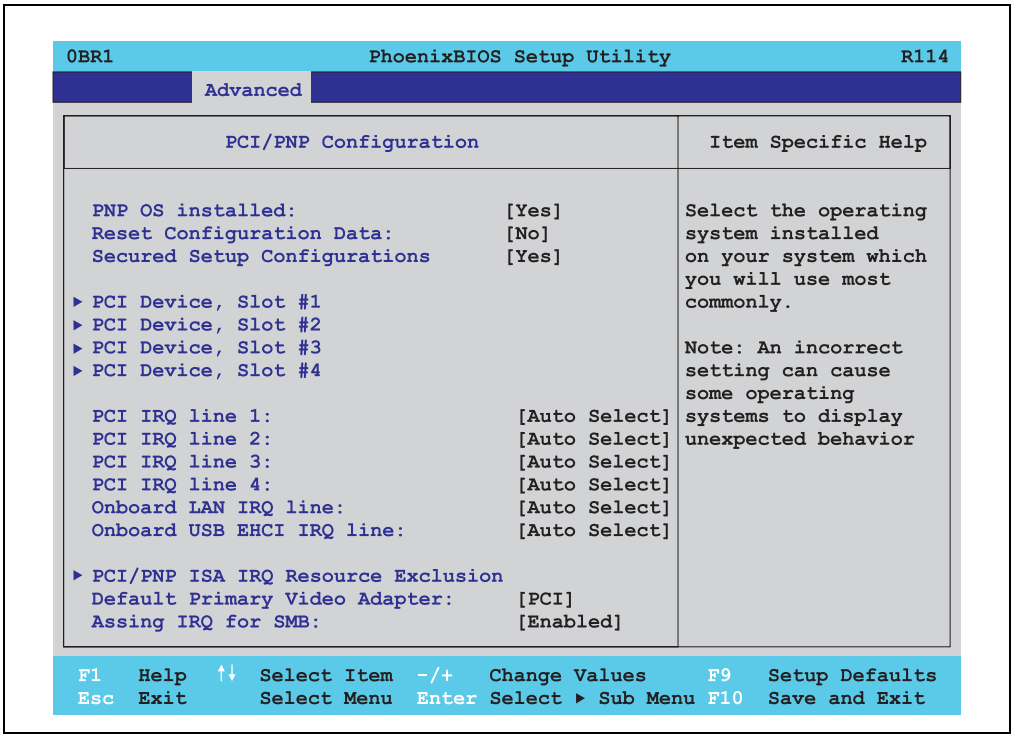


Figure 104: 855GME PCI / PNP configuration

BIOS setting	Description	Configuration possibilities	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 120: 855GME PCI / PNP configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
PCI device, slot #1	Advanced configuration of the PCI slot number 1.	Enter	Opens submenu See "PCI device, slot #1", on page 202
PCI device, slot #2	Advanced configuration of the PCI slot number 2.	Enter	Opens submenu See "PCI device, slot #2", on page 203
PCI device, slot #3	Advanced configuration of the PCI slot number 3.	Enter	Opens submenu See "PCI device, slot #3", on page 204
PCI device, slot #4	Advanced configuration of the PCI slot number 4.	Enter	Opens submenu See "PCI device, slot #4", on page 205
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 206

Table 120: 855GME PCI / PNP configuration possibilities (cont.)

BIOS setting	Description	Configuration possibilities	Effect
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.
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 120: 855GME PCI / PNP configuration possibilities (cont.)

PCI device, slot #1

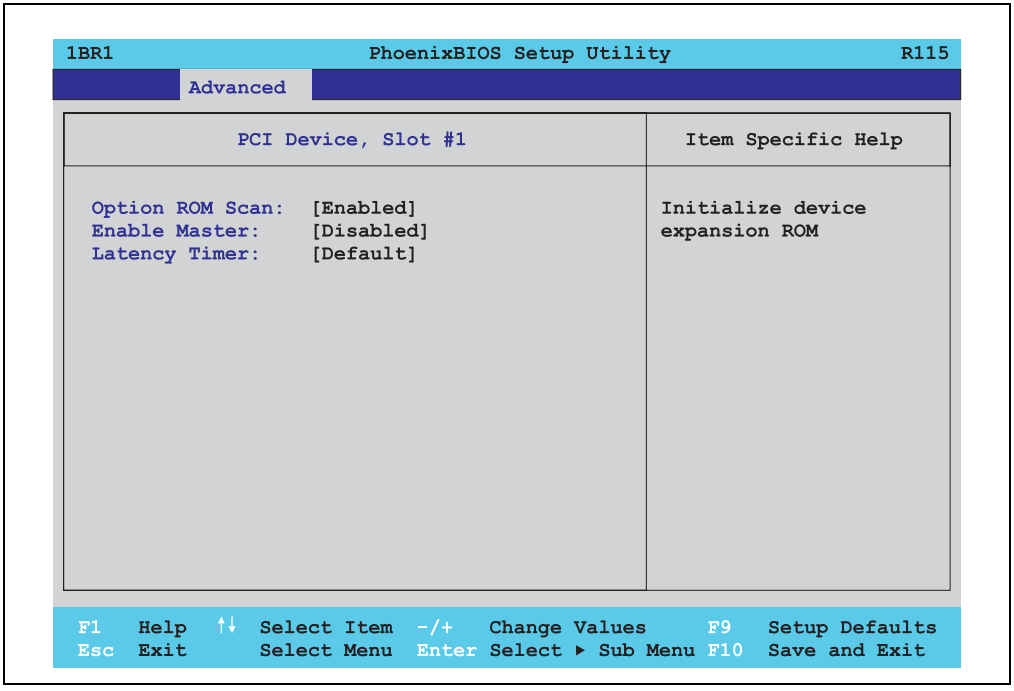


Figure 105: 855GME PCI device, slot #1

BIOS setting	Description	Configuration possibilities	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.

Table 121: 855GME PCI device, slot #1 configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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 121: 855GME PCI device, slot #1 configuration possibilities

PCI device, slot #2

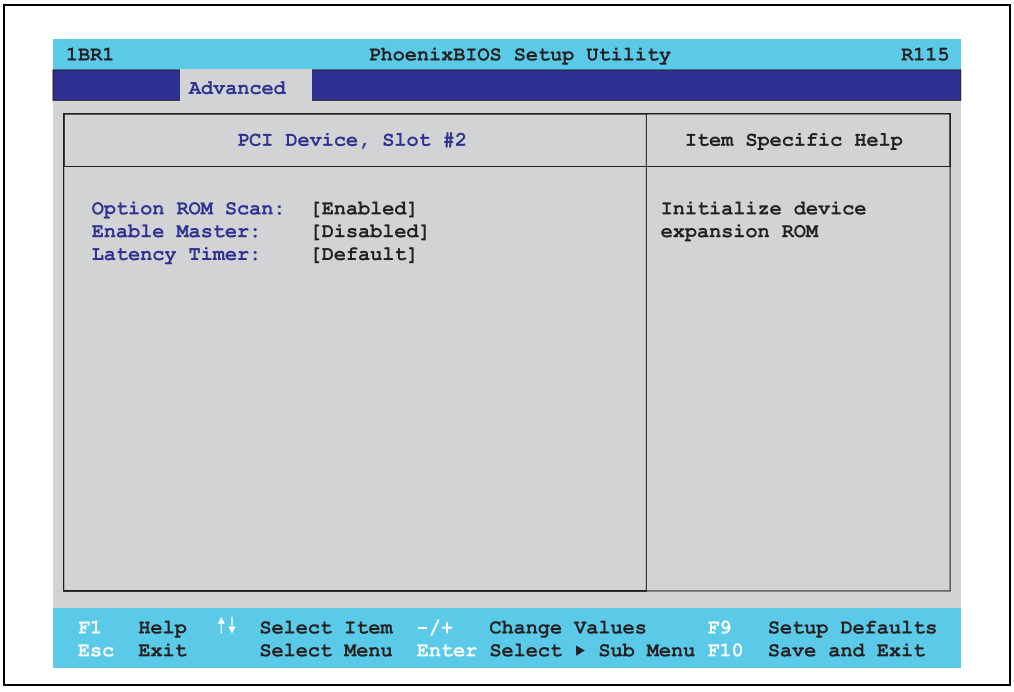


Figure 106: 855GME PCI device, slot #2

BIOS setting	Description	Configuration possibilities	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.

Table 122: 855GME PCI device, slot #2 configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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 122: 855GME PCI device, slot #2 configuration possibilities

PCI device, slot #3

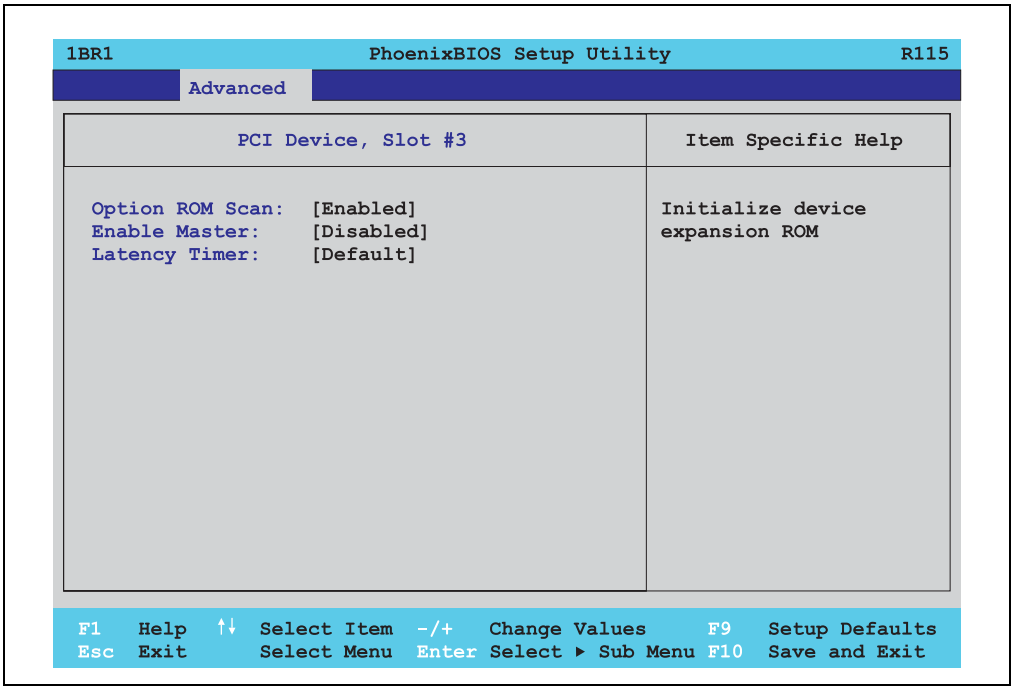


Figure 107: 855GME PCI device, slot #3

BIOS setting	Description	Configuration possibilities	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.

Table 123: 855GME PCI device, slot #3 configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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 #3 configuration possibilities (cont.)

PCI device, slot #4

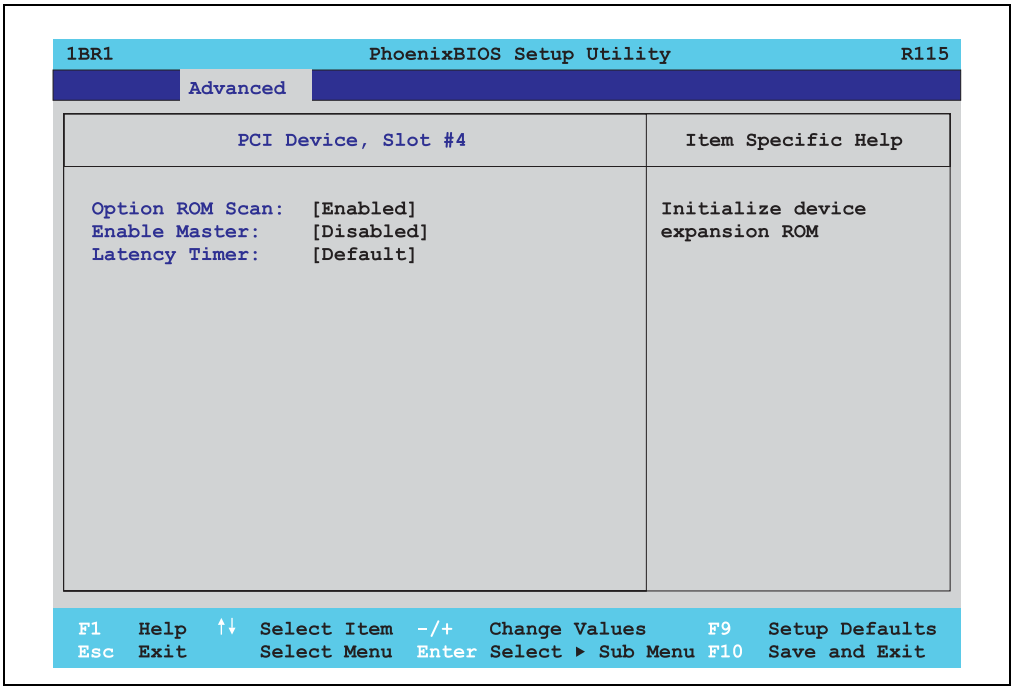


Figure 108: 855GME PCI device, slot #4

BIOS setting	Description	Configuration possibilities	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.

