SIEMENS

SIMATIC

PC BI45/FI45 PII

Product Information Bulletin	C79000-Z7076-C795-03

This bulletin contains important information
on your PC BI45/FI45 PII

Safety Guidelines

This product information bulletin 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:

⚠ **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.

Correct Usage

Please observe the following:

Note

You can set up and operate your programming device in conjunction with the following instructions. You should only connect external devices and work with memory cards in conjunction with the Technical Description.

Only **qualified personnel** should be allowed to install and work on this equipment using the Technical Description. Qualified persons 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.

⚠ **Warning**

This device may only be used for the applications described in the catalog or 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, and set up carefully and correctly, and operated and maintained as recommended.

Trademarks

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

Safety Instructions

<div style="text-align: right; font-size: 2em;">1</div>

Chapter Overview   This chapter provides you with safety instructions which you must follow when operating your PC and its components.

This device conforms to the pertinent safety requirements according to IEC, VDE, EN, UL, and CSA. If you have questions about the admissibility of installation in the selected environment, please contact one of our service departments. You will find a list of addresses in Chapter 5.

1.1 General Notes

Transport

We recommend that you transport the device only in the original packaging (protection against shock and impact).

Installation

Condensation can occur if the device is transported from a cold environment to the operating area. The device must be dry prior to startup. You must therefore provide an acclimatization time of at least four hours.

During installation and prior to operation, please read the information on ambient conditions provided in the section entitled "Technical Specifications" as well as the information concerning installation of the device presented in Section 2.1 of this manual.

The device must be installed in such a way that it presents no danger of any kind (for instance if it is overturned).

Make sure that the ventilation slots are open so that a sufficient amount of air can be drawn in to cool the housing interior.

If the PC is to be permanently installed (in a rack, for example), the drive protection cover in front of the drives on the front side must be kept closed for safety reasons (fire protection according to UL 1950/EN 60950). The drive protection cover may be opened only to service the drives. Removal of the cover is not permitted.

Warning

When installing the systems, the permissible mounting positions must be observed (see Section 2.2.1).

Installation in an impermissible mounting position invalidates certification in accordance with UL 1950 and EN 6095.

Cleaning

Display, membrane keyboard
The surfaces of the display and membrane keyboard are waterproof and may be cleaned using a mild, non-abrasive cleansing agent.

Power Connection

Check to make sure that the rated voltage for the device is the same as the local mains voltage.

This device is equipped with a safety-tested power supply cable, and may be connected only to a socket outlet with earthing contact.

Make sure that the socket outlet on the device or the grounding contact for the building wiring systems is freely accessible and located as near to the device as possible.

The PCs have a power switch. To completely disconnect one of these PCs from the mains power, you must pull the plug. This connection must be easily accessible. For cabinet mounting, a central disconnector must be provided.

Lay the cables so that no one can step on or trip over them. When connecting the device, carefully observe the pertinent information given in Chapter 2.

Never connect or disconnect power cables or data transmission lines during a thunderstorm.

In an emergency situation (for instance damage to housing, operating elements or power cable, penetration of liquids or foreign bodies), pull the power plug and contact the authorized service department.

The PC must be switched off before connecting/disconnecting I/O devices (keyboard, mouse, printer, etc.). Failure to do so can result in damage to the PC.

Country-Specific Notes

For operation in Canada and the United States, use CSA or UL-listed power cables.

For the USA and Canada:
Both a UL approval and a CSA marking are required for the cable in the USA and Canada. The connector must comply with the NEMA 5-15 specification.

For 120 V devices
A flexible cable with UL approval and CSA marking and the following features must be used: SJT design with three conductors, at least 18 AWG cross-section, a maximum length of 4.5 meters and parallel grounding-type plug (15 A, at least 125 V).

For 240 V devices (used in Germany)
A flexible cable with UL approval and CSA marking and the following features must be used: SJT design with three conductors, at least 18 AWG cross-section, a maximum length of 4.5 meters and Tandem ground-type plug (15 A, at least 250 V).

For 230 V devices (outside the USA)
A flexible cable with the following features must be used: At least 18 AWG cross-section and grounding-type plug (15 A, 250 V). The cables must conform to the relevant safety guidelines of the country in which they are installed and bear the specified markings.

The device is intended for connection to grounded power supply systems (TN networks to VDE 0100 Part 300 or IEC 364-3).

No provision is made for connection to non-grounded or impedance-grounded power supply systems (IT networks).

The power cable should comply with the safety guidelines of the country concerned.

Repairs

Only authorized personnel are permitted to repair the device. Unauthorized opening and improper repairs on the device can result in significant danger to the user.

Always pull the power plug before opening the device.

Install only system expansion equipment intended for this computer. If you install other expansion equipment, you can damage the system or violate the safety requirements and regulations for radio interference suppression. Contact your technical customer service or dealer to find out which expansion devices may be safely installed.

Installation or exchange of system expansions which result in defects to your PC invalidate the warranty.

Only authorized service personnel may remove or replace the power supply unit.

Battery

The device is equipped with a battery, which is located on the mother board. Batteries may be replaced by service personnel only. Please refer to the documentation for the CPU module.

Dispose of used batteries in accordance with local regulations for special waste.

Caution

Improper replacement of the battery poses danger of explosion. The battery must be replaced only with an identical battery or a battery type recommended by the manufacturer. Dispose of used batteries in accordance with the manufacturer's recommendations.

ESD Guidelines

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

The following guidelines must always be observed and carefully followed when handling modules equipped with electrostatically sensitive devices:

- Always discharge your body before handling modules equipped with ESDs (for example by touching a grounded object).

- Devices and tools you use must be free of static electricity.

- Always pull the power plug before connecting or disconnecting modules containing ESDs.

- Touch modules fitted with ESDs by their edges only.

- Never touch wiring posts or printed conductors on modules containing ESDs.

1.2   Notes on the CE Symbol

CE   The following applies to the SIMATIC product described in this manual:

EC Directive   This product fulfills the requirements of EC directive 89/336/EEC on "Electromagnetic Compatibility," and is designed for the following fields of application as per the CE marking:

Field of Application	Requirement For	
	Emitted Interference	**Noise Immunity**
Residential, commercial and small businesses	EN 50081-1: 1992	EN 50082-1: 1992
Industrial	EN 50081-2: 1993	EN 50082-2: 1995

Low Voltage Directive   This product fulfills the requirements of EC directive 73/23/EEC on "Low Voltage Directive." Observance of this standard was tested to EN60950:A":1993.

Declarations of Conformity   In accordance with the above-mentioned EU directives, the EC declarations of conformity and the associated documentation are held at the disposal of the competent authorities at the address below:

Siemens AG
Bereich Automatisierungs- und Antriebstechnik
A&D AS E 4
Postfach 1963
D-92209 Amberg

Products which do not carry the CE marking fulfill the requirements and standards as described in the chapter entitled "Technical Specifications."

Observing the Installation Guidelines   The installation guidelines and safety instructions discussed in the manual must be observed on startup and during operation.

1.3   Approvals for the USA and Canada

**UL/CSA
Approval**

Important for the USA and Canada:

One of the following markings on a device is indicative of the corresponding approval:

Underwriters Laboratories (UL) to the UL 1950 standard.

Underwriters Laboratories (UL) to Canadian standard C22.2 No. 950.

Underwriters Laboratories (UL) to the UL 1950 standard and to Canadian standard C22.2 No. 950

UL Recognition Mark

Canadian Standard Association (CSA) to standard C22.2 No. 950.

Canadian Standard Association (CSA) to American standard UL 1950.

1.3.1 FCC Approval for USA and Canada

Federal Communications Commission
Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Shielded Cables

Shielded cables must be used with this equipment to maintain compliance with FCC regulations.

Modifications

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Conditions of Operations

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Canadian Notice

This equipment does not exceed the Class A limits for radiated emissions as described in the Radio Interference Regulations of the Canadian Department of Communications.

