SIEMENS

SIMATIC

PG 720 PII Programming Device

Manual

Preface, Contents

Product Overview 1

Unpacking and Setting Up the PG 720 2

Getting to Know the PG 720 3

Installing and Operating the PG 720 4

PG 720 Expansions 5

Configuring the PG 720 6

Error Diagnostics 7

Hardware Information 8

Appendices

ESD Guidelines A

Glossary, Index

11/99

C79000-G7076-C756

Edition 02

Safety Guidelines

This manual contains notices which you should observe to ensure your own personal safety, as well as to protect the product and connected equipment. These notices are highlighted in the manual by a warning triangle and are marked as follows according to the level of danger:



Danger

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



Warning

indicates that death, severe personal injury, or substantial property damage **can** result if proper precautions are not taken.



Caution

indicates that minor personal injury or property damage can result if proper precautions are not taken.

Note

draws your attention to particularly important information on the product, handling the product, or to a particular part of the documentation.

Qualified Personnel

Only **qualified personnel** should be allowed to install and work on this equipment. Qualified persons in the sense of the safety guidelines of this Manual are defined as persons who are authorized to commission, to ground and to tag equipment, systems and circuits in accordance with established safety practices and standards.

Correct Usage

Note the following:



Warning

This device and its components may only be used for the applications described in the catalog or the technical description, and only in connection with devices or components from other manufacturers which have been approved or recommended by Siemens.

This product can only function correctly and safely if it is transported, stored, set up, and installed correctly, and operated and maintained as recommended.

Trademarks

SIMATIC®, SIMATIC HMI® and SIMATIC NET® are registered trademarks of Siemens AG.

Third parties using for their own purposes any other names in this document which refer to trademarks might infringe upon the rights of the trademark owners.

Copyright © Siemens AG 1999 All rights reserved

The reproduction, transmission, or use of this document or its contents is not permitted without express written authority. Offenders will be liable for damages. All rights, including rights created by patent grant or registration of a utility model or design, are reserved.

Siemens AG
Bereich Automatisierungs- und Antriebstechnik
Geschaeftsgebiet Industrie-Automatisierungssysteme
Postfach 4848, D-90327 Nuernberg

Disclaimer of Liability

We have checked the contents of this manual for agreement with the hardware and software described. Since deviations cannot be precluded entirely, we cannot guarantee full agreement. However, the data in this manual are reviewed regularly and any necessary corrections included in subsequent editions. Suggestions for improvement are welcomed.

© Siemens AG 1999
Technical data subject to change.

Siemens Aktiengesellschaft

C79000-G7076-C756

Excellence in Automation & Drives: Siemens

Preface

Purpose of the Manual

This manual contains all the information you need for working with the PG 720PII programming device. You can use this information to do the following:

- Unpack the programming device and power it up.
- Familiarize yourself with the functions and settings of the various components (display, keyboard, programming facilities, etc.).
- Connect the programming device to other units of equipment (programmable logic controllers, other programming devices).
- Expand your system, provided you comply with the necessary conditions.
- Analyze and eliminate simple problems.

Audience

The following persons require the manual:

- Users commissioning the programming device themselves or working with it (editing, debugging).
- System administrators operating the programming device in a network.
- Service and maintenance personnel using the PG 720PII for system expansion purposes or error/fault analysis.

Where is this Manual Valid?

This manual describes the version of the PG 720PII as available in April 1999. The Product Information Bulletin supplied with the PG 720PII contains the latest technical specifications for your programming device.

Licenses

The approvals, certificates, and licenses for your device are supplied along with the Product Information Bulletin.

Product name PG 720PII

Within this publication the product name PG 720PII is given abbreviated to PG 720 or PG.

Where to Find Information

Along with your PG 720, you also receive the following documents which you require for commissioning the device:

- The Product Information Bulletin with the **valid technical specifications** and **the PG 720 installed Software**.

For more detailed information about handling the software, please refer to the appropriate manuals (for example, the STEP 5 manual).

Structure of the Manual

Chapters 1 to 4 of the manual contain the most important instructions for commissioning and using the PG 720. Chapters 5 to 8 are reference sections required in special situations.

Setting up and getting to know your device
Before you start to use your programming device, you should read about setting up the device in Chapter 2 and about the components and functions of the PG 720 in Chapter 3.

Installation
Chapter 4 describes the basic steps necessary for commissioning the PG 720. This chapter also contains instructions for working with submodules and memory cards for programmable logic controllers and additional interfaces.

Expansion
Chapter 5 describes how to expand your PG 720 (for example, installation of memory expansions). Please observe the safety instructions in this section.

Configuration
Modifications made to the system hardware may make it necessary for you to adapt the original hardware configuration. This is described in Chapter 6.

Error/fault diagnostics
Chapter 7 explains how to deal with simple faults and problems that you can diagnose and, in some cases, eliminate yourself.

Reference data
Chapter 8 contains information about hardware addresses, interrupt assignments, and connecting cables.

ESD guidelines
The guidelines on the handling of electrostatically sensitive devices are particularly important for service and maintenance technicians who are installing expansion units or carrying out error analysis with the PG 720.

Glossary
The glossary defines and explains important terms.

Alphabetical index
The alphabetical index will help you to find passages in the text relating to important terms and keywords quickly and reliably.

Additional Assistance

If you have any questions concerning subjects not covered in the manual, simply get in touch with the Siemens representative in your area or call the SIMATIC Hotline. The addresses are listed in your Product Information Bulletin.

If you have any questions about the manual itself or would like to make or suggestions, please complete the reply card at the end of the manual. We would also appreciate it if you would include your own opinion and appraisal of the manual on the reply card.

Contents

	Preface		**iii**
1	**Product Overview**		**1-1**
2	**Unpacking and Setting Up the PG 720**		**2-1**
	2.1	Setting Up the PG 720	2-2
	2.2	Moving the Programming Device	2-6
3	**Getting to Know the PG 720**		**3-1**
	3.1	Hardware Components of the PG 720	3-2
	3.2	Display	3-8
	3.3	Keyboard	3-9
	3.4	Trackball	3-14
	3.5	Drives	3-16
	3.6	CD-ROM Drive	3-18
	3.7	External Power Unit and Battery	3-19
	3.8	Sound	3-20
4	**Installing and Operating the PG 720**		**4-1**
	4.1	Connecting the PG 720 to the Power Supply	4-2
	4.2	Battery Mode	4-3
	4.3	Connecting I/O Devices	4-7
	4.4	Working with SIMATIC S5 Memory Submodules	4-12
	4.5	Working with SIMATIC Memory Cards	4-14
	4.6	Working with PC Cards	4-15
	4.7	Connecting the PG 720 to other SIMATIC S5 Units	4-17
	4.8	Connecting the PG 720 to a SIMATIC S7 Network (MPI/DP)	4-21
	4.9	Networking the PG 720 with Other Stations on PROFIBUS	4-23
	4.10	Networking the PG 720 and Other Computers on Industrial Ethernet	4-24
	4.11	Connection under Windows	4-24

5 PG 720 Expansions 5-1

5.1 Opening the Unit 5-2

5.2 Components Visible After Opening the Unit 5-4

5.3 Block Diagram of the Motherboard 5-5

5.4 Switch Settings / Jumpers 5-7

5.5 Installing Memory Expansion Submodules 5-8

5.6 Processor Upgrade 5-9

5.7 Replacing the Backup Battery 5-10

5.8 Closing the Unit 5-11

6 Configuring the PG 720 6-1

6.1 Changing the Device Configuration with SETUP 6-2
6.1.1 The Main Menu 6-5
6.1.2 The Advanced Menu 6-14
6.1.3 The Security Menu 6-19
6.1.4 The Power Menu 6-21
6.1.5 The Boot Sequence Menu 6-23
6.1.6 The Version Menu 6-25
6.1.7 The Exit Menu 6-26

6.2 Configuring the PC Card Interface 6-30

7 Error Diagnostics 7-1

7.1 Programming Device Self-Test Prior to Booting 7-4

8 Hardware Information 8-1

8.1 Hardware Address Table 8-2

8.2 Interrupt Assignments 8-5

8.3 PG 720 Video Modes 8-6

8.4 Connector Pinouts 8-7

8.5 Connecting Cables 8-14

A Guidelines for Handling Electrostatically-Sensitive Devices (ESD) A-1

A.1 What is ESD? A-2

A.2 Electrostatic Charging of Persons A-3

A.3 General Protective Measures Against Electrostatic Discharge Damage . A-4

Glossary Glossary-1

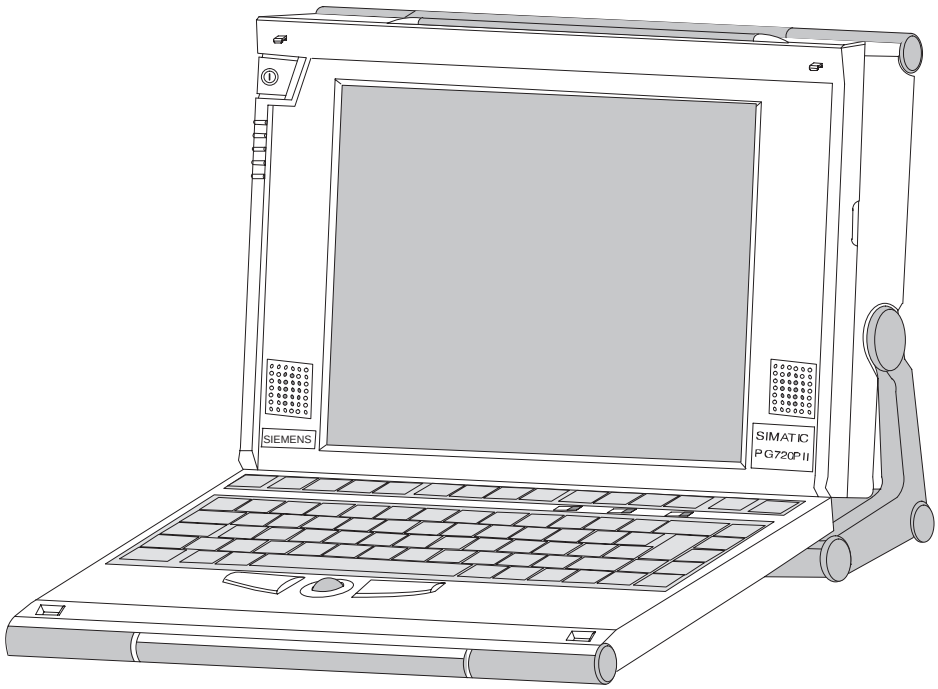
Index Index-1

Product Overview

1

Application

The PG 720 programming device is a self-contained unit designed specifically for an automation environment. Its performance, ergonomic design, and equipment make it a unit particularly suitable for maintenance and service as well as for programming, configuring, debugging, and installing SIMATIC programmable logic control systems.



The PG's Hardware and Software

You can use the PG 720 programming device to program SIMATIC S5 and SIMATIC S7 programmable logic controllers. It is equipped with the following:

- Interface ports for connection to programmable logic controllers.
- Programming facilities for S5 memory submodules and S5/S7 memory cards.

The PG 720 is supplied with system and automation software. The software components are listed in the Product Information leaflet.

Advantages of the PG 720

Compared with a PC with standard hardware and software, the PG 720 programming device of the SIMATIC family has numerous advantages:

- You can develop, debug, and document user programs for SIMATIC S5 and SIMATIC S7 programmable logic controllers with the PG 720 without the need for additional hardware or software.
- The rugged design and practical functions of the PG 720 make it particularly suitable for use on-site under tough industrial conditions. It is extremely light and easy to transport. The PG 720 meets the specific requirements of industrial environments such as noise immunity, compliance with the relevant standards, ruggedness, simple transportation, and commissioning.
- The PG 720 is equipped with a battery allowing it to be operated without a mains connection.
- The PG 720 can be set up and operated in a large number of different ways and positions, and can therefore be used practically anywhere it is needed.
- The PG 720 has all the integral ports necessary for connecting it to SIMATIC automation devices:
  - Programming interface for SIMATIC S5 memory submodules.
  - Programming interface for SIMATIC S5 and SIMATIC S7 memory cards in credit card format.
  - Communication interfaces for connection to S5 and S7 programmable logic controllers.
- The PG 720 is supplied with all the necessary system and automation software already installed on the hard disk.
- Since Windows 98 is also already installed, you can, of course, also use the PG 720 as a stand-alone workstation, and run all the standard software available on the market that requires MS-DOS or Windows.
- In terms of performance and expansion capability, your programming device meets all the normal requirements of a PC. This means that the PG 720 can also be used as a fully-fledged personal computer.

Unpacking and Setting Up the PG 720

2

What Does This Chapter Contain?

This chapter contains important information about unpacking, setting up, and transporting the PG 720, such as:

- Opening and closing the keyboard
- Changing the angle of inclination of the device
- Using the extra pull-out support
- How to move the unit.

Chapter Overview

Section	Contents	Page
2.1	Setting Up the PG 720	2-2
2.2	Moving the Programming Device	2-6

2.1 Setting Up the PG 720

Unpacking Your PG 720

Unpack your PG 720 as follows:

1. Remove the packing.
2. Do not throw the original packing away. Keep it in case you have to ship or transport the unit again at some time in the future.
3. Check the packing list to make sure that no components are missing.



Caution

Risk of damage!

Moisture inside the unit can cause serious damage.

When transporting the unit in cold weather, when it may be submitted to extreme variations in temperature, make sure that the unit is allowed to reach room temperature slowly before you switch it on.

If condensation has formed, this must be allowed to evaporate before you switch on. If, for example, the unit is subjected to a temperature change from –20° C to +20° (–4° F to +68° F) you should wait approximately 12 hours before switching on the unit.

Setting Up on a Desk Top

The PG 720 is used primarily on a desk or table top. To ensure a comfortable working position, the PG 720 can be adapted as follows to suit the work place:

1. Place the PG 720 on the desk or table top.
2. Open the keyboard lock by pulling up the gray handle.
3. Lower the keyboard into position.

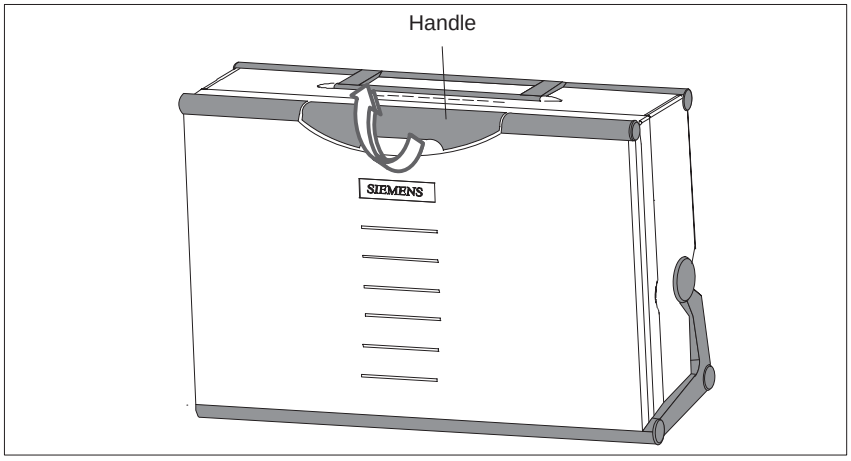


Figure 2-1 The Programming Device before Opening

Changing the Angle of Inclination

With the keyboard open, you can incline the PG 720 to any angle between 0° and 90°. To adjust the angle, proceed as follows:

1. Lower the keyboard into position.
2. Pull the support (Figure 2-4) out of the rear of the stand and, if necessary, pull out the extra support hoop.
3. Incline the unit to an angle that will allow you to work comfortably.

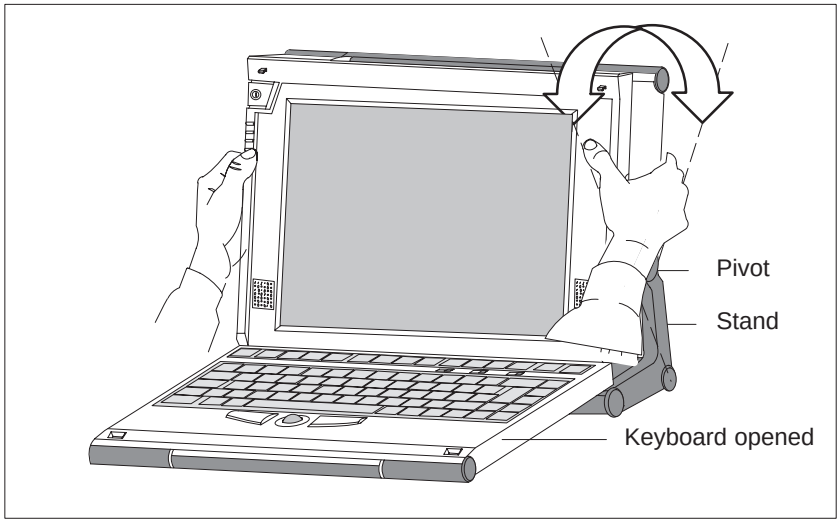


Figure 2-2 Changing the Angle of Inclination

Note

When you change the angle of inclination, make sure that the keyboard cable is **not** trapped between the device and the stand.

Caution

Risk of injury!

There is a danger of the unit tipping over if it is set up at an angle of inclination of more than 15° without using the pull-out support. This could lead to personal injury and also damage to the unit.

If the angle of inclination is greater than 15°, you must use the pull-out support and, if necessary, the extra support hoop in the stand.

Detaching the Keyboard

In certain situations, it is helpful to remove the keyboard.

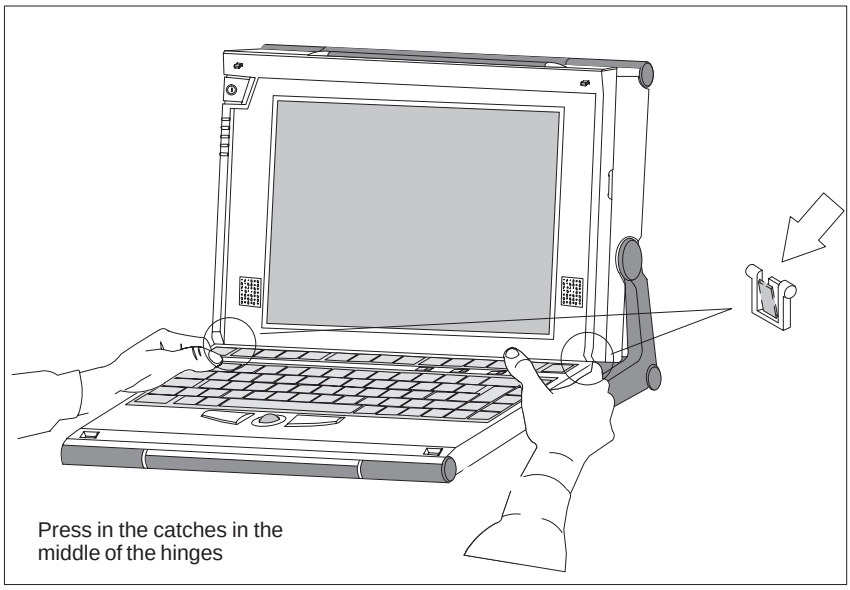


Figure 2-3 Detaching the Keyboard

Caution

Risk of tipping!

If the keyboard is detached, there is a risk of the unit tipping over. Before removing the keyboard, make sure that you pull out the support from the device stand (Figure 2-4) and pull out the additional hoop.

Detaching

You detach the keyboard as follows:

1. Grip the keyboard hinges in the stand behind the keyboard.
2. Pull the locks in the middle of the hinge assembly towards the keyboard.
3. Pull the keyboard up and out.
4. Place the keyboard on a suitable surface, using the hinge assembly as a stand.

Refitting

You attach the keyboard again as follows:

1. Place the keyboard cable in the cable conduit in the stand.
2. Snap the keyboard hinges into the receptacles in the stand.

Note

When attaching the keyboard, make sure that the cable is lying correctly in the cable conduit and is fixed in position.

Keyboard Angle

When the keyboard is attached to the unit, its angle of inclination is 6°, the height of the middle row of keys is 30 mm (about 1 inch). When it is detached, the angle of inclination is 4.5°, and the height of the middle row of keys is 27 mm. This is an ideal ergonomic design to allow a comfortable working position.

Horizontal Position Adjustment

If no table or desk is available, the unit can be operated on the floor. You can adjust the casing and display through approximately 90° into the horizontal plane.

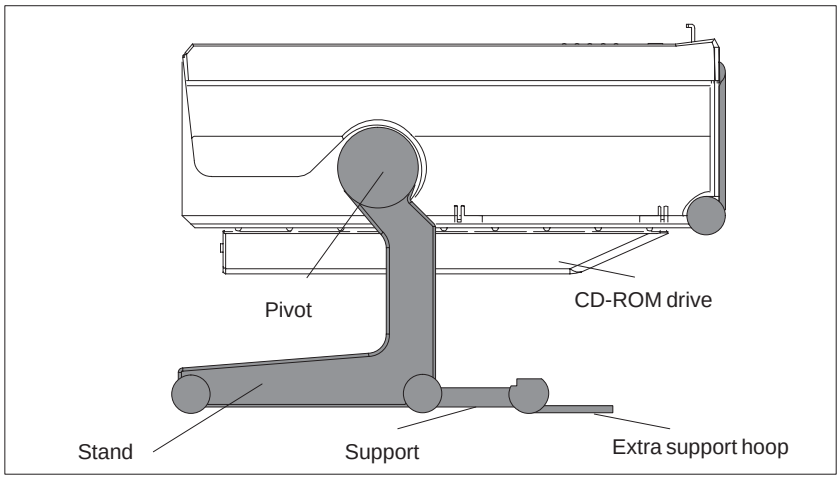


Figure 2-4 Horizontal Operating Position Without Keyboard

2.2 Moving the Programming Device

Preparations

The PG 720 is easy to carry. Before carrying it, however, you should take the following measures:

1. Shut down the operating system. To prevent data loss, you must exit Windows 98 completely. Windows 98 issues a message to inform you when it is safe to switch off the device.
2. Unplug all the connecting cables.
3. Close the covers protecting the ports and connections on the right-hand and left-hand side panels.
4. Bring the unit into an upright position.
5. Raise the keyboard and lock it by pressing it against the front panel of the unit. The latches on the right and left snap in. Make sure that both catches are properly **locked**.
6. If you only want to carry the unit for a short distance, use the handle.
7. If you want to move the PG 720 over larger distances, pack the unit and all its accessories in the carrying bag supplied.

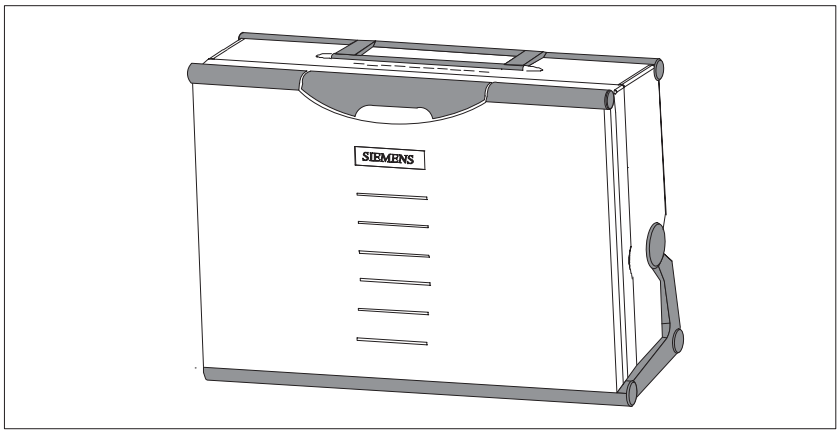


Figure 2-5 PG 720 Ready for Transport

Carrying the PG 720

Despite the rugged design of the PG 720, its internal components are sensitive to severe vibration or jolts. When moving the PG 720, you must therefore make sure that it is protected from severe mechanical forces.

Use the **original packing material** if you have to ship the PG 720 from one location to another.

Getting to Know the PG 720

3

What Does This Chapter Contain?

This chapter contains all the information you require about the most important components of the device, such as:

- LED displays
- Drives
- Keyboard
- Programming facilities of the PG 720
- External power unit and battery.

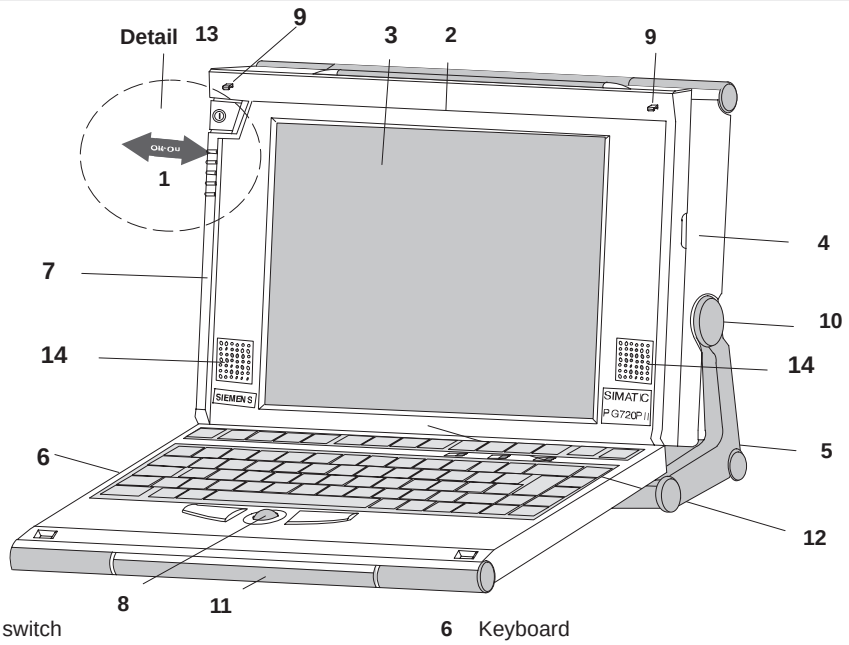
Chapter Overview

Section	Contents	Page
3.1	Hardware Components of the PG 720	3-2
3.2	Display	3-8
3.3	Keyboard	3-9
3.4	Trackball	3-14
3.5	Drives	3-16
3.6	CD-ROM Drive	3-18
3.7	External Power Unit and Battery	3-19
3.8	Sound	3-20

3.1 Hardware Components of the PG 720

Front

You can access all of the important operator controls and displays from the front, base, or sides of the unit. Figure 3-1 shows the front of the PG 720.



1 On/Off switch
2 Carrying handle
3 LC display
4 Cover flap for module ports, memory card ports, PCMCIA ports, and floppy disk drive [1)]
5 Stand
6 Keyboard
7 Cover flap for COM1/COM2 port, MPI/DP port, mouse port, and LPT1/printer port [1)]
8 Trackball
9 Catches for locking keyboard
10 Pivot
11 Protector strip
12 CD-ROM drive [2)]
14 Speaker

1) The cover flaps are used to protect the ports from dust, and can be removed and replaced as required.

2) Can be accessed from the base when the device is turned upside down.

3) Press this button for 1 second in order to switch on the programming device. A hard reset (override) is performed if you hold down the button longer than 7 seconds.

4) External storage media: hard disk drive, floppy disk drive, CD-ROM drive.

See Table 3-1 for more information on the Akku and Power LEDs.

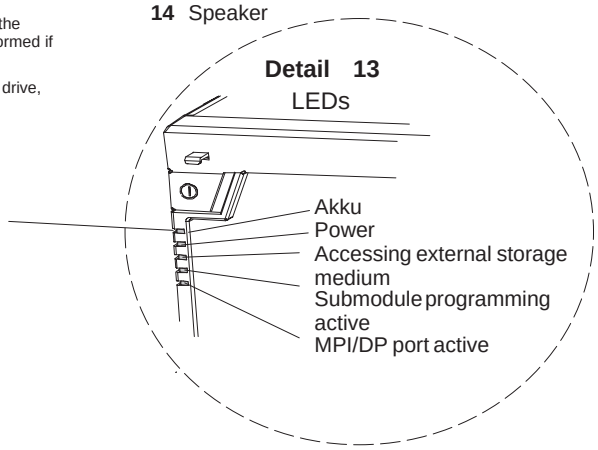


Figure 3-1 The Front of the PG 720

The LEDs and What They Mean

Table 3-1 The LEDs and What They Mean

Label	LED	Meaning
	grn	Device is in mains supply mode; external power unit is supplying power
	or	Device is in mains supply mode; battery is re-charging
Akku	rd	Device is in battery mode; battery charge level low
	blk	Device is in battery mode; battery has shut down or no battery installed
Power	grn	Device is on, battery mode is selected and battery is not down
	grn flashing	Device status is “save to DRAM”
	blk	Device is off or battery has shut down in battery mode (battery down)
	grn	Accessing external storage medium (hard disk, CD-ROM, floppy disk)
	grn	Submodule programming is in progress
MPI/DP	grn	MPI port is active

The Mode LEDs of the PG 720

Table 3-2 The Mode LEDs

Power	Akku	
blk	grn	a.c. mains supply, battery charged or not installed
blk	or	a.c. mains supply, battery is recharging
blk	blk	Device is off or battery is down in battery mode
grn	blk	Device is on, battery mode
grn	grn	Device is on, a.c. mains supply
grn	or	Device is on, a.c. mains supply and battery is recharging
grn	rd	Device is on, battery charge level is low and battery mode is selected

grn = green
rd = red
or = orange
blk = black, dark

Note

Recharging stops when the battery is fully charged or if, for example, the temperature overshoots the maximum permissible limit for recharging. You can check the battery charge level in Windows 98.

Note

Press the On/Off button for approximately one second to switch on the device. The device switches off automatically if it is powered down in Windows. If it is not in Windows, switch off the device by pressing the On/Off button.

If you work under Windows 98, always use the Shut Down menu in the Start pop-up to switch off the programming device. The PG 720 switches off automatically when you exit Windows.

Holding down the On/Off button for longer than seven seconds triggers the override function. The device resets and automatically reboots (useful, for example, if the system freezes).

Left-Hand Side Panel (Communications Side)

All the connectors and interface ports for connecting to external devices are located on the left side panel of the PG 720 (communications side).