Table 124: 855GME PCI device, slot #4 configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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 #4 configuration possibilities (cont.)

PCI / PNP ISA IRQ resource exclusion

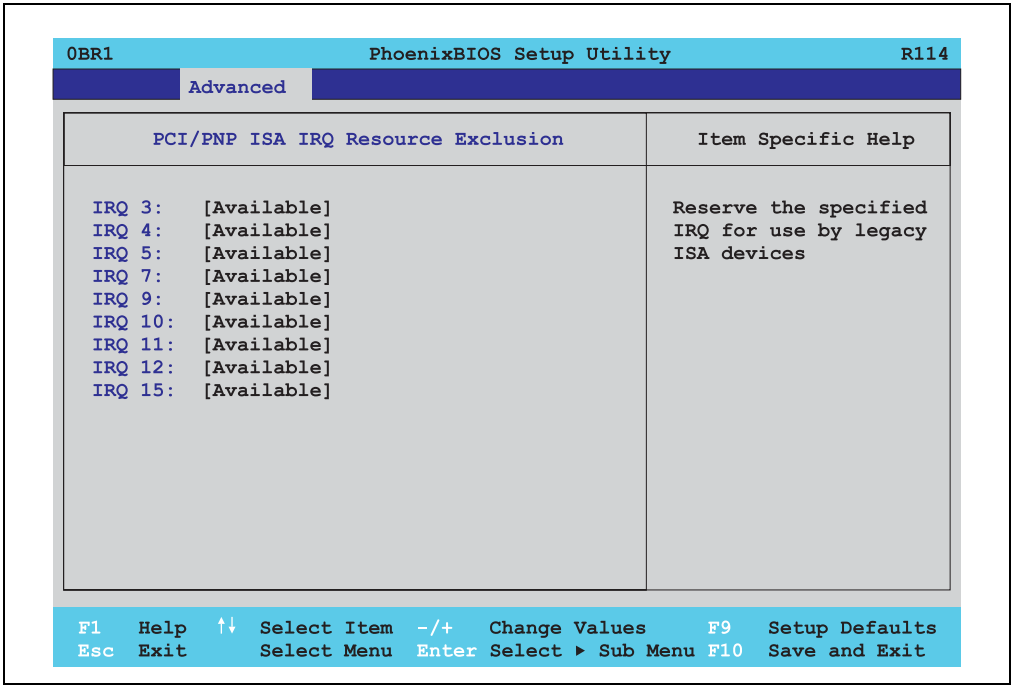


Figure 109: 855GME PCI / PNP ISA IRQ resource exclusion

BIOS setting	Description	Configuration possibilities	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.

Table 125: 855GME PCI / PNP ISA IRQ resource exclusion configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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.
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 125: 855GME PCI / PNP ISA IRQ resource exclusion configuration possibilities (cont.)

2.5.3 Memory cache

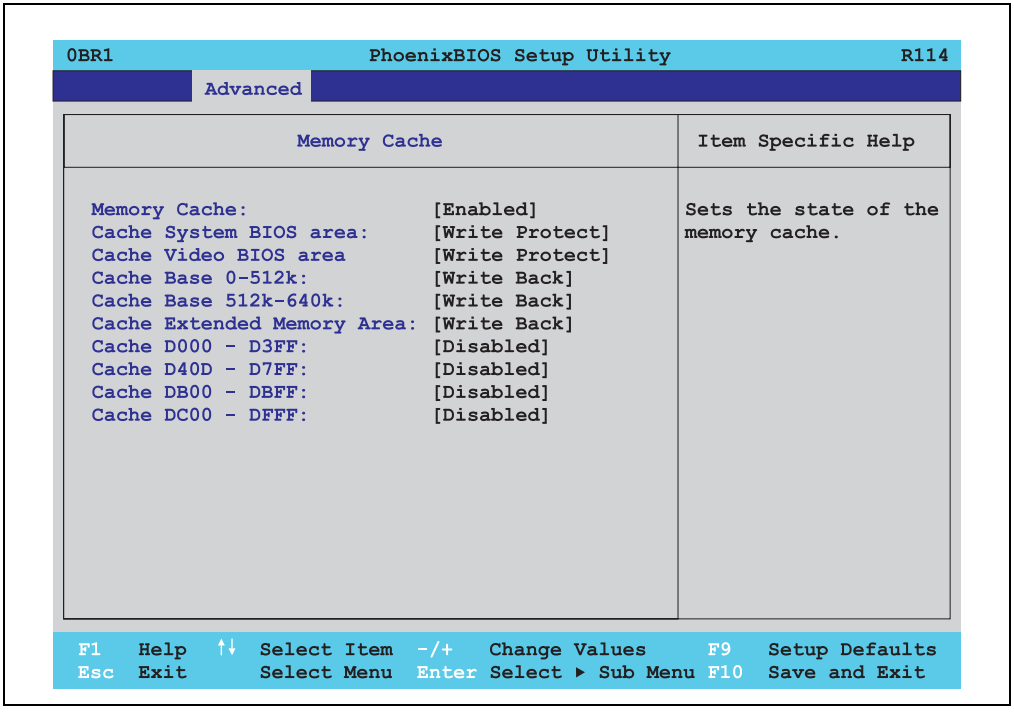


Figure 110: 855GME Memory cache

BIOS setting	Description	Configuration possibilities	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.
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.

Table 126: 855GME Memory cache configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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 126: 855GME Memory cache configuration possibilities (cont.)

2.5.4 I/O device configuration

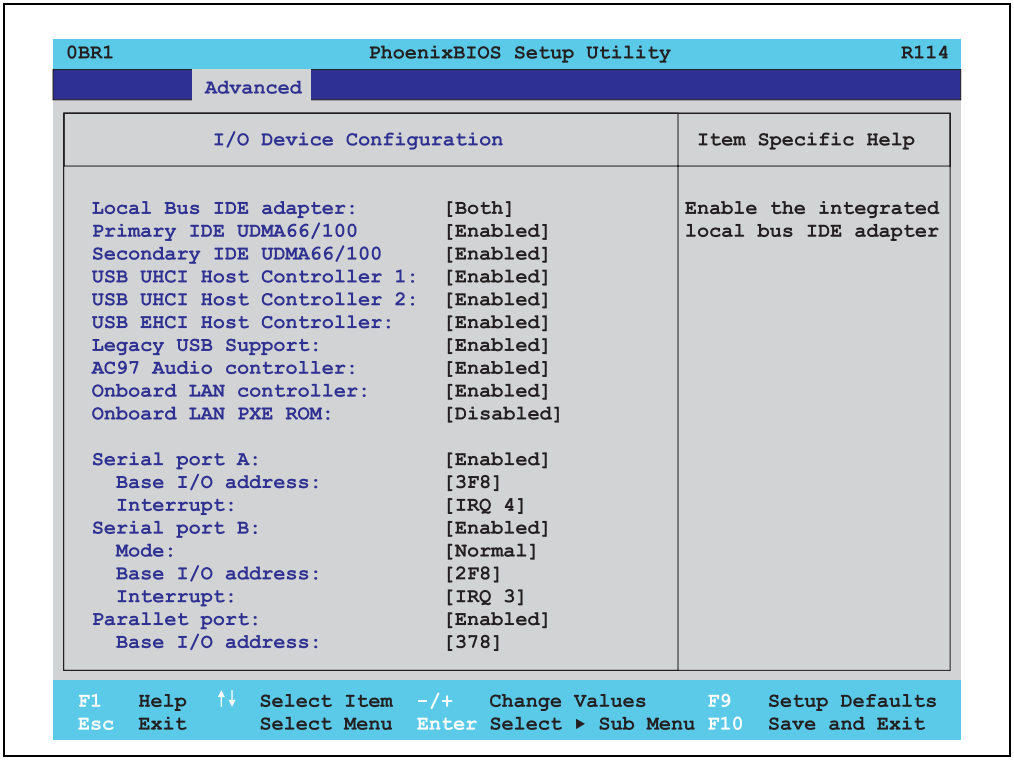


Figure 111: 855GME I/O device configuration

BIOS setting	Description	Configuration possibilities	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.
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.

Table 127: 855GME I/O device configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
Interrupts	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.
Interrupts	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 127: 855GME I/O device configuration possibilities (cont.)

2.5.5 Keyboard features

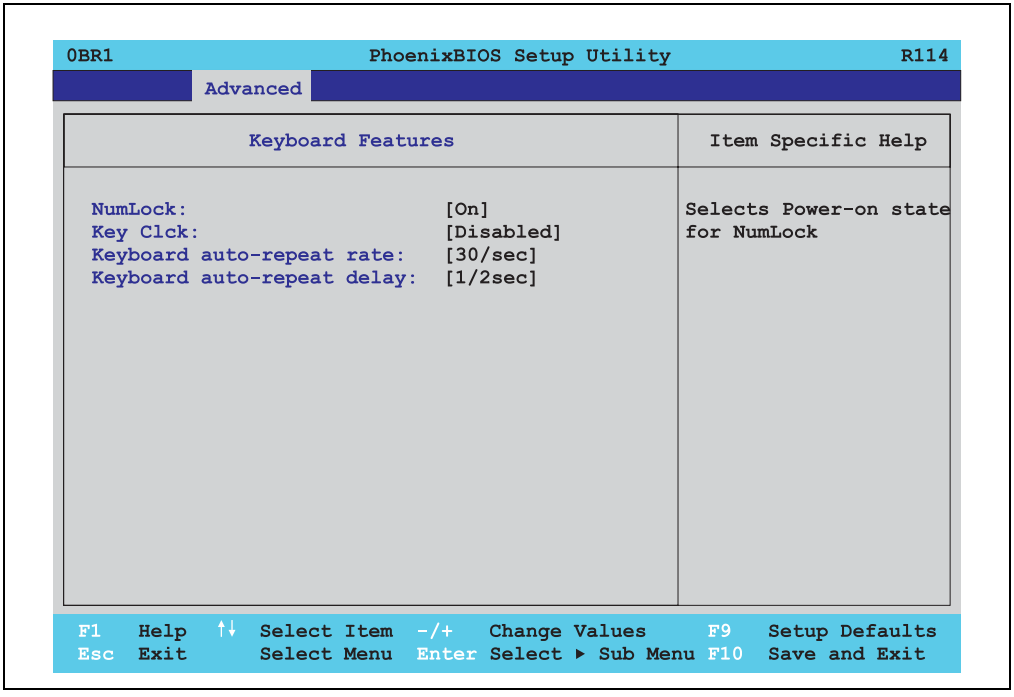


Figure 112: 855GME Keyboard features

BIOS setting	Description	Configuration possibilities	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.
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 128: 855GME Keyboard features configuration possibilities