Avis Canadien

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Classe A prescrites dans le Réglement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

1.4   Technical Specifications

General Information						
Dimensions SIMATIC PC BI45	(W x H x D in mm) 385 x 295 164 mm					
Dimensions SIMATIC PC FI45	(W x H x D in mm) 483 (19") x 310 (7HE) x 184 mm					
Weight of SIMATIC BI45	approx. 11 kg					
Weight of SIMATIC FI45	approx. 11 kg					
Line voltage (U_N)	120 VAC (93 to 132 VAC), or 240 VAC (187 to 264 VAC)					
Line voltage frequency	50/60 Hz (47 to 63 Hz)					
Brief voltage interruption acc. to NAMUR	max. 20 ms at o.85 U_N (max. 10 events per hour; recovery time at least 1 second)					
Max. power consumption	220 W					
Max. current delivery (DC) *1	+5 V	+3.3 V	+12 V	-12 V	-5 V	aux. 5 V
	20 A	10 A	8 A	0.5 A	0.5 A	0.05 A
Noise emission	< 50 dB (A) to DIN 45635					
Degree of protection for SIMATIC PC BI45	IP20					
Degree of protection for SIMATIC PC FI45	IP65, front (with drive cover closed)					
Safety						
Protection class	Protection class I to VDE 0106 T1: 1982 (IEC 536)					
Safety requirements	IEC 950/09.91 corr. to EN 60950					
Electromagnetic Compatibility (EMC)						
Emitted interference	EN 55022 Class B					
Noise immunity: Line-fed interference on supply lines	+- 2 kV (to IEC 1000-4-4:1995; burst) +- 1 kV (to IEC 1000-4-5:1995; surge symm) +- 2 kV (to IEC 1000-4-5:1995; surge unsymm)					
Noise immunity on process, measuring, and control lines	+- 1 kV (to IEC 1000-4-4:1995; burst; length < 3m) +- 2 kV (to IEC 1000-4-4:1995; burst; length > 3m) +- 1 kV (to IEC 1000-4-4:1995; surge symm; length > 3m) +- 2 kV (to IEC 1000-4-4:1995; surge unsymm; length > 3m)					
Noise immunity to discharges of static electricity	+- 6 kV contact discharge (to IEC 1000-4-2:1995) +- 8 kV air discharge (to IEC 1000-4-2:1995)					
Noise immunity to high-frequency radiation	10 V/m 80-1000 Mhz, 80% AM (to ENV 50140:1993) 10 V/m 900 Mhz, 50% ED (to ENV 50204:1995) 10 V 9 KHz-80 MHz					
Magnetic field	30 A/m 50 Hz					
Ambient Conditions						
Temperature	Tested to DIN EN 60068-2-2:1994, DIN IEC 68-2-1, DIN IEC 68-2-14,					
- operation	+ 5°C to +45°C					
- storage/transport	-20°C to +60°C					
- gradient	Max. 10 degrees C/h (no condensation)					
Relative humidity	Tested to DIN IEC 68-2-3, DIN IEC 68-2-30, DIN IEC 68-2-56					
- operation	5 % to 85 % at 25°C (no condensation)					
- storage/transport	5 % to 95 % at 25°C (no condensation)					

Mechanical Specifications	
Vibration	Tested to DIN IEC 68-2-6
- operation	10 to 58 Hz: 0.075 mm, 58 to 500 Hz: 9.8 m/s^2
- CD-ROM operation	10 to 38 Hz: 0.0375 mm, 38 to 500 Hz: 2 m/s^2
- transport	5 to 9 Hz: 3.5 mm, 9 to 500 Hz: 9.8 m/s^2
Shock	Tested to DIN IEC 68-2-29
- operation	50 m/s^2, 30 ms
- CD-ROM operation	50 m/s^2, 11 ms
- transport	250 m/s^2, 6 ms
Special Features	
Quality assurance	to ISO 9001
Motherboard	
Processor	Pentium II 1st level cache 16 Kbytes data memory, 16 Kbytes command memory 2nd level cache 512 Kbytes
Internal processor cache	2 x 16 Kbytes first level, 512 Kbytes second level
Main memory	BI45: 32Mbytes FI45: 64Mbytes Max. 384 Mbytes
Second level cache	512 Kbytes integrated
Free expansion slots	1 ISA long, 1 ISA short (max. 165 mm) 2 PCI short (max. 165 mm), 1 x shared ISA/PCI long
– Max. admissible power consumption per ISA slot	5V 2A, 12V 0.3A, -12 V 0.05A, -5V 0.05A
– Max. admissible power consumption per PCI slot	5V 2A, 12V 0.5A, –12V 0.1A, -5V 0.05A
– In total (all slots):	5V 10A, 12V 3A, –12V 0.5A, -5V 0.1A must not be exceeded
Drives	
Floppy disk drive	3.5" (1.44 Mbytes)
Hard disk drive	3.5" EIDE, ATA 33
CD-ROM drive	20x EIDE, 650 Mbytes, overall height 12.7 mm
Interfaces	EIDE (primary and secondary, ATA 33)
Graphics	
Graphics chip	XGA-LCD-Controller Chips and Technologies with Windows accelerator on the PCI bus.
Graphics memory	2 Mbytes DRAM EDO 60 ns
Resolutions/frequencies/colors	CRT: to 1280 x 1024 / 75 Hz / 65535 colors
LC Display (only for FI45)	
Display type	active TFT, color
Display size	270 x 203 mm (13.3")
Picture resolution	1024 x 768 (XGA)
Colors	65536 (from 162.144)
Contrast	100:1
Brightness	150 cd/m^2
Response time	30/50 ms (t_{rise}/t_{fall})
Permitted fault locations	high/low level: < 12/25 spots green high level: < 5 spots

Interfaces	
COM1	Serial port 1 (V.24 / TTY), 25-pin sub D socket connector
COM2	Serial port 2 (V.24), 9-pin sub D socket connector
LPT1	Parallel port (standard and EPP mode) Interface for printer with parallel port
VGA	VGA interface, for external monitor
Keyboard	PS/2 keyboard interface BI45: on the box FI45: on the Box and at the front
Mouse	PS/2 mouse port
MPI/DP Interface, optically isolated *2	9-pin sub D socket connector, screw-type locking For SIMATIC MPI or PROFIBUS DP networks (CP 5611 compatible)
Data signalling rate	9.6 Kbps to 1.5 Mbps, software-selectable

Operating mode	Isolated*: Data lines A, B
	                  Control lines RTS_AS, RTS_PG
	                  5V supply voltage (max. 90 mA)
	
	Ground connection: MPI/DP connector cable shield

Physical interface	RS485, optically isolated
Memory address area	Resources are assigned via PCI-PNP
Interrupts	Resources are assigned via PCI-PNP
Relay interface, only in conjunction with SafeCard	Connection of a signaling device to a SafeCard monitoring module (see SafeCard description in the section on "Monitoring Module").
Function Displays	
BI45	Floppy disk access (floppy disk drive on the side of the box) CD access (CD drive on the side of the box)
FI45	POWER Floppy drive MPI/DP RUN (in conjunction with SafeCard) TEMP (in conjunction with SafeCard) Floppy disk access (floppy disk drive behind the drive cover) CD access (CD drive behind the drive cover)

*1 Maximum of 150 W in total, with +5V and +3.3V the sum of 100W must not be exceeded. +12V can be loaded with 11A for a maximum of 10 seconds.

*2 Optically isolated within the safety extra-low voltage circuit (SELV)

Starting Up your PC

2

Chapter Overview

In this chapter, you will learn:

- What to consider when installing your PC

- Which interface port to use for connecting standard I/Os and

- How to connect your PC to the mains voltage.

2.1 Unpacking and Checking the Delivered Components

Unpacking

Proceed as follows to unpack your PC:

1. Remove the packaging.

2. Do not throw the original packaging away. Keep it in case you have to transport your PC at some time in the future.

3. Please be sure to keep the enclosed documentation. It belongs to the device and you will need it to put your PC into operation (see Chapter 3).

Checking the Contents

Proceed as follows:

1. Check the packing list to make sure nothing is missing.

2. Check the packaging and the package contents for any visible damage.

3. Inform your dealer immediately if there is any damage or if there is a discrepancy between the packing list and the package contents.

If necessary, refer to the Logbook which is located inside the casing of your PC for exact information on the PC configuration.

Setting Up Your PC

Your SIMATIC PC is suitable for installation in consoles, switchgear cubicles, and control panels. For detailed information, see Sections 2.2.1 and 2.2.2.

2.2 Installation

Please observe the following when installing your SIMATIC PC:

- Position the PC so as to avoid reflections on the screen as much as possible.

- Base your choice of mounting height on the position of your monitor, which should always be at an optimal height for the operator.

- Do not expose your PC to direct sunlight.

- Do not install the PC in such a way that the ventilation slots in the PC housing are covered.

- The cabinet or control panel in which you install the PC should always provide sufficient space for proper air circulation.

⚠

Warning

Avoid extreme environmental conditions whenever possible. Protect your SIMATIC PC from dust, moisture, and heat (refer to the section entitled "System Unit" in the "Technical Description").

The device must be installed in such a way that it poses no danger (for example, by tipping over).

The clearance at the sides and rear of the system unit must be at least 100 mm in order for the unit to be sufficiently ventilated.

Do not cover the ventilating slots of the system unit.

When installing the system, remember to observe the permissible mounting positions (refer to Section 2.2.1).

Installation of a system in an inadmissible mounting position invalidates the UL 1950 and EN60950 approvals.