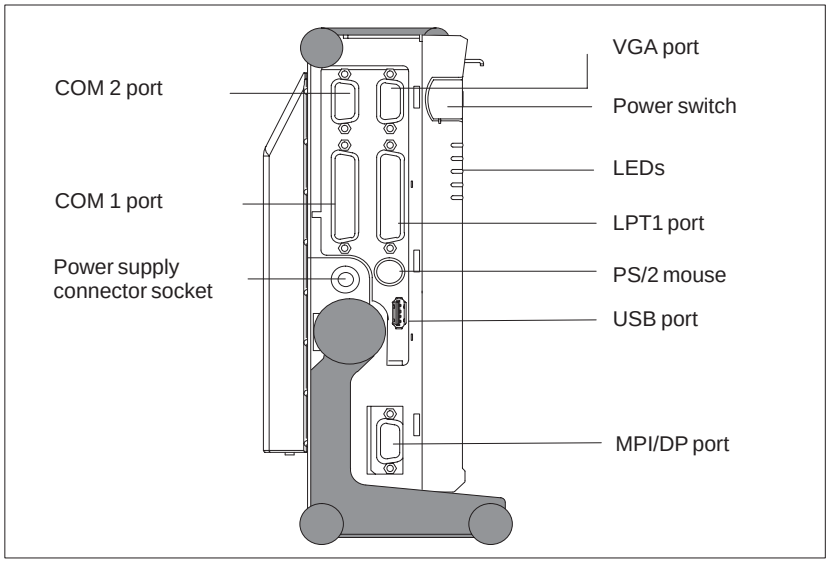


Figure 3-2 Left-Hand Side Panel with Cover Plates Removed

Connectors and Ports

The following table contains an overview of the various interface ports and connectors on the left-hand side panel:

Table 3-3 Connectors on the Left-Hand Side Panel of the Unit

Ports and Connectors	Function
VGA port	Connection for external monitor
COM 2 Serial port RS-232 / mouse Serial port	Connection for serial mouse
	Connection for serial printer
COM 1 RS-232 /MODEM /PLC Serial port	Connection for S5 programmable logic controller
MPI (multipoint interface)	Connection for S7 programmable logic controller
LPT 1 printer Parallel port	Connection for parallel printer
PS/2 mouse	Connection for PS/2 mouse
External power supply unit	Connection for 17 V DC from external power supply unit
USB type A serial interface	Port for the Universal Serial Bus

Right-Hand Side Panel (Processing Side)

You access the slots for programming S5 submodules, S5/S7 memory cards, the PCMCIA port, and the disk drive from the right-hand side of the PG 720 (processing side).

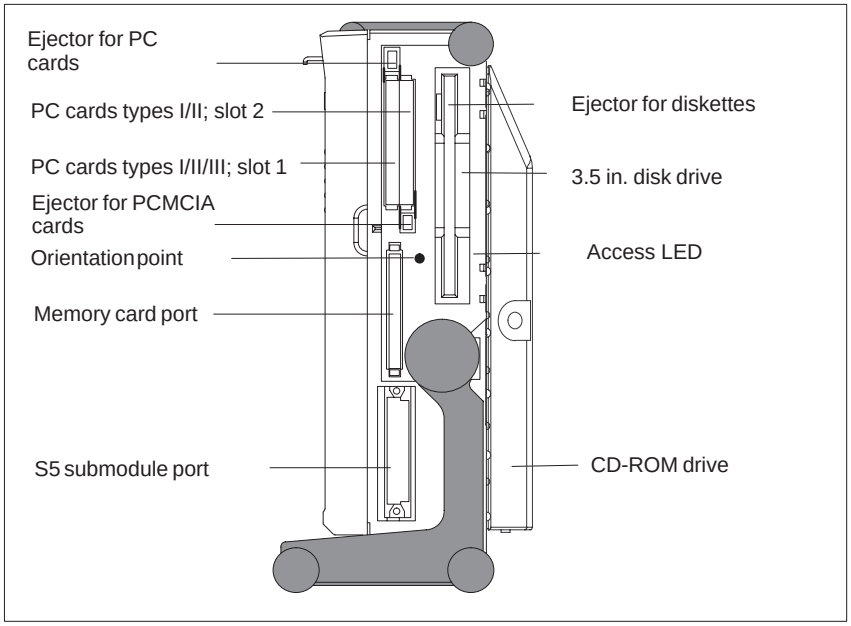


Figure 3-3 Right-Hand Side Panel (with Port Covers Removed)

The following table contains an overview of the ports and connectors on the right-hand side panel:

Table 3-4 Connectors on the Right-Hand Side Panel of the Unit

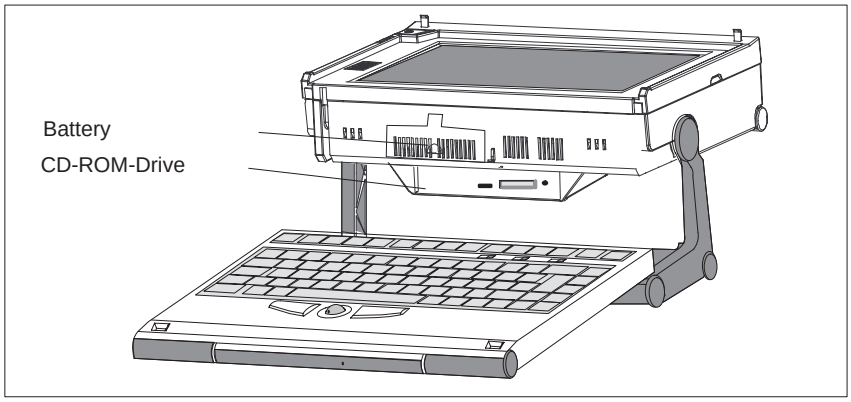
Interface Port	Function
PC card type II port ; slot 2	Connection for PC card types I/II
PC card type III port; slot 1	Connection for PC card types I/II/III
S5 submodule port	Programming SIMATIC S5 submodules
Memory card port	Programming SIMATIC memory cards
Disk drive	Working with 3.5” disks

Note

PC cards is a generic term for Cardbus cards and PCMCIA cards: see Section 4.6.

Base Panel

You can access the CD-ROM drive and the rechargeable battery from the base of the PG 720 device.



Ventilation Slits

There are ventilation slits on the top and bottom panels of the unit. These slits must not be covered or blocked in any way (for example, by placing the device on carpets or rugs).

Caution

Risk of overheating!

If you cover the inlet or outlet ventilation slits, you may cause damage to the PG 720.

Do not place any objects so that they obstruct the ventilating slits in any way.

3.2 Display

Available Displays

The PG 720 has a color display.

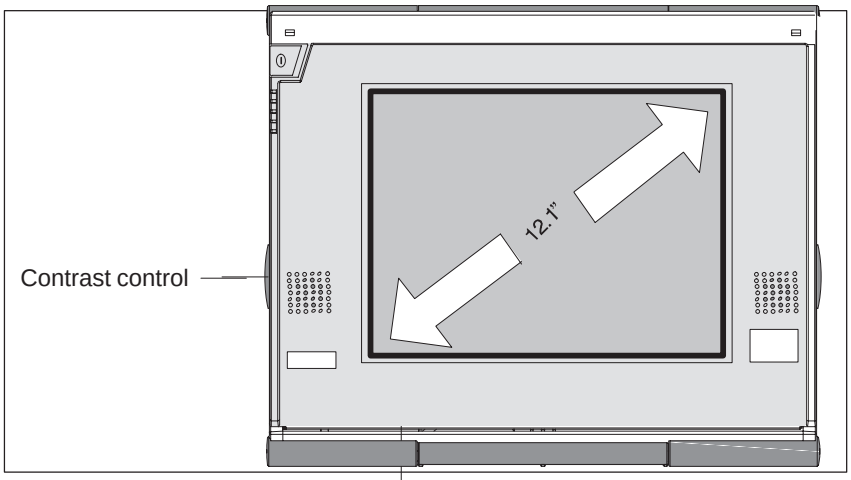


Figure 3-4 PG 720 Display

Color Display of the PG 720

The PG 720 has a 12.1" (≈ 31 cm) TFT color display with a resolution of 800 x 600 pixels.

The three primary colors, red, green and blue, can each be displayed in 64 different shades. This means that, including all the secondary colors, a maximum of 256k different colors can be displayed.

Caution

Risk of injury!

If a display is **damaged**, liquid crystals may escape. Do not touch this liquid or allow it to come into contact with your skin in any way, and do not breath in the vapors. If you do come into contact with the liquid, wash those parts of the skin affected immediately with alcohol, and rinse with plenty of water. Then consult a physician immediately.

To clean the display, use only soft cotton cloth with a little glass cleansing agent, or a special cloth for cleaning glasses. Do not use water or aggressive solvents (such as alcohol or acetone). Never touch the display with hard, sharp objects. Avoid exerting any pressure on the display surface.

3.3 Keyboard

Keyboard Layout

The keyboard is divided into the following areas:

- Alphanumeric or typewriter keyboard with special keys
- LED displays
- Function keys
- Cursor control keys.

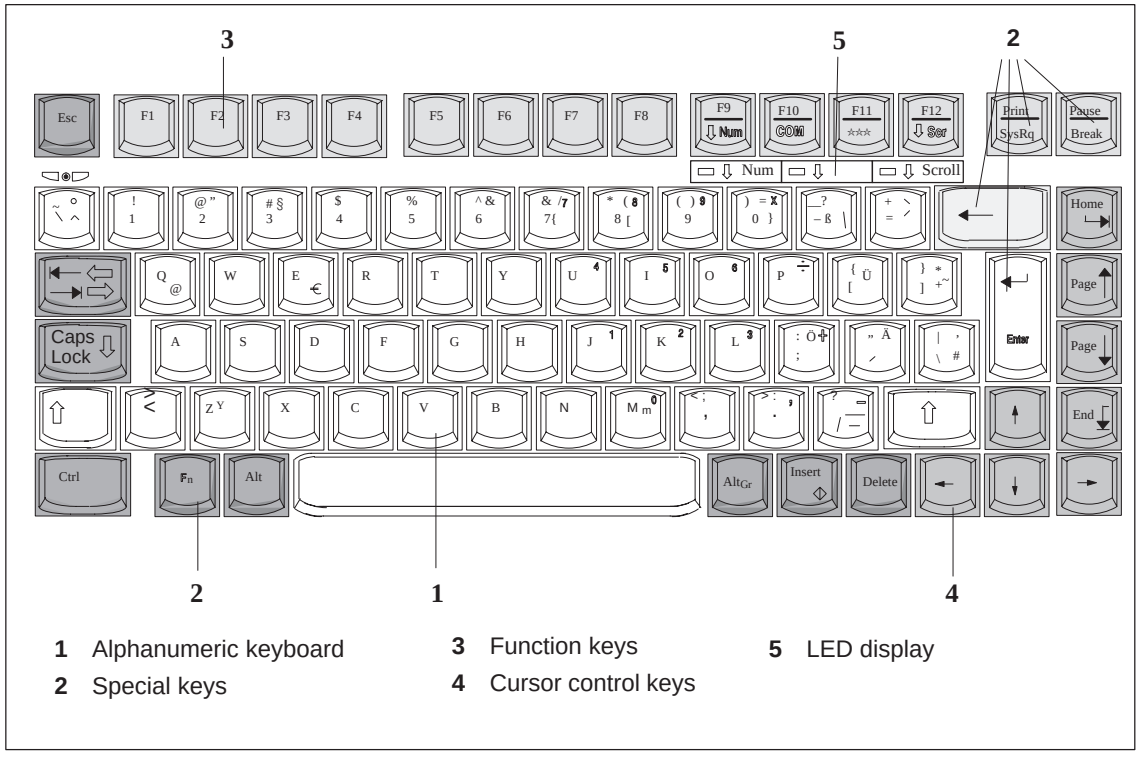


Figure 3-5 Keyboard Layout

Repeat Function

All the keys on the keyboard are of the autorepeat type. The character is repeated as long as the key is pressed.

Keyboard Labeling

The keyboard has international and German labeling.

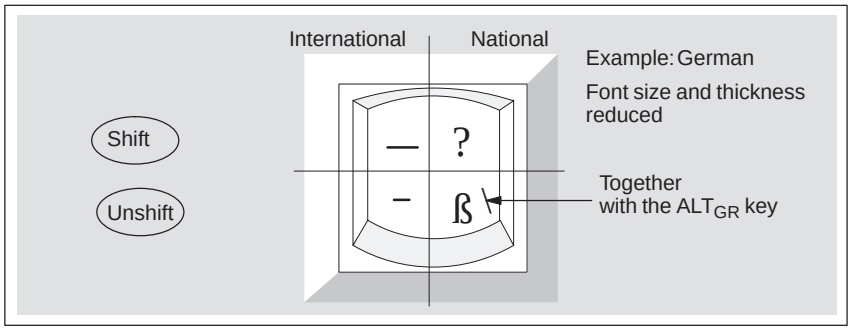


Figure 3-6 The Keyboard Labeling System

Alphanumeric Keyboard

The largest block of keys on the keyboard is the alphanumeric keyboard with all the keys for the letters of the alphabet, numerals and special characters. The characters are arranged in basically the same way as on a normal typewriter. However, there are a number of special keys which have special functions for the PG 720.

Special Keys

The special keys in the alphanumeric keyboard have the following functions:

Table 3-5 Functions of the Special Keys

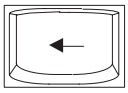
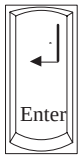
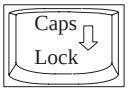
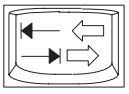
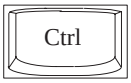
Key	Function
	**Backspace Key** This key moves the cursor one space to the left and deletes the character at this position.
	**Enter Key** (Return, Enter, Line Feed (“New Line”) The return or enter key is used mainly to terminate a command line in the operating system; that is, the command you have typed in is executed when you press this key. For other uses of this key, please refer to the user manual of the relevant user program.
	**CAPS LOCK Key** If you press this key, the middle LED at the top right-hand corner of your keyboard lights up. All upper case characters and other characters are output normally. If you want to type lower case letters in this position, you must first press the shift key. If you are using an international keyboard, you cancel this function by pressing the CAPS LOCK key again. The LED then goes out. If you have a German keyboard, you must press the shift $ key to cancel this function.
	**NUM Key** With these keys F_n+ ^ NUM , the emulated numeric block is switched from the alphanumeric keyboard to numeric keys. The LED display lights up. Press this key again to return to cursor control.
	**Tabulator Key** This moves the cursor depending on the selected tabulator positions.

Table 3-5 Functions of the Special Keys

Key	Function
	**"Fn" Special Key** (combination key) In conjunction with a second key (key combination), you activate other key codes for special applications with this key. This key is also used to emulate the numeric keypad (Figure 3-8 Numeric Keypad).
	**CTRL Key** (combination key) This key is only used in combination with other keys. For example, you press CTRL + ALT + Delete to reset and restart the operating system. For other uses of this key, please refer to the user manual of the relevant user program.
	**ALT Key** (combination key) This key is only used in combination with other keys. For example, you can enter the hexadecimal value of an ASCII character using this key and the numeric keypad for example, F_n + ALT + 123 corresponds to "{".
	**ALT_{Gr} Key** (combination key) You can use this key together with the other combination keys to generate other key codes. For example, you can generate the "\" character on the German keyboard by typing ALT_{Gr} + ß.
	**PRINT** (combination key) Using the Print key, you can output the current screen display to a printer (depending on the software used).
	**PAUSE** (combination key) The Pause key interrupts program execution in the majority of applications.

LED Displays

The LED displays for the keys NUM LOCK and SCROLL LOCK are located below the function keys F9 to F12 and display the current status of the keys.

- NUM LOCK
- CAPS LOCK
- SCROLL LOCK

When the programming device is powered up, the LED displays for the NUM LOCK, CAPS LOCK, and SCROLL LOCK keys light up briefly twice. The keyboard is then ready for operation.

Cursor Keys

The key block shown in the picture below is used for cursor control.

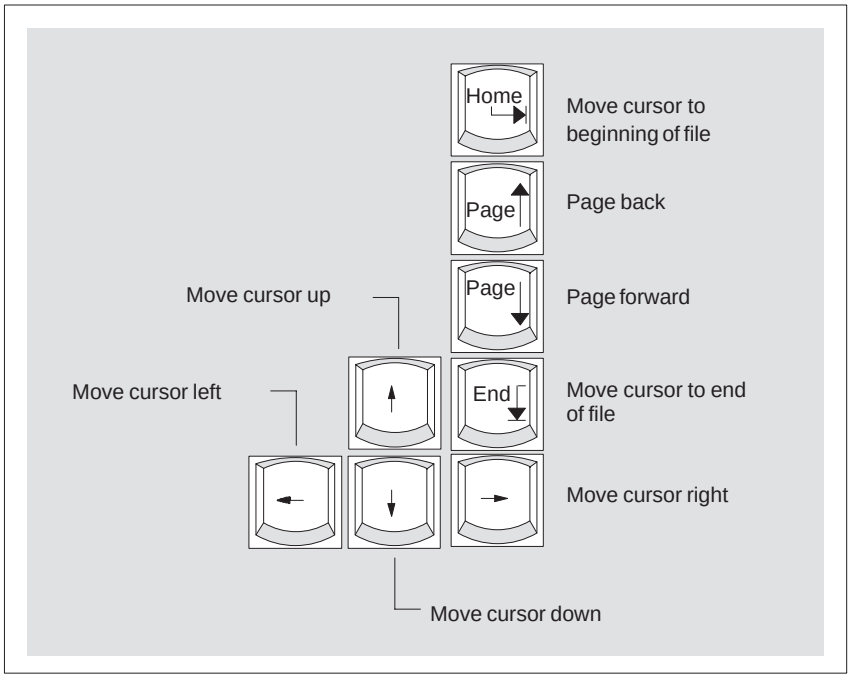


Figure 3-7 Cursor Control Keys

Numeric Keypad with Fn Key

By pressing F_n and one of these keys, the numbers and characters can be used provided Num Lock is switched on.

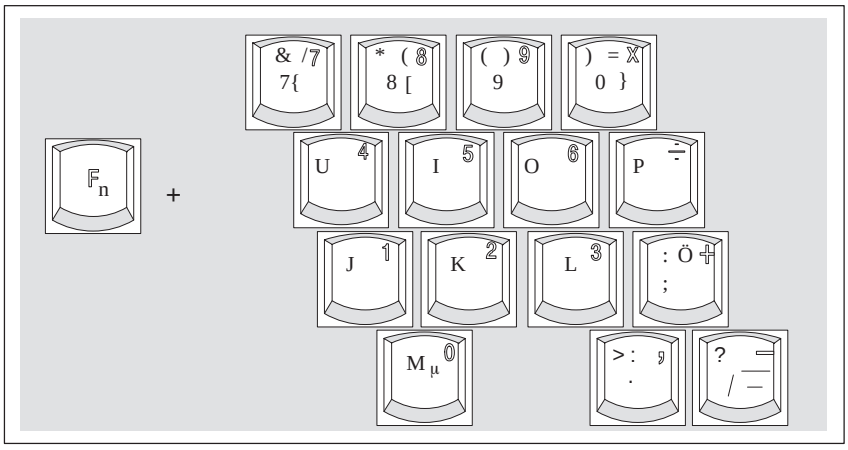


Figure 3-8 Numeric Keypad

Function Keys

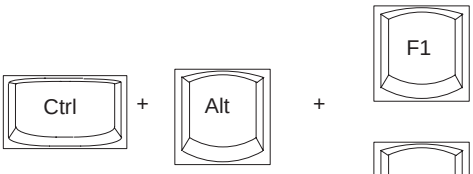
There is a row with twelve function keys located above the alphanumeric keyboard. The assignment of the individual function keys depends on the software you are working with.

F_n + F9 can also be used to switch the numeric keypad from alphanumeric keys to numeric keys.

Key Combinations

A selection of some of the most important key combinations are shown in the following table.

Table 3-6 Key Combinations

Key Combination	Effect
	Restart
	Switch over to international character set
	Switch over to German character set: the German keyboard driver must be loaded.
	Trackball active / passive

3.4 Trackball

Trackball

The trackball is a pointing device for cursor control and menu selection in many programs that support mouse operation. By moving the trackball, the cursor can be positioned anywhere on the screen.

By pressing the left-hand button, you set a marker. The function of the right-hand button depends on the particular program you are using. You can select objects or items in a menu and start functions with the trackball.

Cleaning the Trackball

The trackball is in a roller housing which normally prevents dust collecting on the ball or transmission mechanism. Nevertheless, you should clean the trackball at regular intervals.

To clean the trackball, proceed as follows:

1. Switch off your programming device.
2. Remove the cover of the trackball housing by turning it anti-clockwise, for example by inserting tweezers or a similar tool into the holes in the ring.
3. You can now take the trackball out of its housing.
4. Wash the trackball in a solution of tap water and mild cleansing agent.
5. Blow any residual dust out of the trackball housing.
6. Dry the trackball and return it to its housing.
7. Replace the cover and tighten it by turning it in a clockwise direction.

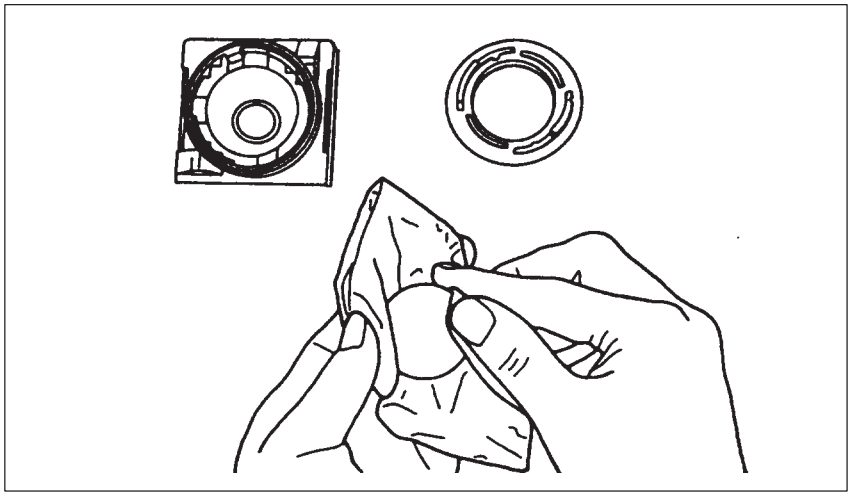


Figure 3-9 Cleaning the Trackball

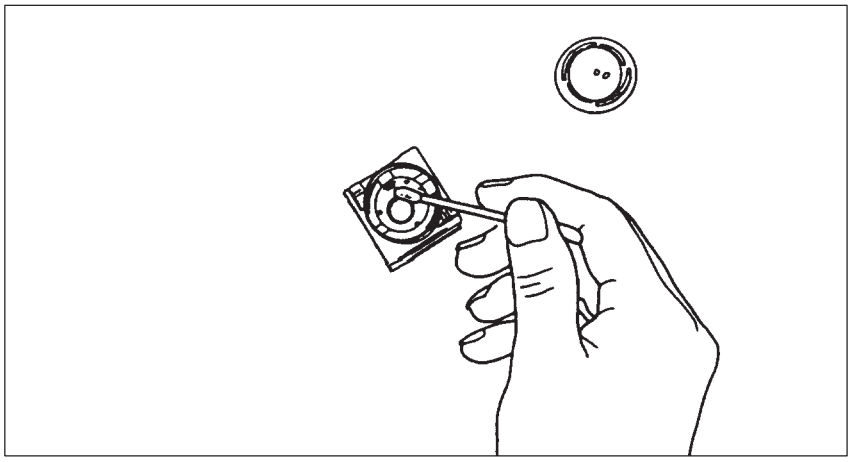


Figure 3-10 Cleaning the Trackball Housing

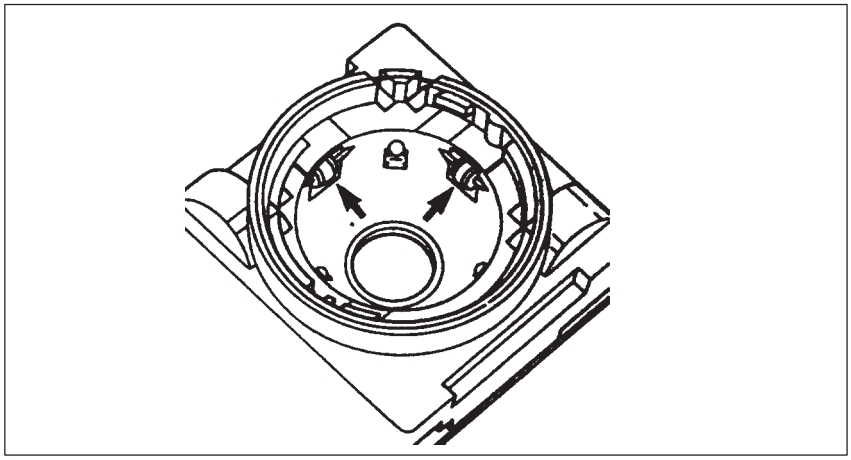


Figure 3-11 Cleaning the Rollers

3.5 Drives

Drive Types

The PG 720 is equipped with the following drives as standard:

Table 3-7 Standard Drives

Type of Drive	Format	Capacity
Floppy (diskette) drive	3.5 inch	1.44 Mbytes
Hard disk drive	2.5 inch	See Product Information leaflet

Floppy Disk Drive

Using the floppy disk drive, you can save programs and data on diskettes and load them on the PG 720.

Types of Diskette

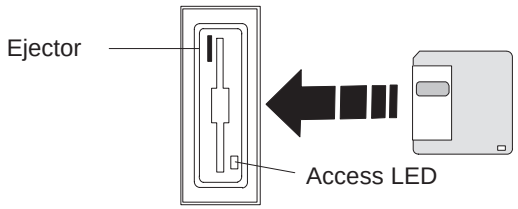
You can use the following diskettes:

Table 3-8 Types of Diskette

Double-Sided High-Density Diskette	Double-Sided Double-Density Diskette
3.5 inch	3.5 inch
1.44 Mbytes (135 TPI)	720 Kbytes
80 tracks per side	80 tracks per side

Handling Diskettes

You insert diskettes into the drive as shown below:



When a floppy disk in the FDD is accessed, this status is indicated by the access LED on the drive and the access LED for external storage media on the front of the device.



Caution

Risk of data loss!

You must not remove the diskette as long as the access LED is lit. Otherwise, you may lose the data on the diskette.

Do not remove the diskette until the access LED on the drive or on the front panel of the PG 720 has gone out.

Hard Disk Drive

You can use a number of different hard disk drives in your PG 720. The memory capacity of the particular type of hard disk can be found in the Product Information Bulletin and SETUP program.

When the hard disk is accessed, this status is indicated by the access LED for external storage media on the front of the device.



Caution

Risk of data loss and damage to drive!

Drives are sensitive to vibrations and shock. Any vibrations occurring during operation can lead to the loss of data or damage to the drive.

After switching off, wait a moment until the drive has stopped spinning (approximately 10 sec.) before you move the programming device.

3.6 CD-ROM Drive

Overview

You can use the CD-ROM drive to read information from CDs into the PG 720. The CD-ROM drive is installed at the back of the PG 720. It is operated on the same port as the hard disk drive.

Opening the Drawer

Swing the PG 720 into a horizontal position. The CD-ROM drive is now on the underside of the programming device. Switch the device on. By briefly pressing the eject button, the drawer springs out slightly. Now pull the drawer out until it clicks into position.

Inserting / Removing CDs

Now insert the CD in the drawer with the labeling face up, and press it firmly down into the center of the turntable. To remove the CD, hold it by the edges and pull upwards.

Closing the Drawer

Push in the drawer until it closes completely. Do **not** press the eject button.

Note

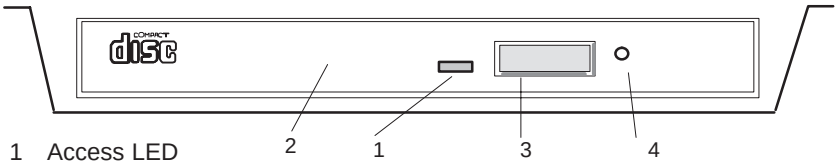
To ensure that the open drawer of the CD-ROM drive is not exposed to excessive strain, **always** use one hand to hold the front of the drawer while inserting or removing a CD-ROM with the other.

Some applications support an EJECT function for opening the CD-ROM drive: this function does not work with this drive.

The CD is tested when you close the drive and the access LED on the drive flashes to indicate that the test is in progress:

– if the LED does not stop flashing the CD is bad but readable,
– if the LED flashes several times and then remains on, the CD is not readable and defective.

Front Panel of the CD-ROM Drive



1 Access LED
2 Drawer
3 Eject button
4. Emergency release

Caution

Risk of data loss and damage to the drive.

CD-ROM drives are very sensitive to impermissible vibration. Vibration during operation can result in damage to the drive or the CD.

3.7 External Power Unit and Battery

External Power Unit

The external power unit is used to supply the PG 720 with power when it is being operated with 120 V or 230 V mains supplies. The voltage range is set automatically. In mains power supply operation, the integrated battery is charged at the same time. The connecting cable to the PG 720 has an external power supply unit. For connection to the power system, the external power supply unit has a connector for non-heating appliances.

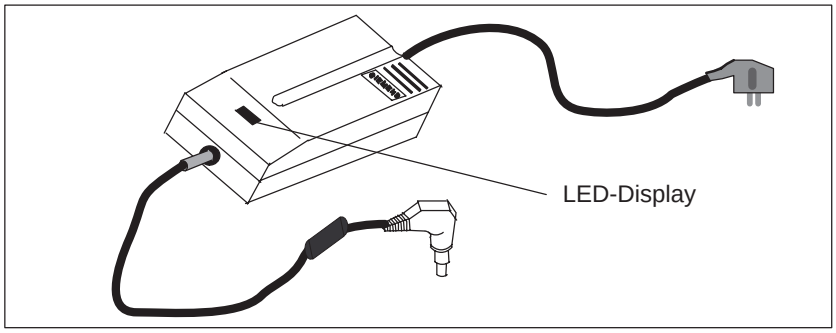


Figure 3-12 External Power Unit



Caution

Danger of overheating!

The external power supply unit can be damaged if it is covered.



Caution

Risk of damage!

The PG 720 can only be used with supplied mains adapter.

Battery

The PG 720 has an integrated NiMH (nickel metal hydride) rechargeable battery. This makes the device portable, meaning you can use it without the external power supply. The battery also prevents data loss occurring on power failure.

Once the external power supply unit is connected, the battery is charged. The following conditions are important:

- When charging, the battery temperature must be between + 5° C and + 40° C (40° F and 100° F).
- When the device is switched off, charging takes approximately 2 hours (fast charging).
- When the device is switched on, charging takes approximately 8 hours (reduced charging current).