2.5.6 CPU board monitor

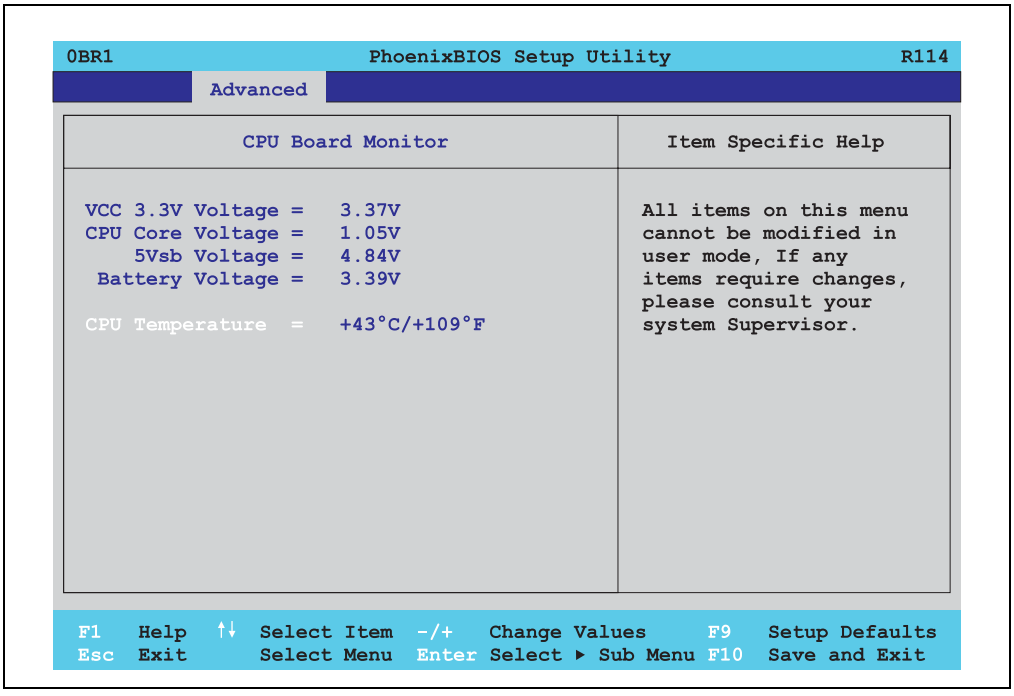


Figure 113: 855GME CPU board monitor

BIOS setting	Description	Configuration possibilities	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	
CPU temperature	Displays the processor's temperature (in degrees Celsius and Fahrenheit).	None	

Table 129: 855GME CPU board monitor configuration possibilities

2.5.7 Miscellaneous

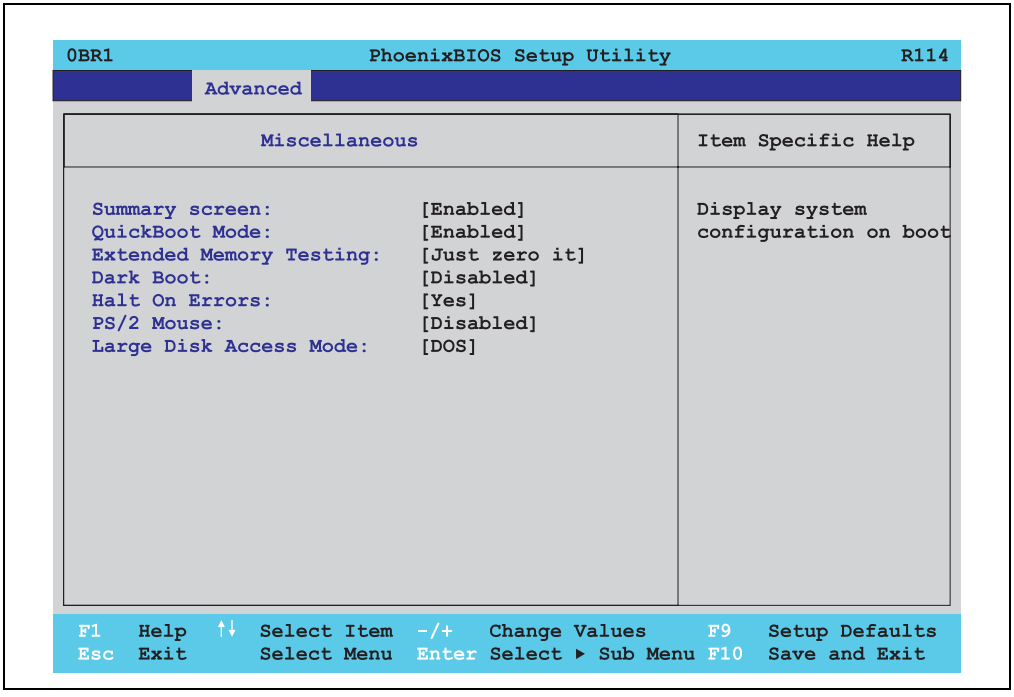


Figure 114: 855GME Miscellaneous

BIOS setting	Description	Configuration possibilities	Effect
Summary screen	Set whether or not the system summary screen should open when the system is started (see figure 96 "855GME BIOS summary screen" on page 186).	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."
Dark boot	Sets whether the diagnostic screen (see figure 95 "855GME BIOS diagnostic screen" on page 186) should be displayed when the system is started.	Enabled	Activates the function. The diagnostic screen is displayed.
		Disabled	Deactivates the function. The diagnostic screen is not displayed.

Table 130: 855GME Miscellaneous configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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. Configuration possibilities: DOS	Other	For non-compatible access (e.g. Novell, SCO Unix.)
		DOS	For MS DOS compatible access.

Table 130: 855GME Miscellaneous configuration possibilities

2.5.8 Baseboard / panel features

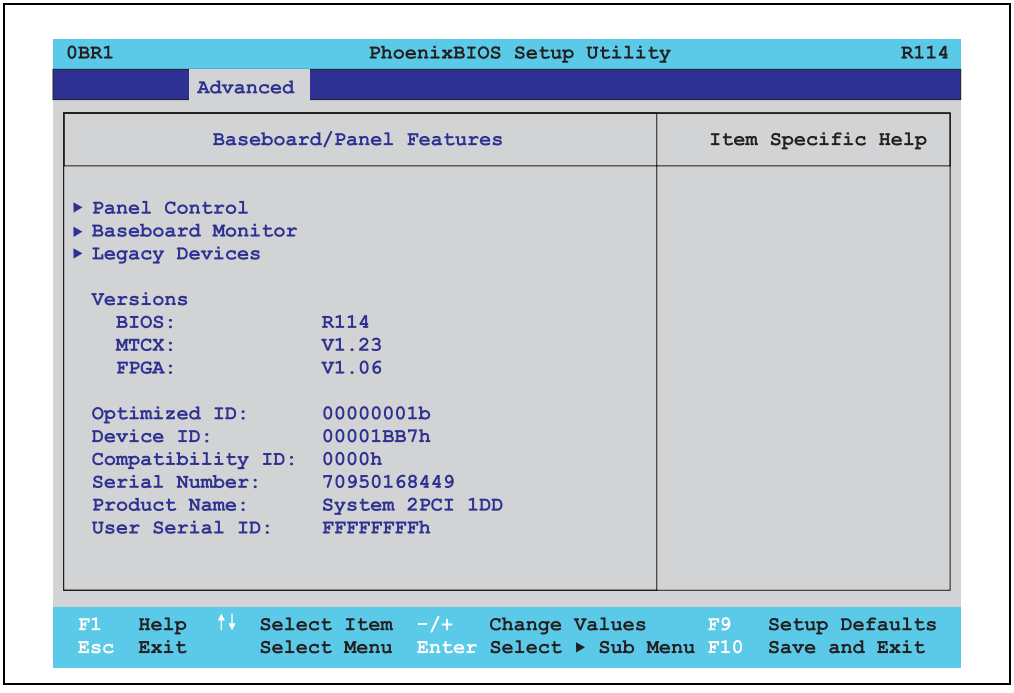


Figure 115: 855GME Baseboard / panel features

BIOS setting	Description	Configuration possibilities	Effect
Panel control	For special setup of connected panels.	Enter	Opens submenu see "Panel control", on page 217.

Table 131: 855GME Baseboard / panel features configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
Baseboard monitor	Display of various temperatures and fan rpms.	Enter	Opens submenu see "Baseboard monitor", on page 218.
Legacy devices		Enter	Opens submenu see "Legacy devices", on page 219.
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 131: 855GME Baseboard / panel features configuration possibilities (cont.)

Panel control

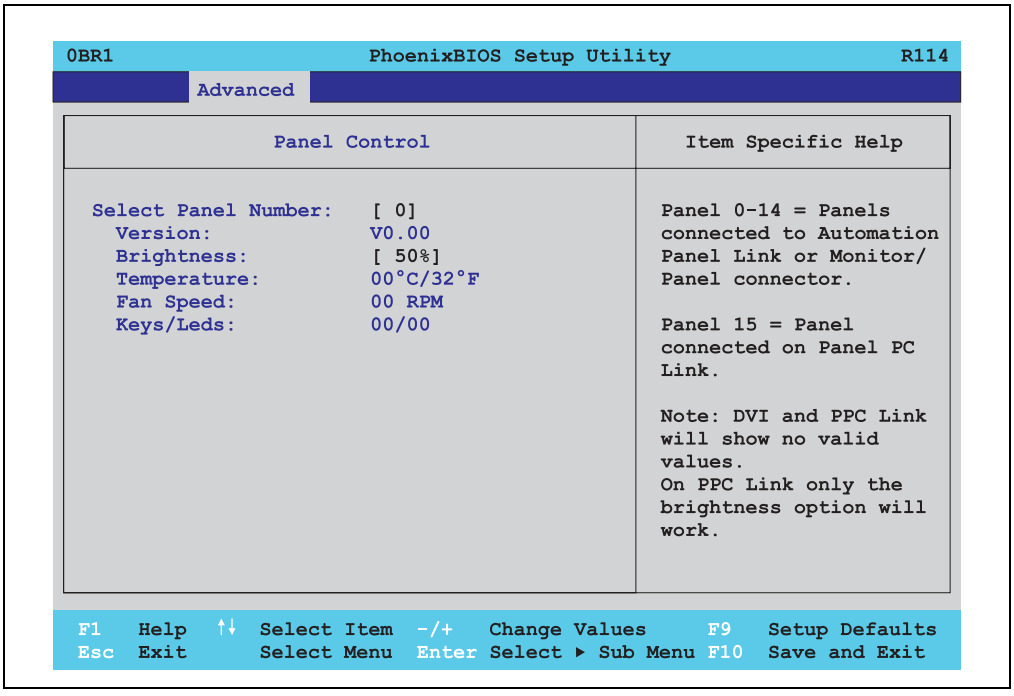


Figure 116: 855GME Panel control

BIOS setting	Description	Configuration possibilities	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 132: 855GME Panel control configuration possibilities

Baseboard monitor

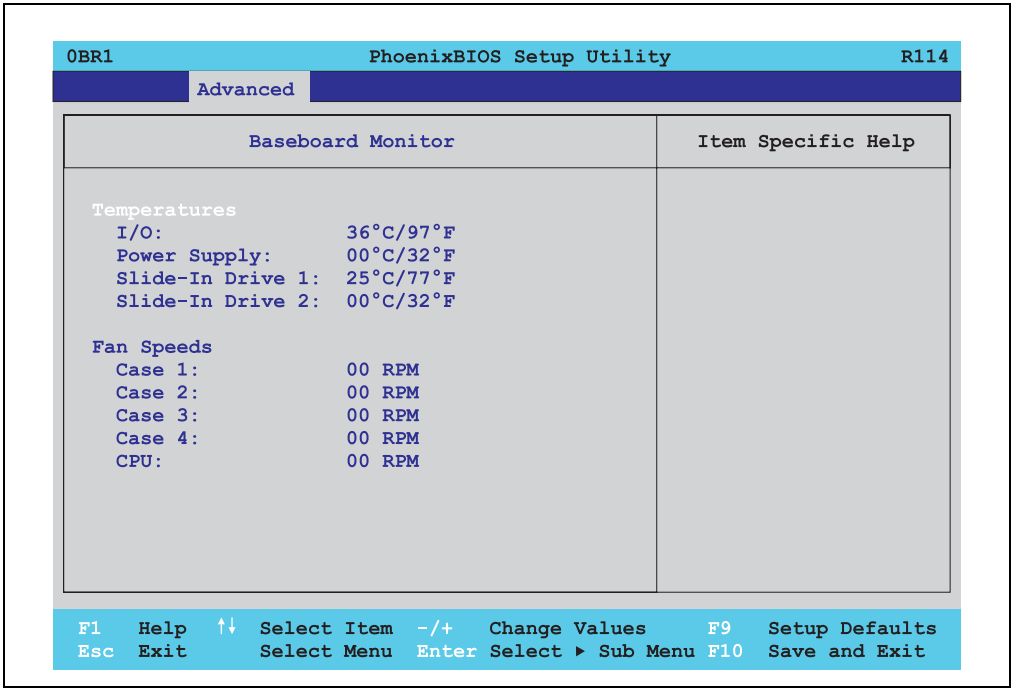


Figure 117: 855GME Baseboard monitor

BIOS setting	Description	Configuration possibilities	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 133: 855GME Baseboard monitor configuration possibilities