2.2.1 Installing the BI45

The SIMATIC BI45 PC is equipped with two mounting brackets, which are located on the sides of the unit. Four M4 bolts (two for each bracket) are needed to mount the unit.
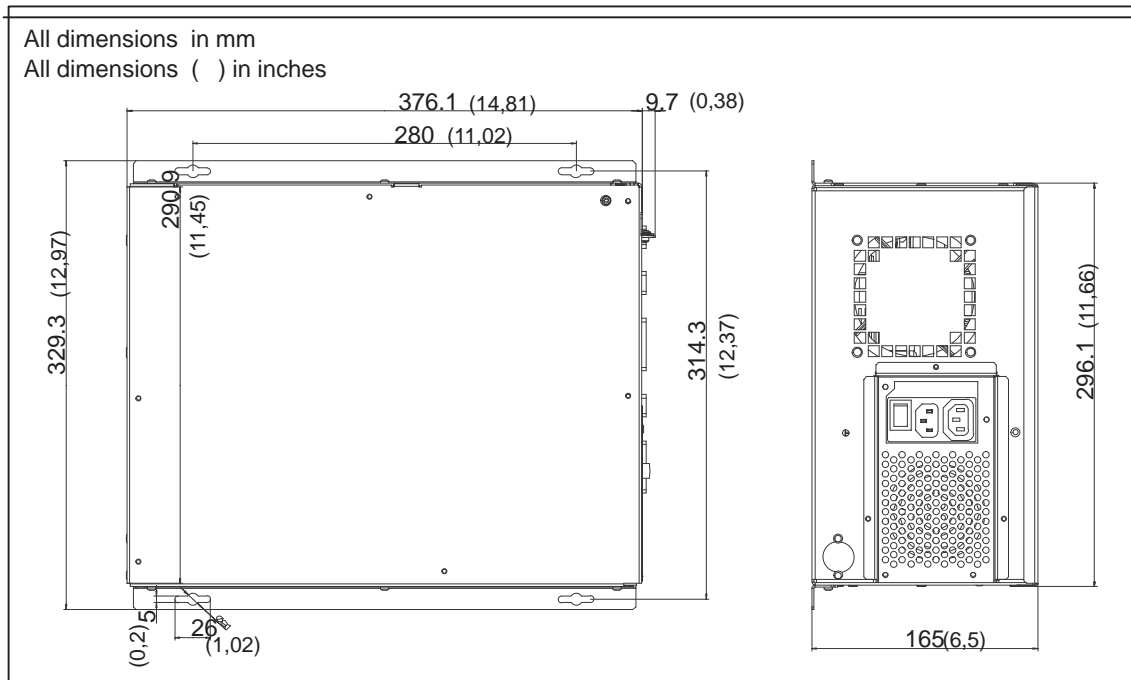

Figure 2-1 Installing the BI45

Note

The permissible mounting positions for the box also apply for the FI45 system, whose main component is also a box.

The BI45 can be installed in various positions. However, the side with the power supply and the fan should never be face downwards. When installing the device, you must also take into consideration the permissible installation positions for the floppy disk drive (see Figure 2-2). The drive support with the mounted floppy disk drive and CD-ROM drive can be rotated through 90° to match the installation position.
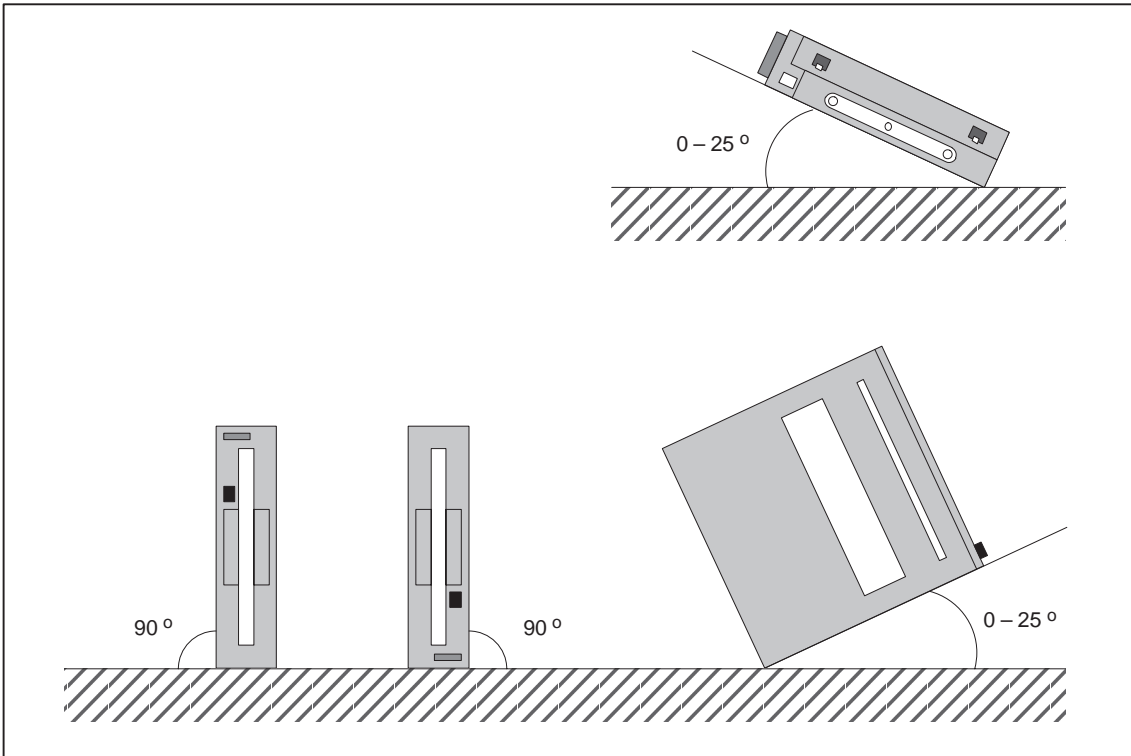
Figure 2-2 Permissible Installation Positions for Floppy Disk Drive

2.2.2   Installing the FI45

**Panel
Mounting**

Proceed as follows:

- Place the device in the prepared panel cutout (see Figure 2-3) and protect it against falling out until it can be permanently secured.

- Make sure that the seal is properly attached.

- Clamp the device in the panel with the ten screw spanners (threaded spindles) provided by hooking a screw spanner onto the front frame of the PC and turning the threaded spindle from the back toward the panel.

!

Caution

Only turn the threaded spindle until the rear side of the front frame is resting on the control panel.
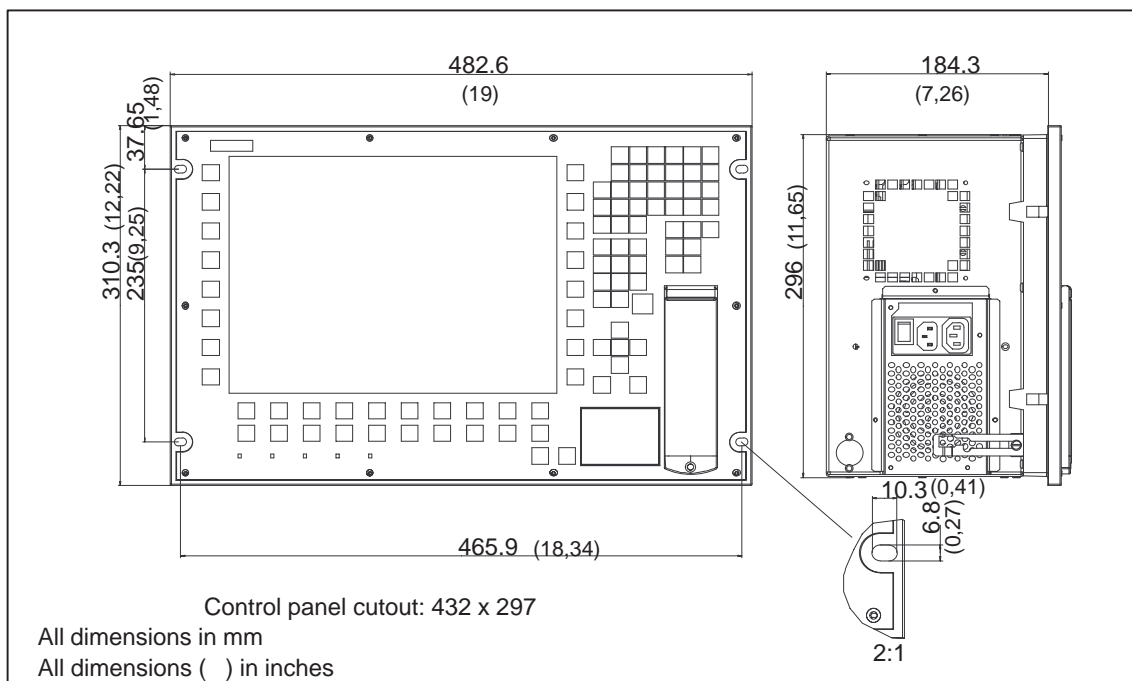

Figure 2-3   Installing the FI45

**Installation in
19" Cabinet**

Proceed as follows:

- Install the device in the correct position in the cabinet and ensure that it cannot fall out.

- Secure the device in the cabinet with 4 screws M5 x 20.

2.3 Connecting the I/O Devices

The SIMATIC PC BI45 and FI45 are designed so that the box represents the core component of the two systems. This means that all interfaces and connections provided on the BI45 are also provided on the FI45 system. The differences in the three are listed in the table below.