- Charging stops as soon as the battery is fully charged.
- In storage, a fully charged battery runs down in approximately 2 months. It must then be recharged.
- The battery has an integral charge-status monitor (”fuel gauge”).
- You can check the battery charge level in Windows 98. See Section 4.2 Battery Mode.
- It is advisable to run a teach-in cycle every now and again (see Section 4.2).

Note

The green ”Battery” LED does not necessarily mean that the battery is fully charged. Charging is cut short for safety reasons if the battery temperature drops below 5°C or rises above 40°C.

Whenever possible, avoid running down the battery too far. Switch off the unit when it is not in use and remove the battery connector (see Section 4.2) if it will not be used for some time (weeks).

The Battery LED goes red and an acoustic warning sounds if the battery is in danger of discharging fully (see Section 4.2)

Bear in mind that you must unplug the a.c. cord from the mains socket in order to disconnect the programming device from the mains supply.

3.8 Sound

The programming device has two built-in speakers. You can adjust the output volume either by clicking the Loudspeaker button in the taskbar or by opening the Start menu in Windows and selecting **Programs > Accessories > Multimedia > Volume**.

Installing and Operating the PG 720

4

What Does This Chapter Contain?

This chapter describes what you have to do to set up your PG 720 correctly for operation. This includes:

- The basic steps for commissioning your PG 720
- Working in the battery mode and changing the battery
- Working with memory submodules and cards for the programmable logic controllers
- Connecting your PG 720 to other devices.

Chapter Overview

Section	Contents	Page
4.1	Connecting the PG 720 to the Power Supply	4-2
4.2	Battery Operation	4-3
4.3	Connecting I/O Devices	4-7
4.4	Working with SIMATIC S5 Memory Submodules	4-12
4.5	Working with SIMATIC Memory Cards	4-14
4.6	Working with PC cards	4-15
4.7	Connecting the PG 720 to other SIMATIC S5 Units	4-17
4.8	Connecting the PG 720 to a SIMATIC S7 Network (MPI/DP)	4-21
4.9	Networking the PG 720 with Other Stations on PROFIBUS	4-23
4.10	Networking the PG 720 and Other Computers on Industrial Ethernet	4-24
4.11	Connection under Windows	4-24

4.1 Connecting the PG 720 to the Power Supply

Connecting to the Power Supply

You can operate the PG 720 on 120 V and 230 V power systems using the external power supply unit. The voltage is selected automatically.

1. Plug the power supply cable supplied with the unit into the connector on the external power supply unit.
2. Connect the power cable to a socket outlet with a grounded protective conductor.
3. Connect the low voltage connector to the connection for the external power supply on the unit. The power supply cable to the PG 720 is integrated in the external power supply unit.
4. The device is now ready for power supply operation and the battery will be charged if required.

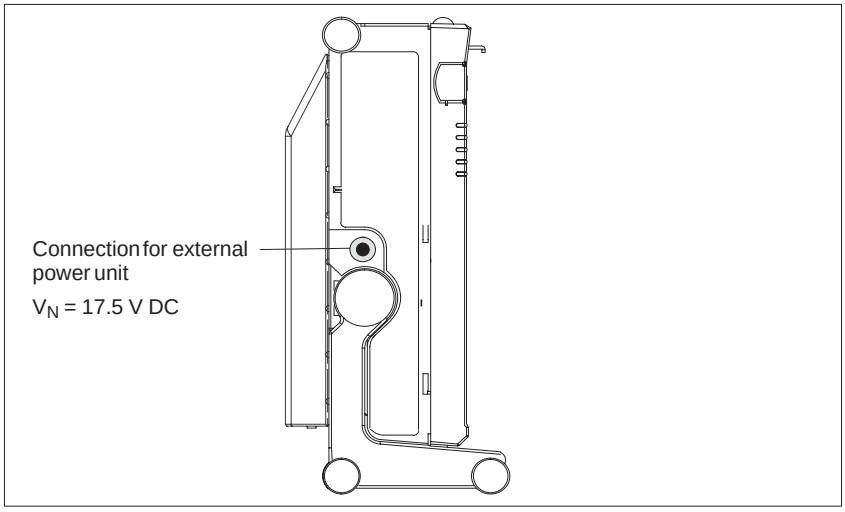


Figure 4-1 Power Supply Connection

Note

The power plug must be disconnected to isolate the unit completely from the supply.

For operation in Canada and the US, a CSA or UL listed power supply cable must be used.

The external power supply unit is intended for operation with grounded power supply systems (TN networks according to IEC 364-3).

The unit is not intended for operation with non-grounded or impedance-grounded systems (IT networks).

The Power Management function can interrupt battery charging if current consumption is high while the programming device is in operation.

4.2 Battery Mode

Charge-Status Indicator

The battery has electronic circuitry for showing the current charge status. The electronics incorporate a metering unit which has to be calibrated at regular intervals so that it can compensate for error. The chemical properties of the battery change in the course of time, so the electronics have to relearn the battery's characteristics at regular intervals. A teach-in cycle ensures that the battery's maximum charge capacity is at your disposal.

Note

There is a danger of the charge-status indicator misinterpreting the actual capacity of the battery if a lengthy period of time is allowed to pass between teach-in cycles. This can result in an unexpected shutdown with no prior warning.

Teach-in Cycle (calibration cycle)

Run a teach-in cycle:

- once every month,
- if a prolonged period of time has elapsed since the battery was last used,
- if you think that the battery no longer operates at full capacity,
- if the programming device shuts down unexpectedly with no prior warning,
- if operating time on battery becomes shorter.
- If during startup the error message "Battery needs calibration cycle" appears (has to be acknowledged with the F1 key).

Performing a Teach-in Cycle

Broadly speaking, the procedure for a teach-in cycle is as follows:

- Charge the battery until the charge-status indicator shows 100%. See the section entitled "Displaying Charge Status" for instructions on how to view the indicator.
- Leave the programming device switched on to drain the battery: the programming device will switch itself off when the battery is discharged. Remember to disconnect the power unit from the PG 720 so that the battery can discharge.
- Once the programming device has switched itself off, start another charge cycle by reconnecting the external power unit to the PG 720. The teach-in cycle terminates automatically approximately 10 minutes later.

Note

You can speed up the discharge stage by deactivating the Power management functions in the BIOS (see Setup menu, Section 6.1.4 Power Savings Disabled....). Under Windows 98 you can achieve the fastest possible discharge by clicking **Taskbar > Start > Settings > Energy Management > Energy Schematics > Settings for Energy Schematics > Battery Mode** and entering 'Never' in all categories.

Displaying Charge Status

The battery charge status is shown in the Summary screen (see Figure 6-6). You can freeze this screen for viewing by hitting the Pause key as soon as the Summary screen appears as the programming device powers up.

Windows 98 has a convenient feature for viewing the battery charge status. To check the battery charge status: **Taskbar > Start > Settings > Energy Management > Battery Indicator.**

Battery Mode

If no external power unit is connected, the PG 720 can operate on the built-in rechargeable battery.

1. Switch on the programming device. Check that the battery is adequately charged before you start work.

Note

The battery charge status is displayed in the Summary screen at the end of the system boot phase; you can also check the charge status under Windows 98.

2. Work with your PG 720 in the usual way.
3. When the Battery LED turns red in battery mode, the battery has discharged to a minimal residual-charge level. Save your data and close your work session.

Note

Do not start a work session in battery mode unless the battery is fully charged. This is the only way of ensuring that the full on-battery operating time is available; note that if the Battery LED is orange when you switch on with the programming device is connected to the a.c. mains supply, the battery is recharging.

The battery is not recharging if the Battery LED is green. The green ”Battery” LED does not necessarily mean that the battery is fully charged. Charging is interrupted if, for example, battery temperature is too high.

You may find that the battery is partially or fully discharged when you switch on the programming device (because it has drained gradually while not in use, for example). Use the external power unit to connect the programming device to the a.c. mains supply so that the battery can recharge.

The battery recharges as soon as the programming device is connected to the a.c. mains supply by means of the external power unit: the battery recharges in fast-charge mode if the programming device remains switched off (this takes about 2 hours) or in about eight hours at reduced charge current if the programming device is switched on.

Changing the Battery

You can remove a discharged or defective battery and install a replacement (see the Operating Instructions for the order number):

1. Switch off the programming device.
2. Pull out the support in the stand and open the extra support hoop.
3. Turn the housing through approximately 90°.
4. Slide the cover in the underside of the housing down to open the battery compartment.
5. Unplug the battery connector and lift out the battery.
6. Slip the new battery into position and reconnect the cable.
7. Close the battery-compartment cover.

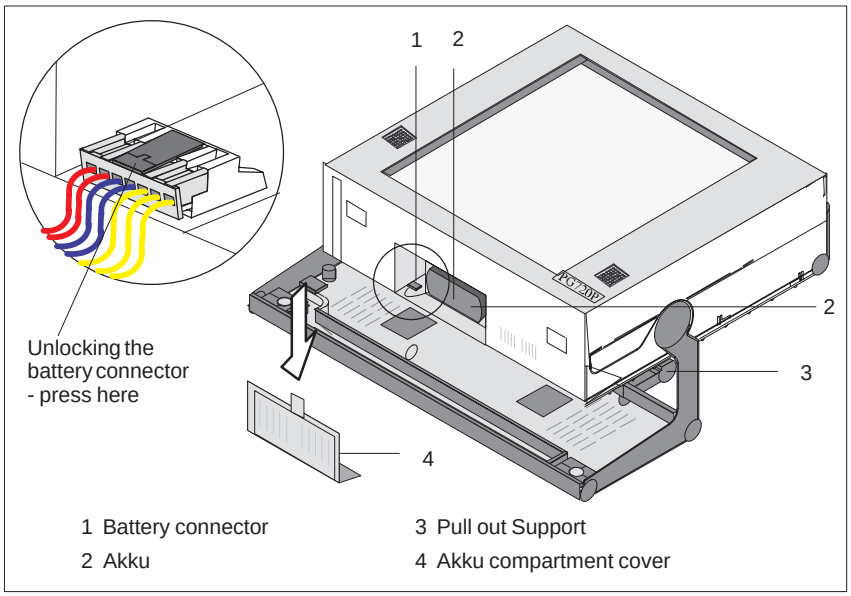


Figure 4-2 Changing the Akku

Note

Whenever possible, avoid running down the batterie to a low level. Switch off the device after use. If the device will not be used for some time (for example, several weeks), you should remove the battery connector. The batterie then has no connection to the device and in this way can be optimally saved for future use.

Disposal of Used Batteries

Nickel-metal hydride batteries can be recycled. Their components can be used as raw materials for new batteries or other products. Effective recycling of batteries is only possible when the used batteries are collected according to type.

Note

Observe the local regulations for disposal of materials.

4.3 Connecting I/O Devices

Connecting the Printer to the Parallel Port

To connect your printer, proceed as follows:

1. Switch off the PG 720 and the printer.
2. Open the cover to the interface ports on the left-hand side panel.
3. Plug the printer cable into the LPT1 parallel port.
4. Connect the printer cable to the printer.
5. Screw the connector tight at the interface port.

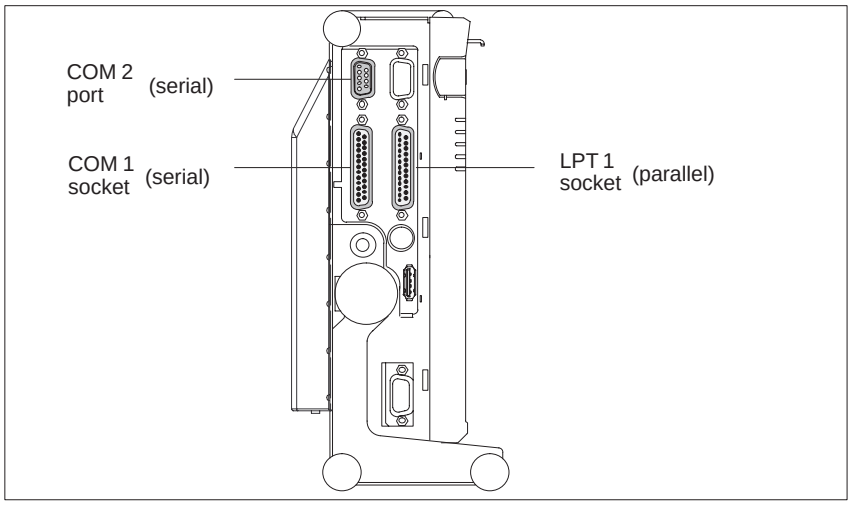


Figure 4-3 Position of the Printer Ports



Caution

Risk of damage to the unit!

Switch the unit off before connecting the parallel printer to the LPT 1 port (the printer should also be switched off).

Make sure that you use the correct port. If you use the wrong port or wrong connecting cables, the port may be damaged.

Before plugging in the cables, the electrostatic charge of your body, the unit, and the cables must be equalized. To do this, touch the mounting plate for the ports on the left-hand side of the unit.

Only use original connecting cables.

Connecting the Printer to the Serial Port

You can also connect your printer to the PG 720 using a serial COM port. You will find information on how to adapt and set your interface and which connecting cable you require in the description of your printer.

Recommended Monitors

You connect external multisynchronous monitors using the standard VGA connector on the left-hand panel side of the unit. We recommend that you use a Siemens monitor.

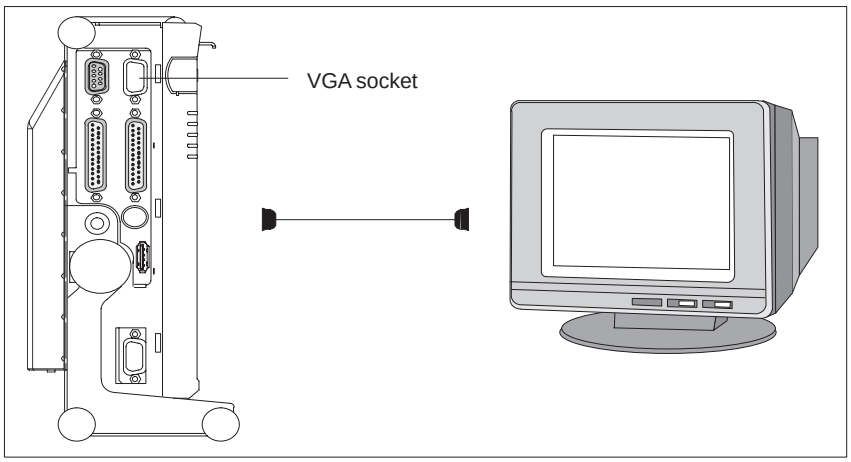


Figure 4-4 Connecting the Monitor

Connecting Monitors

You must switch the PG 720 off before connecting the monitor cable. You will find further information about the connector pinout in Chapter 8.
To connect the monitor, proceed as follows:

1. Switch off the PG 720 and the monitor.
2. Open the port cover on the left-hand side panel.
3. Plug the monitor cable into the VGA socket connector.
4. Secure the connector with the screws.
5. Plug the other end of the monitor cable into the monitor.
6. Switch on the PG 720 and the monitor.
7. Make the necessary changes in the SETUP program (**Menu > Main > Hardware Options** “CRT enabled”, “LCD enabled” “SIMULTAN”).



Caution

Danger of damaging the monitor!

If you want to set higher clock frequencies and resolutions, first make sure that the monitor you are using is suitable for a higher clock frequency and resolution.

If the clock frequency is too high, this can cause damage to the monitor.

Using a Mouse

You can connect both a PS/2–USB and a serial mouse to the PG 720. When the PG 720 is supplied, the mouse driver for the trackball and PS/2 mouse is already loaded.

Connecting a PS/2 Mouse

You can connect an external PS/2 mouse or another external pointing device to an additional PS/2-compatible mouse connector.

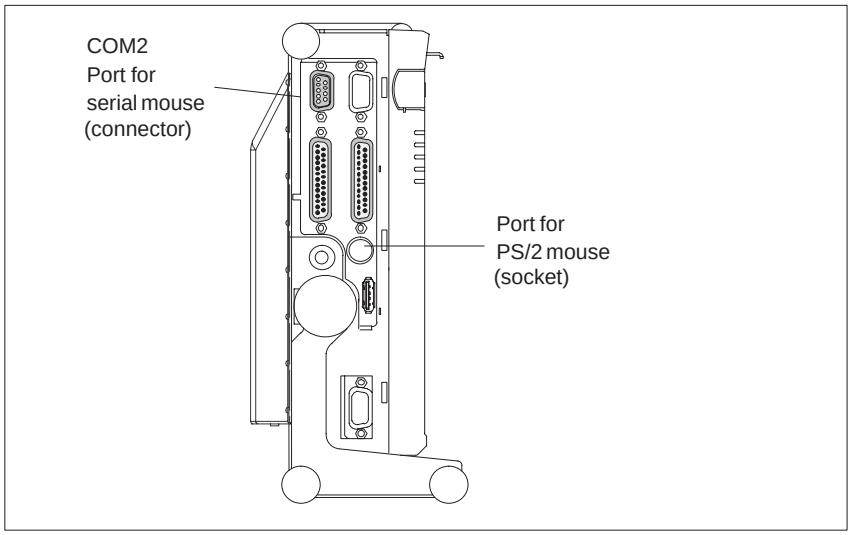


Figure 4-5 Connecting a PS/2 Mouse

To connect the mouse, proceed as follows:

1. Switch off your device.
2. Open the port cover on the left-hand side panel.
3. Plug the cable of the PS/2 mouse or another external pointing device into the mouse connector.
4. Secure the connector with the screws.
5. Switch on your PG 720 again.

Switching between Internal Trackball and External PS/2 Mouse

Once you have plugged in the external mouse and **restarted** your PG 720, the internal trackball is deactivated and remains inactive until the PG 720 is powered up again without the external mouse.

Table 4-1 Trackball/External Mouse Mode

State	Internal Trackball	External PS/2 Mouse
No mouse	Active	
External mouse connected	Deactivated	Active

Connecting a Serial Mouse

You can connect a serial mouse to the COM2 serial port. To operate a serial mouse, the appropriate mouse driver must be initialized and assigned parameters. You will find the information you need to do this in the description of your mouse or in the description of the operating system.

1. Switch off your device.
2. Open the cover of the interface ports on the left-hand side panel.
3. Plug the serial mouse into the mouse connector labeled COM2.
4. Secure the connector with the screws.
5. Switch on your PG 720 again.
6. Connect external mouse to USB interface.

Choosing Another Keyboard

You can connect another PS/2-type keyboard to your PG 720 instead of the one supplied with it.

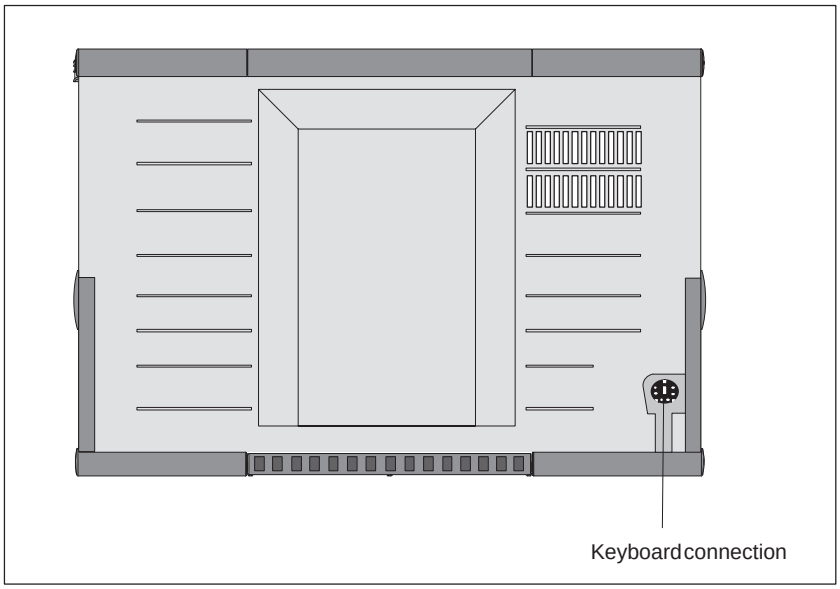


Figure 4-6 Connecting a PS/2 Keyboard

Connecting a PS/2 Keyboard

To connect the keyboard, proceed as follows:

1. Switch off your device.
2. Unplug the keyboard connector from the base of the unit.
3. Plug in the PS/2-type keyboard connector.

Note

It is advisable to use a keyboard cable with an angled connector, so that the connector does not extend beyond the back panel.

The keyboard cable must be inserted in the cable conduit on the back panel of the unit, otherwise the connector can work loose when the device is tilted.

Connecting USB Periphery

You can connect peripheral devices with USB interfaces to the USB port.

1. Open the port cover on the left-hand side panel.
2. Plug the USB cable into the port, for example under Windows 98.

The device connected in this way is available as soon as it has been registered by the Plug and Play operating system.

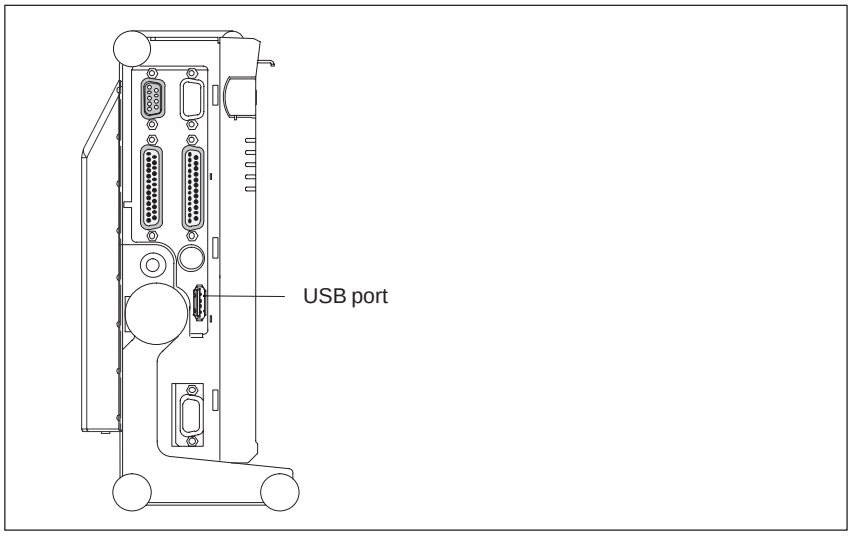


Figure 4-7 USB Port

4.4 Working with SIMATIC S5 Memory Submodules

Working with SIMATIC S5 Submodules

You can read and program SIMATIC S5 EPROMs and EEPROMs using the 48-pin S5 EPROM and EEPROM programming port. You will find information about using the programming software in the STEP 5 User Manual.

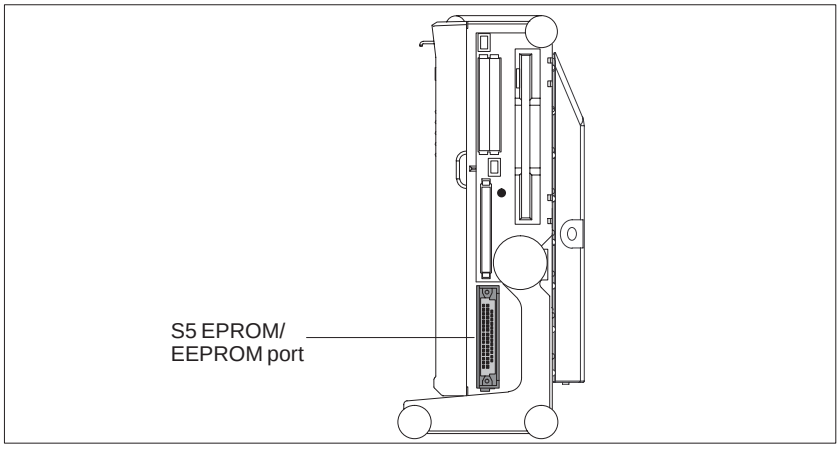


Figure 4-8 S5 Submodule (EPROM/EEPROM) Programming Port

Proceed as follows when working with the S5 submodule programming ports:

1. Switch on your device.
2. Start the EPROM function in your STEP 5 software (version V 6.x).
3. Plug the S5 memory submodule into the 48-pin programming port.
4. Read, program, or erase (EEPROMs only) your S5 memory submodule with the EPROM programming package of your STEP 5 software.
5. Remove the S5 memory submodule.
6. Terminate the EPROM programming package of your STEP 5 software.

Note

Only program SIMATIC S5 submodules when you are operating the device using the power supply system (the external power supply unit must be plugged in). Only then can you be sure that programming will not be interrupted by a power outage if the battery is low.



Caution

Risk of damage to EPROMs or EEPROMs!

If you insert or remove the EPROM or EEPROM while it is in use, there is a danger that it will be damaged.

You must not remove the S5 EPROM or EEPROM while the LED indicating that the EPROM or EEPROM is being read etc. is lit. You **cannot** work simultaneously with S5 memory submodules and memory cards.

Before inserting or removing S5 EPROMs or EEPROMs, you must equalize the static charge on your body with the potential on the unit. You can do this by briefly touching the metal mounting plate of the ports on the left-hand side panel of the unit.

4.5 Working with SIMATIC Memory Cards

Working with SIMATIC Memory Cards

SIMATIC memory cards can be read, programmed, and erased using the 68-pin connector. SIMATIC memory cards are available for SIMATIC S5 and SIMATIC S7 software.

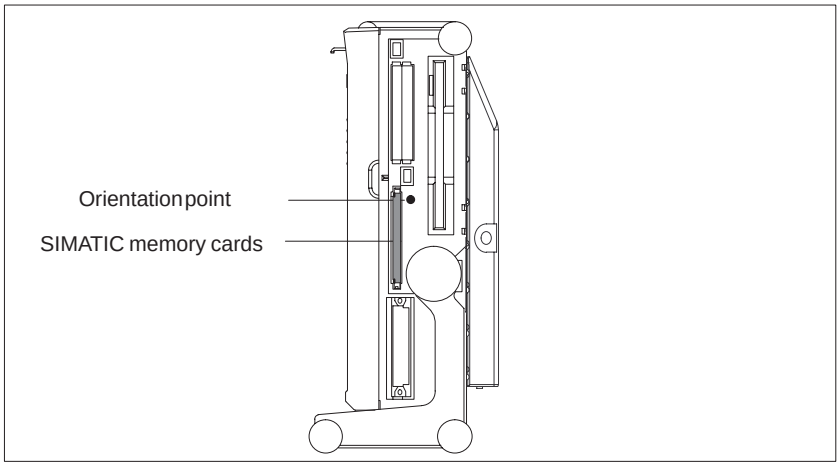


Figure 4-9 Slot for SIMATIC Memory Cards

Proceed as follows when working with SIMATIC memory cards:

1. Switch on your device.
2. Start your SIMATIC programming function.
3. Plug the SIMATIC memory card into the 68-pin connector.
4. Read, program, or erase the memory card with the programming function of your SIMATIC programming software.
5. Terminate the programming function of your SIMATIC software.
6. Remove the SIMATIC memory card from the programming port for further use in a programmable logic controller.



Caution

Risk of damage to memory cards and the PG 720!

You must insert the memory card into the 68-pin connector with the type label pointing to the rear of the unit. Make sure that the orientation point beside the slot matches the point on the card.

If you attempt to plug in the memory card the wrong way round, you may damage your PG 720 or memory card.

You must not remove the memory card while the LED indicating that the card is being read etc. is lit. You **cannot** work simultaneously with S5 memory submodules and memory cards.

4.6 Working with PC Cards

PC Cards

The PC card interface supports Cardbus cards (32-bit) and PCMCIA cards (16-bit). The PG 720 has two PC card ports. You can plug communication modules for MODEM, FAX-MODEM, ISDN, Token Ring, ETHERNET, memory expansion and SCSI interface modules in credit-card format into these ports. You can plug in two type II cards or one type III card.

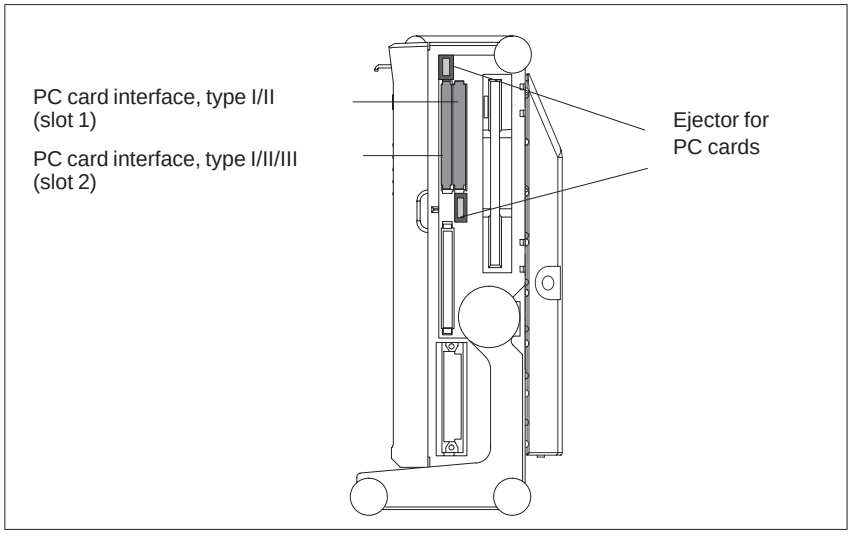


Figure 4-10 PC Card Interface

Caution

Risk of damage to PC cards and the PG 720!

Always insert PC cards with the front face turned toward the rear of the PG 720. The front face generally bears the company and product designation and is labeled ”This side up”, or words to that effect.

You might damage the PG 720 and the PC card if you attempt to insert the PC card the wrong way round.

Always discharge your body’s charge of static electricity by briefly touching a grounded part of the device (e.g. the metal mount of the port) before inserting or removing a card (in accordance with the instructions for handling electrostatically sensitive components)

Note

Do not use PC cards along with a SIMATIC-S5 module or a SIMATIC memory card. Always follow the instructions in your Operating Instructions.

Note

In order to use a PC card you must enter BIOS-SETUP, open the *Main* menu, select the *Hardware Option* submenu and set “Cardbus/ PCMCIA Slot” to “Enabled”.

4.7 Connecting the PG 720 to other SIMATIC S5 Units

Point-To-Point Connection

In this section, you will learn how to connect your PG 720 to a programming device or S5 programmable logic controller using a point-to-point connection.

You can establish a point-to-point connection by connecting the PG 720 to another programming device or a programmable logic controller using

- An RS-232 connection
- A TTY connection

Configuring Interfaces with Line Current (TTY, 20 mA)

To ensure reliable data transfer, several factors must be taken into account. The maximum data transfer rate (baud rate) depends on the distance, the type of cable, the pin assignment of the interface and external interference.