Legacy devices

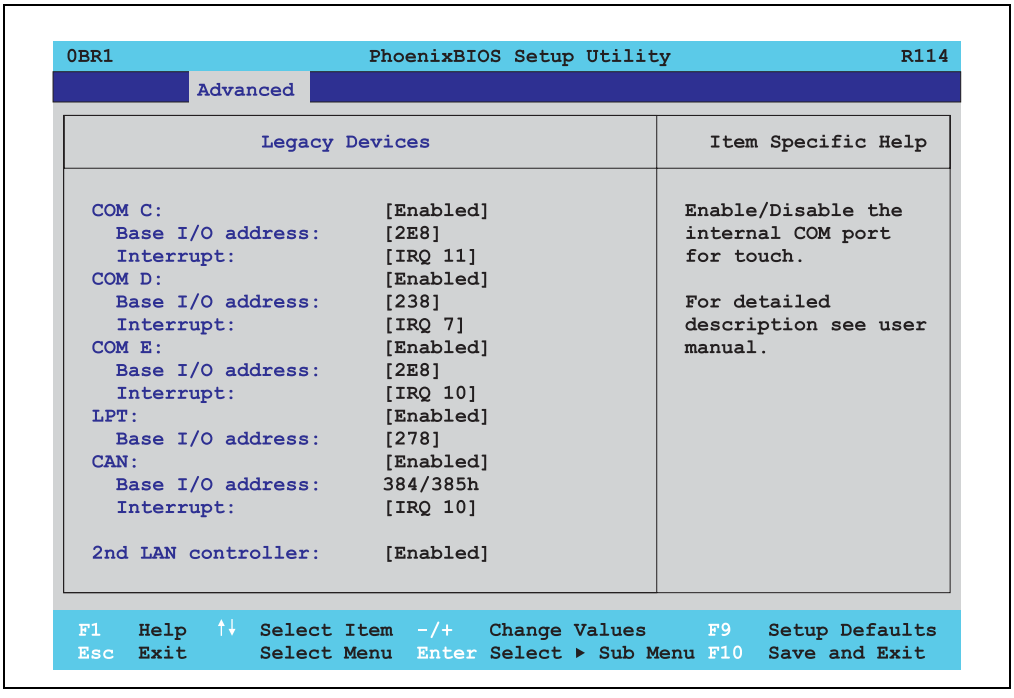


Figure 118: 855GME Legacy devices

BIOS setting	Description	Configuration possibilities	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.
Interrupts	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.

Table 134: 855GME Legacy devices configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
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.
Interrupts	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.
Interrupts	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	-
Interrupts	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 134: 855GME Legacy devices configuration possibilities (cont.)

2.6 Security

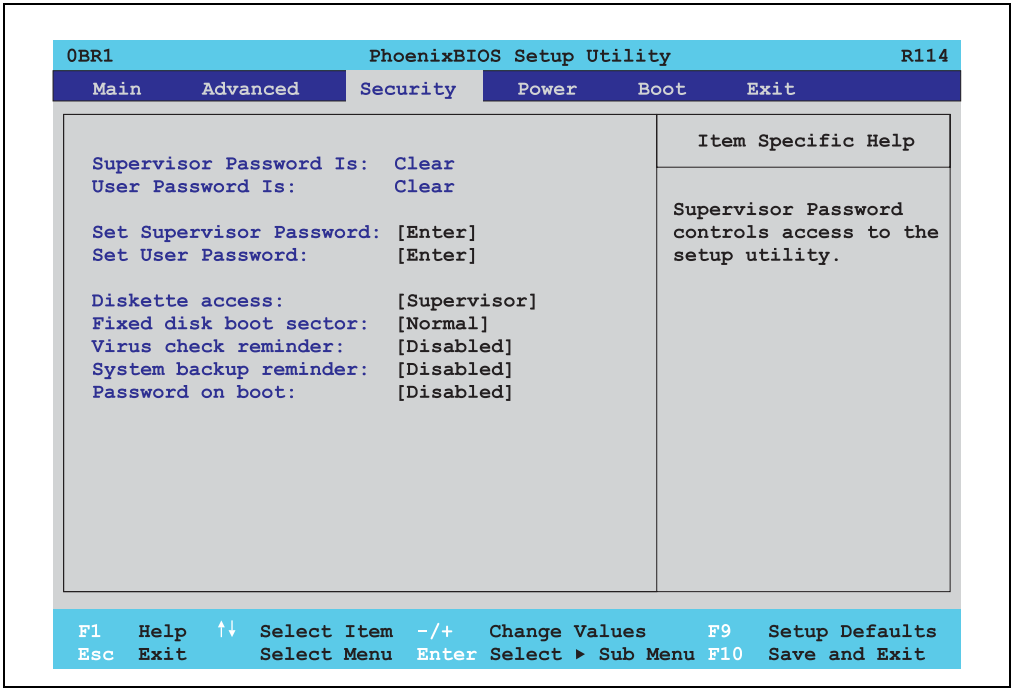


Figure 119: 855GME Security menu

BIOS setting	Description	Configuration possibilities	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 the BIOS setup menu. To change password, enter 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 the BIOS setup menu. To change password, enter old password once and then the new password twice.

Table 135: 855GME Security configuration possibilities

BIOS setting	Description	Configuration possibilities	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 to scan for viruses when the system is started.	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 to create a system backup when the system is started.	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 135: 855GME Security configuration possibilities (cont.)

2.7 Power

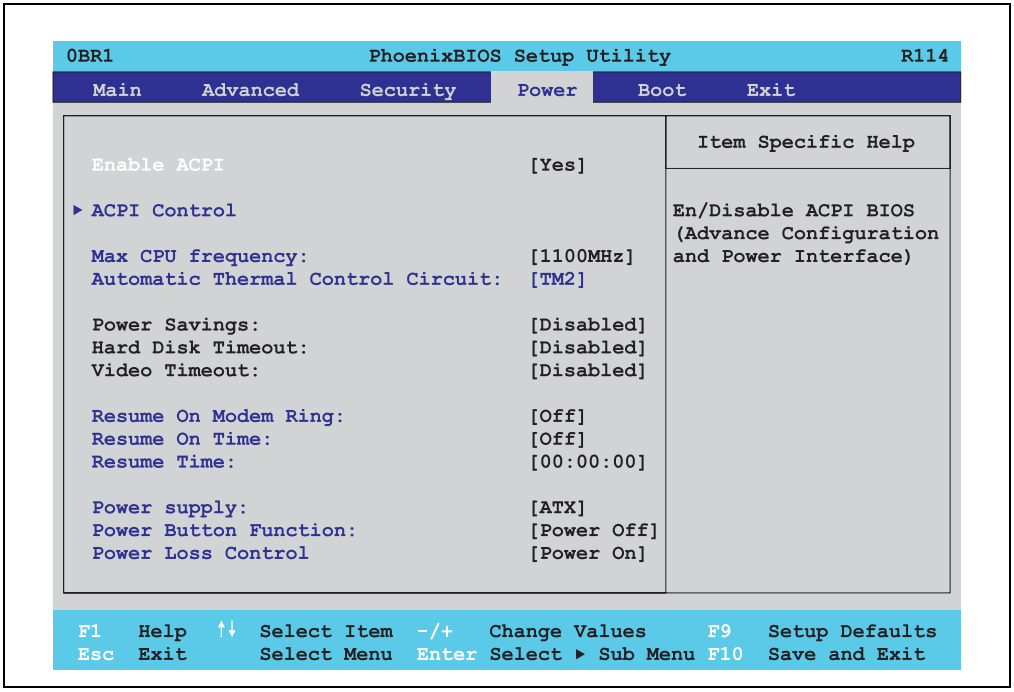


Figure 120: 855GME Power menu

BIOS setting	Description	Configuration possibilities	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 225
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.

Table 136: 855GME Power configuration possibilities

BIOS setting	Description	Configuration possibilities	Effect
Power savings	This function determines if and how the power save function is used.	Disabled	Deactivates the power save function.
		Customized	Power management is custom configured by adjusting the individual settings.
		Maximum power savings	Maximum power savings function.
		Maximum performance	Energy savings function to maximize performance.
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 136: 855GME Power configuration possibilities (cont.)

2.7.1 ACPI control

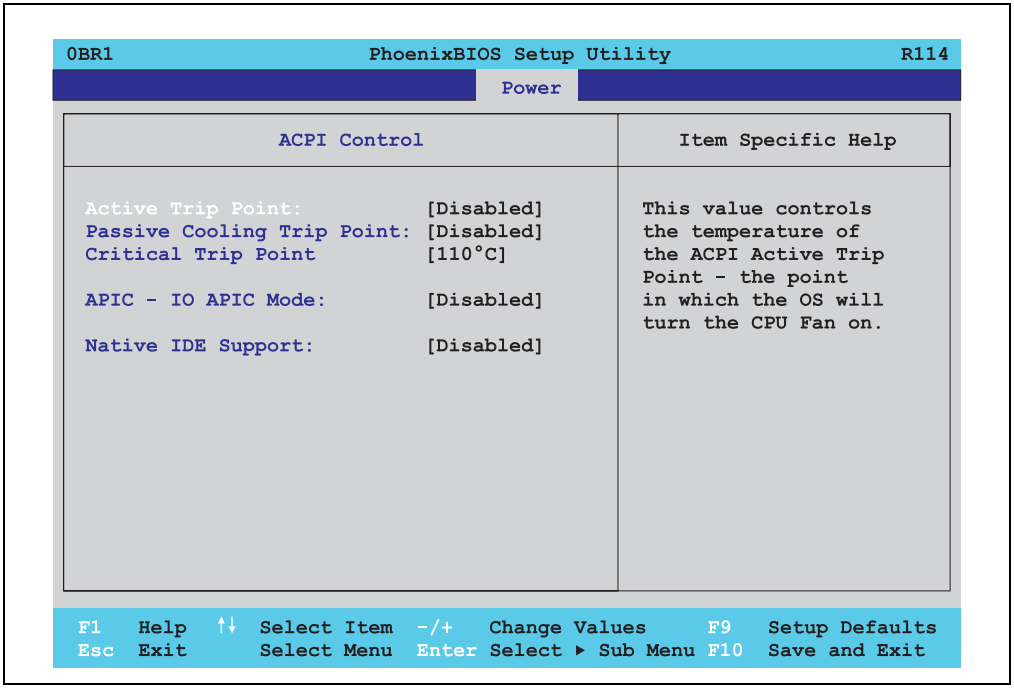


Figure 121: 855GME ACPI control

BIOS setting	Description	Configuration possibilities	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 137: 855GME ACPI control configuration possibilities

BIOS setting	Description	Configuration possibilities	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 137: 855GME ACPI control configuration possibilities