Table 2-1   Connections on the Right-Hand Side of the Device

Connection	Function	BI45	FI45
VGA	VGA port for connecting an external monitor 15-pin, sub D socket connector	Yes	Yes
COM1	Serial port 1 (V.24/RS232C) 25-pin, sub D socket connector	Yes	Yes
COM2	Serial port 2 (V.24/RS232C) 9-pin, sub D connector	Yes	Yes
Mouse	PS/2 mouse port	Yes	Assign.*1
Keyboard	PS/2 keyboard port	Yes *4	Yes *2
LPT1	Parallel port Port for devices with a parallel port (such as a printer) 25-pin, sub D socket connector	Yes	Yes
MPI/DP (RS 485)*5	Multipoint interface / PROFIBUS DP connection For connecting an S7 programmable controller 9-pin, sub D socket connector	Yes	Yes
Relay output (only with SafeCard option)	Connection for a signaling device on the SafeCard monitoring module (see SafeCard description in the section on "Monitoring Module" in the Technical Description). Technical specifications: DC switching voltage : max. 60V DC switching current : max. 1A DC switching capacity : max. 30W Permanent DC current : max. 1A		

If expansion boards are connected in the PC, there are additional interfaces. Please refer to the description of the relevant module for the significance of these additional interfaces.

*1: On the FI45, the PS/2 mouse port is already occupied by the sensor field (Touch Pad) which is installed as standard. An external mouse can also be connected. In this case, the Touch Pad does not function.

*2: On the FI15, a PS/2 keyboard can be interfaced to the front panel of the PC. The port is located behind the front cover. The box's PS/2 keyboard port can be used only alternatively, not at the same time as the front-panel port.

*3: When using the optional touch screen (see 3.9) you must not use the external COM2 interface.

*4: It is possible to connect keyboards with an integrated trackball (for example, PG720 or PG740).

*5: Optically solated within the safety extra low voltage circuit (SELV).
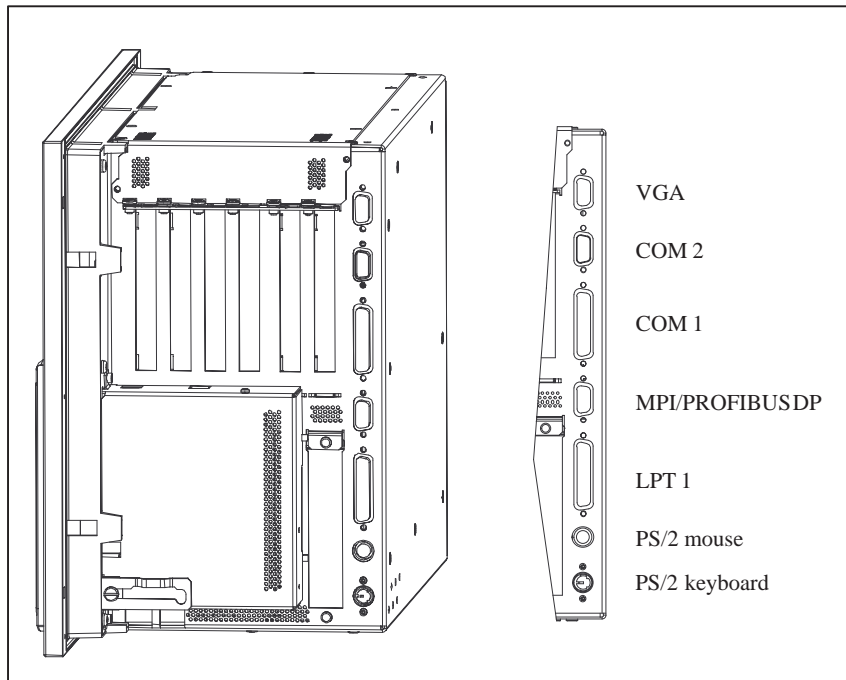
Figure 2-4   Connections on the Right-Hand Side of the SIMATIC PC FI45

Note

Always be sure to use shielded cables and metal connectors to avoid invalidating your operating permit. Use a screwdriver to fasten the interface cable connectors on the PC housing to improve electrical shielding.

Table 2-2   Connections on the Left-Hand Side of the Device

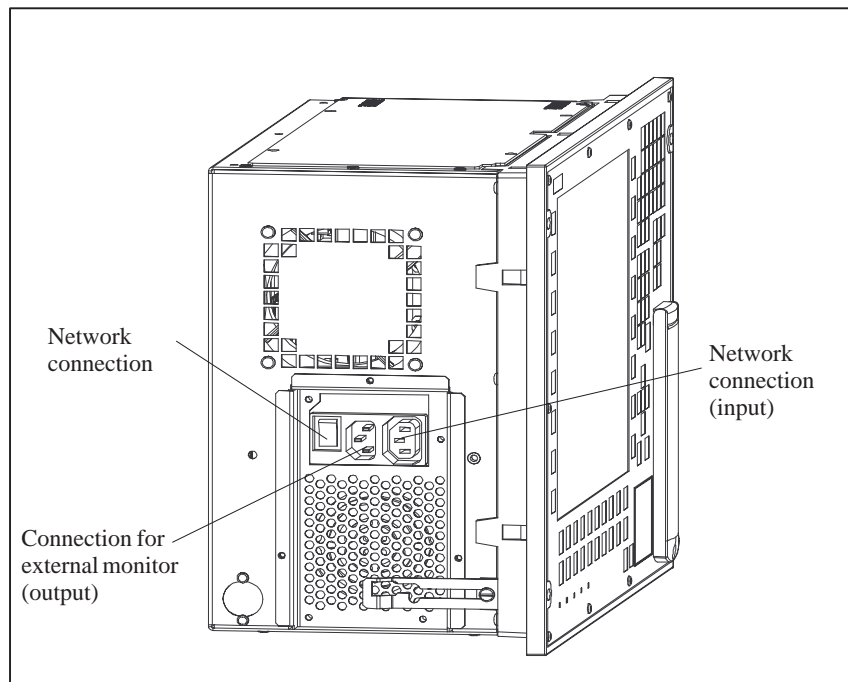| Connection	Function	BI45	FI45
Power supply connector (input)	Network connection (115/230V AC)	yes	yes
Power supply connector (output)	Network connection for external monitor (115/230V AC)	yes	yes

Figure 2-5 Connections on the Left-Hand Side of the SIMATIC PC FI45

The labels in the figure read: Network connection, Connection for external monitor (output), and Network connection (input).

Note

Once the power supply cable has been inserted, it must be secured with the strain relief clamp supplied. This prevents the power supply connector from being disconnected.

2.4   Earthing Measures

Low-resistance earthing connections ensure that the user of the plant is protected against an electric shock (for example, if a short-circuit occurs, or if there are defects in the system). Moreover, they discharge interference transmitted by power supply cables, signal cables, or cables to peripheral equipment.

You should therefore create a low-resistance connection (a large surface acting as the contact) between the earthing point on the system housing and the central earthing point of the cabinet or the plant in which the computer is to be installed. The minimum cross-section should not be less than 5 mm^2.

The earth connection is located on the left-hand side of the device to the right of the fan for the power supply.

2.5   Connecting the Supply Voltage

**Changing the
Supply Voltage**

The standard power supply for the SIMATIC PC is set for 115/230V networks. The voltage selection switch is located at the rear of the system unit below the ventilation slots.

You must ensure that the supply voltage set at the voltage selection switch matches the local supply voltage.

**Selecting the
Supply Voltage**

If the voltage specified at the selection switch does not match the local supply voltage, you must change the voltage selection switch so that you can read the voltage value set below the green triangle on the right. Use a small, flat screwdriver to lever out the part with the voltage values and reinsert it in the appropriate position.
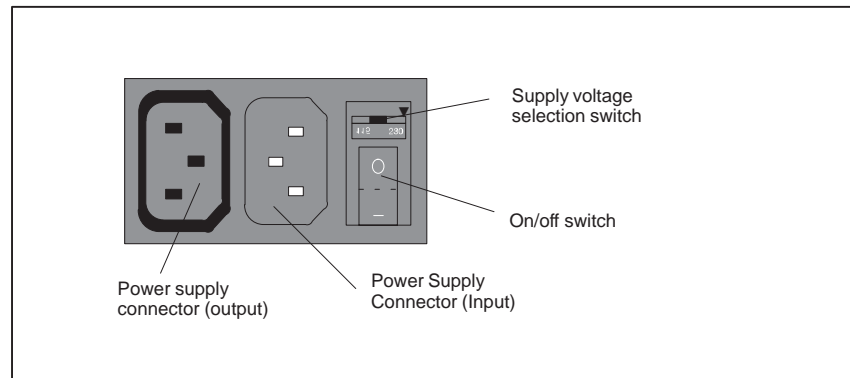
Figure 2-6 Connecting the Supply Voltage

⚠ **Caution**

Damage may be caused to the device!

Operating the PC with the wrong supply voltage setting may damage the device. The same voltage is applied to the supply voltage output and the supply voltage input.

Please observe the specifications made by the monitor manufacturer when operating the monitor.

The following table lists the permissible input currents for the monitor:

Input voltage	120 V / 240 V ± 10%
Input current	8A / 4A
Output voltage	Equal to input voltage
Max. output current	3A / 1.5A

Setting Up and Operating the PC 3

Chapter Overview   In this chapter, you will learn:

- How to start up your PC for the first time, and

- How to use the electronic manual.