Rules

You can reduce interference by choosing the right transmission cable and connecting it properly, and by observing the following guidelines:

- Use a shielded cable with a low line resistance (130 Ω / km) (about 40 Ω kft) and low capacitance (< 90 pF/m) (about 27 pF/ft). Twisted-pair cables are less susceptible to noise and interference. A low line resistance results in reduced voltage excursions and shorter charge reversal times. The line resistance decreases with increasing conductor cross-section for the same length of cable.
- The shorter the transmission link, the higher the maximum possible data transfer rate.
- If there is an active sender and an active receiver at the same end of the transmission link, the sequence of access priority to the transmission circuit must be taken into account in order to achieve the longest possible transmission link.
- Signal lines and power lines must not run together. Signal lines must be installed as far away as possible from sources of strong interference (for example, 400 V 3-phase power cables).
- The active TTY interface with a 12 V no-load voltage has been tested on a 100 m (1100 ft) long cable at a transmission rate of 9600 bps in an environment with normal levels of noise (field strength < 3 V/m or 1 V/ft). If a shielded LiYCY 5 x 1 x 0.14 shielded cable is used, reliable transmission is possible over a distance of up to 100 m (1100 ft). The AS511 protocol (only one transmitter at a time) was used for testing.

Note

The interference field of the source decreases exponentially with the distance.

Connecting the PG 720 to S5 Programmable Controllers

You can connect the PG 720 to a SIMATIC S5 programmable logic controller using the COM1/TTY interface port. The cable for connecting to SIMATIC S5 CPUs is supplied with the PG 720 (Order no.: 6ES5734-2BD20).

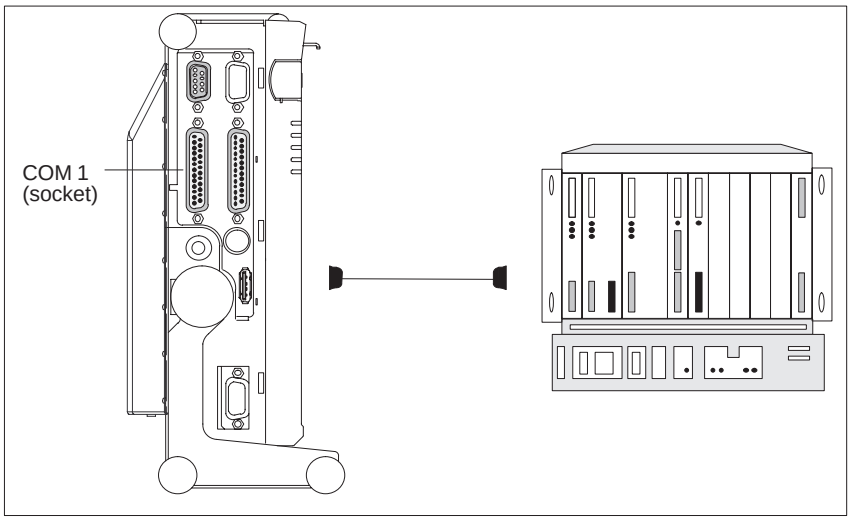


Figure 4-11 Connecting the PG 720 to an S5-Programmable Logic Controller

You connect your PG 720 to a SIMATIC S5 programmable logic controller as follows:

1. Switch off your device.
2. Open the cover of the interface ports on the left-hand side panel.
3. Plug the cable into the COM1/RS-232 modem/PLC interface port.
4. Secure the connector with screws.
5. Plug the cable into the corresponding port on the CPU of the programmable logic controller.



Caution

Risk of damage to the PG 720!

The interface port may be damaged if you confuse the connections or use the wrong connecting cables.

Make sure that the TTY cable of the PG 720 is plugged into the COM1/TTY port and not into the LPT1 port.

Before plugging the cable in, the static charge on your body, the unit, and the connecting cables must be equalized. You can do this by briefly touching the metal mounting plate for the interfaces on the left-hand side panel of the device.

Only use original cables to connect the programmable logic controller.

Connecting the PG 720 Using an Adapter

The connecting cable 6ES5 734-2BD20 is supplied with the PG 720. An adapter is available for connecting the programmable logic controller using older standard cables.

Table 4-2 Adapter for the PG 720 Connecting Cable

Port	Connection	Connecting Cable Order No.	Adapter
COM1 as TTY interface	PG 720 with SIMATIC S5 programmable logic controller	6ES5 734-2BD20	
		6ES5 731-1xxx0 15-pin	6ES5 731-6AG00
		6ES5 731-0xxx0 25-pin	6ES5 731-6AG00

To allow a data transfer rate of 9600 bps up to a distance of 100 m (1100 ft), the receiving diode is connected to ground (reference) via the connecting cable.

Note

Cables of various lengths are available under Order No. 6ES5 734-2xxx0 (xxx stands for the length in meters).

Connecting the PG 720 to Other Programming Devices (RS-232, TTY)

If you want to connect your PG 720 to another programming device, you can plug the appropriate connecting cable into the RS-232 or TTY interface port. You will find more detailed information about the connecting cables listed below in Chapter 8.

Table 4-3 Connecting the PG 720 to Other Programming Devices

Port	Connection	Connecting cable Order No:	Adapter
COM1 as RS-232 interface	PG 7xx with PG 7xx	6ES5 733-5BD20[2]	
COM1 as TTY interface	PG 7xx with PG 6xx	Series connection of 6ES5 733 -2xxx0[2] and 6ES5 731-6AG00[1)]	6ES5 731-6AG00

Note

1. When connecting the programming devices in series, make sure you connect the cable the right way round (see Figure 4-12).
2. The connecting cable is available for order only as a spare part. The connecting cable is described in Section 8.



Figure 4-12 Direction of Connection: Adapter-Connecting Cable

Note

If you connect two programming devices using the TTY interface, you must deactivate the TTY interface (COM1) on one of the devices by changing the jumper settings. When supplied, this interface is always active.

Activating/ Deactivating the PG 720

When your PG 720 is supplied, the COM1 (TTY) serial port is active (20 mA current loop). When you connect two programming devices using the COM1 (TTY) serial port, you must deactivate the port on one of these devices. The PG 720 has jumpers on the mother board for this purpose.

These jumpers are accessible if you open the battery compartment cover.

Jumper Settings

Change the jumper settings as shown in Figure 4-13.

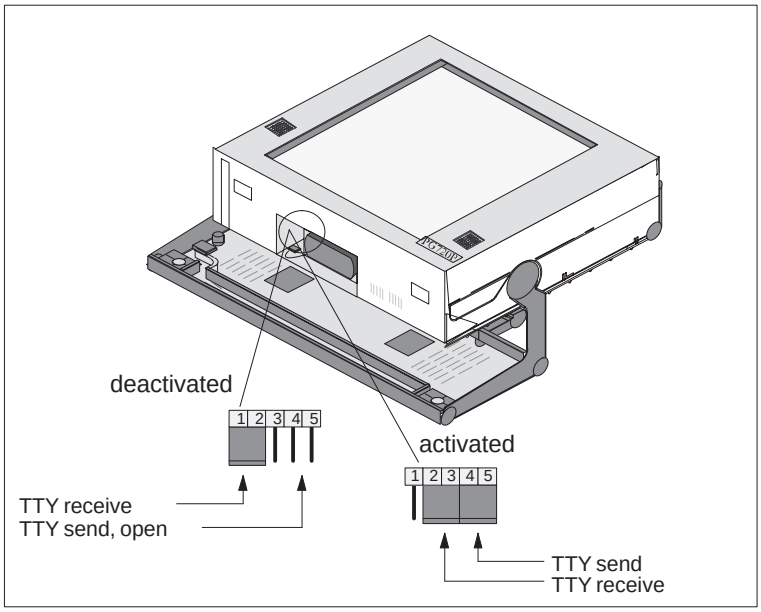


Figure 4-13 Activating, Deactivating the TTY Port using jumpers

Changing the Jumper Setting

Proceed as follows to deactivate the port on the PG 720:

1. Switch off your device.
2. Adjust the position of the PG 720 so that it is horizontal.
3. Open the battery compartment cover.
4. Remove jumpers 2-3 and 4-5 at the top left beside the battery.
5. Insert the jumper in slot 1-2 (see Figure 4-13).
6. Close the battery compartment cover.

4.8 Connecting the PG 720 to a SIMATIC S7 Network (MPI/DP)

Connecting an S7 Programmable Controller via an MPI/DP Interface

You can connect your PG 720 to a SIMATIC S7 programmable logic controller using the floating*) MPI/DP interface. The MPI cable for connection to SIMATIC S7 CPUs is supplied with the PG 720. (Order No.: 6ES7901-0BF00-0AA0)

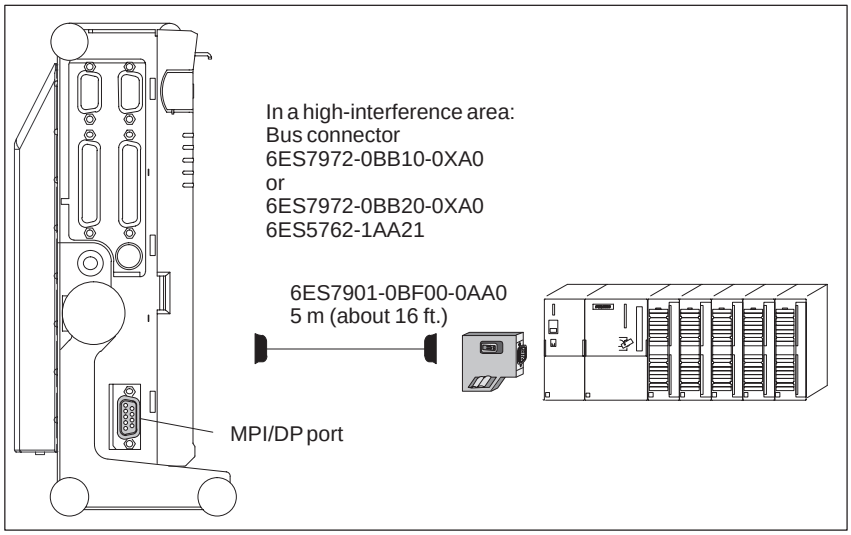


Figure 4-14 Connection Using the MPI/DP Interface

Proceed as follows when connecting to a SIMATIC S7 programmable logic controller:

1. Switch off your device.
2. Open the interface cover on the left-hand side panel of the device.
3. Connect the cable to the MPI/DP interface.



Caution

Risk of damage to the PG 720!

Before plugging in the cables, the static charge on your body, the unit, and the cables must be equalized. You can do this by briefly touching the metal mounting plate for the interfaces on the left-hand side panel.

*) Electrical isolation in the safety extra-low voltage circuit (SELV circuit).

Connecting

Via the MPI/DP interface, you can connect your programming devices to

- MPI networks (S7-200, S7-300, and S7-400) or
- PROFIBUS DP networks (DP components).

MPI/PROFIBUS DP Network

Up to 32 devices (PC, programming device, or programmable controller) can be connected to the MPI/DP interface to form a network segment. The physical connection to the MPI/PROFIBUS DP network is via a floating RS485 interface which is a component of the programming device basic module.

Several MPI/PROFIBUS DP network segments can be connected via repeaters. The complete MPI/PROFIBUS DP network can comprise up to 127 stations. The data transmission rate in the MPI network is 187.5 Kbps. Data transmission rates from 9.6 Kbps to 12 Mbps are possible in the PROFIBUS-DP MPI network.

Note

You will find more information on setting up an MPI/DP network in the manual ”Profibus Networks” Order No.: 6GK 1970-5CA10-0AA0 or in SIMATIC NET.

4.9 Networking the PG 720 with Other Stations on PROFIBUS

Networking the PG 720 on PROFIBUS

PROFIBUS is an open and robust bus system for industrial use. It can be used to configure networks with up to 32 stations per segment. The data transfer rate for PROFIBUS is 1.5 Mbps. PROFIBUS-DP supports data-transfer rates from 9,6 Kbaud to 12 Mbaud.

How the Network Functions

The network operates on the master-slave principle with token passing (complying with DIN19245, PROFIBUS). It distinguishes between active and passive stations. An active station receives the token and passes it on to the next station within a specified time.

Hardware Requirements

Using the following components, for example, you can connect or network the PG 720 with PROFIBUS:

- RS 485 MPI/DP interface adapter, integrated
- Shielded, twisted pair (bus cable or connecting cable to network).

Note

You will find more detailed information about the SIMATIC Net PC cards in the SIMATIC NET Catalog IK 10.

4.10 Networking the PG 720 and Other Computers on Industrial Ethernet

Networking the PG 720 on Industrial Ethernet

Industrial Ethernet is a bus system for industrial use based on ETHERNET (ISO 8802/3). The main features of Industrial Ethernet are speed (10 Mbps), simple expansion, open communication, and widespread application.

How the Network Functions

Industrial Ethernet is the name of Siemens networks and network components operating according to the CSMA / CD (ETHERNET) principle. Industrial Ethernet is a bus-type LAN that uses a triaxial cable (H1) as its transmission medium.

Hardware Requirements

To connect or network the PG 720 with Industrial Ethernet, a PC-card-ETHERNET interface module is required.

Note

You will find more detailed information about the SIMATIC Net PC cards in the SIMATIC NET Catalog IK 10.

4.11 Connection under Windows

Windows supports point-to-point connections via the LPT or COM port. The connecting cables are standard, commercially available products. More information is available in the Networks section of the Windows description and in the online Help system under “Connection to Another Computer”.

PG 720 Expansions

5

What Does This Chapter Contain?

You can enhance the performance of your PG 720 by adding additional memory. This chapter describes how to expand your PG 720. Please observe the relevant safety guidelines.

Chapter Overview

Section	Contents	Page
5.1	Opening the Unit	5-2
5.2	Components Visible After Opening the Unit	5-4
5.3	Block Diagram of the Motherboard	5-5
5.4	Switch Setting / Jumper	5-7
5.5	Installing Memory Expansion Modules	5-8
5.6	Processor Upgrade	5-9
5.7	Replacing the Backup Battery	5-10
5.8	Closing the Unit	5-11

5.1 Opening the Unit

Prerequisites

The device is designed for easy maintenance so that any work that is necessary can be done quickly and at low cost.



Caution

The electronic components on the printed circuit boards are extremely sensitive to electrostatic discharge. Certain precautionary measures are therefore necessary when handling such components. These measures are explained in the guidelines for handling electrostatically-sensitive devices at the end of this manual.

Limitation of Liability

All technical specifications and licences apply only to expansion functions approved by SIEMENS.

No liability can be accepted for impairment of functions caused by the use of devices and components of other manufacturers.

All the modules and components in the PG 720 are electrostatically sensitive. Please read the ESD guidelines at the end of this book carefully. The following symbol warns that electrostatically-sensitive modules are present.



Before Opening the Unit

Note the following rules before opening the unit:

- Before you disconnect the power supply cable, discharge any electrostatic charge on your body. You can do this by touching the metal mounting plate for the interfaces on the left-hand side panel of the unit.
- Discharge any electrostatic charge from tools that you are using.
- Wear a grounding wrist-strap if you are handling components.
- Leave components and modules in their packing until you are ready to install them.
- Disconnect the PG 720 from its power supply and remove the battery before plugging in or removing any modules or components.
- Touch components and modules only on their edges. Above all, do not touch the connecting pins and printed conductors.
- Never operate the PG 720 with the cover open.

Tools

Use a screwdriver to open the unit.

Opening the PG 720

To open your PG 720, proceed as follows:

1. Switch off the PG 720, pull out the power supply connector, and remove all connecting cables from the unit, including the keyboard cable.
2. Lower the keyboard and detach it.
3. Incline the unit to 90°. To stabilize the unit, pull out the extra support and the fold-down bracket.
4. Open the cover of the battery compartment and disconnect the battery.
5. Remove the two screws beneath the handle.
6. Lift the front section clear of the housing.
7. Disconnect the CD-ROM ribbon cable and the audio cable from the drive plug of the backplane.
8. Lay the front section with the display on a soft, flat surface.

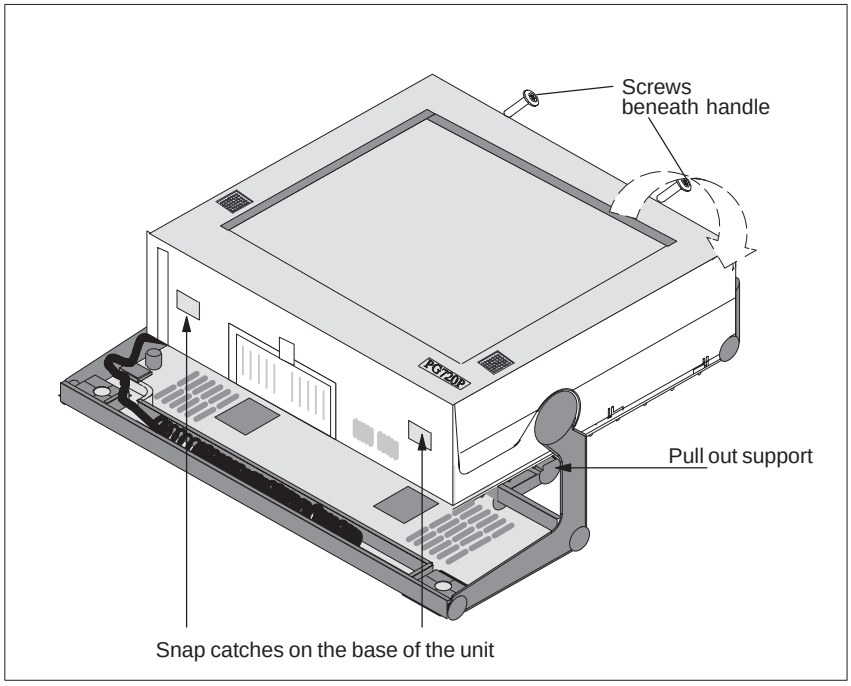
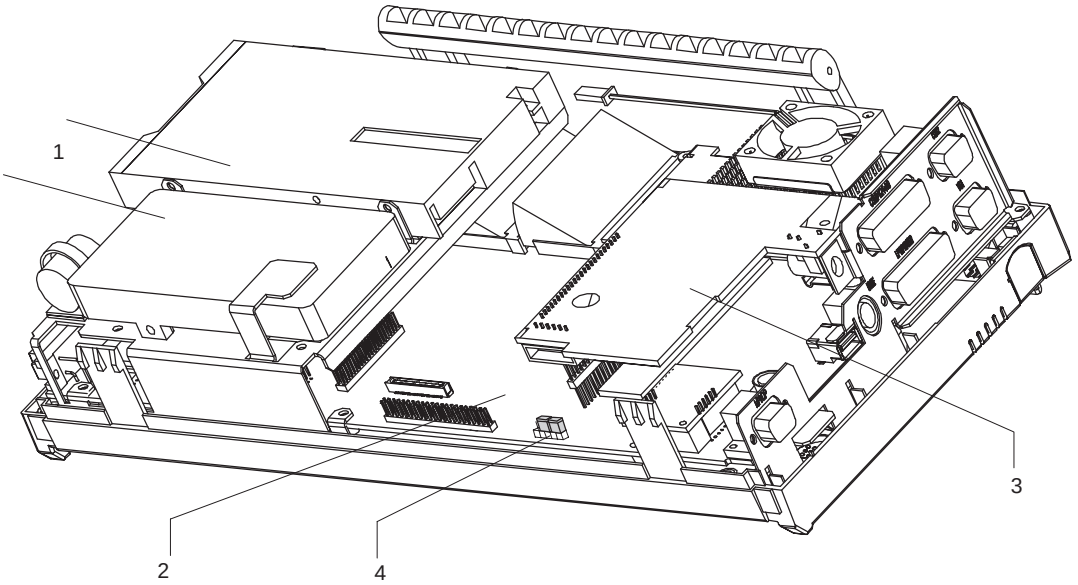


Figure 5-1 PG 720 prepared for opening

5.2 Components Visible After Opening the Unit

Components

Once you have removed the top cover of your unit, the components are visible.



1 Drives
2 Motherboard
3 Power supply
4 Jumpers for TTY setting

Figure 5-2 PG 720 open

5.3 Block Diagram of the Motherboard

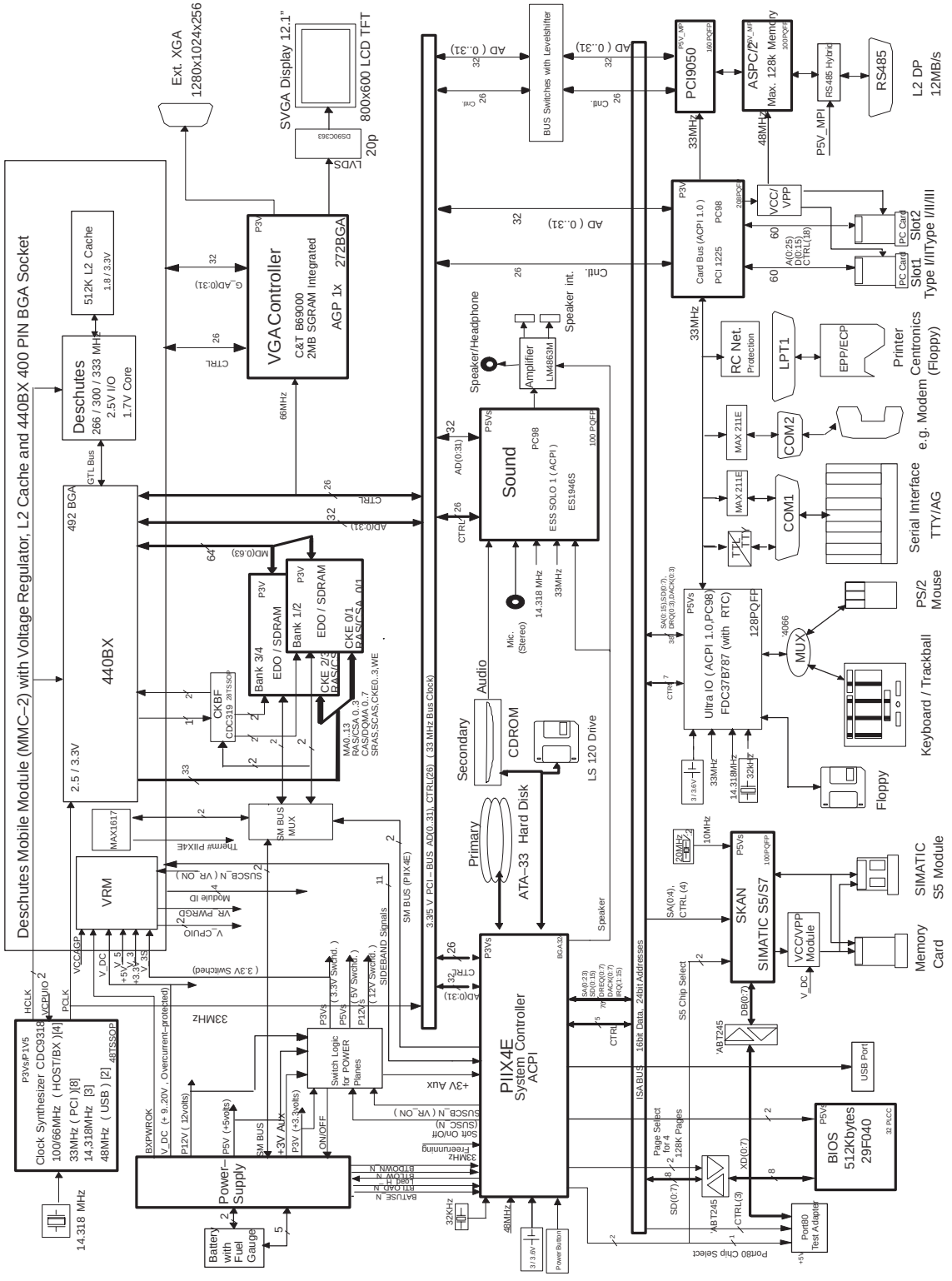


Figure 5-3 Block Diagram, PG 720PII

Motherboard

The motherboard is the heart of the PG 720. Here, data are processed and stored, and interfaces and device I/Os controlled and managed.

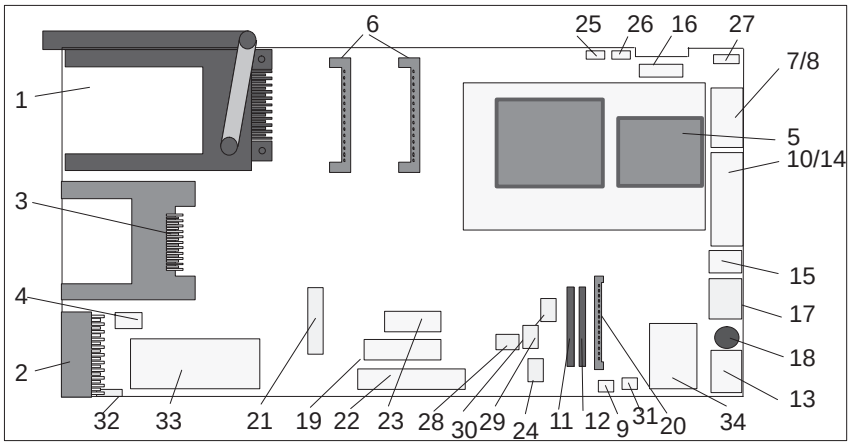


Figure 5-4 Motherboard

Components on the Motherboard

The following components are located on the motherboard of the PG 720:

Table 5-1 Components of the Motherboard

Serial Number	Functions
1	PC card slots
2	S5 submodule port
3	Memory-card port
4	Clock-battery connector
5	Pentium II CPU on base with cooling unit
6	System memory, 2 slots
7	External VGA port
8	COM 2 serial port
9	TTY jumpers (X30)
10	COM 1/TTY serial port
11	TTY receiver
12	TTY transmitter
13	MPI/DP port
14	LPT 1 parallel port
15	PS/2 mouse port (external)
16	Connector for display
17	Type A USB connector
18	Port for keyboard and trackball
19	Floppy disk drive connection
20	Power supply connection (from DC converter)
21	IDE for hard disk drive
22	IDE for CD-ROM drive
23	IDE for LS 120 drive
24	CD-ROM sound connection
25	Connector for CPU fan

Table 5-1 Components of the Motherboard

Serial Number	Functions
26	Connector for On/Off switch
27	Connector for display unit
28	Connector, reserved (microphone)
29	Jumper not installed
30	Connector, reserved (earphones)
31	Connector for speaker, left
32	Connector for speaker, right
33	Programming submodule
34	RS 485 hybrid

5.4 Switch Settings / Jumpers

TTY Jumpers (x30) (see also Figure 5-2)

X30		Function
2-3	4-5	Active TTY port (standard setting)
x	off	TTY send loop separate from power source (passive setting)
off	x	TTY receive loop separate from power source (passive setting)

5.5 Installing Memory Expansion Submodules

Standard Memory

The motherboard has 2 slots for 144 pin SO DIMM memory submodules. This allows you to expand the memory capacity of your PG 720 to a maximum of 256 Mbytes.

The basic configuration consists of a 64 Mbyte SDRAM module. Only one module has to be installed.

Table 5-2 Slots for Memory Expansion

Memory	Modules		
	32 Mbytes	64 Mbytes	128 Mbytes
64 Mbytes	–	1	–
128 Mbytes	–	2	–
128 Mbytes	–	–	1
192 Mbytes	–	1	1
256 Mbytes	–	–	2

The order numbers for the SO DIMM memory submodules are listed in the Operating Instructions.

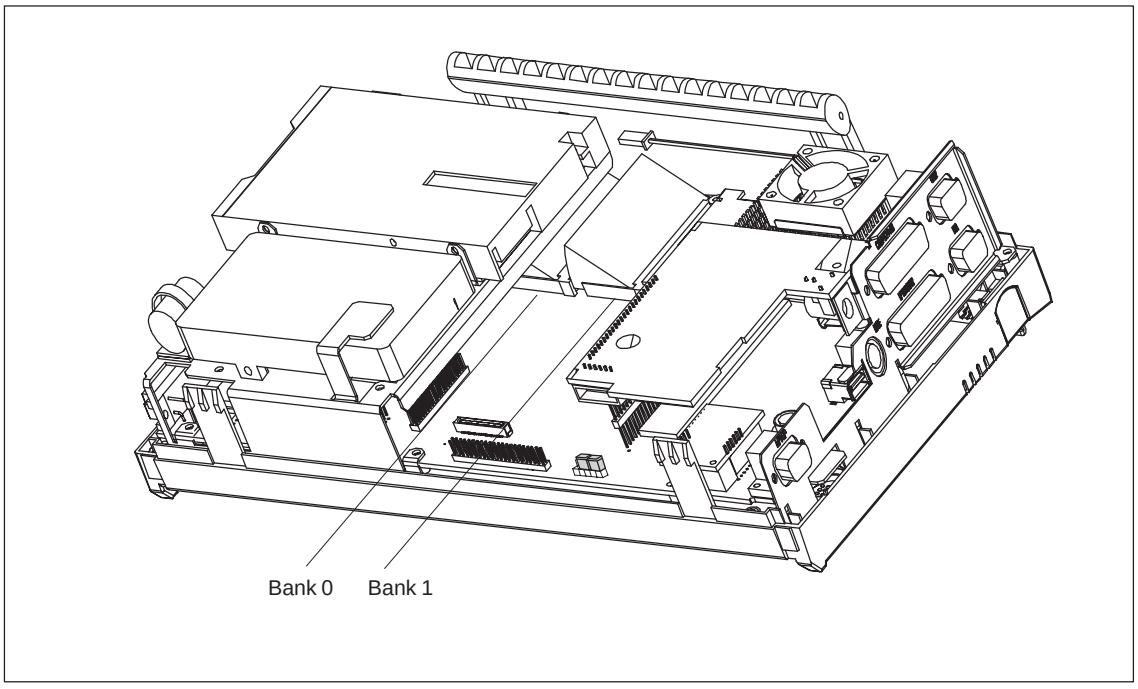


Figure 5-5 Positions of the SO DIMM Memory Submodules



Caution

Risk of damage!

The electronic components of the printed circuit boards are extremely sensitive to electrostatic discharge. Certain precautionary measures are therefore necessary when handling such components. These measures are explained in the guidelines for handling electrostatically-sensitive devices at the end of this manual.

Installing the SO DIMM Cards

To plug in expansion submodules, proceed as follows:

1. Open the unit as described in Section 5.1.
2. Plug the cards into the slots. Note the safety recess on the connector side of the SO DIMM card.
3. Push the card down applying light pressure until it locks into place.
4. Close the unit (see Section 5.8).