2.8 Boot

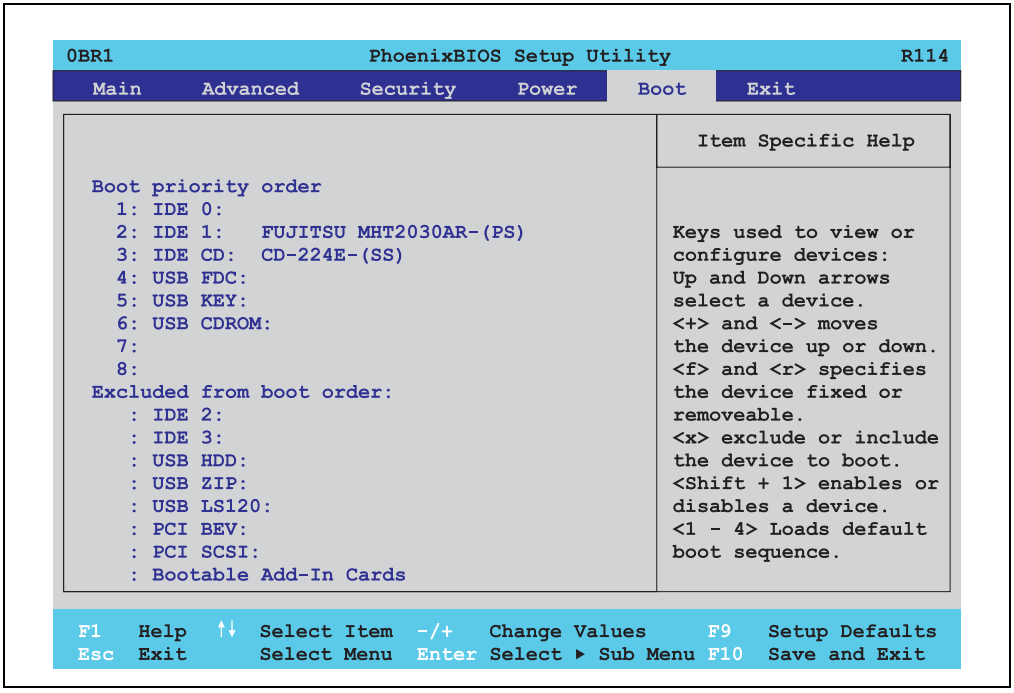


Figure 122: 855GME Boot menu

BIOS setting	Description	Configuration possibilities	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 138: 855GME Boot configuration possibilities

2.9 Exit

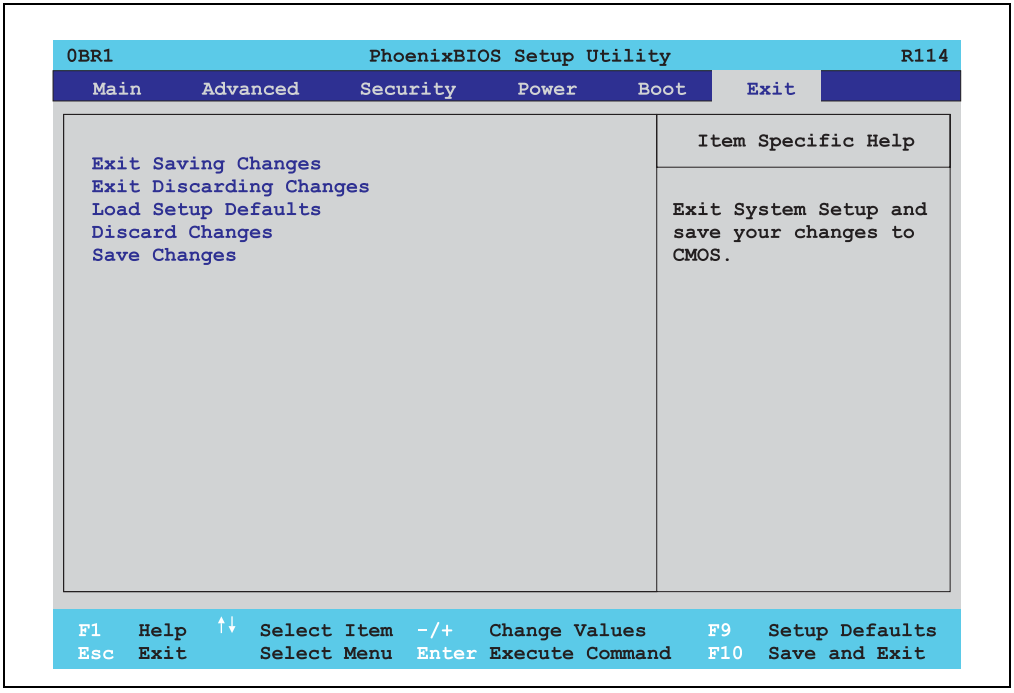


Figure 123: 855GME Exit menu

BIOS setting	Description	Configuration possibilities	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	
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 139: 855GME Exit configuration possibilities

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.

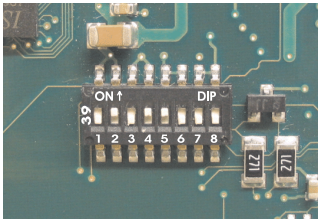


Figure 124: DIP switch on system unit

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 140: 855GME Profie 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 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 141: 855GME Main configuration possibilities

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 142: 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 143: 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 143: 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 144: 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	
Interrupts	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	
Interrupts	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 145: 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 146: 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 147: 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 148: 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 149: 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**	
Interrupts	-	-	-	**11**	**11**	
COM D	Disabled	Disabled	Disabled	Disabled	Disabled	
Base I/O address	-	-	-	-	-	
Interrupts	-	-	-	-	-	
COM E	Disabled	Disabled	Disabled	Disabled	Disabled	
Base I/O address	-	-	-	-	-	
Interrupts	-	-	-	-	-	
LPT	Disabled	Disabled	Disabled	Disabled	Disabled	
Base I/O address	-	-	-	-	-	
CAN	Disabled	Disabled	Disabled	Disabled	Disabled	
Base I/O address	-	-	-	-	-	
Interrupts	-	-	-	-	-	
2nd LAN controller	Enabled	Enabled	Enabled	Enabled	Enabled	

Table 149: 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 150: 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 150: 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 151: 855GME Security 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 152: 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 153: CPU board software versions

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

Table 154: 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 and 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".

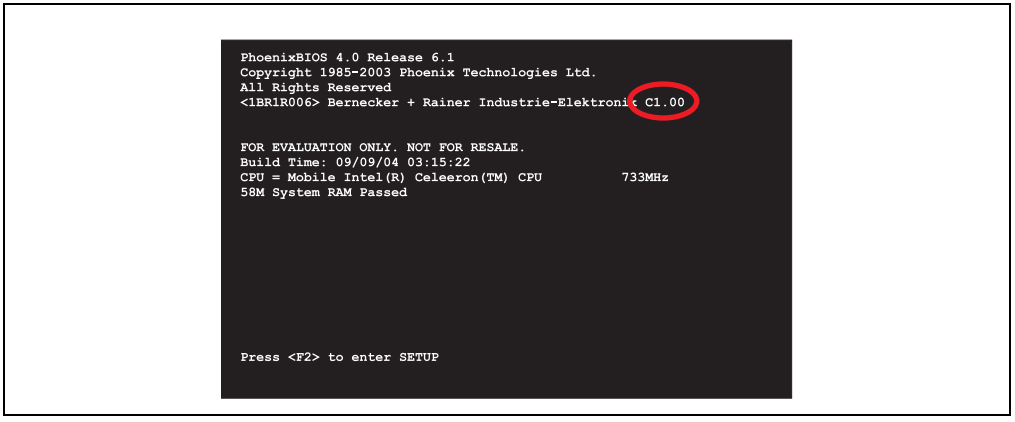


Figure 125: Differentiating between 815E and 855GME CPU boards

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

Table 155: 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):

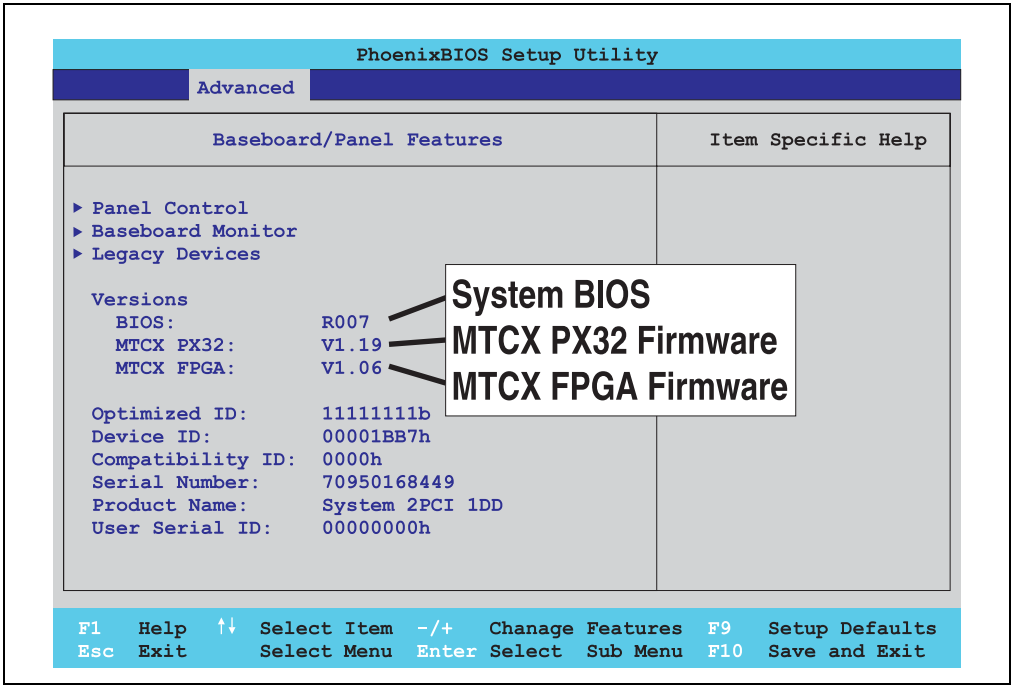


Figure 126: Software versions

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.

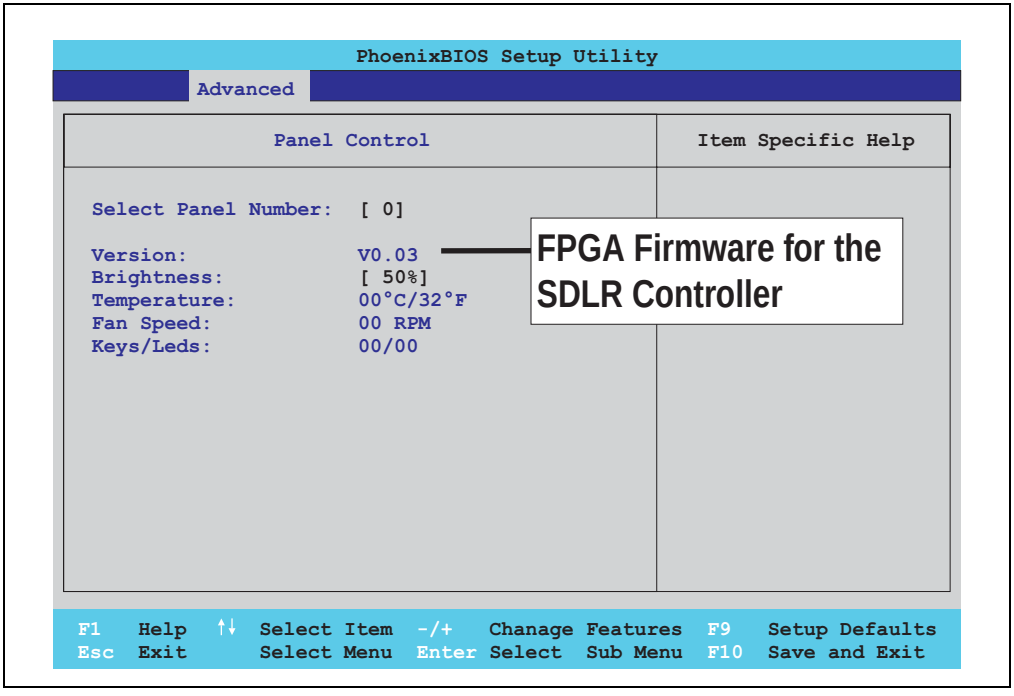


Figure 127: Firmware version of Automation Panel Link SDL transceiver/receiver

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 250).
- 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.

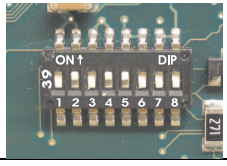


Figure 128: DIP switch on system unit (example)

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 156: 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 units 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 units 5PC720.1043-01, 5PC720.1505-01 and 5PC720.1505-02.	Off	Off	On	Off	Off	Off	-	-

Table 156: 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 250).
- 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.