3.1 Setting Up and Operating the PC

3.1.1 Operating Elements and Displays

The operating elements for the three systems can be broken down as follows:

Operating Element	Function	BI45	FI45
Keypads on the sealed keyboard			
Function keys	Entering function codes	――	Included
Alphanumeric and symbol keys	Entering text	――	Included
Numeric keypad, cursor control, and control keys	Entering numbers, positioning the cursor, scrolling	――	Included
Sensor field (finger mouse, touch pad)	Positioning the cursor, triggering functions, mouse replacement	――	Included
Reset key	Resetting the device (complete restart)	Included *3	Included *4
Floppy disk drive	Loading programs/data	Included	Included *1
CD-ROM drive	Loading programs/data	Included	Included *1

*1: On the FI45, the floppy disk drive is located at the front, behind a sealing cover. The IP 65 protection provided for the front panel can be maintained only when this cover is closed.

*3: The reset key (in preparation) is located on the box near the ISA slot boards.

*4: The reset key (in preparation) is located on the front panel behind the sealing cover. The reset key can only be activated by means of a pointed object (for example, a pen or the tip of an extended paper clip).

3.1.2 Input Fields on the FI45

Function Keys   The function key assignments depend on the operating system and/or user program.
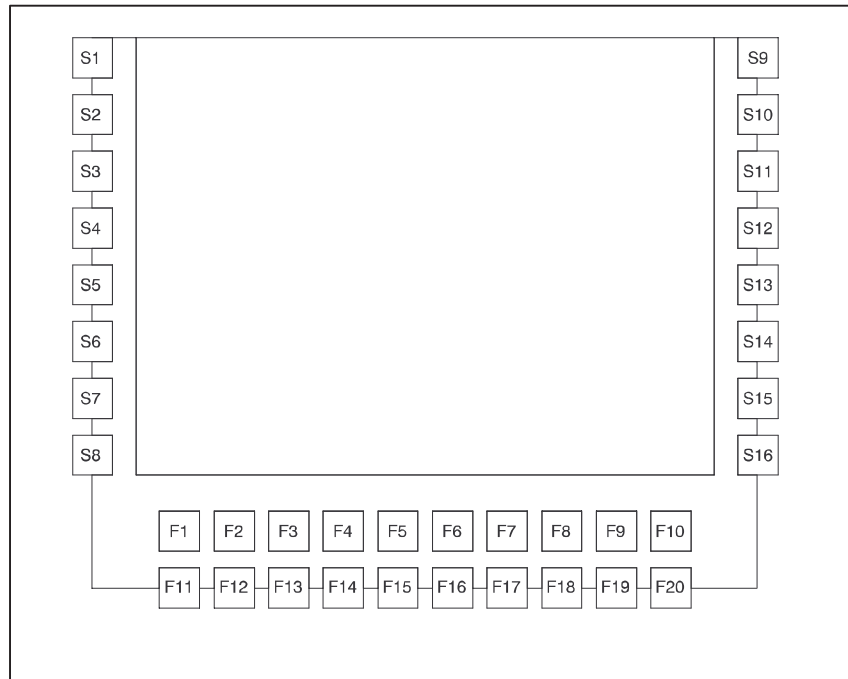
Figure 3-1 Function Keys and Symbol Keys

**Alphanumeric /
Symbol Keys**

The letters and symbols are arranged alphabetically in a matrix (see 3-2):

(A	) B	& C	$ D	? E	[F
] G	@ H	% I	! J	{ K	} L
⬆	# M	" N	' O	< P	> Q	~ R
⎵	– S	, T	^ U	/ V	\ W	I X
SHIFT	: Y	; Z				

Figure 3-2 Alphanumeric / Symbol Keypad

Note

Key combinations: SHIFT + KEY   = Symbol

⇑ + KEY   = Upper-case letter

Numeric Keypad, Cursor Control Keys, and Control Keys

In addition to digits, the numeric keypad also contains the spacebar, the decimal point, the symbols for the four basic arithmetic functions, and the tabulator, backspace and enter keys; the control keys are at the left of the numeric keypad.
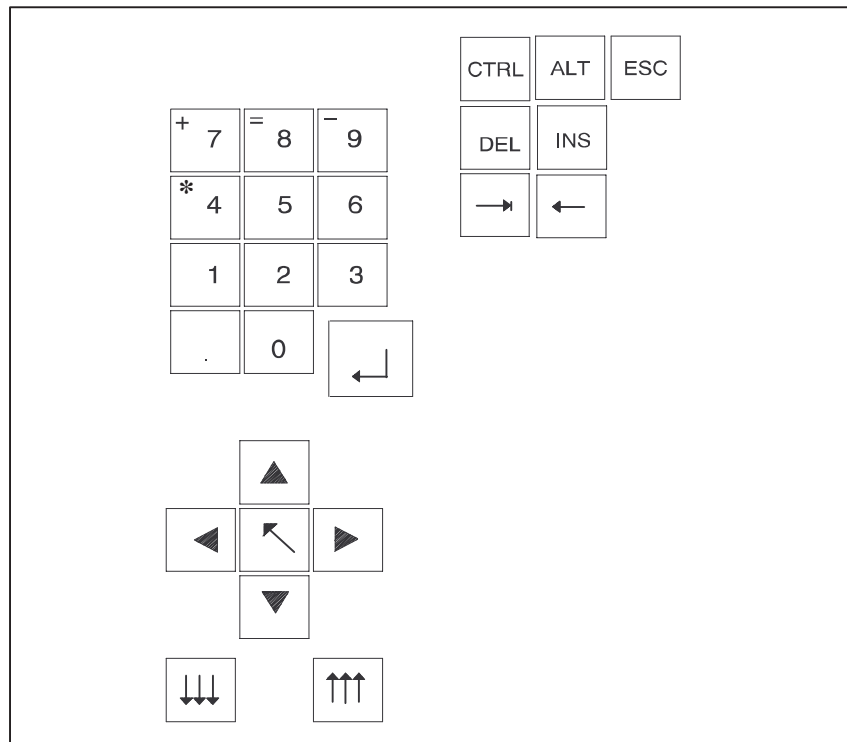
Figure 3-3 Numeric Keypad, Cursor Control Keys, and Control Keys

Important Key Combinations

Key combinations are formed with the [CTRL] and/or [Alt] keys, and are entered as follows:

- Press and hold the [CTRL] and/or [Alt] keys.

- Press the key for the required function.

[Ctrl] + [C]
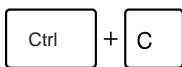
Abort current operation
Aborts the operation currently in progress, but does not clear the line buffer.

[Ctrl] + [Alt] + [Del]

Warm restart
This key combination restarts your PC.

Note

For additional key combinations, please refer to the documentation provided with your operating system as well as that for your user program.

Sensor Field (Finger Mouse or Touch Pad)

You can use the sensor field as though it were a mouse. The mouse pointer makes the same moves on the screen as your finger makes as it moves over the surface of the sensor field. The L and R keys to the left of the touch pad correspond to the left (L) and right (R) mouse button.

You can click on symbols or texts using the two mouse buttons. First, move the mouse pointer to the symbol you want, then press the left mouse button to select that symbol.

Alternatively, when using a full-graphics operator interface, such as Windows, you can click on a symbol and move the mouse pointer to that symbol. Then briefly press the sensor field with your finger twice in succession to open the symbol.

You need not put pressure on the sensor field surface. The sensor does not respond to the pressure of your finger, but rather to the change in capacitance at the point of contact.

3.1.3 Floppy Disk Drive

Floppy disk drives are equipped with an access slot for the diskettes; this slot is covered by a flap. When a floppy disk is inserted incorrectly, it will not fit in the slot. A disk can be ejected by pushing the eject button on the drive.

> ⚠ **Caution**
>
> The eject button must never be pressed while the green LED on the drive is on. Caution: This could result in loss of data.

3.1.4 Reset Key

Pressing the reset key triggers a hardware reset. The PC is restarted.

> ⚠ **Caution**
>
> Possible loss of data!

On the FI45, the reset key is integrated in the front panel under the cover next to the floppy disk drive. The reset key can only be activated with a pointed object (for example, a pen or the tip of an extended paper clip).

On the BI45, the reset key is situated below the slot boards. You can activate the reset key by hand, without using any additional tool. The reset key can only be activated with a pointed object (for example, a pen or the tip of an extended paper clip).

3.1.5   CD-ROM Drive

The CD-ROM drive enables you to update your software easily. The drive is operated via the secondary IDE interface.

Opening the Drawer

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 label face up (BI45) or to the left (FI45), and press it firmly down into the center of the turntable. To remove the CD, hold it by the edges and pull upwards.

Caution

To avoid too much pressure on the open drawer, **always** hold the drawer at the front with one hand when inserting or removing a CD.

Closing the Drawer

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

Note

The EJECT function offered by various applications for opening the CD-ROM drawer does not work with this drive.