Caution

Risk of damage!

Make sure that the cards sit securely in the slots, otherwise they can fall out and be damaged.

Installation

The memory configuration is detected automatically. When you switch on the unit, the distribution of base and extended memory is displayed on the screen.

5.6 Processor Upgrade

You can boost the performance of your PG 720PII by installing other Pentium II processors. Consult your local service partner or distributor.

Note

Processor upgrade

If an upgrade is implemented, for example to a processor with a different frequency, it may be important to also upgrade the BIOS.

5.7 Replacing the Backup Battery

Battery Power Supply for Real-Time Clock and Configuration

A backup battery (3.6 V lithium battery) powers the real-time clock even after the PG 720 is switched off. In addition to the time of day, all the information about the PG 720 (device configuration) is stored in RAM. If the backup battery fails or is removed, all these data are lost.

The clock uses very little power and the lithium battery has a high capacity so that the battery can provide backup power for the real-time clock for many years and seldom needs to be replaced.

Battery Voltage too Low

If the battery voltage is too low, the time of day and the device configuration data in the RAM are lost.

Replacing the Battery

In this case, you must replace the backup battery. The battery is located on the drive mounting.

To change the battery, proceed as follows:

1. Switch off your PG 720 and remove the power cable and all the connecting cables.
2. Open the unit as described in Section 5.1.
3. Now change the battery by removing the connector and releasing it from the clip.
4. Push the new battery firmly into the clip.
5. Close the unit as described in Section 5.7

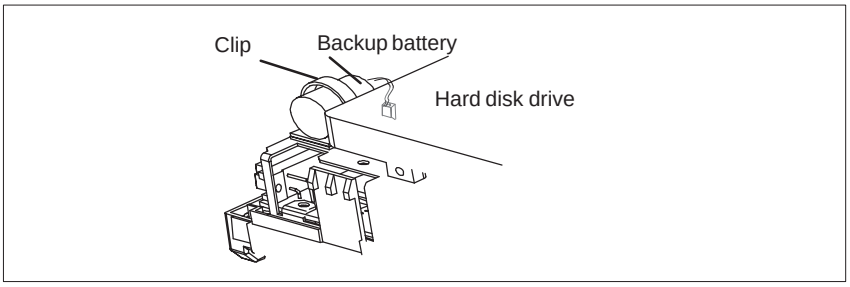


Figure 5-6 Clip for Backup Battery



Caution

Risk of damage!

Only replace the lithium battery with an identical battery or with a type recommended by the manufacturer (Order No.: W79084-E1003-B1).

Dispose of used batteries in keeping with local regulations.

Changing SETUP

If you change the battery or unplug the battery connector you must run the SETUP program to reset your programming device's configuration data (see Chapter 6).

5.8 Closing the Unit

Closing the Unit

To close the unit, proceed as follows:

1. Tilt the unit to the horizontal position.
2. Place the front section on the casing.
3. Insert the CD-ROM ribbon cable and the CD-ROM audio line into the drive connector on the backplane.
4. Press the front section onto the lower edge of the casing until the catches in the base engage.
5. Insert the battery into the battery compartment and connect it up.
6. Close the battery cover.
7. Connect the keyboard connector to the back of the unit. Make sure that the cable is inserted in its channel.
8. Insert the keyboard cable in the cable conduit at the base of the device.
9. Allow the keyboard hinge to slide into the receptacles in the base of the device.
10. Tilt the unit back into the operating position.

Your PG 720 is now ready for operation again.

Configuring the PG 720

6

What Does This Chapter Contain?

In this chapter, you will learn how to configure your programming device. You need to do this if you change your system by adding, removing, or exchanging expansion modules and memory expansions, or by replacing a system module.

Chapter Overview

Section	Contents	Page
6.1	Changing the Device Configuration with SETUP	6-2
6.1.1	The Main Menu	6-5
6.1.2	The Advanced Menu	6-14
6.1.3	The Security Menu	6-19
6.1.4	The Power Savings Menu	6-21
6.1.5	The Boot Sequence Menu	6-23
6.1.6	The Version Menu	6-25
6.1.7	The Exit Menu	6-26
6.2	Configuring the PCMCIA Interface	6-30

6.1 Changing the Device Configuration with SETUP

Changing the Device Configuration

Your PG 720 device configuration is set for working with the software supplied with the unit. You should only change the preset values if you have modified your PG 720 in any way or if a fault occurs when the unit is powered up.

SETUP Program

The SETUP program is in the ROM-BIOS. Information about the system configuration is stored in the battery-backed RAM of the PG 720.

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

Incorrect SETUP Data

If incorrect SETUP data are detected when you boot the system, the BIOS prompts you to:

- Start SETUP by pressing **F2** or
- Continue booting by pressing **F1**.

Starting SETUP

On completion of the startup test, the BIOS gives you the opportunity of starting the SETUP program by displaying the following screen prompt:

```
PRESS <F2> to enter SETUP
```

To start SETUP, proceed as follows:

1. Reset your PG 720 (warm or cold restart).
2. Press the **F2** key as long as the BIOS prompt appears on the screen.

SETUP Menus

The various menus and submenus are listed on the following pages. You can get all the information you need for the SETUP entry selected from the **“Item Specific Help”** part of the relevant menu.

Screen Display Following Power On

With the standard setting of your programming device, the display shown below appears following power-on:

```
Phoenix NoteBIOS 6.0 A5E000xxxxx-01
Copyright 1985-98 Phoenix Technologies Ltd., All Rights
Reserved.


SIEMENS PG 720PII

CPU = Pentium®II  266MHz
640K System RAM Passed
63MB Extended RAM Passed
0512K Cache SRAM passed
System BIOS shadowed
Video BIOS shadowed
UMB upper limit segment address: xxxx
Mouse initialized
Fixed Disk 0: IBM DADA 26480
ATAPI CD–ROM: T...


Press <F2> to enter SETUP
```

If you press the F2 key while the above display is shown, you select the ROM-based BIOS setup program. In this program, you can set a number of system functions and hardware configurations of your programming device.

The standard settings are effective on delivery. You can change these settings using the BIOS setup. The modified settings become effective when you have saved them and terminated the BIOS setup.

The following screen form appears when you start the BIOS setup:

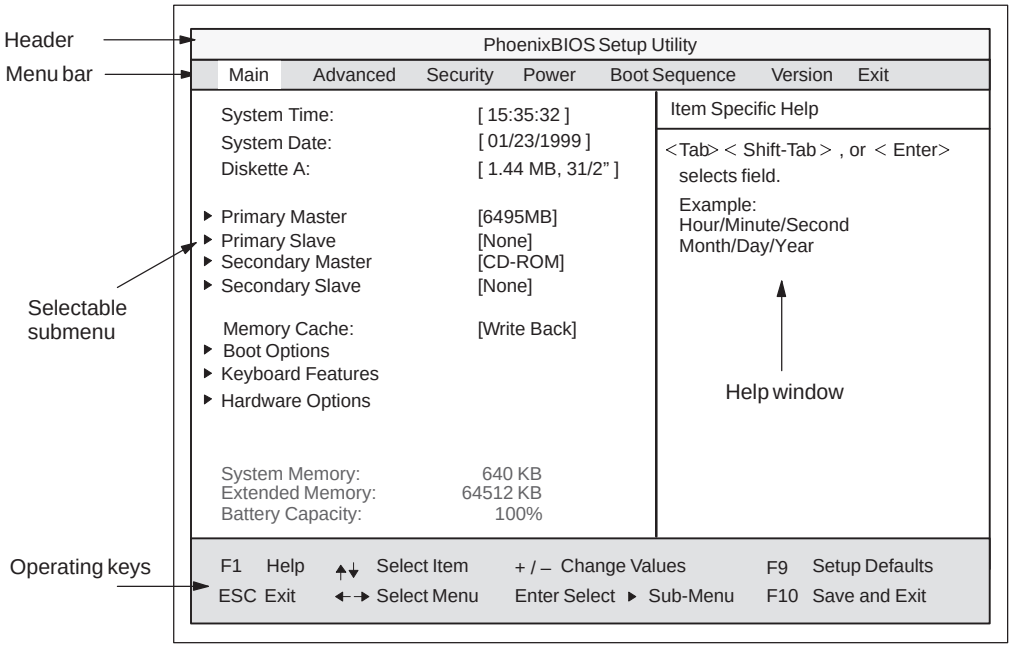


Figure 6-1 Main SETUP Menu

Menu Structure

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

You can move between the menu screens using the cursor keys [←] and [→].

Menu	Meaning
Main	System functions are set here
Advanced	An extended system configuration can be set here
Security	Security functions are set here, for example a password
Power	Power functions can be selected here
Boot Sequence	The boot priorities are defined here
Version	Information about the programming device's release status
Exit	Used for terminating and saving

6.1.1 The Main Menu

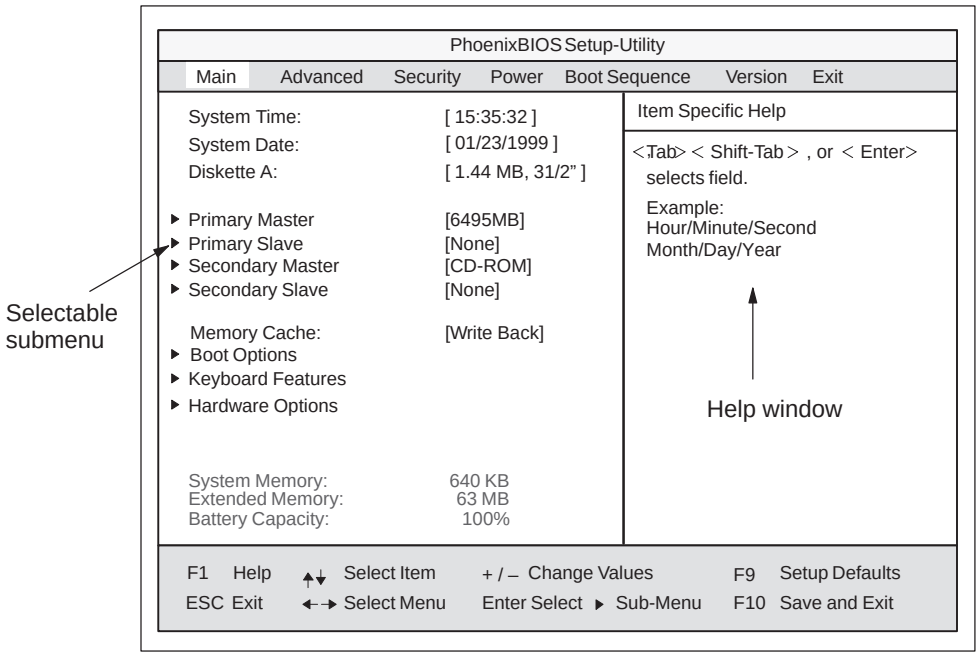


Figure 6-2 Main SETUP Menu

Settings in the Main Menu

In the **Main** menu, you can move upwards and downwards using the cursor keys [↑] and [↓] to select the following system parameters:

Field	Meaning
System Time	For viewing and setting the current time
System Date	For viewing and setting the current date
Diskette A	Type of built-in floppy disk drive
Memory Cache	For setting the cache options
By submenus	
Primary Master	Type of built-in drives
Secondary Master	Type of built-in drives
Boot Options	For setting boot options
Keyboard Features	For setting keyboard-interface options (e. g. NUM Lock, Typematic Rate)
Hardware Options	For setting PG 720PII hardware options

System Time and System Date

System Time and System Date indicate the current values. Once you have selected the appropriate option, you can use the [+] and [–] keys to modify the time setting

`Hour:Minute:Second`

and the date

`Month/Day/Year.`

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

Diskette A

The name of the installed floppy disk drive in the programming device is set here. The following entries are possible:

[Disabled]	If a floppy disk drive is not fitted
[360 KB, 5 1/4”]	
[1.2 MB, 5 1/4”]	
[720 KB, 3 1/2”]	
[1.44 MB, 3 1/2”]	Standard setting for installed disk drive A
[2.88 MB, 3 1/2”]	

Primary Master
Primary Slave
Secondary Master-
Secondary Slave

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

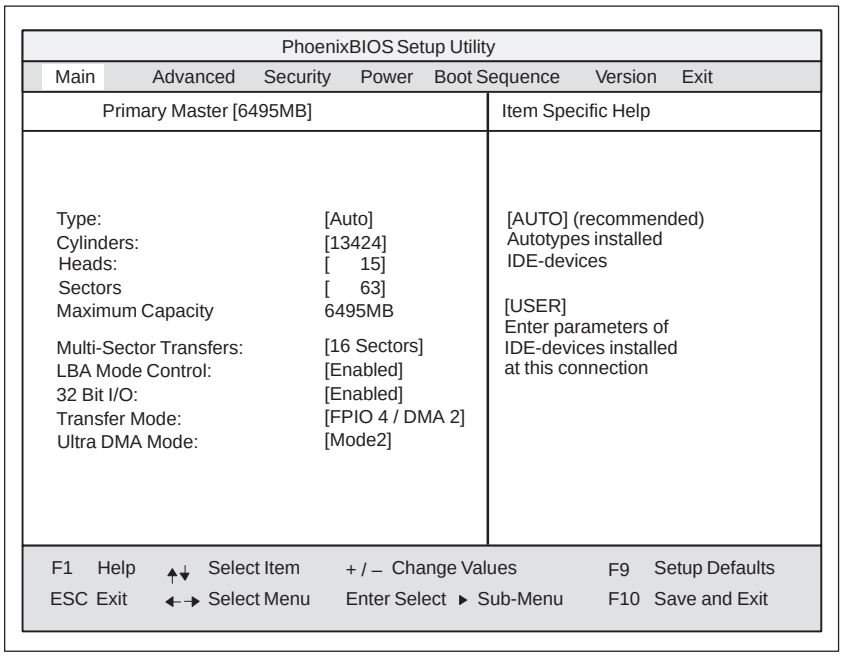


Figure 6-3 Example: Primary Master

"Type" Field

The parameters you can select here are usually stored on the IDE drive. The 'Auto' setting in the 'Type' field means that these values are automatically read from the drive and written into memory (**Autodetect**).

If Type is selected for a drive that cannot be detected, a timer times out in approximately 1 minute and the entries remain unchanged. You should always check that the interfaces for which you select 'Auto' are in fact connected to drives.

Select "User" if you want to define the hard-disk type yourself, in which case remember that you also have to set the other fields, including Cylinder, Heads, Sectors/Track and WritePrecomp, to the correct values for the type of hard disk in question.

"Multi-Sector Transfer" Field

The entry in the Multi-Sector Transfer field defines the number of sectors transferred per interrupt. The value depends on the drive and should be set only by setting the *Type* field to *Auto*.

```
Disabled

2,4,8,16    sectors
```

"LBA Mode Control" field

If the LBA Mode Control field (enabled,disabled) is set to 'Enabled', the system supports hard disks with capacities greater than 528 Mbytes. The value depends on the drive and should be set only by setting the *Type* field to *Auto*.

"32 Bit I/O" Field

The setting in the 32 Bit I/O field defines the mode of access for the drive

```
Disabled    16-bit access

Enabled     32-bit access     (default)
```

"Transfer Mode" and "Ultra DMA Mode" Fields

The settings in these fields define the interface's data-transfer rate. The value depends on the drive and should be set only by setting the *Type* field to *Auto*.

Hit ESC to exit the submenu.

“Memory Cache” Field

The following pop-up menu appears when you select the option “Memory cache” in the main menu:

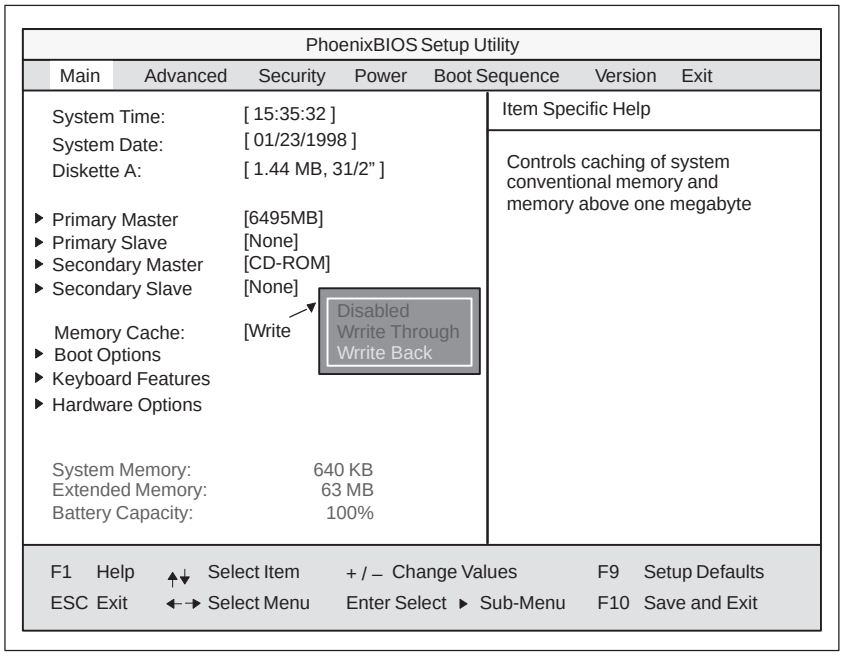


Figure 6-4 “Memory Cache” Menu

A cache is a fast memory buffer between the CPU and main memory (DRAM). Recurrent memory access operations are executed in the fast cache, instead of main memory, if the function is enabled. In rare instances involving some hardware and software combinations, it may be necessary to disable the cache because the program runtimes or waits are too short on account of the fast cache.

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

Option “Boot Options”

The following submenu appears when you select the option “Boot Options” in the main menu:

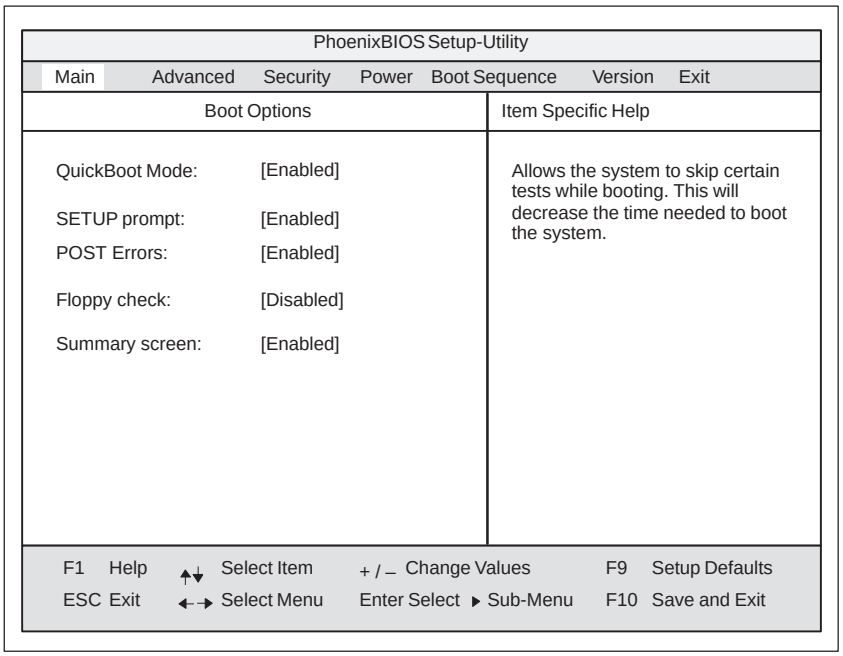


Figure 6-5 ”Boot Options” Submenu

Quick Boot Mode	Some hardware tests are skipped to speed up the boot procedure.
SETUP prompt	The message *PRESS <F2> to enter Setup* appears at the bottom of the screen during the system run-up phase.
POST Errors	The boot process is stopped if an error is detected; you must press F1 to acknowledge. Enter “Disabled”to avoid the necessity of acknowledging errors, for example if no keyboard is connected.
Floppy check	The floppy head is stepped inward and then back to its original position during the system run-up phase. This test is useful because it reinitializes the drive.
Summary screen	The most important system parameters are displayed when the system run-up phase completes.

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

Example of a summary screen:

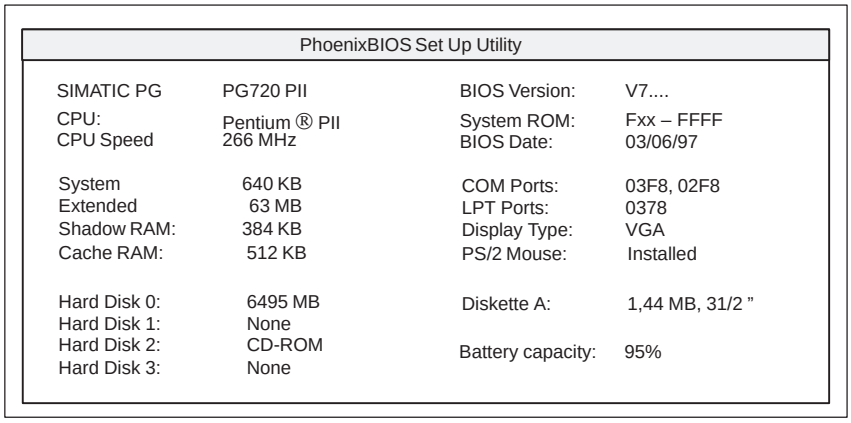


Figure 6-6 Summary Screen

The Summary screen appears when the system run-up phase completes.

Option “Keyboard Features”

The following submenu appears if you select the “Keyboard Features” field in the main menu:

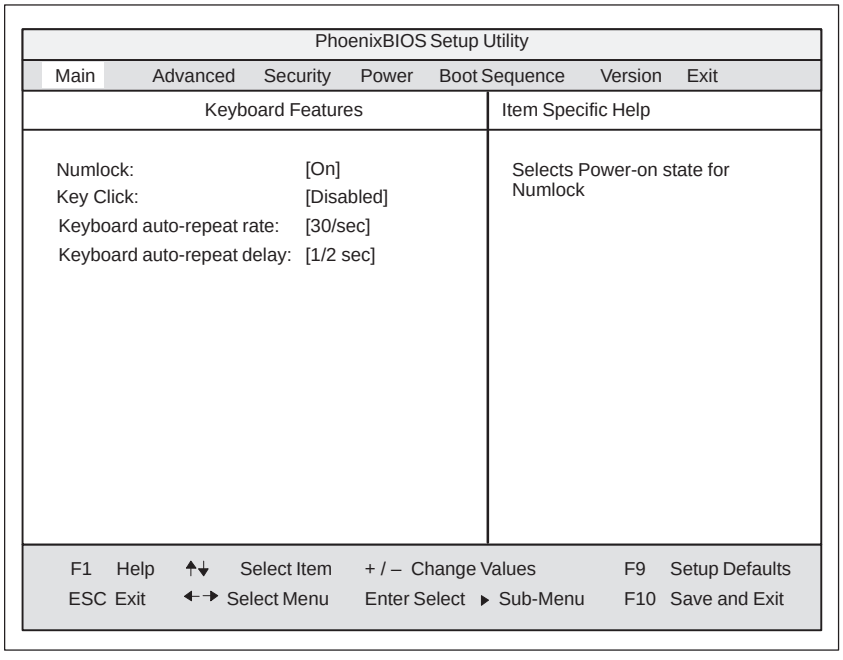


Figure 6-7 ”Keyboard Features” Submenu

Numlock	Switches Numlock on or off following power on
Key Click	A keystroke can be heard
Keyboard auto-repeat rate	Increase in automatic key repeat rate

"Hardware Options" Field

The following submenu appears when you select the "Hardware Options" field in the main menu:

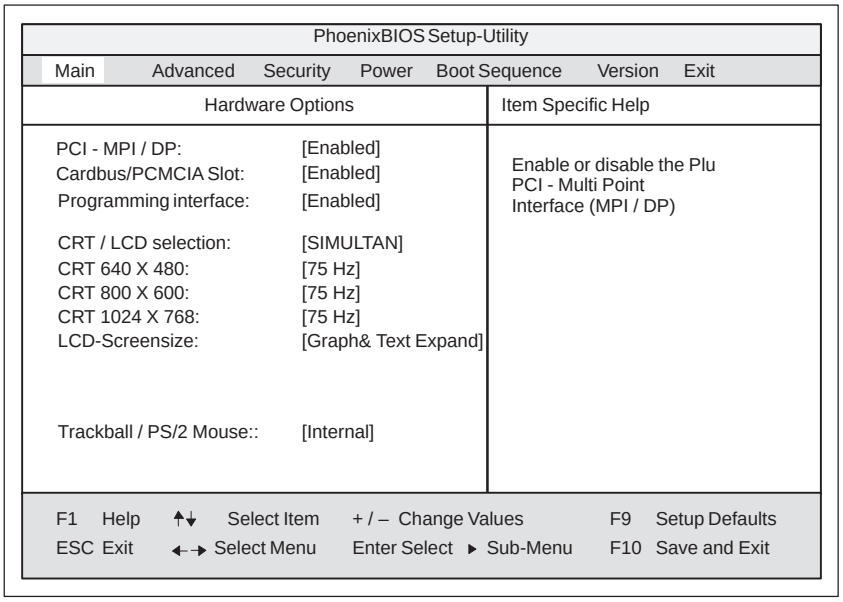


Figure 6-8 "PG 720 PII Hardware Options" Submenu

The parameters of the interfaces present on the basic module are set here.

Entry	Meaning	
PCI-MPI/DP	Enables the CP5611-compatible MPI/DP interface. The recourses are managed by the BIOS PCI plug & play mechanism.	
Cardbus / PCMCIA Slot	[Disabled]	Disables the Cardbus / PCMCIA interfaces.
	[Enabled]	The resources are managed by the BIOS PCI plug & play mechanism.
Programming interface	Enables or disables the interface for SIMATIC S5 memory modules and SIMATIC memory cards. This interface uses the I/O address range 300h-31fh.	
CRT / LCD selection	[LCD Enabled]	All data is output only to the internal LCD, the 15-way VGA port is disabled
	[CRT Enabled]	For maximum resolution the display signals are output only to the 15-way VGA port; the LCD interface of the VGA controller is disabled.
	[SIMULTAN]	Both display interfaces are enabled and operate simultaneously. Note, however, that the LCD does not support all resolutions.
CRT 640 x 480	Refresh rate with a resolution of 640x480 pixels	
CRT 800 x 600	Refresh rate with a resolution of 800x600 pixels	

Entry	Meaning	
CRT 1024 x 768	Refresh rate with a resolution of 1024x768 pixels	
LCD Screen-size	[Normal]	The display window in Text and Graphic modes is not expanded to full screen size.
	[Text expand]	Only the Text modes are expanded to full screen size.
	[Graph&Text expand]	The Graphic and Text modes are expanded to full screen size.
Trackball / PS/2 Mouse	[Internal]	The PS/2 port is activated. This is the default for the PG 720, the trackball is activated in this setting. IRQ 12 is assigned.
	[External]	The PS/2 port is activated, IRQ12 is assigned. The keyboard trackball is disabled, an external PS/2 mouse must be connected. If no external mouse is connected when the system boots, the BIOS deactivates the PS/2 port.
	[AUTO]	Automatic detection of the type of mouse connected. A PS/2 mouse takes priority over the keyboard trackball
	[Disabled]	The PS/2 port is deactivated, IRQ12 is available.
	Note:	Invariably, changes to this interface do not come into effect until the PG is switched off and on again.

6.1.2 The Advanced Menu

Menu Structure

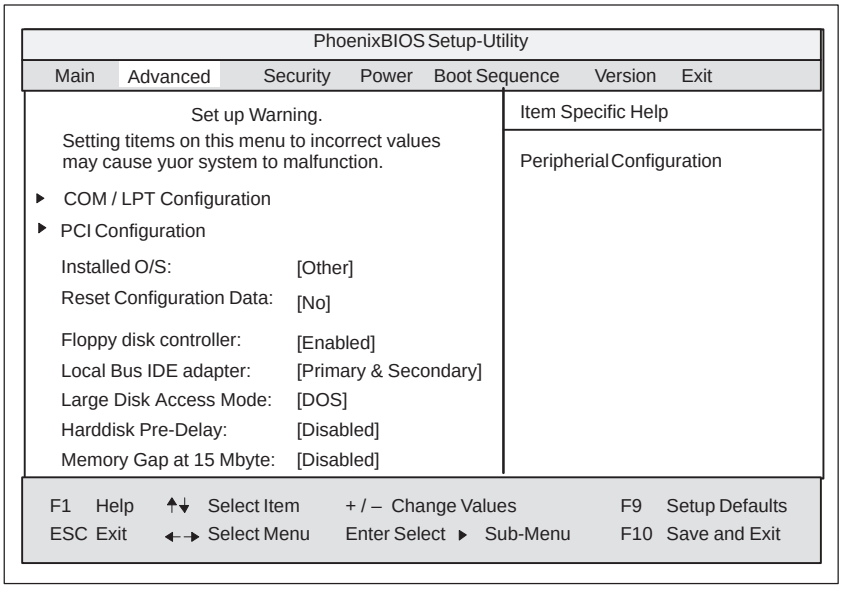


Figure 6-9 ”Advanced” Menu

Settings in the Advanced Menu

Installed O/S	Plug & play means that all modules are automatically detected and installed, providing they support the Plug&Play functionality.	
	[other]	BIOS handles the entire Plug&Play capability, default configuration
	[Win98]	The operating system handles some of the Plug&Play functions
Reset Configuration Data	[Yes]	All installations under Plug&Play are deleted and reconfiguration is triggered the next time the system boots. The entry is then reset to [No]. System components that do not support Plug&Play have to be entered manually.
Diskette controller	Enables or disables the floppy-disk controller on the motherboard.	
Local Bus IDE adapter	[Primary] [Secondary]	One IDE interface for max. two drives.
	[Primary & Secondary]	Two IDE interfaces for max. four drives.
	[Disabled]	No local IDE interface.
Large Disk Access Mode	[DOS]	The drive tables are adapted for DOS access operations in accordance with Enhanced IDE.
	[OTHER]	The tables are not adapted.

Harddisk Pre-Delay	[Disabled] No additional start-up delay for the hard disk. 3 to 30 seconds Additional start-up delay for the hard disk; needed only for older-generation hard disks.
Memory Gap at 15 MByte	[Disabled] The area from 15 to 16 Mbytes is not available as PC-Card memory. [Enabled] The area from 15 to 16 Mbytes is enabled for PC-Cards which can use this address range.