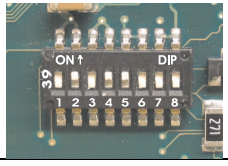


Figure 129: DIP switch on system unit (example)

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 157: 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 157: 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 250).
- 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 lower 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 reinstalled (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..."**.

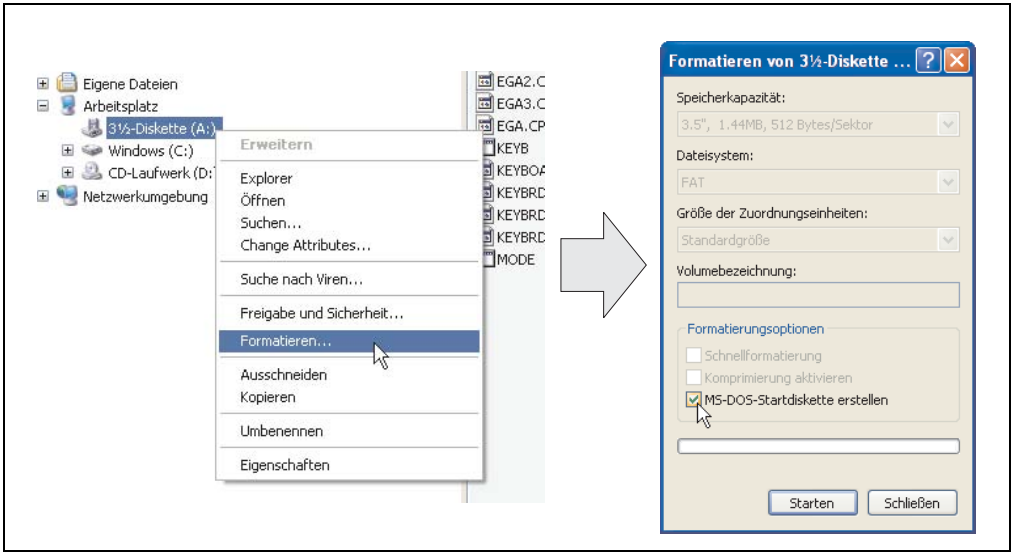


Figure 130: Creating a bootable diskette in Windows XP - step 1

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

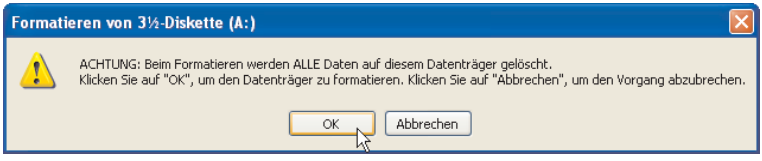


Figure 131: Creating a bootable diskette in Windows XP - step 2

Figure 132: 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 deactivate the option "hide protected operating system files (recommended)" (activated as default) and deactivate the option "show hidden files and folders".

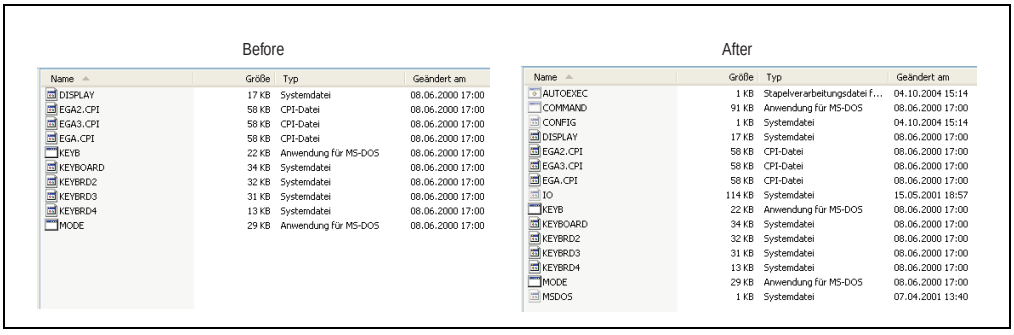


Figure 133: Creating a bootable diskette in Windows XP - step 4

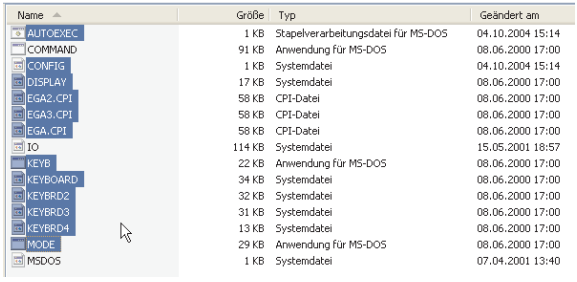


Figure 134: Creating a bootable diskette in Windows XP - step 5

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, 1.5 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** Cable SDL DVI-D/m:DVI-D/m 1.8 m	
5CASDL.0050-00	**SDL cable 5 m** Cable SDL DVI-D/m:DVI-D/m 5 m	
5CASDL.0100-00	**SDL cable 10 m** Cable SDL DVI-D/m:DVI-D/m 10 m	
5CASDL.0150-00	**SDL cable 15 m** Cable SDL DVI-D/m:DVI-D/m 15 m	
5CAUSB.0018-00	**Cable USB 2.0 A/m:B/m 1.8 m** USB 2.0 connection cable; Type A - Type B; 1.8 m	

Table 158: Model numbers - accessories

Model number	Short description	Note
5CAUSB.0050-00	**Cable USB 2.0 A/m:B/m 5 m** USB 2.0 connection cable; Type A - Type B; 5 m	
5CFCRD.0032-02	**Compact Flash 32 MB TrueIDE SanDisk/A** Compact Flash card with 32 MB Flash PROM, and true IDE/ATA interface.	
5CFCRD.0064-02	**Compact Flash 64 MB TrueIDE SanDisk/A** Compact Flash card with 64 MB Flash PROM, and true IDE/ATA interface.	
5CFCRD.0128-02	**Compact Flash 128 MB TrueIDE SanDisk/A** Compact Flash card with 128 MB Flash PROM, and true IDE/ATA interface	
5CFCRD.0256-02	**Compact Flash 256 MB TrueIDE SanDisk/A** Compact Flash card with 256 MB Flash PROM, and true IDE/ATA interface	
5CFCRD.0512-02	**Compact Flash 512 MB TrueIDE SanDisk/A** Compact Flash card with 512 MB Flash PROM, and true IDE/ATA interface	
5CFCRD.1024-02	**Compact Flash 1024 MB TrueIDE SanDisk/A** Compact Flash card with 1024 MB Flash PROM, and true IDE/ATA interface	
5CFCRD.2048-02	**Compact Flash 2048 MB TrueIDE SanDisk/A** Compact Flash 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, Compact Flash 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	**Cable RS232 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	**Cable RS232 DB9/f:DB9/m 5 m** RS232 extension cable for remote operation of a display unit with touch screen, length 5 m.	
9A0014.10	**Cable RS232 DB9/f:DB9/m 10 m** RS232 extension cable for remote operation of a display unit with touch screen, length 10 m.	

Table 158: Model numbers - accessories

2. Supply voltage connector (TB103 3-pin)

2.1 General information

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

2.2 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 159: Order data - TB103

2.3 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.

Description	0TB103.9	0TB103.91
Number of pins	3	
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	
Connection cross section	0,08 mm² -2.5 mm² (AWG 26 - 12)	
Cable type	Only copper wires (no aluminum wires!)	

Table 160: Technical data - TB103

3. Replacement CMOS batteries

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

3.1 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 batteries

3.2 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

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 271) to protect the interface.

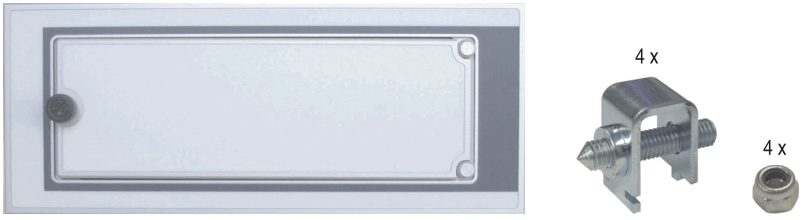


Figure 135: Front cover - 5A5003.03

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 163: Technical data - 5A5003.03

4.2 Dimensions

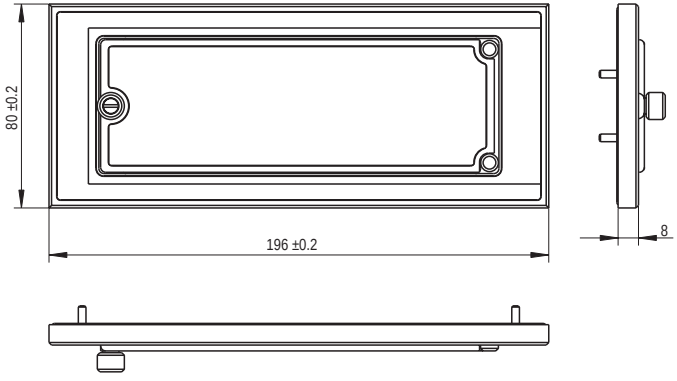


Figure 136: Dimensions - 5A5003.03

4.3 Mounting

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.

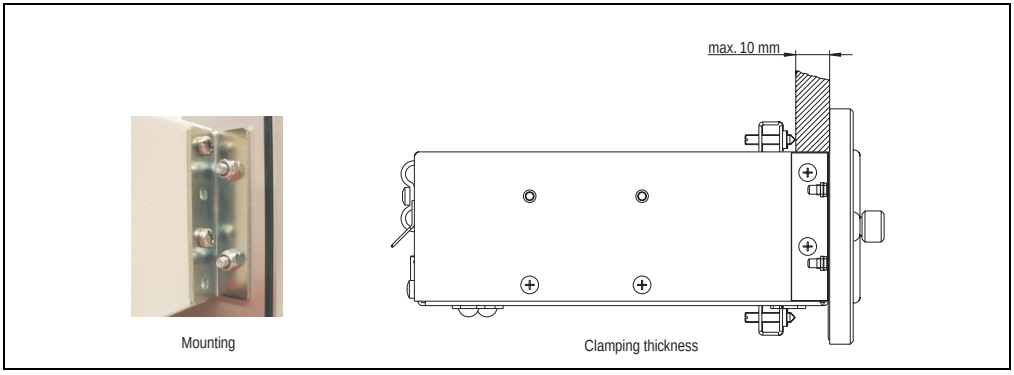


Figure 137: Front cover mounting and installation size

5. Interface cover 5AC600.ICOV-00

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

5.1 Order data

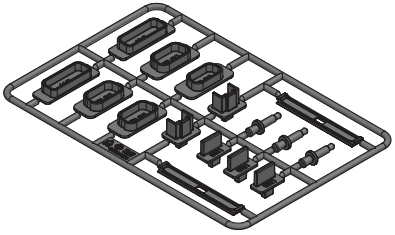
Model number	Description	Image
5AC600.ICOV-00	**Interface covers** Interface covers for APC620 and PPC700 devices; 5 pieces	

Table 164: Order data - PPC700 interface cover

5.2 Contents of delivery

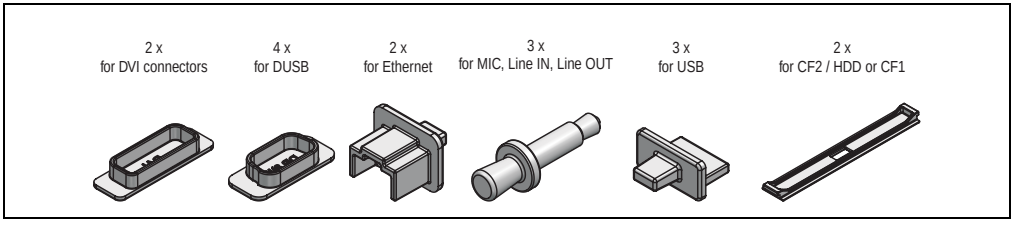


Figure 138: Interface cover - contents of delivery

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 165: 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 166: Order data - USB interface cover (cannot be lost)