After the drawer has been closed, the CD is tested and the access display light on the drive starts to flash:

– If the display flashes continually, the CD is faulty but can still be read,

– If the display flashes several times and then remains lit, the CD you have inserted is defective and cannot be read.

CD-ROM Front
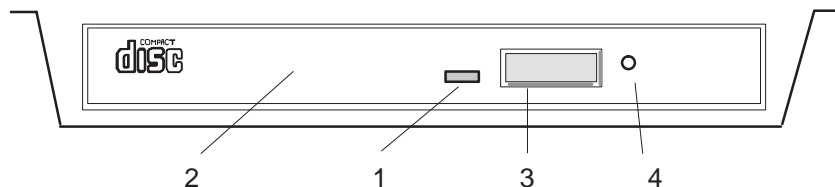
1   Access display
2   Drawer
3   Eject button
4   Emergency eject

Emergency Eject   The procedure described below can be used to remove a disc from the CD-ROM reader if the Open/Close button is disabled by software or a power failure occurs. In this case the CD tray cannot be opened automatically.

1. Turn off the power to the CD-ROM reader (switch off your device if necessary).

2. Insert a steel rod or a stiff paper clip (with a maximum diameter of 1.3 mm and a minimum length of 55 mm) into the emergency eject hole at the front of the drive and push lightly. The CD tray is ejected by about 10 mm. Pull it all the way open by hand and lift the disc out carefully.

3.1.6   Display

The FI45 are equipped with 13.3" LCD displays. These displays are precabled and preset at the factory. VGA monitors can be operated in parallel to these displays. The specification as to whether to operate only a display or a VGA monitor in parallel is made in BIOS Setup.

3.1.7   LEDs

At the bottom left you will find five light-emitting diodes.

Table 3-1   Control LEDs

Power LED	green off	Power supply switched on Power supply switched off
Disk LED	green	Lights up for a hard disk access
Run LED	green red off	Watchdog monitor switched *on* (only in connection with a SafeCard) Monitoring time run out No watchdog monitor active
Temp. LED	green red	Temperature in the device is normal (only FI45 with SafeCard) Inner temperature is critical
MPI/DP LED	green off	Data exchange on the Profibus DP No data exchange on the Profibus DP or No connection to the Profibus DP

3.2   Starting Up Your PC for the First Time

Switching ON   Once the I/Os and the system unit have been connected, your PC is ready to be put into operation.

Plug your PC into the mains power supply.

Switching OFF   Disconnect your PC from the mains supply.

Note

The SIMATIC FI45 has no ON/OFF switch. In order to disconnect the PC from the power supply, you must pull the plug.

When the PC is on, the POWER LED green light is lit.

3.3 Setting Up Your PC

Overview

Your PC's operating system and system software were preinstalled on the hard disk at the factory. Either a multilingual version of Windows 95, or Windows NT (German or English) was installed.

When powering up the PC, you must distinguish between the following:

- Cold start (also called an initial start)
- Complete restart

Cold Start

Your PC software is set up during a cold start. Proceed as follows:

1. Switch on your PC.

2. Set the monitor's brightness control to the brightest setting (refer to the monitor's operating instructions) and switch on the monitor (applies to BI45 only).

   The PC executes a self-test. The following message appears on the screen during the self-test:

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

3. Wait until the message disappears, then follow the instructions displayed on the screen.

   Your operating system is loaded upon completion of the self-test. The load procedure itself depends on the operating system.

Complete Restart

Once it has been set up, the operator interface of the operating system you are using is displayed following system startup every time you switch on or reset the PC.

3.4 Electronic Manual

Overview

Your PC features an online manual. The manual consists of two parts:

- The Product Information Bulletin (the part you are now reading) in five languages (German, English, French, Italian and Spanish) and
- The Technical Description in two languages (German and English).

User's Guide

The User's Guide is in the following directory:

`c:\docu` in file `U_MAN [D, E, F, I, S].PDF`

D = Deutsch (German), E = English, F = French, I = Italian, S = Spanish

Technical Description

The Technical Description is in the following directory:

`c:\docu` in file `T_DES [D, E].PDF`

ADOBE Acrobat Reader

You need the ADOBE Acrobat Reader to print out the User's Guide and the Technical Description. The ADOBE Acrobat Reader software is located in directory

```
c:\acrodos or c:\acroread
```

Due to license agreements, the software is not preinstalled and the user must install it himself.

3.5   Installing the ADOBE Acrobat Reader

Installing the ADOBE Acrobat Reader

We recommend that you connect a mouse and install a mouse driver before installing the ADOBE Acrobat Reader software. Although it is possible to use a keyboard, using a mouse to operate the Acrobat Reader is considerably easier.

Proceed as follows to install the ADOBE Acrobat Reader:

1. Start by entering the following:

- `acroread.exe` in directory `c:\acroread` (Windows 95).

The following message is displayed:
```
Adobe Acrobat Reader for WINDOWS Installation,
version x.y
```

2. Confirm by pressing any key.

A license agreement is displayed:
```
Adobe Systems Incorporated License Agreement
```

3. Acknowledge with `Accept`.

4. You are prompted to enter your name.
    Press `ENTER`.

5. Your are prompted to enter your company/department.
    Press `ENTER`.

6. You are prompted to enter the directory for the installation. Use the suggested directory.
    Press `ENTER`.

Under Windows 95/NT, the installation from this point on is automatic, and ends with the appearance of the Acrobat Reader icon in a window.

3.6   Using Adobe Acrobat

**Working with the
Acrobat Reader**

Proceed as follows to use the Acrobat Reader:

1. Start the Acrobat Reader by typing in **acrobat** (MS-DOS 6.22) or clicking on the Acrobat Reader icon under Windows 95.

   Use the TAB key or the mouse to change from window to window. Use the keyboard's cursor control keys (or the mouse) to move the cursor within a given window (remember, your selection has not been made until the line is displayed in reverse video; that is, white characters on a black background).

2. Open the file you want to read

   ```
   U_MAN[D,E,F,I,S].PDF      Product Information Bulletin
   T_DES[D,E].PDF            Technical Description
   ```

   D = Deutsch (German), E = English, F = French, I = Italian, S = Spanish

   These files are in the `c:\docu` directory.

3. Use the FILE menu to print out the opened file. First choose PRINTER SETUP from the FILE menu and choose your printer from the list of printers. Then choose PRINT from the FILE menu to print out the file.

3.7   SafeCard

Please take information on the SafeCard module from the Technical Description. To install the SafeCard driver for different operating systems, see the **ReadMe.TXT** file in the **C:\SAFECARD** directory.

3.8   Direct Key Module

Notes on installing and operating the the direct key module can be found in the Technical Description.

3.9   Touch Screen Display

For notes on installing and operating the touch screen display, please refer to the Technical Description. To install the drivers for the touch screen, change to directory **C: \Touch**. The **ReadMe.TXT** files for the various operating systems can be found in the DOS, Win311, Win95, WinNT and OS2 subdirectories.

Note

You must not use the COM2 port of the box with device versions which have a touch screen display.

3.10   Saving Hard Disk Data on Floppy Disk

Overview

Your industrial PC is delivered with a hard disk containing important data and programs (such as the operating system) which you must copy to diskette, as these data could be lost in the event of an operator error or hard disk defect.

Saving under Windows 95

During the initial installation of the operating system, you are prompted to make backup copies. To do so, you will need 40 formatted, empty diskettes (1.44 Mbytes).

Refer to Section 4.7 for instructions on setting up your PC once again.

3.11   Protective Functions

Use passwords in Setup to prevent unauthorized persons from changing entries in Setup. For further information on Setup passwords, refer to Chapter 2, Mother Board in the Technical Description (see Section 2.10.3, the Security Menu).

Error Diagnostics

4

Chapter Overview

In this chapter you will find information on how to localize and troubleshoot frequently recurring problems.

- For error messages from the operating system, please refer to your operating system documentation.

- For messages about errors caused by the processor module, refer to the chapter entitled **"CPU Module"** in the Technical Description. Error messages output during the self-test (tone sequences, screen messages) are listed in this manual in Sections 4.8 and 4.9.

Note

If you want to connect or disconnect cables, please observe the safety instructions given in Chapters 1 and 2.

4.1   No Response from the PC

Error Manifestation   Although switched on, the PC shows no reaction whatsoever: the Power LED does not light up.

Cause   Problem with power supply.

Remedy   Proceed as follows:
- Switch off the PC.
- Check to make sure that the power supply cable is plugged in.
- Make sure that the plug is properly inserted in the socket.
- Check if the power switch on the power supply unit is set to ON.
- Switch the PC on again.

Note

If the Power LED still does not light up after taking the corrective measures suggested above, contact your technical customer service (Chapter 5).

4.2   Problems When Using Non-Siemens Modules

Error Manifestation   The PC crashes during startup.

Cause   The following causes are possible:
- Multiple assignments of input/output addresses
- Multiple assignments of hardware interrupts and/or DMA channels
- Signal frequencies or signal levels are not maintained
- Deviations in connector pin assignments

Remedy   Check your computer configuration:
- If the current configuration is the same as the original configuration, please contact your technical customer service (Chapter 5).
- If the configuration has been modified, restore the original configuration by removing any non-Siemens modules and restarting the PC:
  - If the PC still crashes, contact your technical customer service.
  - If the problem no longer occurs, the non-Siemens module(s) was/were probably the cause. Replace these with Siemens modules or contact the module supplier.