Submenu COM/LPT Configuration

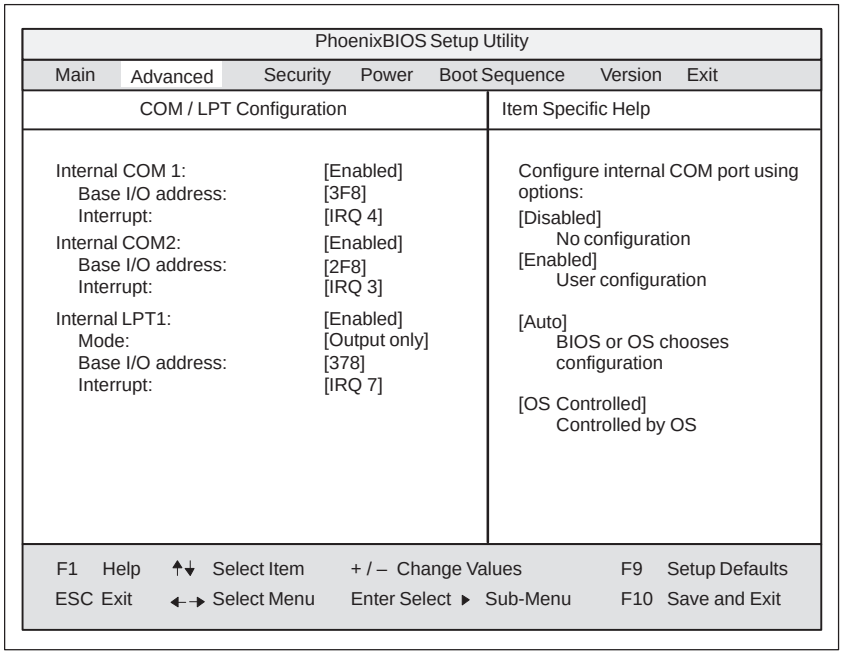


Figure 6-10 “COM / LPT Configuration” Submenu

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

The I/O addresses and interrupts are preassigned: it is advisable not to change these default assignments.

Printer Port Internal LPT1

Mode:	Use this setting to set the operating mode of the printer interface. Make sure that the setting matches the printer connected to the printer port. See the printer documentation for details of the appropriate settings.

PCI Configuration Submenu

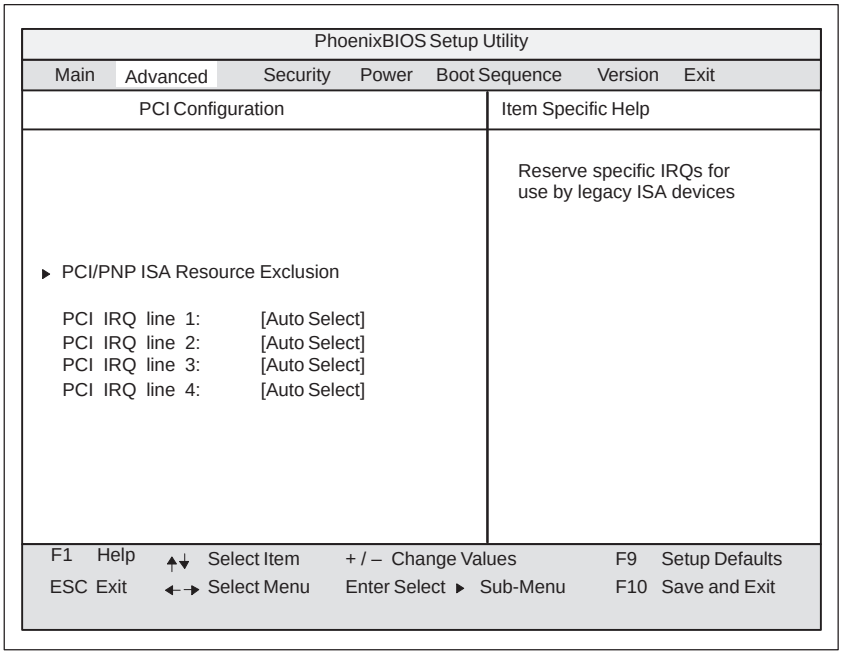


Figure 6-11 ”PCI Configuration” Submenu

Submenu PCI/PNP ISA IRQ Resource Exclusion

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

Use the 'Reserved' setting only if the interrupt has to be assigned specifically to PCMCIA submodules with no plug&play capability.

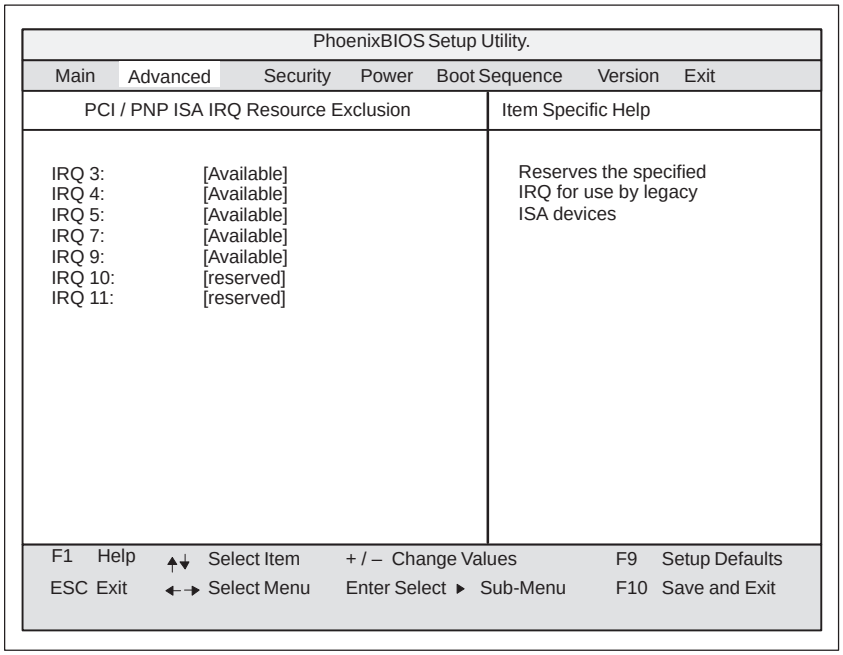


Figure 6-12 "PCI / PNP ISA IRQ Resource Exclusion" Submenu

Option "PCI IRQ line"

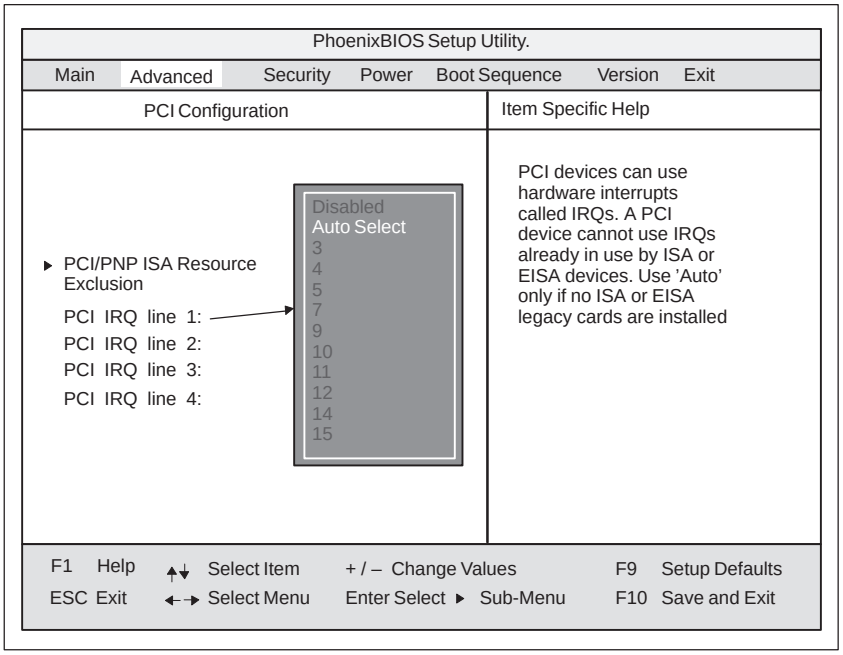


Figure 6-13 "PCI Configuration" Submenu

Disabled	No interrupt possible for this PCI-IRQ line
AutoSelect	Plug & Play mechanism in BIOS selects unassigned interrupts and allocates them to the on-board PCI devices.
3 to 15	The PCI-IRQ line is assigned to the selected interrupt. Do not use this setting unless it is specifically required in your application's documentation.

6.1.3 The Security Menu

Summary

You can only edit the fields enclosed in square brackets. Two passwords are assigned to protect your programming device from unauthorized use. You can use the supervisor password to prevent use of diskettes for the normal user and to limit use of the hard disk.

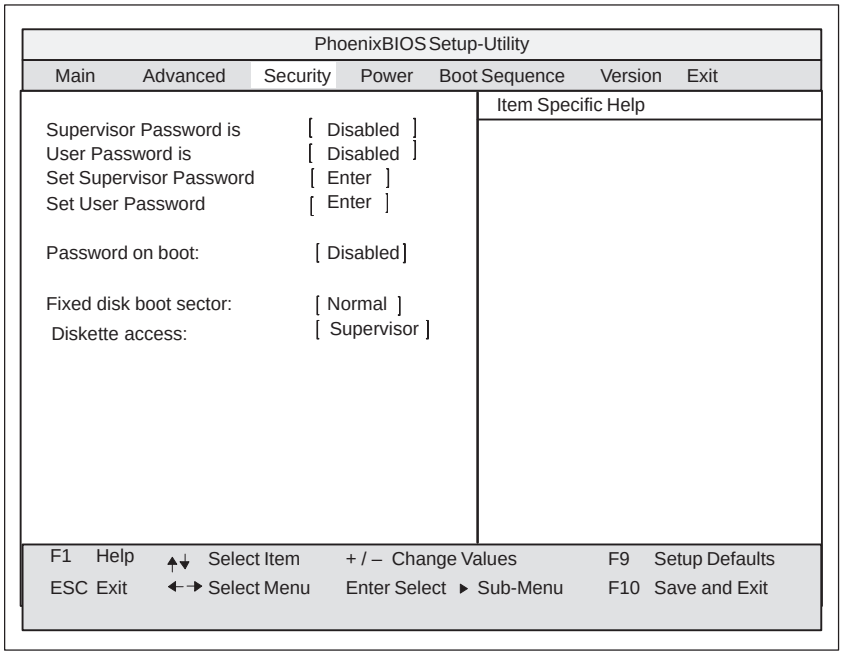


Figure 6-14 ”Security ”Submenu

User Password is	[Disabled]	Password is active. BIOS Setup cannot be opened until the password has been entered.
	[Enabled]	Certain Setup fields are thus configurable by the user, including the user password.
	The field resets automatically from [Disabled] to [Enabled] when the password is entered.	
Set Supervisor Password	This field opens the dialog box for entering a password. Once it has been entered, the supervisor password can be changed or deleted by pressing ”Return” and thus deactivated.	
Set User Password	This field opens the dialog box for entering a password. Once it has been entered correctly, the user password can be changed or deleted by pressing ”Return” and thus deactivated.	
Password on boot	[Disabled]	No password required for system boot.
	[Enabled]	Supervisor or user password must be entered for system boot.

Fixed disk boot sector	Normal	All types of hard-disk access are permitted.
	protected	No operating system can be installed. This is a way of protecting against boot viruses.
Diskette access	This mode of protection is not active unless ”Password on boot ” is set to [enabled].	
	Supervisor	Diskette access is not possible unless the supervisor password was entered during system boot.
	User	Diskette access is not possible unless the user password was entered during system boot.

6.1.4 The Power Menu

Summary

This menu has the following structure:

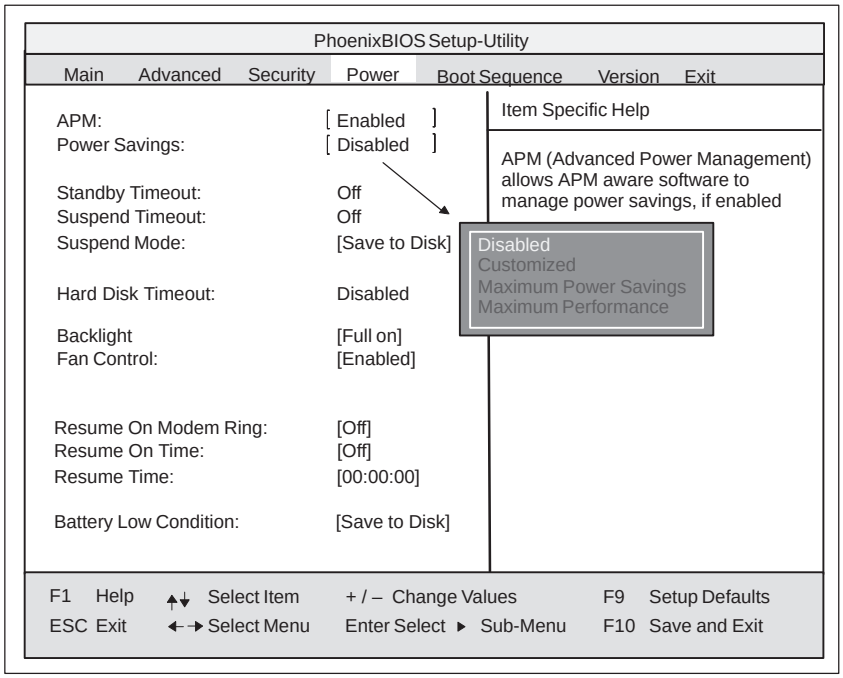


Figure 6-15 “Power” Submenu

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

APM (Advanced Power Management)	[Enabled]	The operating system can shut down system resources when they are not needed.
	[Disabled]	The operating system is denied APM access.
Power Savings	[Disabled]	No power-saving functions
	[Customize, Maximum Power Savings, Maximum Performance]	User-selectable and preset power-saving functions for maximum and minimum power saving. You can set the parameters for Standby/Suspend Timeouts and Fixed Disk Timeout or they set automatically to their defaults.
Standby Timeout	[Off]	No standby mode
	[30 seconds or 1, 2, 4, 8, 12, 16]	...minutes after your PG enters standby mode.
Suspend Timeout	[Off]	No suspend mode
	[1,2, 5, 10, 15, 20, 30]	seconds after your PG enters suspend mode.

Major components are shut down in suspend mode. The information needed for reactivating the programming device is buffered.

Suspend Mode	[Save to Disk]	In suspend mode all relevant data is written to a defined sector of the hard disk
	[Save to DRAM]	In suspend mode all relevant data is stored in main memory.
Hard Disk Timeout	[Disabled]	The hard disk does not shut down.
	[10, 15, 30, 60]	Time since the last hard-disk access, the hard disk is shut down. The next time it is accessed, the hard disk starts spinning again after a brief delay.
Backlight	[Full on]	Display lighting is at full brightness
	[reduced]	Brightness is reduced
Fan Control	[Disabled]	Fan always runs at full speed
	[Enabled]	Fan speed depends on temperature.
Battery Low Condition	[Save to Disk]	The Save to Disk mode is activated as soon as the battery charge level drops to minimum.
	[Beeper]	When the battery charge level drops to minimum the beeper sounds a warning
	[Power Off]	At this setting, the device is shut down when the charge level drops to minimum.
Resume on Modem Ring	[Off]	If this function is enabled, the programming
	[On]	device is reawakened from suspend mode by the modem's "Ring" signal.
Resume On Time	[On]	If this function is enabled the programming device is automatically switched on at the preset time.
	[Off]	'Off' means this function is disabled.
Resume Time		Time for automatic restart

6.1.5 The Boot Sequence Menu

Summary

This menu allows you to prioritize the boot devices.

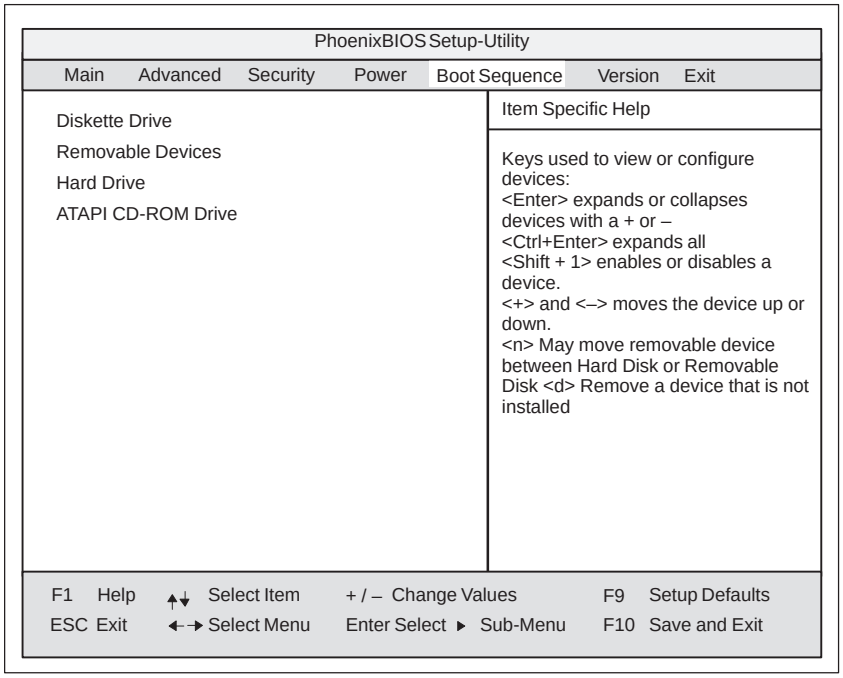


Figure 6-16 The ”Boot Sequence” Submenu

This menu lists the boot devices in groups. The group with the highest priority is at the top. The procedure for changing the sequence is as follows:

Use the ↑↓ keys to select a group and the + or – keys to move the group to its new position in the sequence.

Note

During booting the boot drive can be selected with the ESC key.

Groups marked + can contain more than one device. When you select a group marked in this way, hit Enter to view the list of devices in the group. See the figure below for an illustration:

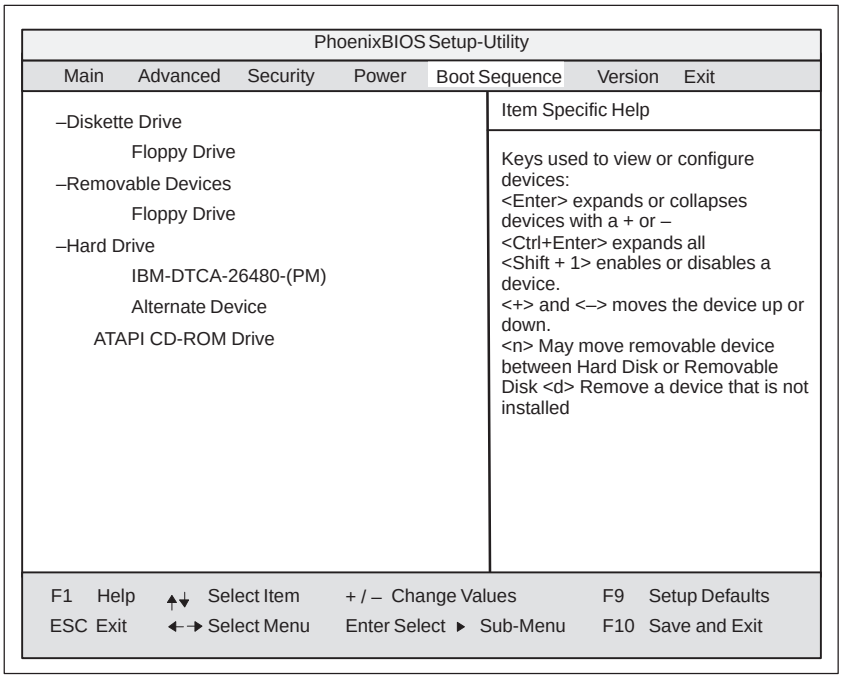


Figure 6-17 The ”Boot Sequence” Submenu

This screen shows all possible boot devices; within a given group the highest priority device is always listed first. Here again, you can change the sequence as described above.

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

6.1.6 The Version Menu

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

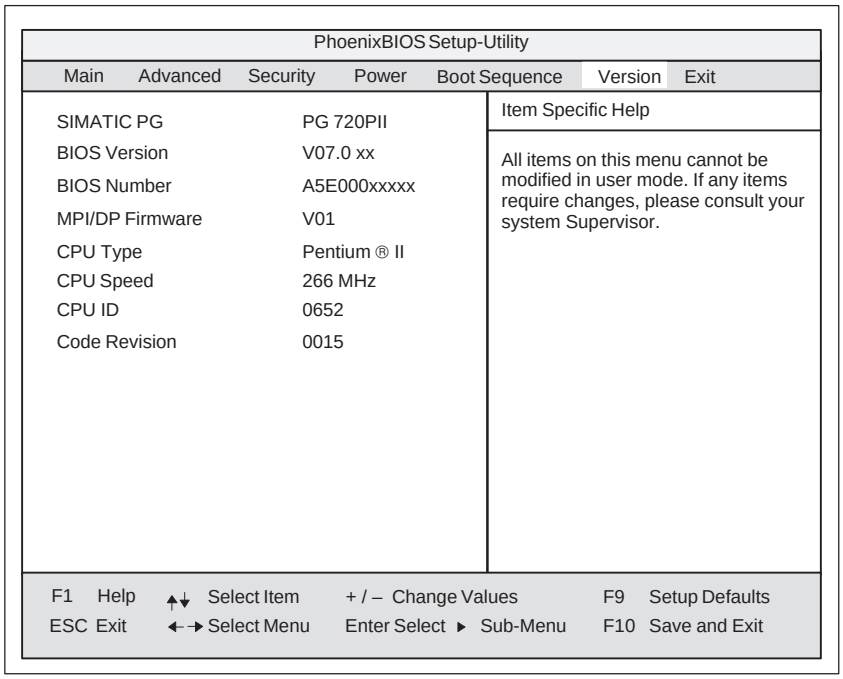


Figure 6-18 The ”Version” Submenu

6.1.7 The Exit Menu

The Exit Menu

The setup program is always terminated using this menu.

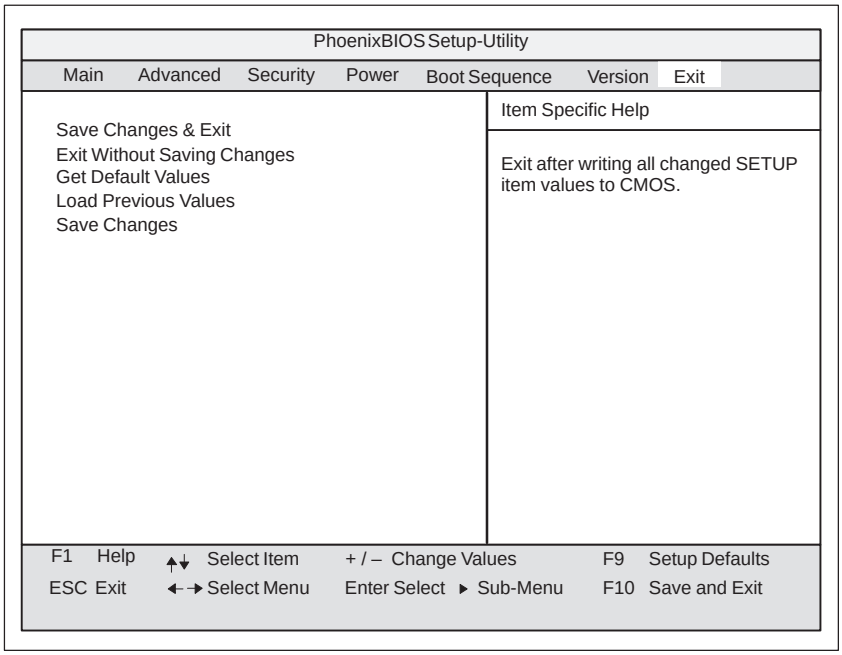


Figure 6-19 ”Exit” Submenu

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

Documenting Your Device Configuration

If you have made any modifications to your standard SETUP settings, you can enter them in the following table. You can then refer to these entries if you need to make any hardware modifications later.

Note

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

System Parameter	Standard Settings	Your Entries
Main		
System Time		
System Date		
Diskette A	1,44 MB, 31/2	
Primary Master	C: 6495 MB	
Primary Slave	None	
Secondary Master	CD-ROM	
Secondary Master	None	
Memory Cache	Write back	
Boot options		
Quick Boot Mode	Enabled	
SETUP prompt	Enabled	
POST errors	Enabled	
Floppy check	Disabled	
Summary Screen	Enabled	
Keyboard Features		
Numlock	Off	
Key click	Disabled	
Keyboard auto repeat time	30/s	
Keyboard auto repeat delay	1/2s	
Hardware Options		
PCI-MPI/DP:	Enabled	
Cardbus/PCMCIA Slot	Enabled	
Programming Interface	Enabled	
CRT/LCD selection	SIMULTAN	
CRT 640 x 480	75	
CRT 800 x 600	75	
CRT 1024 x 768	75	
LCD Screensize	Graph&Text Expanded	
Trackball / PS2 Mouse	Internal	
Advanced		

System Parameter	Standard Settings	Your Entries
COM/LPT Configuration		
Internal COM1	Enabled	
Base I/O address	3F8	
Interupt	IRQ4	
Internal COM2	Enabled	
Base I/O address	2F8	
Interrupt	IRQ3	
Internal LPT1	Enabled	
Mode	Output only	
Base I/O address	378	
Interrupt	IRQ7	
DMA Channel	DMA @	
PCI-Configuration		
PCI/PnP ISA IRQ Exclusuion		
IRQ3	Available	
IRQ4	Available	
IRQ5	Available	
IRQ7	Available	
IRQ9	Available	
IRQ10	Reserved	
IRQ11	Reserved	
PCI IRQ Line 1	Auto Select	
PCI IRQ Line 2	Auto Select	
PCI IRQ Line 3	Auto Select	
PCI IRQ Line 4	Auto Select	
Installed O/S	other	
Reset Configuration Data	No	
Diskette controller	Enabled	
Local Bus IDE Adapter	Primary & Secondary	
Large Disk Access Mode	DOS	
Hard Disk Access Mode		
Pre-Delay	Disabled	
Memory Gab	Disabled	
Security		
Supervisor Password is	Disabled	
User Password is	Disabled	
Set Supervisor Password		
Set User Password		
Password on boot	Disabled	
Fixed disk boot sector	Normal	
Diskette Access	Supervisor	

System Parameter	Standard Settings	Your Entries
Power		
APM	Enabled	
Power Savings	Disabled	
Powersavings by Customize		
Standby Timeout	Off	
Suspend Timeout	Off	
Suspend Mode	Save to DRAM	
Hard Disk Timeout	Disabled	
Fan Control	Enabled	
Backlight	Full on	
Resume on Modem Ring	Off	
Resume on Time	Off	
Resume Time	00:00:00	
Battery Low Condition	Save to disk	
Version		
SIMATIC PG	720PII	
BIOS Version	V7.xx	
BIOS Number	A5Exxxxxxxx	
MPI/DP Firmware	V01	
CPU Type	Pentium II	
CPU Speed	266 MHz	
CPU ID		
Code Revision	0015	
Boot Sequence		
Diskette Drive	Floppy Drive	
Removable Devices	Floppy Drive	
Hard Drive	IBM	
ATAPI CD-ROM Drive		
Exit		
Save Changes & Edit		
Exit Windows Saving Changes		
Get Default Values		
Load Previous Values		
Save Changes		

6.2 Configuring the PC Card Interface

You can obtain the software you require for using PC cards under MS-DOS, such as

- Socket Services
- Card Services
- Client Drivers
- Flash File System

from your nearest Siemens sales office or representative.

Your programming device comes supplied with Windows 98 already installed; this supports the PC card interface.

Error Diagnostics

7

What Does This Chapter Contain?

This chapter will help you to locate, identify, and in some cases eliminate simple errors and faults. The symptoms of the problem, possible causes, and remedies are listed in the form of a table.

Table 7-1 Errors/Faults in PG 720 Operation

Error/Fault	Cause	Remedy
Power- LED does not light up	• PG 720 is switched off • Power supply not properly connected • Battery run down	• Switch the unit on • Check the power supply, power cable, and power connector • Charge or replace battery
Display remains dark after power up	• Back lighting is not active	• Wait 3 to 5 seconds until the back lighting is active
External monitor remains dark	• LCD enabled is entered in SETUP	• Enter CRT enabled or SIMULTAN in SETUP
Message on the display: **“Invalid configuration information... Press the F1 key for continue, F2 to run Setup utility”**	• Incorrect configuration data	• Press “F2” key, check the configuration data in the SETUP program, if necessary adapt the default values, and check the error messages in the first SETUP menu
Message on the display: “No boot device available” NTDLR not found, check boot data carrier	• Diskette in drive A: is not a boot diskette • Wrong hard disk type entered in SETUP	• Replace diskette with boot diskette • Use the “Autotype Fixed Disk” function
Message: “Keyboard stuck key failure”	• A key became blocked during the self-test of the keyboard	• Check the keyboard • Restart the system
Booting of the PG 720 aborted with a series of beeps	• Error occurred during the self-test • Battery charge too low	• Check hardware • Charge battery, or connect to mains power
Every time a key is pressed, a beep is heard and no character appears	• Keyboard buffer overflow	• <CTRL> <PAUSE>
Not ready message when attempting to read a diskette	• No diskette inserted • Diskette is not formatted	• Insert diskette • Format diskette
Read-only error when attempting to write to a diskette	• Diskette is read-only • Read-only hole open on 3.5” diskette	• Cancel the write protection
<\> key does not exist	• Wrong keyboard driver is being used	• German keyboard: <ALTGr> <ß> • International keyboard : <\> key
Mouse pointer cannot be moved with the trackball	• The ball is not rotating • No or wrong mouse driver	• Clean the trackball and its housing • Load the correct mouse driver
Mouse pointer moving erratically	• Trackball dirty	• Clean the trackball and its housing

Table 7-1 Errors/Faults in PG 720 Operation

Error/Fault	Cause	Remedy
Trackball not working	• Trackball is switched off • External mouse plugged in • PS/2 interface is set to external or disabled in Setup	• Activate trackball with key combination F_n + ^ • Check Setup entry
After power on: Error message: "Battery needs calibration cycle"	• Battery is no longer calibrated	• Acknowledge error message with the F1 key • Run teach-in cycle (see section 4.2)

7.1 Programming Device Self-Test Prior to Booting

When the PG 720 is powered up, it runs a self-test (POST = Power On Self Test).