7.2 Mounting

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

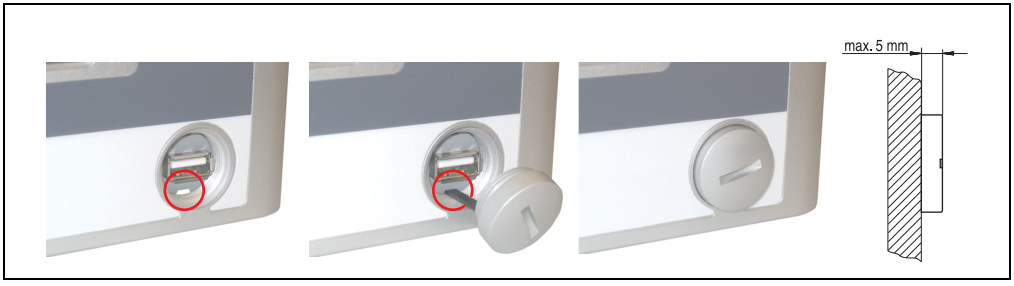


Figure 139: Front side USB interface cover - installation

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

8. Compact Flash cards 5CFCRD.xxxx-02

8.1 General information

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

8.2 Order data

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

Table 167: Order data - Compact Flash 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 168: Technical data - Compact Flash cards 5CFCRD.xxxx-02

Mechanics	5CFCRD.xxxx-02
Dimensions Length Width Thickness	 36.4 mm ± 0.15 mm 42.8 mm ± 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 168: Technical data (cont.)- Compact Flash cards 5CFCRD.xxxx-02

8.4 Dimensions

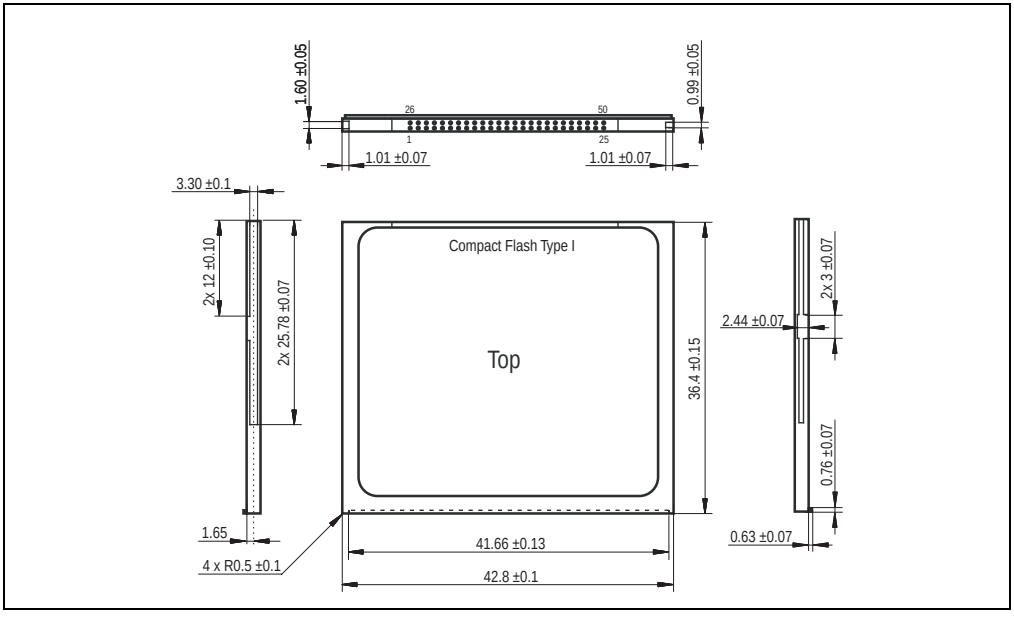


Figure 140: Dimensions - Compact Flash card type I

8.5 Calculating the lifespan

SanDisk provides a 6-page "white paper" for the lifespan calculation for Compact Flash 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 141: SanDisk white paper - page 1

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

Figure 142: 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 143: 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 144: 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 145: 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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408-542-0500
FAX: 408-542-0503
URL: http://www.sandisk.com

Figure 146: SanDisk white paper - page 6

9. USB media drive DVD-ROM/CD-RW FDD CF USB

Delivered without data media!

Figure 147: 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 Compact Flash 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 257)

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 MBytes/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
Features - Compact Flash slot	**5MD900.USB2-00**

Table 169: Technical data - USB media drive 5MD900.USB2-00

Compact Flash Type Amount Connection	 Type I 1 slot IDE / ATAPI
Compact Flash LED	signals read or write access to a compact flash 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 169: Technical data - USB media drive 5MD900.USB2-00 (cont.)

9.3 Dimensions

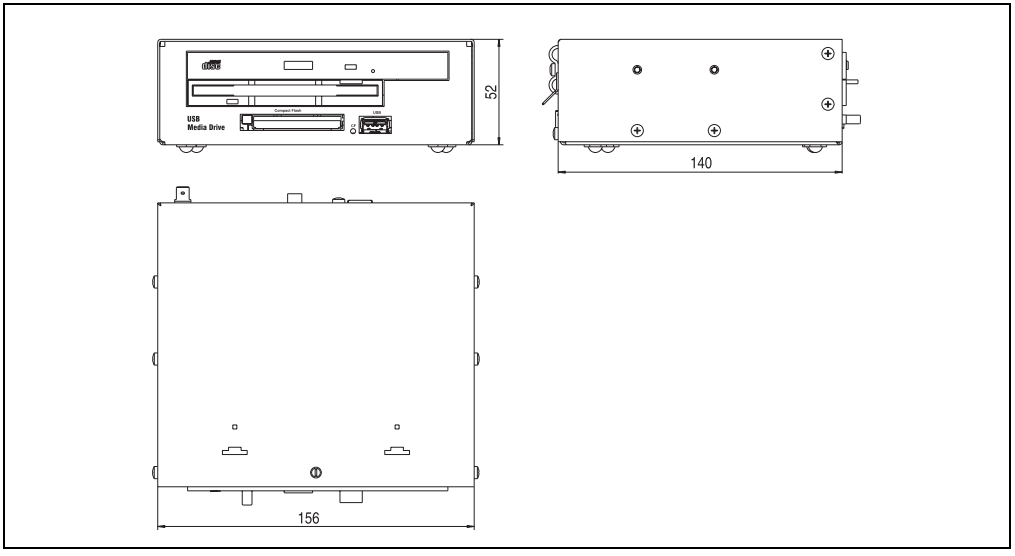


Figure 148: Dimensions - 5MD900.USB2-00

9.4 Interfaces

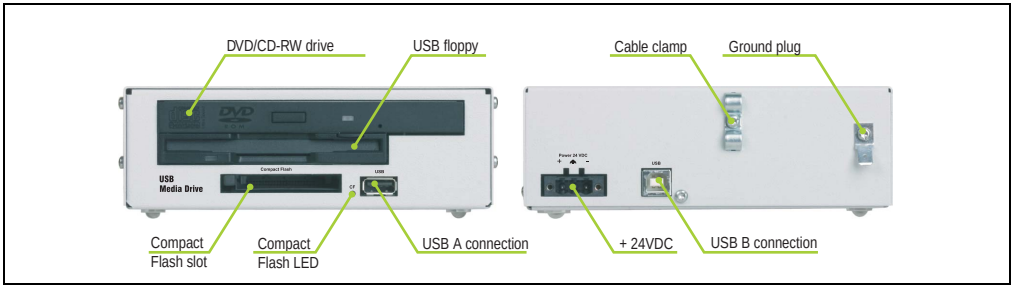


Figure 149: Interfaces - 5MD900.USB2-00

9.5 Mounting

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.

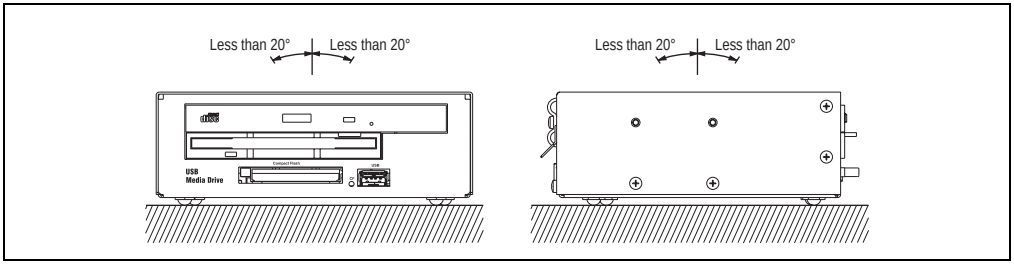


Figure 150: Installation position - 5MD900.USB2-00

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 170: 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 171: Technical data - USB memory stick 5MMUSB.0xxx-00

Features	5MMUSB.0xxx-00
Interface Type Transfer rate Sequential reading Sequential writing Connection	USB specification 2.0 high speed device, mass storage class, USB-IF and WHQL certified USB 1.1 and 2.0 compatible up to 480 MBit (high speed) Max. 8.7 MB/second Max. 1.7 MB/second 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 Width Thickness	 62 mm 19 mm 11 mm
Environment	
Environmental temperature Operation Storage Transport	 0 °C to +45 °C -20 °C to +60° C -20 °C to +60° C
Humidity Operation Storage Transport	 10 % to 90 %, non-condensing 5 % to 90 %, non-condensing 5 % to 90 %, non-condensing
Vibration Operation Storage Transport	 2 G (10 to 500 Hz), oscillation rate 1/minute 4 G (10 to 500 Hz), oscillation rate 1/minute 4 G (10 to 500 Hz), oscillation rate 1/minute
Shock Operation Storage Transport	 40 G and 11 ms duration (all axes) 80 G and 11 ms duration (all axes) 80 G and 11 ms duration (all axes)
Altitude Operation Storage Transport	 3,048 meters 12,192 meters 12,192 meters

Table 171: Technical data (cont.)- USB memory stick 5MMUSB.0xxx-00

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

11. Cables

11.1 DVI cable

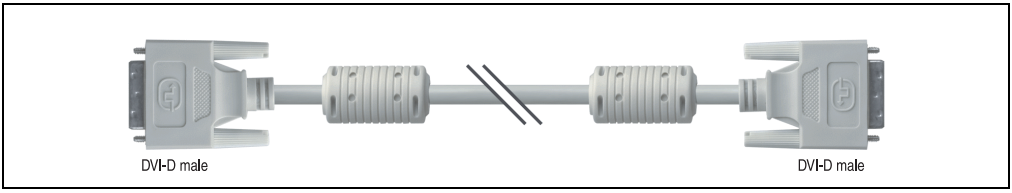


Figure 151: DVI extension cable (similar)

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 172: 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 173: 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.