4.3   The External Monitor Remains Dark

**Cause/
Remedy**

The following causes are possible:

The monitor has been switched off

• Switch on the monitor.

The monitor has been blanked

• Press any key on the keyboard.

The brightness control has been turned to the darkest setting

• Set the brightness control to "bright." For detailed information, refer to the instruction manual for your monitor.

The power supply cable or monitor cable is not connected

• Switch off the monitor and the system unit.

• Check to make sure that the power supply cable is properly connected to the monitor and the system unit and is plugged properly into the mains outlet.

• Check to make sure that the monitor cable is correctly connected to the system unit and the monitor (if there is a plug-in connector).

• Switch on the monitor and the system unit.

Note

If the monitor still remains dark after taking all of the corrective measures recommended above, contact your technical customer service (Chapter 5).

4.4   No Display or Drifting Display on External Monitor

**Cause/
Remedy**

The wrong line frequency and/or the wrong resolution has been set for the monitor or the user program.

- Terminate the user program. If the error still occurs, switch off the monitor and wait at least three seconds before switching it on again.

- Make the proper entries for your monitor in the *CONFIG.SYS* file (on the hard disk).

- Correct the settings for monitor and graphics in your user program.

- Select the right screen driver for your user program.

4.5   No Mouse Pointer on Monitor or Display

**Cause/
Remedy**

The mouse pointer may fail to appear for one of the following reasons:

Mouse driver not loaded

- Check to make sure that the mouse driver has been properly installed, and that it is available when the user program is started. For detailed information on the mouse driver, please refer to the mouse manual or application manual.

Mouse not connected

- Terminate your user program and exit the operating system.

- Switch off your PC by removing the power supply plug.

- Check to make sure that the mouse cable is properly connected to the system unit. If you are using an adapter or extension cord for the mouse cable, check that connection as well.

- Switch on the PC by removing the power supply plug.

Note

If the mouse pointer still does not appear after you have taken all of the corrective measures listed above, contact your technical customer service (Chapter 5).

4.6   PC Shows Incorrect Time and/or Date

Remedy

Set the time or date in the Setup menu.

Press <F2> to invoke Setup while booting your PC.

Note

If the time and/or date are still incorrect after you have switched the PC off and on again, the battery is low or fully discharged. In this case, contact your technical customer service (Chapter 5).

4.7　Restoring the Hard Disk (Data Erased)

Cause/
Remedy

If you have a system disk and a backup copy of the hard disk, you can restore your hard disk. This process restores the directories and files that were on the hard disk at the time the backup copy was made.

1. Start the PC with the system disk inserted.

2. Partition the hard disk with the MS-DOS FDISK command
   (this requires thorough knowledge of the system).

3. Format the hard disk with the `MS-DOS FORMAT` command and the `/s` option (for example, `FORMAT C: /s`). The /s option is used to copy to the hard disk those system files needed to start the operating system.

Under
MS-DOS 6.22

Restore your files on the hard disk. To do so, use `MS-DOS's XCOPY` command and the backup diskettes you made as described in Section 3.10. Insert the first backup diskette.

1. The command

```
A: <CR>
XCOPY *.* C:\ /s<CR>
```

copies the data back to the hard disk.

2. When the first diskette has been copied, insert the next diskette, repeating this step until all diskettes have been copied. You have now restored the hard disk to its original state.

3. If your hard disk still does not work properly after it has been restored, it must be replaced.

Under Windows 95

Follow the instructions given in the section entitled *Installing Windows 95* in the User's Guide entitled **Introduction to Microsoft Windows 95**.

Under
Windows NT

Follow the instructions given in the section entitled *Installing Windows NT* in the User's Guide entitled **Introduction to Microsoft Windows NT**.

4.8   An Error Message Appears on the Monitor or Display

Error Messages   The error messages output by the BIOS system are listed below. For a list of error messages output by the operating system or the various programs, please refer to the respective manuals.

Press <F2> during booting to invoke Setup.

On-Screen Error Message	Description / Suggestions
Address conflict	Plug & Play problem Contact your technical customer service.
Combination not supported	Plug & Play problem Contact your technical customer service.
IO device IRQ conflict	Plug & Play problem Contact your technical customer service.
Invalid System Configuration Data	Plug & Play problem Please set the RESET CONFIGURATION DATA option in Setup's Advanced menu. Contact your technical customer service.
Allocation Error for	Plug & Play problem Please undo the last hardware modification. Contact your technical customer service.
System battery is dead Replace and run SETUP	Battery on the CPU module is defective or discharged. Contact your technical customer service.
System CMOS checksum bad run SETUP	Call SETUP, make the necessary entries, and save them. If this message always appears on runup, contact your technical customer service.
Incorrect Drive A type run SETUP	Check the SETUP entries for drive A.
Incorrect Drive B type run SETUP	Check the SETUP entries for drive B.
Diskette drive A error	Error while accessing drive A. Contact your technical customer service.
Diskette drive B error	Fundamental error. Contact your technical customer service.
Failure Fixed Disk	Error while accessing the hard disk. Check the SETUP entries. Contact your technical customer service.
Keyboard error	Check to make sure that the keyboard is properly connected.
Stuck Key	Check the keyboard to see if a key is stuck.
System RAM Failed at offset:	Memory error. Contact your technical customer service.
Shadow RAM Failed at offset:	Memory error. Contact your technical customer service.
Extended RAM Failed at offset:	Memory error. Contact your technical customer service.
Failing Bits:	Memory error. Contact your technical customer service.
Operating system not found	Possible causes: No operating system. Wrong drive addressed (diskette in drive A/B). Wrong active boot partition. Incorrect drive entries in SETUP.
Previous boot incomplete Default configuration used	Previous boot was aborted, for example due to power failure. Correct the SETUP entries.
System cache error Cache disabled	Cache error on the CPU module. Contact your technical customer service.

On-Screen Error Message	Description / Suggestions
Monitor type does not match CMOS Run SETUP	Monitor conflicts with SETUP entries. Make proper SETUP entries for the monitor you are using.
System timer error	Hardware fault. Contact your technical customer service.
Real time clock error	Clock chip error. Contact your technical customer service.
Keyboard controller error	Keyboard error. Contact your technical customer service.

4.9   Diagnostic Messages (Port 80)

When the SIMATIC PC 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.

In addition, the individual self-test steps are output at I/O port 80h. The optional SafeCard allows these outputs to be displayed in hex code at the front of the device.

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:

B	BBBB	BBB	BBB	Beeps
3		6		Hex Code
Check shutdown code				Meaning

The POST Codes in order of occurrence:

Display (hex)	Meaning	Description
02	TP_VERIFY_REAL	Test whether the CPU is in real mode
1C	TP_RESET_PIC	Reset the interrupt controller
12	TP_RESTORE_CRO	Restore the controller register
13	TP_PCI_BM_RESET	Reset the PCI bus master
36	TP_CHK_SUTDOWN	Check the shutdown code
24	TP_SET_HUGE_ES	Switch the ES to special mode
03	TP_DISABLE_NMI	Switch off the NMI
0A	TP_CPU_INIT	Initialize the CPU
04	TP_GET_CPU_TYPE	Determine the CPU type
AE	TP_CLEAR_BOOT	Edit the boot flag
06	TP_HW_INIT	Initialize the main hardware
18	TP_TIMER_INIT	Initialize the timer
08	TP_CS_INIT	Initialize the chip set
C4	TP_PEM_SIZER_INIT	Reset system error
0E	TP_IO_INIT	Initialize IO
0C	TP_CACHE_INIT	Initialize the cache
16	TP_CHECKSUM	EPROM checksum test
28	TP_SIZE_RAM	Determine the RAM size
3A	TP_CACHE_AUTO	Determine the cache size
2A	TP_ZERO_BASE	Set 512k base RAM to 0
2C	TP_ADDR_TEST	Test the base RAM address cables
2E	TP_BASERAML	Check the 1.64k base RAM
38	TP_SYS_SHADOW	BIOS shadow
20	TP_REFRESH	Refresh circuit test
29	TP_PMM_INIT	Initialize the post memory manager
33	TP_PDM_INIT	Initialize the dispatch manager
C1	TP_7xx_INIT	Initialize the PG 7xx I/Os
09	TP_SET_IN_POST	Start power ON self-test
0A	TP_CPU_INIT	Initialize the CPU
0B	TP_CPU_CACHE_ON	Switch on the cache
0F	TP_FDISK_INIT	Initialize the hard disk
10	TP_PM_INIT	Initialize the power management
14	TP_8742_INIT	Initialize the 8742 circuit
1A	TP_DMA_INIT	Initialize the DMA circuits
1C	TP_RESET_PIC	Reset the interrupt controller
32	TP_COMPUTE_SPEED	Determine the clock pulse speed
C1	TP_740_INIT	Initialize the PG 740 I/Os
34	TP_CMOS_TEST	Test the CMOS RAM
3C	TP_ADV_CS_CONFIG	Configure the advanced chip set
42	TP_VECTOR_INIT	Initialize the interrupt vectors
46	TP_COPYRIGHT	Test the copyright
49	TP_PCI_INIT	Initialize the PCI interface
48	TP_CONFIG	Check the configuration
4A	TP_VIDEO	Initialize the video interface
4C	TP_VID_SHADOW	Copy the video BIOS to RAM
24	TP_SET_HUGE_ES	Switch the ES to special mode