If the POST detects a fault, it outputs the sequence of beeps (beep code) assigned for the fault.

Each beep code consists of 2 x 2 sequences.

Conversion table for the beep codes to hexadecimal representation:

Beeps		Hex Code
B	B	0
B	BB	1
B	BBB	2
B	BBBB	3
BB	B	4
BB	BB	5
BB	BBB	6
BB	BBBB	7
BBB	B	8
BBB	BB	9
BBB	BBB	A
BBB	BBBB	B
BBBB	B	C
BBBB	BB	D
BBBB	BBB	E
BBBB	BBBB	F

Example:

Beeps			
B	BBBB	BB	BBB
3		6	
Check shutdown code			

Hex Code	Meaning	Description
02	TP_VERIFY_REAL	Test whether CPU in Real mode
1C	TP_RESET_PIC	Reset interrupt controller
12	TP_RESTORE_CR0	Restore control register
13	TP_PCI_BM_RESET	PCI Bus Master reset
36	TP_CHK_SHUTDOWN	Check shutdown code
24	TP_SET_HUGE_ES	Set ES to special mode
03	TP_DISABLE_NMI	Disable NMI
0A	TP_CPU_INIT	Early initialization of CPU
04	TP_GET_CPU_TYPE	Determine CPU type
AE	TP_CLEAR_BOOT	Edit boot flag
06	TP_HW_INIT	Initialize basic hardware
18	TP_TIMER_INIT	Initialize timer
08	TP_CS_INIT	Initialize chip set
C4	TP_PEM_SIZER_INIT	Reset system fault
0E	TP_IO_INIT	Initialize IO
0C	TP_CACHE_INIT	Initialize cache
16	TP_CHECKSUM	EPROM checksum test
28	TP_SIZE_RAM	Determine RAM size
3A	TP_CACHE_AUTO	Determine cache size
2A	TP_ZERO_BASE	Set basic 512K RAM to 0
2C	TP_ADDR_TEST	Test basic RAM address lines
2E	TP_BASERAML	Basic RAM, check 1st 64K
38	TP_SYS_SHADOW	BIOS shadow
20	TP_REFRESH	Refresh chip test
29	TP_PMM_INIT	Initialize Post Memory Manager
33	TP_PDM_INIT	Initialize dispatch manager
C1	TP_PEM_INIT	Initialize Post Error Manager
09	TP_SET_IN_POST	Start Power On Self Test
0A	TP_CPU_INIT	Initialize CPU
0B	TP_CPU_CACHE_ON	Switch on cache
0F	TP_FDISK_INIT	Initialize hard disk
10	TP_PM_INIT	Initialize power management
14	TP_8742_INIT	Initialize 8742 chip
1A	TP_DMA_INIT	Initialize DMA chips
1C	TP_RESET_PIC	Reset interrupt controller
32	TP_COMPUTE_SPEED	Compute clock speed
C1	TP_740_INIT	Initialize PG 720 PII I/O

Hex Code	Meaning	Description
3C	TP_ADV_CS_CONFIG	Configure advanced chip set
42	TP_VECTOR_INIT	Initialize interrupt vectors
46	TP_COPYRIGHT	Check copyright
49	TP_PCI_INIT	Initialize PCI interface
48	TP_CONFIG	Check configuration
4A	TP_VIDEO	Initialize video interface

If the INSERT key is pressed during booting of the system, three short beeps are sounded. This signalizes that the initialization of the special programming device hardware is being skipped.

If your PG 720 does not boot correctly, you can inform the hotline of the POST hex code.

Hardware Information

8

What Does This Chapter Contain?

This chapter contains important reference data about the following:

- Hardware addresses
- Interrupt assignments
- Information about connecting cables

Chapter Overview

Section	Contents	Page
8.1	Hardware Address Table	8-2
8.2	Interrupt Assignments	8-5
8.3	PG 720 Video Modes	8-6
8.4	Connector Pinouts	8-7
8.5	Connecting Cables	8-14

8.1 Hardware Address Table

There are two kinds of address area:

- Memory address area
- I/O address area.

Different read/write signals (I/O WR, I/O RD, MEMR, MEMW) are used to address these areas. The following tables provide you with an overview of the address areas used. For further information, refer to the description of the individual function modules.

Table 8-1 Assignment of the Memory Addresses

From Address	To Address	Size	Assignment	Comments
0000 0000	0007 FFFF	512K	Conventional system memory	
0008 0000	0009 FBFF	127K	Conventional system memory extended	
0009 FC00	0009 FFFF	1K	Conventional system memory extended BIOS DATA	
000A 0000	000A FFFF	64K	Graphics/text refresh memory	VGA
000B 0000	000B 7FFF	32K	BW graphics/text refresh memory	free
000B 8000	000B FFFF	32K	Graphics/text refresh memory	VGA/CGA
000C 0000	000C AFFF	44K	VGA BIOS expansion	VGA
000C B000h	000CB FFFh	4K	Motherboard resources	
000E 0000h	000F FFFFh	128K	Systems board extension for plug&play BIOS	
0010 0000h	03FF FFFFh	63M	Systems board extension for plug&play BIOS	
0810 0000h	0810 0FFFh	4K	Texas Instruments PCI–1225	
0810 0000h	0810 1FFFh	4K	Texas Instruments PCI–1225	
0900 0000h	0A0F FFFFh	17M	Intel 82443BX Pentium® II processsor / AGP controller	
0D00 0000h	0DFF FFFFh	16M	Chips and Tech. 69000 PCI	VGA
0E00 0000h	0E03 FFFFh	256K	Chips and Tech. 69000 PCI	VGA
F400 0000h	F407 FFFFh	512K	CP5611 (PCI)	
F408 0000h	F408 007Fh	8K	CP5611 (PCI)	
F800 0000h	FBFF FFFFh	64M	Intel 82443BX Pentium® II processsor / PCI jumper	
FFFE 000h	FFFF FFFFh	128K	Motherboard resources	Mirroring of system BIOS (000E 0000 – 000F FFFF)

This list is not an absolute, since the resources are allocated by Windows. Consequently, alternative address assignments are possible. The actual assignment can be looked up in the “Resources Report”.

Table 8-2 I/O Address Assignments

Address		Assignment	Remarks
From	To		
0000	000F	DMA controller 1	
0020	0021	Interrupt controller 1	
0024	003D	Motherboard resources	
0040	0043	Timer 1	
0060	0060	Keyboard controller, data	
0061	0061	NMI, system speaker settings	
0064	0064	Keyboard controller, command, status	
0070	0070	Real-time clock index	
0071	0071	Real-time clock date	
0072	0077	CMOS-RAM / keyboard	
0078	0079	Reserved, board configuration	
0080	008F	DMA page register	
00A0	00A1	Interrupt controller 2	
00A4	00B9	Motherboard resources	
00C0	00DF	DMA controller 2	
00F0	00FF	Numeric processor	
0170	0177	Second IDE channel	Can be deactivated
01F0	01F7	First IDE channel	
0200	0203	Reserved for Game port, otherwise free, joystick	Reserved / free
0220	022F	ESS SOLO -1 DOS emulation	Sound
02F8	02FF	COM2	Can be deactivated
0300	031F	Programming interface	Can be deactivated
0330	0331	ESS SOLO -1 DOS emulation	Sound
0370	0370	Super I/O	
0371	0371	Index / data	
0376	0376	Second IDE channel command	Can be deactivated
0377	0377	Second IDE channel status	Can be deactivated
0378	037F	LPT 1	Can be deactivated
0388	038B	ESS SOLO -1 DOS emulation	Sound
03B0	03BB	VGA	Chips and tech. 69000
03C0	03DF	VGA	Chips and tech. 69000
03F0	03F5	FD controller	
03F6	03F6	First IDE channel command	
03F7	03F7	First IDE channel status	
03F8	03FF	COM 1	Can be deactivated
04D0	04D1	Motherboard resources	
0CF8	0CFF	PCI bus	PCI BUS

Table 8-2 I/O Address Assignments

Address		Assignment	Remarks
From	To		
1000	103F	PIIX IO	
1040	104F	PIIX power management	
1050	1057	First IDE controller (dual FIFO)	
1058	105F	Second IDE controller (dual FIFO)	
1060	107F	PCI/USB universal host controller	
1080	10E7	ESS SOLO -1 audio device	Sound

Table 8-3 DMA Assignments

DMA Channel	Data Transfer	Description
0	8 / 16 bits	Unoccupied
1	8 / 16 bit	ESS SOLO -1 DOS emulation (sound)
2	8 / 16 bits	Floppy
3	8 / 16 bits	Unoccupied
4		Cascading of DMA controllers
5	16 bits	Unoccupied
6	16 bits	Unoccupied
7	16 bits	Unoccupied

8.2 Interrupt Assignments

Interrupt Assignment

The PG 720 uses the two integrated interrupt controllers of type 82C59 to handle the 16 hardware interrupts (IRQ 0 to IRQ 15).

The INT output of the slave controller is connected to the IRQ 2 input of the master controller. Interrupt 9 (IRQ 9) can be used on the bus for the assigned interrupt 2 (IRQ 2). In the initialization phase, IRQ 9 is assigned to the software interrupt vector 0A H (IRQ 2) by the ROM-BIOS.

Priority

The priority of the interrupts is in the reverse order of their numbering. This means the following: Interrupt IRQ 0 has the highest priority and interrupt IRQ 7 the lowest. For triggering IRQ 2, interrupt IRQ 8 has the highest and IRQ 15 the lowest priority. Interrupts IRQ 8 to IRQ 15 therefore have higher priority than interrupts IRQ 3 to IRQ 7. The interrupt vectors are initialized and masked when the PG 720 is powered up.

I/O Addresses of the Interrupt Controllers

Interrupt	Description	Comment	Vector
SMI	System management interrupt, cannot be masked	-	–
NMI	Expansion slots signal I/O channel check 2	Fixed	INT 2 H
IRQ 0	Internal timer (system clock)	Fixed	INT 8 H
IRQ 1	Keyboard	Fixed	INT 9 H
IRQ 2	Cascading from interrupt controller 2	Fixed	INT A H
IRQ 3	Serial port 2 (COM2)	Can be switched off *)	INT B H
IRQ 4	Serial interface 1 (COM1/TTY)	Can be switched off *)	INT C H
IRQ 5	Sound, Cardbus controller SLOT 1	P&P **)	INT D H
IRQ 6	Floppy controller	Fixed	INT E H
IRQ 7	Parallel port 1 (printer port LPT 1/EPP/ ECP)	Can be switched off *)	INT F H
IRQ 8	Battery-backed real-time clock (RTC)	Fixed	INT 70 H
IRQ 9	VGA controller	generally vacant	INT 71 H
IRQ 10	Cardbus controller	Fixed	INT 72 H
IRQ 11	USB, Cardbus controller SLOT 2	Fixed	INT 73 H
IRQ 12	PS/2 mouse or trackball in keyboard	Can be switched off *)	INT 74 H
IRQ 13	Math coprocessor error	Fixed	INT 75 H
IRQ 14	IDE interface (primary)	Fixed	INT 76 H
IRQ 15	IDE controller (secondary)	Fixed	INT 77 H

Note the interrupts which are already occupied in the system.

*) These components can be disabled via the BIOS SETUP. The functions are then no longer available and the resources are released for other components.

**) The on-board MPI/DP interface is plug&play-capable, the occupied resources are managed by the BIOS.

8.3 PG 720 Video Modes

Mode No. (Hex)	VESA mode No.	Video mode (text/ graphic) (L) = linear mode	Colors	CRT (I) = Interlaced	LCD/ Simultaneous
00+/01+	—	Text 40x25	16	70Hz	60Hz
02+/03+	—	Text 80x25	16	70Hz	60Hz
04/05	—	Gr.320x200	4	70Hz	60Hz
6	—	Gr.640x200	2	70Hz	60Hz
07+	—	Text 80x25	2 (sw)	70Hz	60Hz
0D	—	Gr.320x200	16	70Hz	60Hz
0E	—	Gr.640x200	16	70Hz	60Hz
0F	—	Gr.640x350	2 (sw)	70Hz	60Hz
10	—	Gr.640x350	16	70Hz	60Hz
11	—	Gr.640x480	2 (sw)	60Hz	60Hz
12	—	Gr.640x480	16	60Hz	60Hz
13	—	Gr.320x200	256	70Hz	60Hz
20	120h	Gr.640x480 (L)	16	60/75/85	60Hz
22	122h	Gr.800x600 (L)	16	56/60/75/85	60Hz
24	124h	Gr.1024x768 (L)	16	43(I)/60/75/85	60Hz
28	128h	Gr.1280x1024 (L)	16	43(I)/60	60Hz
30	101h	Gr.640x480 (L)	256	60/75/85	60Hz
31	100h	Gr.640x400 (L)	256	70	60Hz
32	103h	Gr.800x600 (L)	256	56/60/75/85	60Hz
34	105h	Gr.1024x768 (L)	256	43(I)/60/75/85	60Hz
38	107h	Gr.1280x1024 (L)	256	43(I)/60	60Hz
40	110h	Gr.640x480 (L)	32K	60/75/85	60Hz
41	111h	Gr.640x480 (L)	64K	60/75/85	60Hz
42	113h	Gr.800x600 (L)	32K	56/60/75/85	60Hz
43	114h	Gr.800x600 (L)	64K	56/60/75/85	60Hz
44	116h	Gr.1024x768 (L)	32K	43(I)/60/75/85	60Hz
45	117h	Gr.1024x768 (L)	64K	43(I)/60/75/85	60Hz
50	112h	Gr.640x480 (L)	16M	60/75/85	60Hz
52	115h	Gr.800x600 (L)	16M	56/60/75/85	60Hz
64	104h	Gr.1024x768	16	43(I)/60/75/85	60Hz
68	106h	Gr.1280x1024	16	43(I)/60	60Hz
6A	102h	Gr.800x600	16	56/60/75/85	60Hz
70	101h	Gr.640x480	256	60/75/85	60Hz
71	100h	Gr.640x480	256	70	60Hz
72	103h	Gr.800x600	256	56/60/75/85	60Hz
74	105h	Gr.1024x768	256	43(I)/60/75/85	60Hz
78	107h	Gr. 1280x1024	256	43(I)/60	60Hz

8.4 Connector Pinouts

Socket Connector for the External Power Unit

The socket for the external power supply unit has the following potentials:

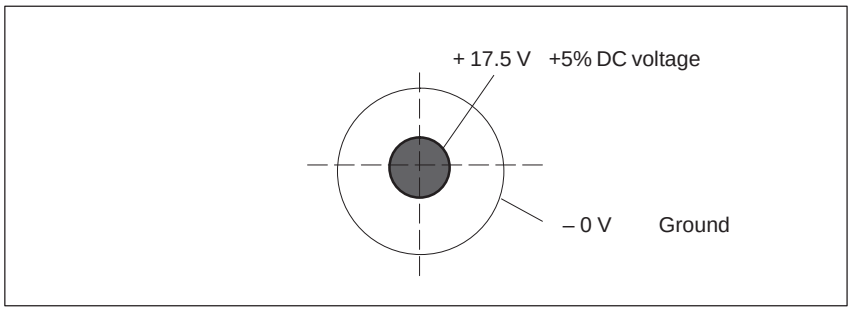


Figure 8-1 Power Supply Connector

Connecting a PS/2 Mouse

You can connect a PS/2 mouse to your PG 720. The connector has the following pinout:

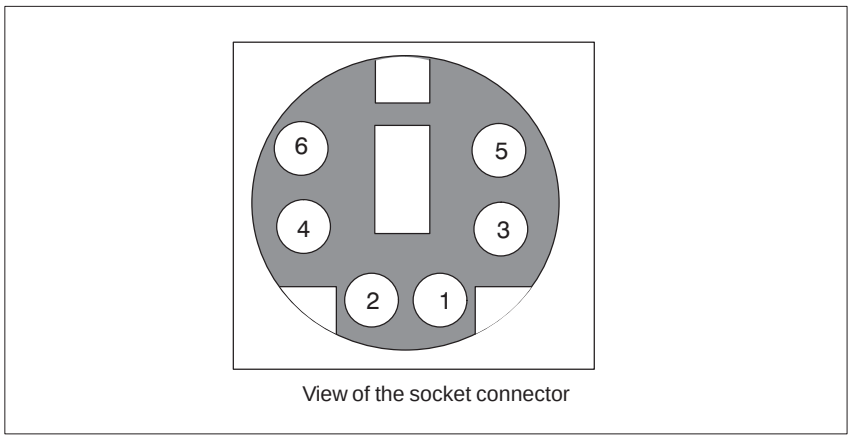
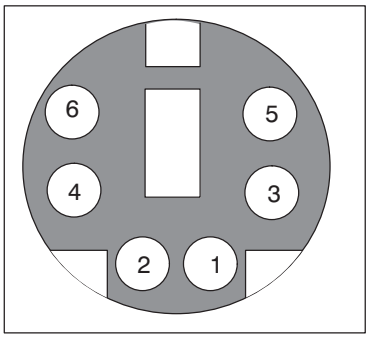


Figure 8-2 Connector Pinout for the PS/2 Mouse Cable

Pin No.	Designation	Input/Output
1	Data line	Input/output
2	Not assigned	–
3	0 V	–
4	Current-limited 5V power supply	Output
5	Clock line	Input/output
6	Not assigned	–

Connecting an External Keyboard

You can connect an external keyboard to your PG 720. The connector has the following pinout:



View of the socket connector

Figure 8-3 Connector Pinout for an External Keyboard

Pin No.	Designation	Input/Output
1	Data line, keyboard	Input/output
2	Data line, trackball	Input/output
3	0V	–
4	Current-limited 5V power supply	Output
5	Clock line, keyboard	Input/output
6	Clock line, trackball	Input/output

VGA Socket Connector

The VGA socket connector on the PG 720 has the following pinout:

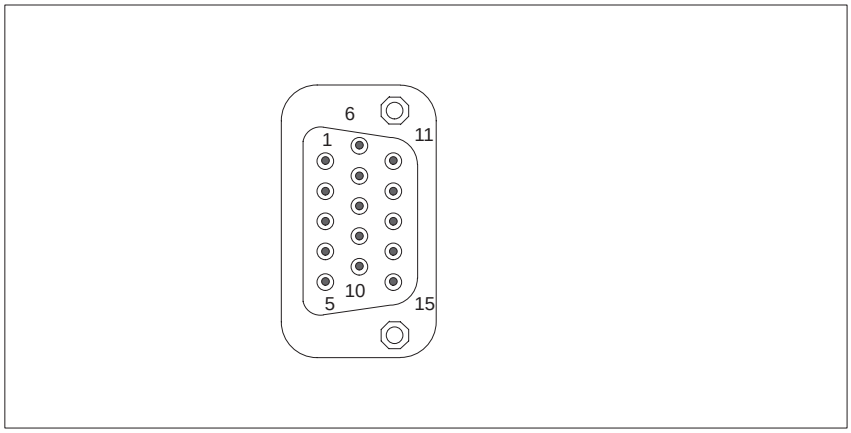


Figure 8-4 VGA Socket Connector

Pin No.	Designation	Description	Input/Output
1	R_EXT	Red	Output
2	G_EXT	Green	Output
3	B_EXT	Blue	Output
4	–	NC	–
5	M	Ground	–
6	M	Ground	Ground
7	M	Ground	Ground
8	M	Ground	Ground
9	–	NC	–
10	M	Ground	Ground
11	–	NC	–
12	–	NC	–
13	EXT_H	Horizontal sync	Output
14	EXT_V	Vertical sync	Output
15	–	NC	–

MPI/DP Socket Connector

The MPI/DP socket connector on the PG 720 has the following pinout:

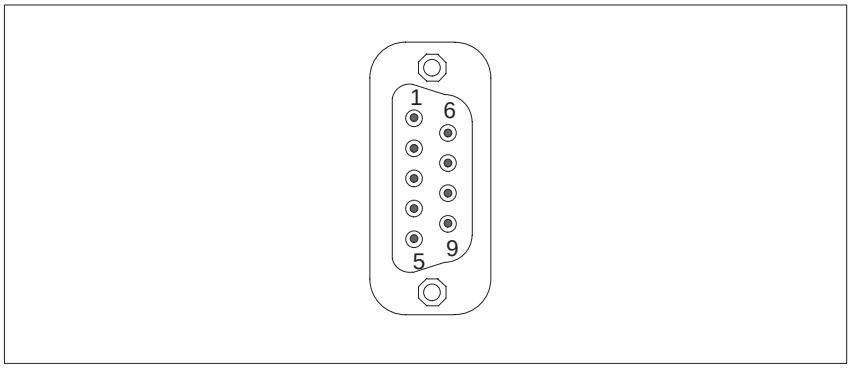


Figure 8-5 MPI/DP Socket Connector

Signal Description

Pin No.	Designation	Description	Input/ Output
1	NC	Pin 1 is not assigned	–
2	NC	Pin 2 is not assigned	–
3	LTG_B	Signal line B of the MPI module	Input/output
4	RTS_AS	RTSAS, control signal for received data stream. The control signal is “1” active when PLC is sending.	Input
5	M5EXT	M5EXT return line (GND) of the 5 V power supply. The current load caused by an external user connected between P5EXT and M5EXT must not exceed max. 90 mA.	Output
6	P5 EXT	P5EXT power supply (+5V) of the 5 V power supply. The current load caused by an external user connected between P5EXT and M5EXT must not exceed max. 90 mA.	Output
7	NC	Pin 7 is not assigned	–
8	LTG_A	Signal line A of the MPI module	Input/output
9	RTS_PG	RTS output signal of the MPI module. The control signal is “1” when the programming device is sending	Output
Shield	–	On connector casing	–

Parallel Port

The parallel port (LPT1) on the PG 720 has the following pinout:

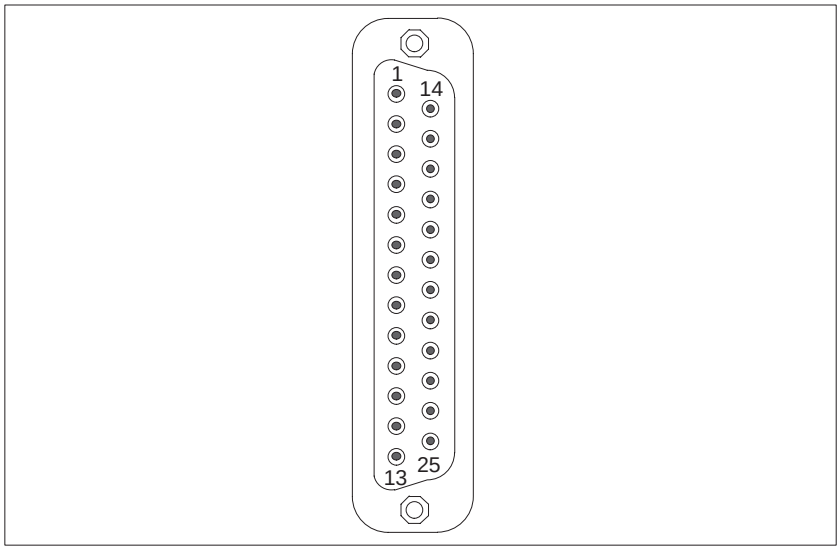


Figure 8-6 LPT1 Parallel Port (Socket)

Pin No.	Signal Description	Input/Output
1	/Strobe (CLK)	Output (open collector)
2	Data - bit 0	Output (TTL level)
3	Data - bit 1	Output (TTL level)
4	Data - bit 2	Output (TTL level)
5	Data - bit 3	Output (TTL level)
6	Data - bit 4	Output (TTL level)
7	Data - bit 5	Output (TTL level)
8	Data - bit 6	Output (TTL level)
9	Data - bit 7	Output (TTL level)
10	/ACK (Acknowledge)	Input (4.7 kΩ pull up)
11	BUSY	Input (4.7 kΩ pull up)
12	PE (PAPER END)	Input (4.7 kΩ pull up)
13	SELECT	Input (4.7 kΩ pull up)
14	/AUTO FEED	Output (open collector)
15	/ERROR	Input (4.7 kΩ pull up)
16	/INIT	Output (open collector)
17	/SELECT IN	Output (open collector)
18	GND	–
:		
25	GND	–

Serial Port (PLC/RS-232/ Modem)

The serial port (COM1) on the PG 720 has the following pinout:

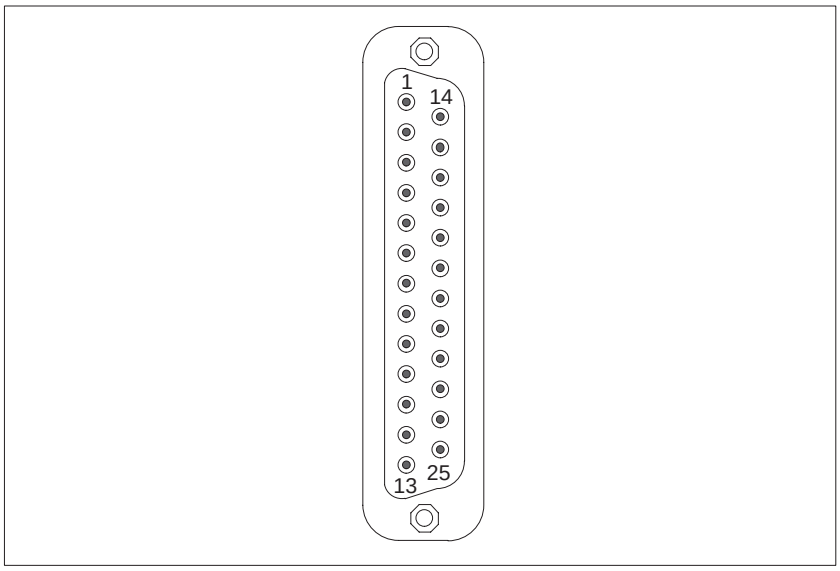


Figure 8-7 COM1 Serial Port (Socket)

Pin No.	Designation	Description	Input/Output
2	TxD (D1)	Serial transmit data	Output
3	RxD (D2)	Serial receive data	Input
4	RTS (S2)	Request to send	Output
5	CTS (M2)	Clear to send	Input
6	DSR (M1)	Data set ready	Input
7	GND (E2)	Ground (reference potential)	–
8	DCD (M5)	Data carrier detect	Input
9	+TTY RxD	TTY receive	Input
10	–TTY RxD	TTY receive	Input
18	+TTY TxD	TTY send	Output
19	+20mA	Isolated current source	–
20	DTR (S1)	Data terminal ready	Output
21	–TTY TxD	TTY send	Output
22	RI (M3)	Incoming call	Input
1	–	Shield	–
11-17	–	Not assigned	–
23-25	–	Not assigned	–

Serial Port (RS-232/Mouse)

The serial port (COM2) on the PG 720 has the following pinout:

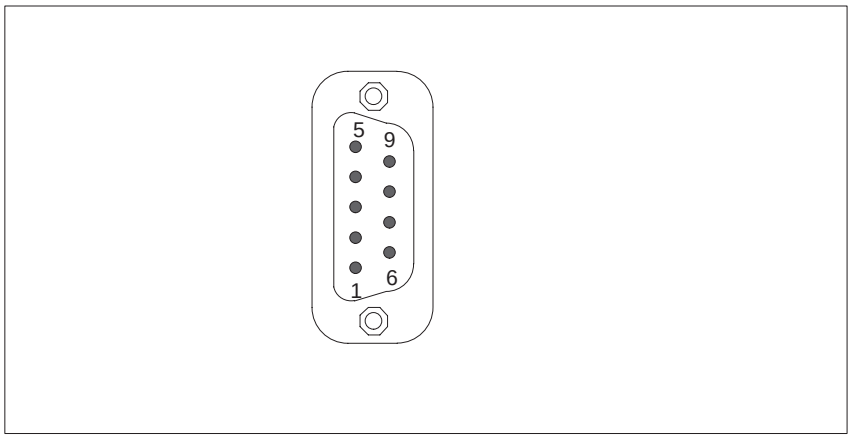


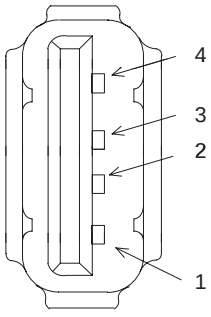
Figure 8-8 COM2 Serial Port (Connector)

Pin No.	Designation	Description	Input/Output
1	DCD (M5)	Data carrier detect	Input
2	RxD (D2)	Receive data	Input
3	TxD (D1)	Transmit data	Output
4	DTR (S1)	Data terminal ready	Output
5	GND (E2)	Ground	–
6	DSR (M1)	Data set ready	Input
7	RTS (S2)	Request to send	Output
8	CTS (M2)	Clear to send	Input
9	RI (M3)	Incoming call	Input

USB Port

The pin assignment of the Universal Serial Bus port is as follows:

Table 8-4 Universal Serial Bus Port

	Pin No.	Signal name	Meaning
	1	VCC	Cable power
	2	– Data	
	3	+ Data	
	4	Ground	Cable ground

The plug is a type A connector.