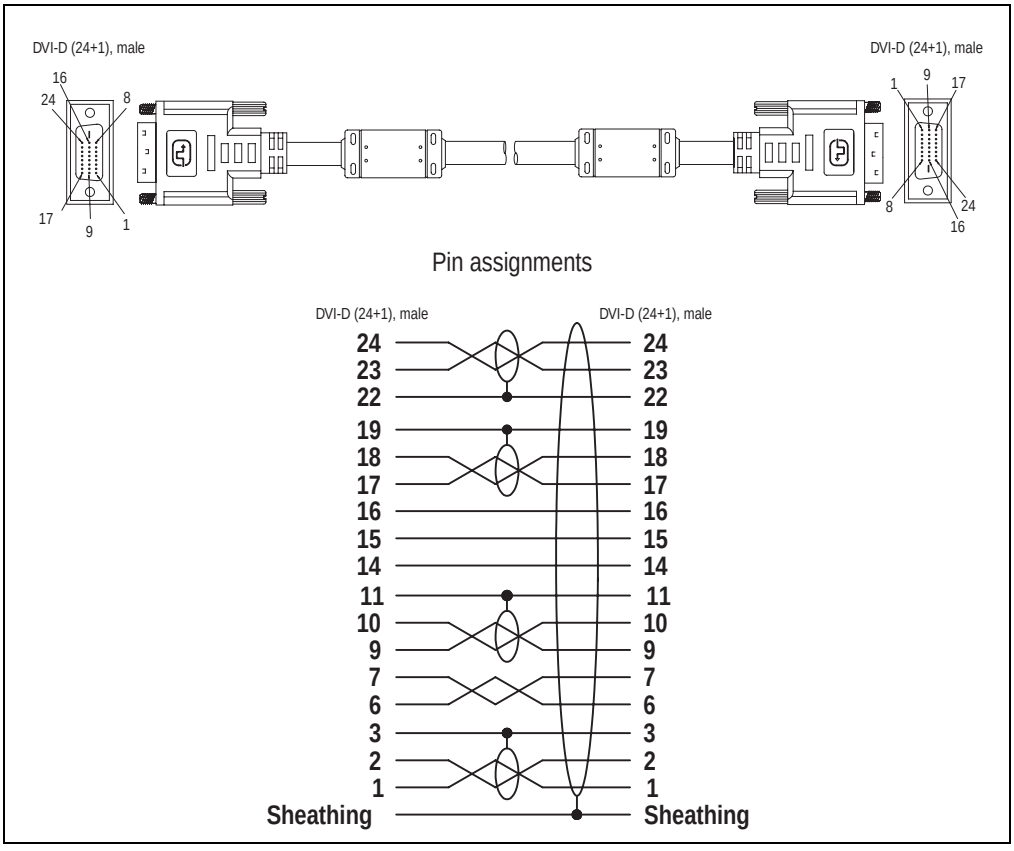


Figure 152: DVI cable assignments

11.2 SDL cable

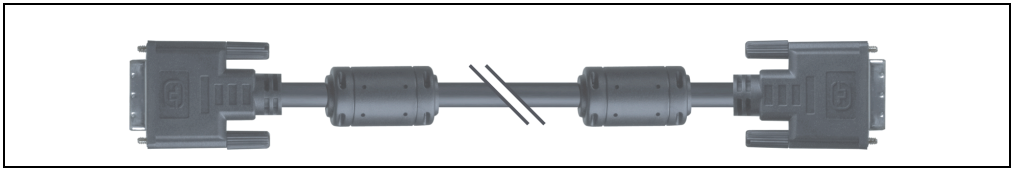


Figure 153: SDL extension cable (similar)

11.2.1 Order data

Model number	Description	Note
5CASDL.0018-00	**SDL cable 1.8 m** Cable SDL DVI-D/m:DVI-D/m 1.8 m	
5CASDL.0050-00	**SDL cable 5 m** Cable SDL DVI-D/m:DVI-D/m 5 m	
5CASDL.0100-00	**SDL cable 10 m** Cable SDL DVI-D/m:DVI-D/m 10 m	
5CASDL.0150-00	**SDL cable 15 m** Cable SDL DVI-D/m:DVI-D/m 15 m	

Table 174: 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
Length	1.8 m ± 50 mm	5 m ± 80 mm	10 m ± 100 mm	15 m ± 120 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 24			
Wave impedance	Max. 237 Ω/km			
Insulation resistance	Min. 93 MΩ/km			
Mobility	Flexible			
Flex radius	Min. 129 mm		Min. 165 mm	

Table 175: Technical data - SDL cables

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.

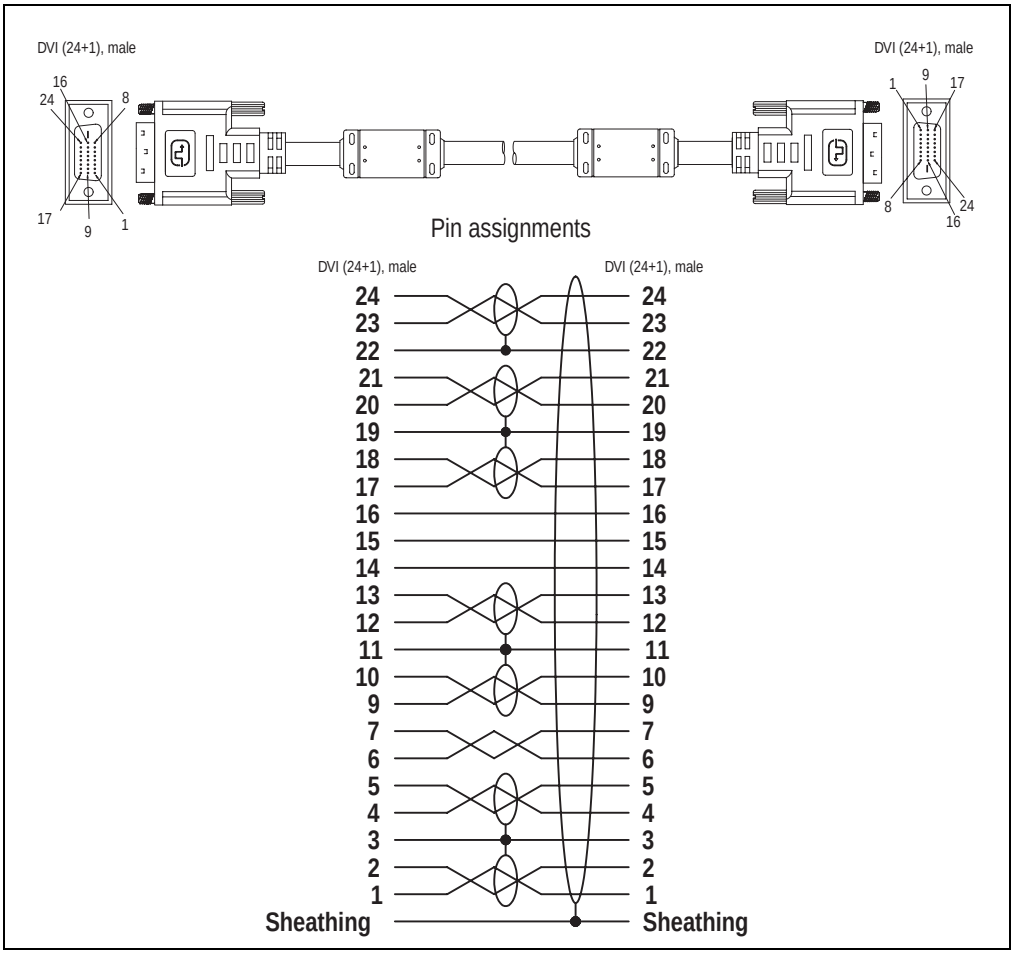


Figure 154: SDL cable assignments

11.3 RS232 cable

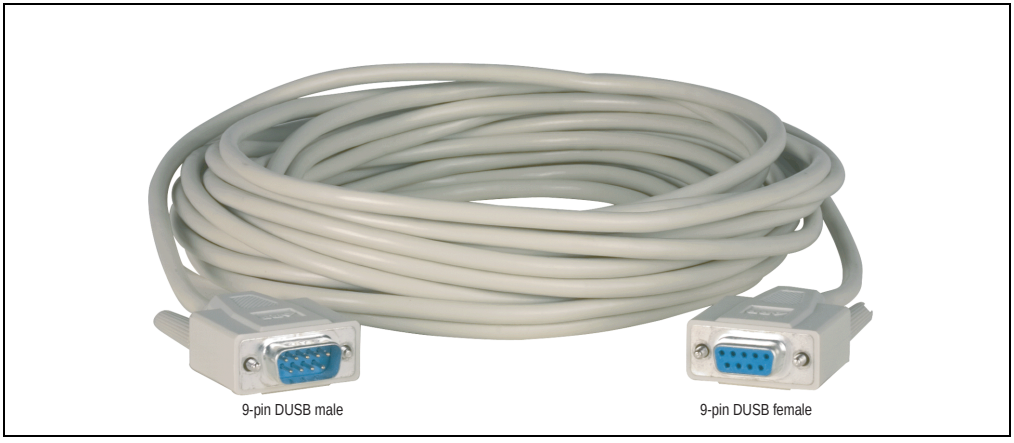


Figure 155: RS232 extension cable (similar)

11.3.1 Order data

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

Table 176: 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		

Table 177: Technical data - RS232 cables

Features	9A0014.02	9A0014.05	9A0014.10
Mobility	Flexible		
Flex radius	Min. 70 mm		

Table 177: 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.

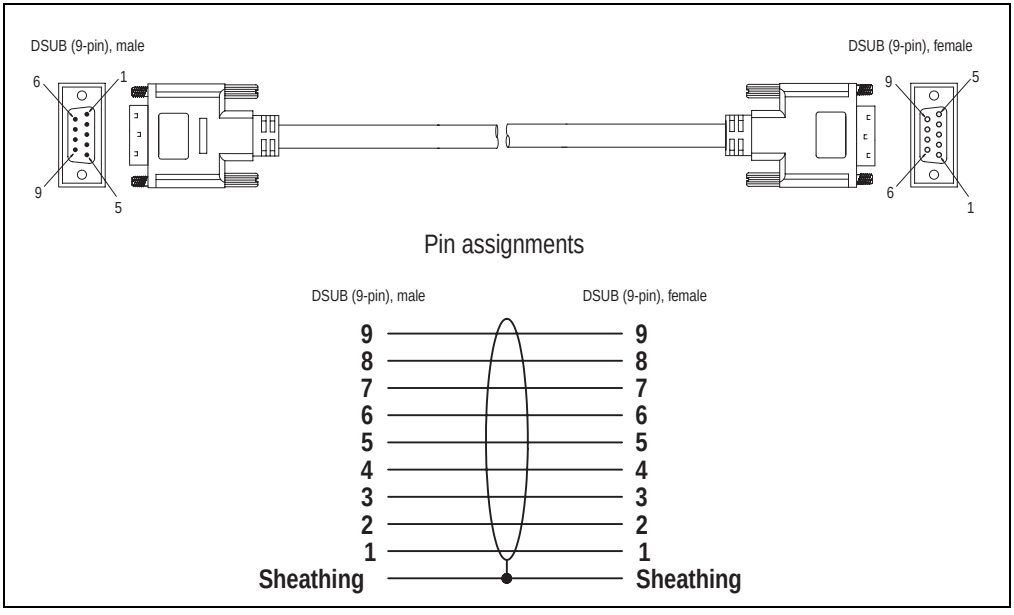


Figure 156: RS232 cable assignments

11.4 USB cable

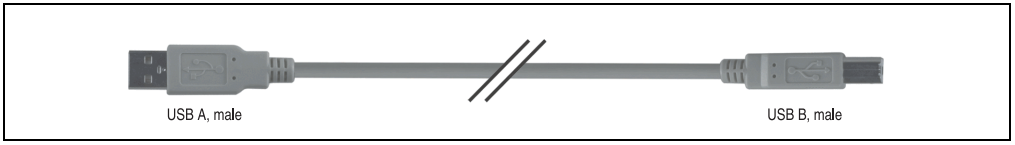


Figure 157: USB extension cable (similar)

11.4.1 Order data

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

Table 178: 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	

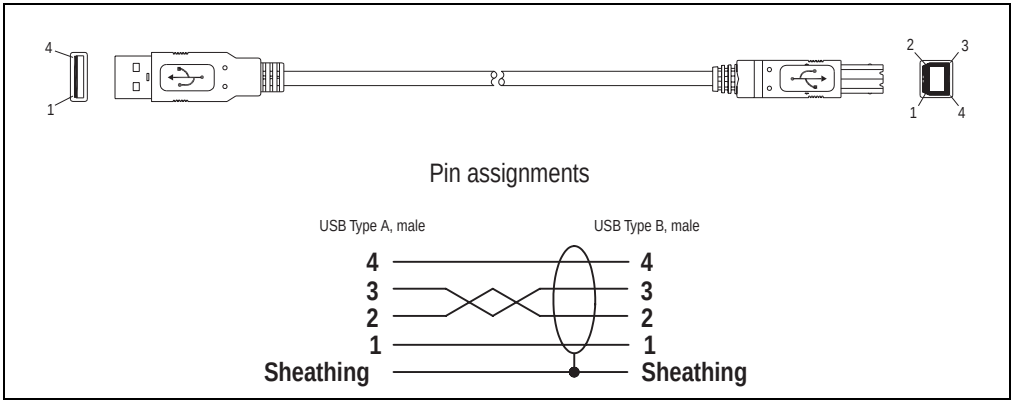
Table 179: Technical data - USB cables

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.



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