8.5 Connecting Cables

Overview

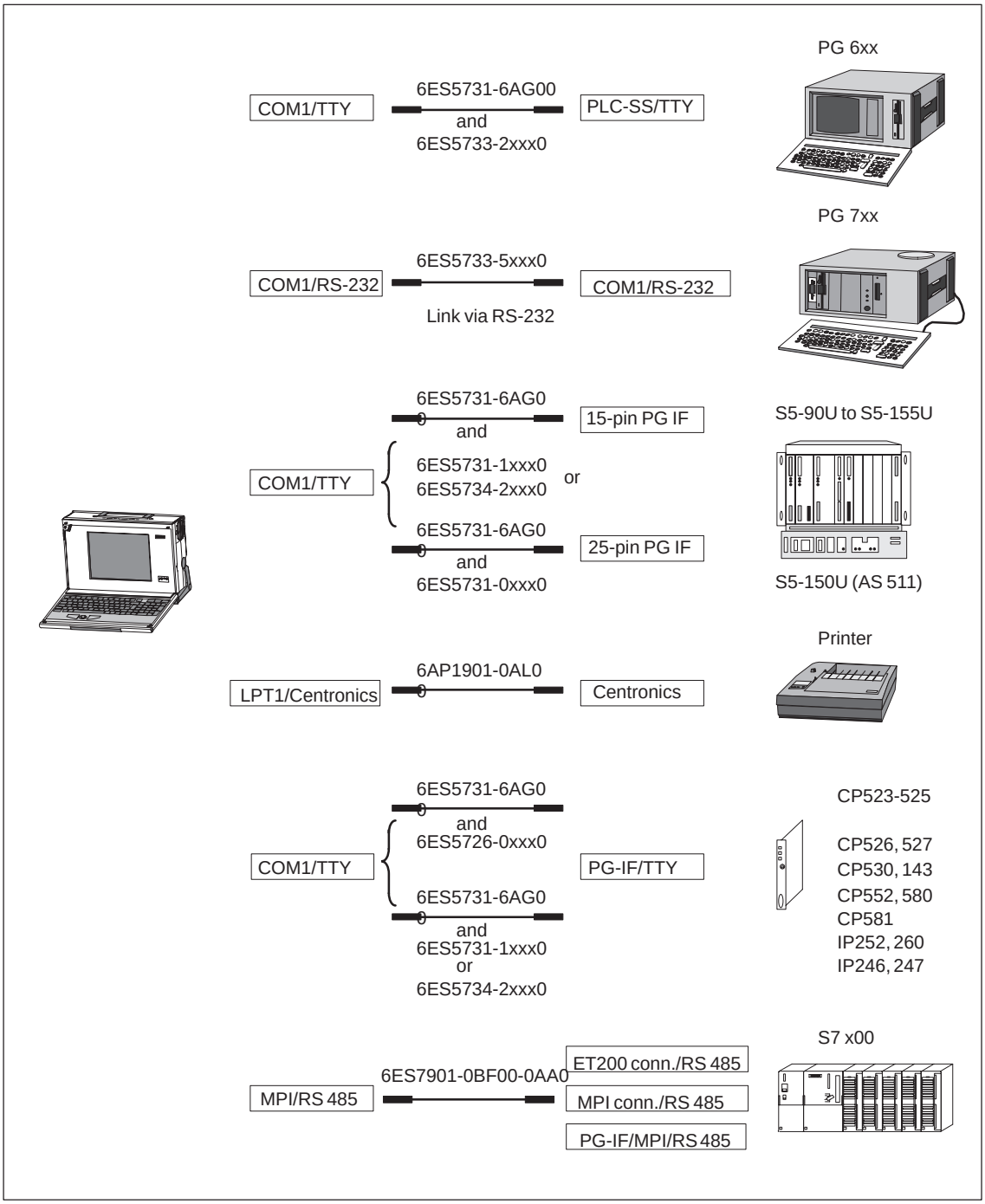


Figure 8-9 Connecting Cables

1) Connecting cables available as spare parts only

Standard Connecting Cable

Using the standard connecting cable (supplied with the unit) you can connect your PG 720 to a Siemens programmable logic controller. Please refer to the information in Chapter 3.

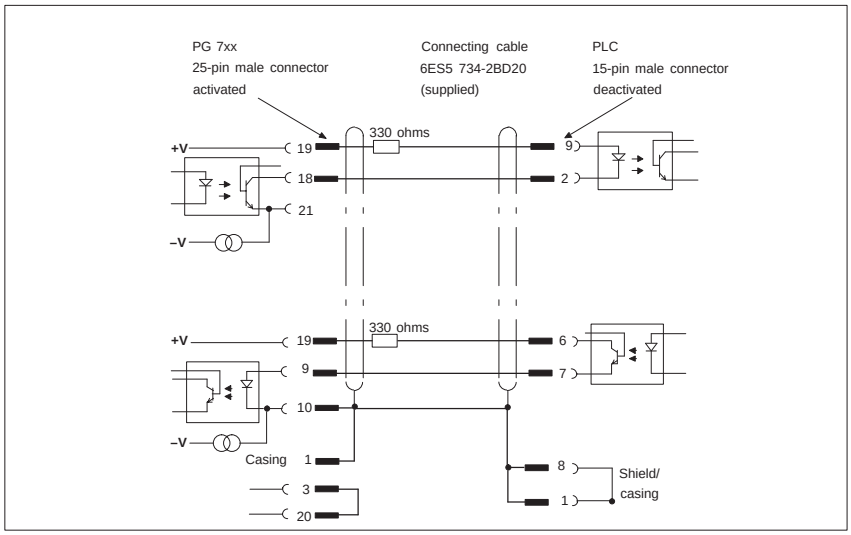


Figure 8-10 Standard Connecting Cable

Adapter for PG 6xx Cable

If you want to connect your PG 720 to a programmable logic controller using the standard connecting cable of a PG 6xx, use an adapter.

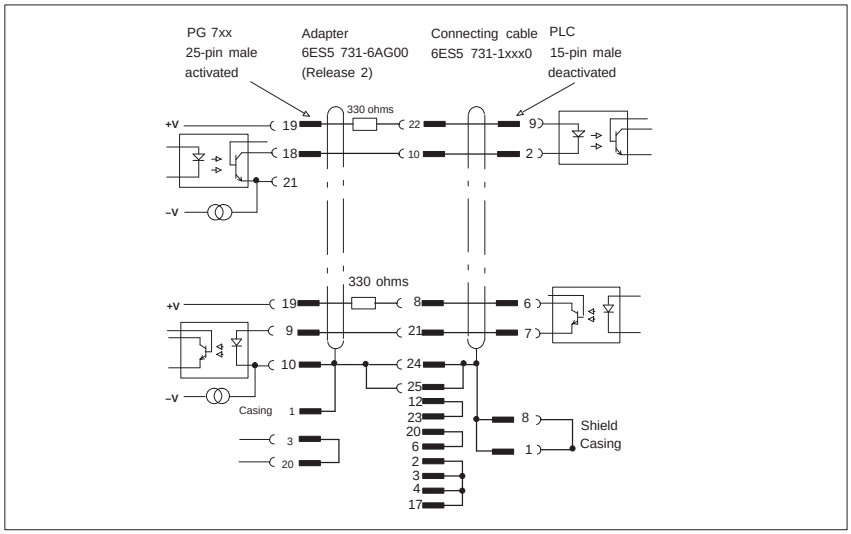


Figure 8-11 Adapter for PG 6xx Cable

Connecting Cable With 25-Pin Socket Connector

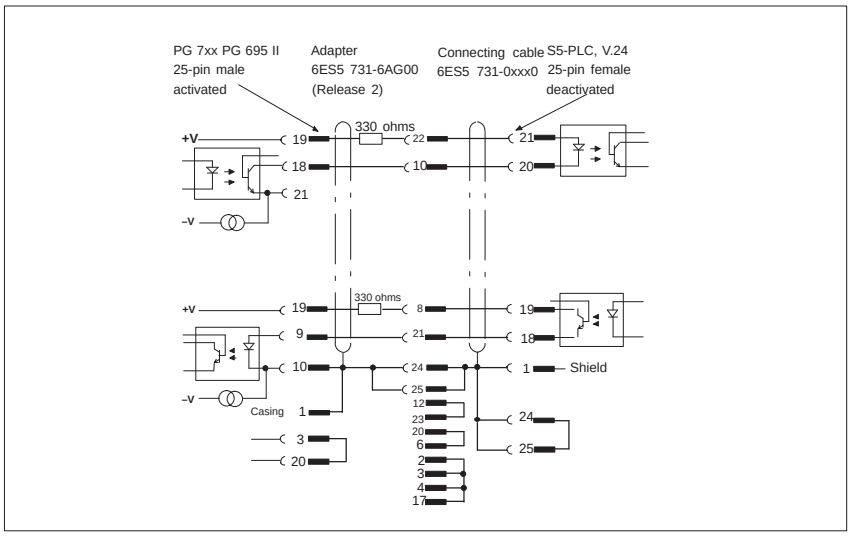


Figure 8-12 Connecting Cable With 25-Pin Socket Connector

Cable for Interconnecting Programming Devices

You can connect your PG 720 to other programming devices with this cable using the TTY/COM1 interface. This cable does not have an order number. Please read the notes in Chapter 4.

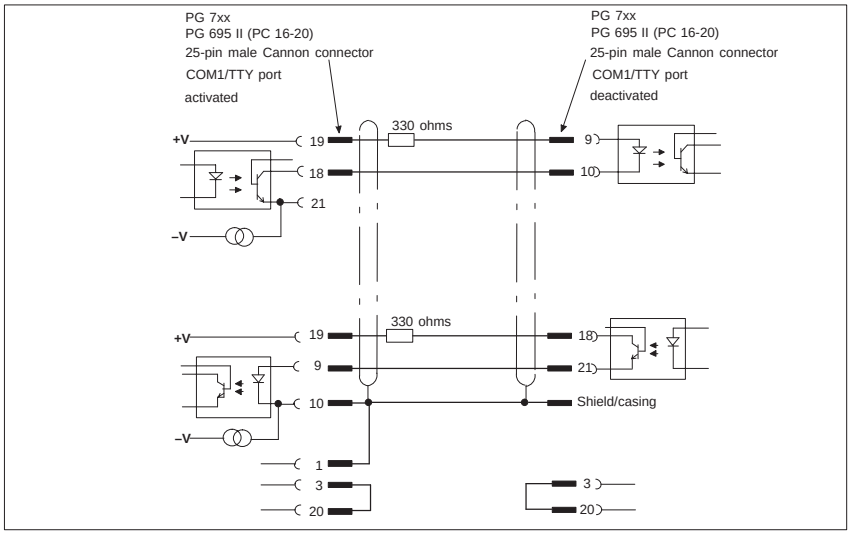


Figure 8-13 Cable for Interconnecting Programming Devices

Connection to S5 PLC/RS-232 and COM1/TTY of a PG 6xx

If you want to connect your PG 720 to the S5/RS-232 port of a PG 6xx programming device, you require an adapter. In this case, the PG 720 must be the active programming device. Please read the information about activating and deactivating the TTY/COM1 port in Chapter 4.

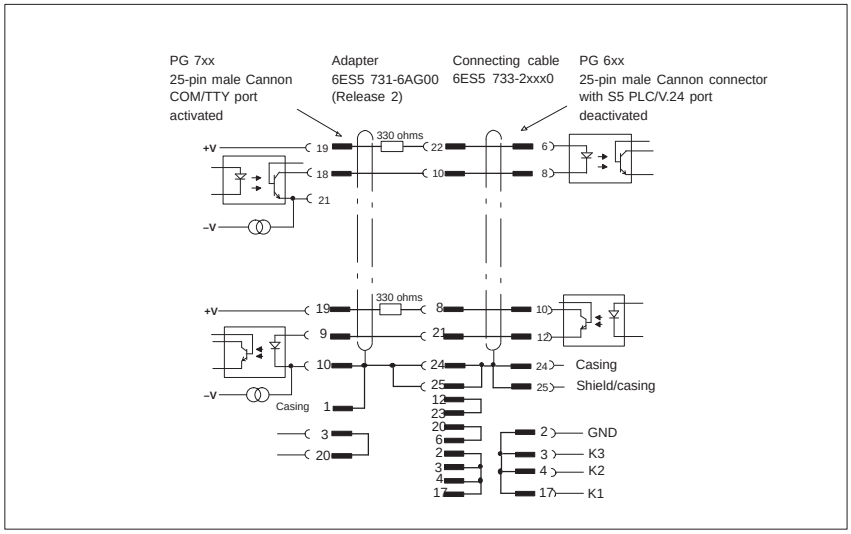


Figure 8-14 Connecting to the S5/RS-232 and COM1/TTY Ports of a PG 6xx Programming Device

PG 7xx- PG 7xx connection in V.24 mode

You can interconnect all PG 7XX programming devices with this cable.

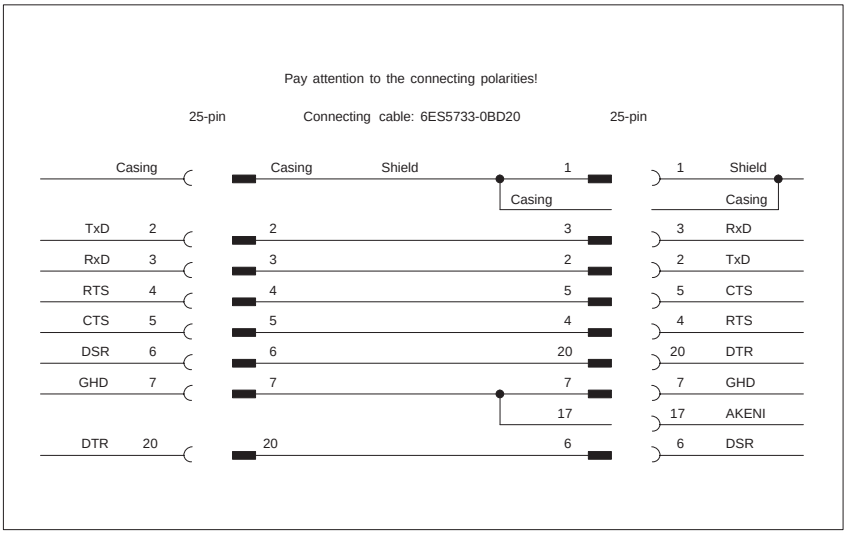


Figure 8-15 PG 7xx - PG 7xx Connection in V.24 Operation

Guidelines for Handling Electrostatically-Sensitive Devices (ESD)

A

Chapter Overview

Section	Contents	Page
A.1	What is ESD?	A-2
A.2	Electrostatic Charging of Persons	A-3
A.3	General Protective Measures Against Electrostatic Discharge Damage	A-4

A.1 What is ESD?

Definition

All electronic modules are equipped with large-scale integrated ICs or components. Due to their design, these electronic elements are very sensitive to overvoltages and thus to any electrostatic discharge.

These **E**lectrostatically-**S**ensitive **D**evices are commonly referred to by the abbreviation **ESD**.

Electrostatically-sensitive devices are labeled with the following symbol:





Caution

Electrostatically-sensitive devices are subject to voltages that are far below the voltage values that can still be perceived by human beings. These voltages are present if you touch a component or the electrical connections of a module without previously being electrostatically discharged. In most cases, the damage caused by an overvoltage is not immediately noticeable and results in total damage only after a prolonged period of operation.

A.2 Electrostatic Charging of Persons

Charging

Every person with a non-conductive connection to the electrical potential of its surroundings can be charged electrostatically.

Figure A-1 shows you the maximum values for electrostatic voltages which can build up on a person coming into contact with the materials indicated in the figure. These values are in conformity with the specifications of IEC 801-2.

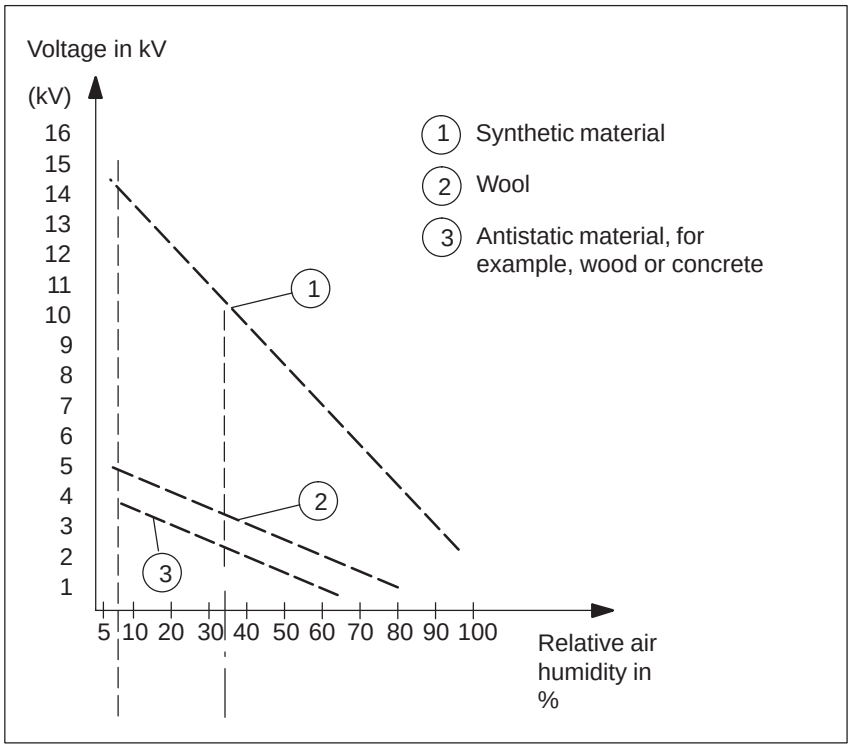


Figure A-1 Electrostatic Voltages which can Build up on a Person

A.3 General Protective Measures Against Electrostatic Discharge Damage

Ensure Sufficient Grounding

Make sure that the personnel, working surfaces, and packaging are sufficiently grounded when handling electrostatically-sensitive devices. You thus avoid electrostatic charging.

Avoid Direct Contact

You should touch electrostatically-sensitive devices only if it is unavoidable (for example, during maintenance work). Hold modules without touching the pins of components or printed conductors. In this way, the discharged energy cannot affect the sensitive devices.

If you have to carry out measurements on a module, you must discharge your body before you start the measurement by touching grounded metallic parts. Use grounded measuring devices only.

Glossary

What does This Chapter Contain?

This chapter contains a glossary in which you will find a list of the terminology used in conjunction with the Siemens range of programming devices and a brief explanation of each of the terms.

A

Access Protection Access to the programs and data of a programming device can be protected by passwords.

ACPI Advanced Configuration and Power Interface.

APM Advanced Power Management.

Application An application is a program which builds directly on, for example, the MS-DOS/Windows operating system. Applications on your programming device are the STEP 5 Basic package, STEP 7, etc.

ASCII Editor With an ASCII editor you can process (that is, edit) text files which are stored in ASCII code (American Standard Code of Information Interchange).

B

Base Memory The base memory is a part of the main memory. It is 640 Kbytes for all programming devices. The size is entered in the SETUP menu under the entry “Base Memory” and is not changed even if the memory is extended.

BIOS BASIC Input Output System

Boot Diskette A diskette which includes a boot sector, enabling it to load the operating system.

Booting A loading operation which transfers the operating system to the main memory.

Bps The speed (in bits per second) with which information is transmitted over a data link.

C

Cardbus interface
This interface is compatible with 32-bit Cardbus cards with PCI performance compliant with the PC Card standard.

CD ROM
(Compact Disc – Read Only Memory) Removable memory for large amounts of data.

Click
Pressing and immediately releasing the left mouse button; this selects objects or trigger commands.

COM1 Port
The COM1 port is a serial V.24/modem-PLC interface. This interface is suitable for asynchronous data transmission. It can also be used to connect printers with a serial interface.

COM2 Port
The COM2 port is a serial RS-232 interface which can be used to connect a mouse or a printer.

Configuration Files
These are files containing data which define the configuration after booting. Examples of such files are CONFIG.SYS and AUTOEXEC.BAT.

Configuration Software
The configuration software brings the device configuration up-to-date when modules are installed. This is done either by copying the configuration files supplied with the module or by manual configuration using the configuration utility.

Cursor
Collective term for mouse pointer and text cursor.

Cursor Control
Keypad on the keyboard for controlling the cursor.

D

Device Configuration
The configuration of a programming device contains information on the hardware and options of the device, such as memory configuration, drive types, monitor, network address, etc. The data are stored in a configuration file and enable the operating system to load the correct device drivers and assign the correct device parameter assignments.

If changes are made to the hardware configuration, the user can change entries in the configuration file using the SETUP program.

Disk Drive

The disk drive (floppy disk drive) is used to store programs and data on diskette (write access) or to load from diskette to the computer (read access).

Diskette

The diskette (floppy disk) is an external data access memory on which all types of files and programs can be stored. The storage medium is a round magnetic disk in a plastic cover to protect it from getting scratched.

Display

The flat monitor of the PG 720.

Double-Click

Pressing and releasing the left mouse button very quickly twice in succession without moving the mouse. This action is normally to open an object or program.

Drives

The PG 720 programming device is equipped with one hard disk drive and one floppy disk drive.

Drivers

These are programs which are part of the operating system. They adapt the data from user programs to the specific formats required by the I/O devices such as hard disk, printers, and monitors.

Drop-Down Menu

In graphics-supported programs, a menu line is positioned on the top edge of the screen. The menu titles contained in this line can be set either as drop-down or pull-down menus. Drop-down menus “roll” down as soon as the mouse pointer passes over a menu title. Pull-down menus only “roll” down when the menu title is clicked on. Different functions can then be called from these menus by moving the mouse and clicking on an item in a menu.

E

EPROM/ EEPROM Submodules

These are plug-in submodules with EPROM/EEPROM chips. S5 user programs can be stored on them. These programmed submodules are then plugged in specially designed receptacles in the programmable logic controller.

Extended Memory

A memory extension can be installed in a programming device to increase the size of the memory.

F

File A file is the collection of data under one name.

Formatting Formatting divides the memory area on a magnetic data medium into tracks and sectors. Formatting deletes all the data on a data medium. Every data medium must be formatted before it is used for the first time.

Function Keys Function keys can be divided into two different types; the normal function keys which are assigned a particular function of the computer (for example, delete key), and programmable function keys (softkeys).

H

Hard Copy The output of the complete contents of the screen on a printer is called a hard copy.

Hard Disk Drive Hard disk drives (Winchester drives) are a form of magnetic disk memory where the magnetic disks are permanently built into the drive.

I

Industrial Ethernet Bus system based on the Ethernet standard. Components of the SIMATIC S5 and S7 series (programming devices, programmable logic controllers, programmable control systems) can be networked using Industrial Ethernet interface modules.

Interface

- An interface is the connection between individual hardware elements such as PLCs, programming devices, printers, or monitors via physical connections (cables).
- An interface is also the connection between different programs, to enable them to work together.

Interface Module Module which controls and extends the hardware periphery.

Interrupt The interruption of program processing in the processor of a programming device / programmable controller by an interrupt event.

IRQ Interrupt Request Line

ISA Industrial Standard Architecture

J

JEIDA (Japanese Electronics Industry Development Association) Association of Japanese electronics manufacturers whose aim is to set up standards worldwide for the miniaturization and flexible application of PC expansion cards. Cooperates with PCMCIA.

K

Keyboard The keyboard is the collection of keys which are used to input data, text, characters, letters, numbers, special characters, and control commands in a computer. The keyboard forms the input interface between the user and the computer.

L

LED Light-emitting diode (for display and indicating purposes).

LPT1 Port The LPT1 port (Centronics port) is a parallel interface that can be used to connect a printer.

M

Main Memory The main memory is the complete RAM memory of a programming device.

Memory Card Memory submodule in credit-card format containing RAMs or EPROMs.

Memory Expansion See Extended Memory

Modem Communications device that enables a computer to send and receive data over a telephone line. **Mo**dulator and **dem**odulator of a signal transmission facility. It converts the digital pulses from a computer into analog signals (and vice versa).

Module Modules are boards (printed circuit boards) which can be plugged into a programmable logic controller or programming device. They are available, for instance, as central controller modules, interface modules, or as bulk memory modules.

Monitor The monitor or screen is a visual display unit via which the programming device communicates with the user.

Mother Board The mother board is the core of the programming device. From here data are processed and stored, interfaces and device I/Os are controlled and managed.

Mouse The mouse is a pointing device with which the user inputs coordinates (x,y). By moving the mouse, the mouse pointer can be moved at will around the screen. By pressing the left mouse button, the position is marked. The other mouse keys may have different assignments according to the application. With the mouse, objects can be selected, menus processed, and functions started.

Mouse Pointer The mouse pointer is moved across the worktop (screen) by means of the mouse. The mouse pointer selects, for example, objects which are to be processed.

MPI/DP The multipoint interface (MPI) is the programming device interface of SIMATIC S7. It permits the simultaneous operation of several programming devices, text displays, and operator panels on one or more central processing units. The stations on the MPI are connected together via a bus system.

MS-DOS (Microsoft Disk Operating System) is one of the standard operating systems for personal computers.

N

Network Link between programming devices and programmable controllers by means of interface modules, physical cables, and the corresponding software to allow data exchange between the devices.

O

Operating System Collective term for all functions which, in conjunction with the hardware, control and monitor execution of the user programs, the distribution of resources among the individual user programs, and the maintenance of the operating mode (for example, Windows 98, MS-DOS).

P

Parallel Interface Information is transmitted a byte at a time via a parallel interface (port). This means that the transmission rate is very fast. The programming devices have one parallel interface (LPT1).

Password See Access Protection

PC Personal computer

PC cards Personal Computer cards compliant with the 16-bit PCMCIA standard or the 32-bit Cardbus standard.

PCI Peripheral Component Interconnect (high-speed I/O expansion bus)

PCMCIA (Personal Computer Memory Card International Association). Association of about 450 computer companies with the aim of setting worldwide standards for miniaturizing PC expansion cards and making their use more flexible, offering the market a basis for development. Cooperates with JEIDA.
See Cardbus interface.

PG LINK Linking two programming devices via a special connecting cable.

PLC SIMATIC S5 programmable logic controller

PROFIBUS Bus system based on the PROFIBUS standard. Components of the SIMATIC S5 and S7 series (programming devices, programmable logic controllers, programmable control systems, distributed I/Os) can be networked using PROFIBUS.

Programmable Logic Controller

The programmable logic controllers (PLC) of the SIMATIC S5 system consist of a central controller, one or more CPUs and various I/O modules. The PLCs of the SIMATIC S7 system (for example, S7-200, -300, -400) consist of one or more CPUs and various I/O modules.

Programmable Logic Controller System

The programmable logic controllers (PLC) of the SIMATIC S5 system consist of one or more CPUs and various I/O modules. The PLCs of the SIMATIC S7 system (for example, S7-200, S7-300, S7-400) consist of one or more CPUs and various I/O modules.

Pull-Down Menu

See Drop-Down Menu

R

RAM

RAM (**R**andom **A**ccess **M**emory) is a read/write memory in which every memory location can be addressed individually and its contents changed. RAM is used to store data and programs.

ROM

ROM (**R**ead **O**nly **M**emory) is a memory in which every memory location can be addressed individually. The stored programs and data are permanently programmed at the factory before delivery and are not lost in the event of a power failure.

RS-232 Interface

The RS-232 interface is a standardized interface for data transmission. Printers, modems and other hardware modules can be connected to a RS-232 interface.

RTC

Real Time Clock

S

SCSI Interface

Small Computer System Interface. Interface for connecting SCSI devices (hard disk drives, CD-ROM drives).

Serial Interface

Data is transmitted one bit at a time via a serial interface (port); serial interfaces are therefore slower than parallel interfaces.

SETUP

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

SIMATIC S5 Memory Submodules

Memory submodules for SIMATIC S5 which are programmed with the PG 720 and can be plugged into an S5 programmable logic controller.

SIMATIC Memory Cards

Memory submodules in credit-card format for SIMATIC S5 and SIMATIC S7 which are programmed with the PG 720 and can be plugged into an S5 or S7 programmable logic controller.

Software

The collective term for all programs which are used on a computer. The operating system and the user programs are part of the concept “software”.

Standby

Power saving status: for example, hard disk drive or display turned off.

STEP 5

This is a software package which represents the basis for all other STEP 5 software packages. With the programming device (PG 720), this package is used to program programmable logic controllers of the SIMATIC S5 family. The language used is known as STEP 5.

STEP 7

Programming software for the creation of user programs for SIMATIC S7 control.

STN Display

Super Twist Nematic passive display

Suspend to Disk

Transition to power-off status, with prior saving of the system contents to the hard disk drive.

Suspend to RAM

Transition to power-saving status, with prior saving of the system contents to the RAM.

T

Text Cursor The cursor shows where text may be entered, for example, in text editors and in dialog windows. In many applications the position of the cursor can be changed by moving and clicking the mouse pointer.

TFT Display Thin Film Transistor Color Display

Trackball The trackball is used as a pointing device for programs serviced by a mouse. On the PG 720, the trackball is integrated in the keyboard.

U

USB Universal Serial Bus

User Interface The software-controlled menus and screens on the monitor through which the user communicates with the program.

User Program A collection of all the instructions and declarations for signal processing, by which a system (or process) is controlled or influenced.

V

VGA (Video Graphics Array)
Color graphics control mode

W

Warm Restart A warm restart is a restart after a program has been aborted. The operating system is reloaded and restarted. Under Windows 98, MS-DOS, a warm restart is performed by simultaneously pressing keys CTRL+ALT+DEL.

Working Memory The memory in which a program is stored which can be processed. Also known as main memory.

Write Protection

Write protection for files or diskettes

- Write protection for files; this type of write protection is stored in the computer and is allocated by the system manager.
- Diskette write protection; for 3 1/2 in. diskettes by opening the write protection hole.

Index

A

Activating/deactivating, 4-20
Address areas, 8-2

B

Battery, 4-4, 4-5
BIOS, 6-2
  date, 6-6
  time, 6-6

C

Calibration cycle, 4-3, 7-3
Cardbus, 4-15
CD-ROM, 3-18
Closing the unit, 5-11
COM1, 3-5
Connecting cables, 8-14
  overview, 8-14
Connectors and ports, 3-5
Cursor keys, 3-12

D

Device configuration, 6-1, 6-2
Diskettes, 3-16
Display, 3-8
Drives, 3-16

E

EPROM/EEPROM, 4-12
Error diagnostics, **7-1**
Errors, 7-2
ESD guidelines, 5-2
ETHERNET, 4-24
Expansions, **5-1**
External keyboard, 8-8
External power supply, 3-5

F

Function keys, 3-12

H

Hard disk drive, 3-17
Hardware information, **8-1**

I

I/O address area, 8-2
Industrial Ethernet, 4-24
Installation, **4-1**
Interrupt, 8-5

J

Jumper settings, 4-20

K

Key combinations, 3-13
Keyboard, 3-9, 4-10

L

Lithium battery, 5-10
LPT 1, 3-5, 8-11

M

Memory address area, 8-2
Memory expansion, 5-8
Modem, 3-5
Moisture, 2-2
Monitor, 4-8
Motherboard, 5-6
Mouse, connecting, 8-7
Moving the PG 720, 2-6

MPI, 3-5
MPI connector, 8-10

O

Opening the keyboard, 2-2

P

Parallel port, 8-11
PC interface, 4-15
Pinouts, 8-7
Point-to-point link, 8-16
Point-to-point connection, 4-17
Power supply system, 4-2
Product Overview, **1-1**
PROFIBUS, 4-23
Programming device, advantages of the programming device, 1-2

R

RS-232, 3-5

S

S5 memory submodule, 4-12
Serial port, 8-12, 8-13
SETUP, 6-2
Setup
  Advanced menu, 6-14
  disk drive type, 6-6
  hardware options, 6-12
  keyboard features, 6-11
  Security menu, 6-19
SIMATIC memory cards, 4-14
SINEC H1, 4-3
Special keys, 3-10
Stand support, 2-3

T

Teach–in Cycle (Battery), 4-3, 7-3
Trackball, 3-14, 4-9

V

VGA connector, 8-9