Display (hex)	Meaning	Description
22	TP_8742_TEST	Test circuit 8742
52	TP_KB_TEST	Keyboard available?
54	TP_KEY_CLICK	Switch the keyboard click on/off
76	TP_KEYBOARD	Check the keyboard
58	TP_HOT_INT	Test for unexpected interrupts
4B	TP_QUIETBOOT_START	Switch off any boot messages
4E	TP_CR_DISPLAY	Display the copyright notice
50	TP_CPU_DISPLAY	Display the CPU type
5A	TP_DISPLAY_F2	Display the F2 message for "SETUP"
5B	TP_CPU_CACHE_OFF	Switch off the cache if applicable (SETUP setting)
5C	TP_MEMORY_TEST	Test the system memory
60	TP_EXT_MEMORY	Test the extended memory
62	TP_EXT_ADDR	Test the A20 address line
64	TP_USERPATCH1	Area for own initializations
66	TP_CACHE_ADVNCD	Determine and enable the cache size
68	TP_CACHE_CONFIG	Configure and test the cache
6A	TP_DISP_CACHE	Display the cache configuration
6C	TP_DISP_SHADOWS	Configuration and size of the shadow Display RAM
6E	TP_DISP_NONDISP	Display nondisposable segment
70	TP_ERROR_MSGS	Display post error
72	TP_TEST_CONFIG	Check SETUP irregularities
7C	TP_HW_INTS	Set the IRQ vectors
7E	TP_COPROC	Check whether the CO processor is present
96	TP_CLEAR_HUGE_ES	Switch the ES back
80	TP_IO_BEFORE	Disable IO circuits
88	TP_BIOS_INIT	Initialize the BIOS data area
8A	TP_INIT_EXT_BDA	Initialize the external BIOS data area
85	TP_PCI_PCC	Determine the PCI circuits
82	TP_RS232	Determine the serial interfaces
84	TP_LPT	Determine the parallel interface
86	TP_IO_AFTER	Reenable the IO circuits
83	TP_FDISK_CFG_IDE_CTRLR	Configure the IDE controller
89	TP_ENABLE_NMI	Enable the NMI
8C	TP_FLOPPY	Initialize the floppy controller
90	TP_FDISK	Initialize the hard disk controller
8B	TP_MOUSE	Test the internal mouse interface
95	TP_CD	Test the CP
92	TP_USERPATCH2	Area for own initializations
98	TP_ROM_SCAN	Search for BIOS expansions
69	TP_PM_SETUP	Initialize the power management
9E	TP_IRQS	Enable the hardware IRQ
A0	TP_TIME_OF_DAY	Set the clock time and date
A2	TP_KEYLOCK_TEST	Preset the keylock
C2	TP_PEM_LOCK	Stop the error manager
C3	TP_PEM_DISPLAY	Display any possible errors
A8	TP_ERASE_F2	Delete the F2 message
AA	TP_SCAN_FOR_F2	Check whether to activate setup

| Display (hex)	Meaning	Description
AC	TP_SETUP_CHEK	Output any F1/F2 message
AE	TP_CLEAR_BOOT	Cancel the self-test flag
B0	TP_ERROR_CHECK	Check for any possible errors
B2	TP_POST_DONE	End of the self-test
BE	TP_CLEAR_SCREEN	Clear the screen
B6	TP_PASSWORD	Password query (option)
BC	TP_PARITY	Cancel the parity memory bit
BD	TP_BOOT_MENU	Display the boot menu (option)
B9	TP_PREPARE_BOOT	Prepare the boot
C0	TP_INT19	Boot via Interrupt 19
00		Message after startup is complete

Service for SIMATIC PCs 5

Chapter Overview   For all your service needs, contact your regional service department or repair center (service shop). You can obtain the addresses from the SIMATIC Customer Support Hotline.

SIMATIC Customer Support Hotline

Open round the clock, world-wide:
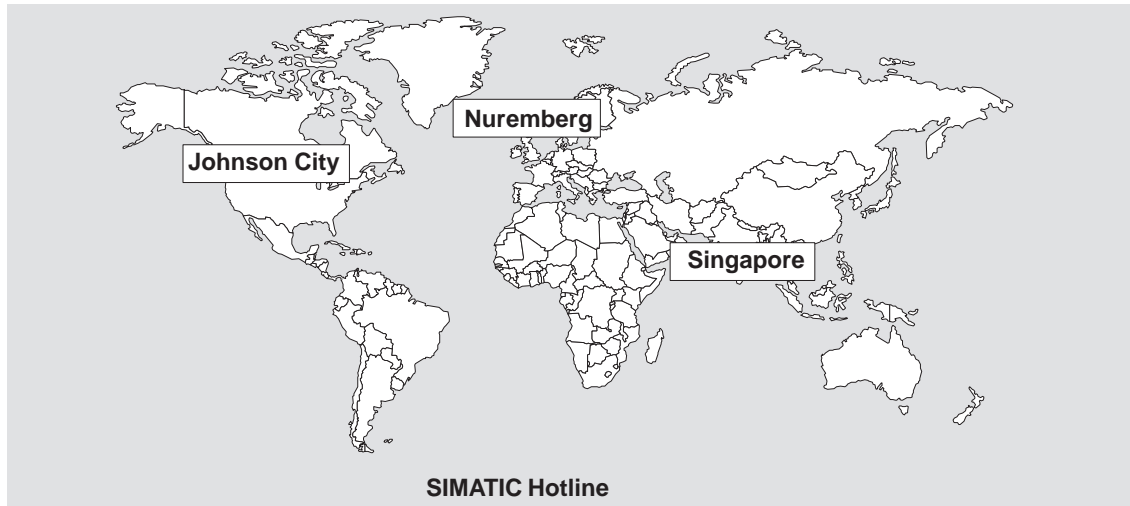
SIMATIC Hotline

Nuremberg
SIMATIC BASIC Hotline
Local time: Mo.-Fr. 7:00 to 17:00

Phone:	+49 (911) 895-7000
Fax:	+49 (911) 895-7002
E-Mail:	simatic.support@
	nbgm.siemens.de
GMT:	+1:00

Nuremberg
SIMATIC Authorization Hotline
Local time: Mo.-Fr. 7:00 to 17:00

Phone:	+49 (911) 895-7200
Fax:	+49 (911) 895-7201
E-Mail:	authorization@
	nbgm.siemens.de
GMT	+1:00

Johnson City
SIMATIC BASIC Hotline
Local time: Mo.-Fr. 8:00 to 17:00

Phone:	+1 423 461-2522
Fax:	+1 423 461-2231
E-Mail:	simatic.hotline@
	sea.siemens.com
GMT:	–5:00

SIMATIC Premium Hotline

(Calls charged, only with
SIMATIC Card)

Time:	Mo.-Fr. 0:00 to 24:00
Phone:	+49 (911) 895-7777
Fax:	+49 (911) 895-7001
GMT	+01:00

Singapore
SIMATIC BASIC Hotline
Local time: Mo.-Fr. 8:30 to 17:30

Phone:	+65 740-7000
Fax:	+65 740-7001
E-Mail:	simatic@
	singnet.com.sg
GMT	+8:00

The working languages of the SIMATIC Hotlines are generally English and German; the Authorization Hotline can also be contacted in French, Italian, or Spanish.

SIMATIC Customer Support Online Services

The SIMATIC Customer Support team offers you substantial additional information about SIMATIC products via its online services:

- General current information can be obtained from:
  - the **Internet** under `http://www.ad.siemens.de/simatic-cs`
  - the **Fax-Polling** number 08765-93 02 77 95 00
- Current product information leaflets and downloads which you may find useful are available:
  - on the **Internet** under `http://www.ad.siemens.de/support/html_00/`
  - via the **Bulletin Board System** (BBS) in Nuremberg (*SIMATIC Customer Support Mailbox)* under the number +49 (911) 895-7100.

    To access the mailbox, use a modem with up to V.34 (28.8 Kbps) with parameters set as follows: 8, N, 1, ANSI; or dial in via ISDN (x.75, 64 Kbps).

5.1 Regional Repair Centers

Region	Phone	Fax
Augsburg	+49 (821)2595 599	+49 (821)2595 546
Berlin	+49 (30)386 34926	+49 (30)386 34933
Bielefeld	+49 (521)291 323	+49 (521)291 538
Bremen	+49 (421)364 2093	+49 (421)364 2107
Chemnitz	+49 (371)475 3860	+49 (371)475 3888
Cologne Ossendorf	+49 (221)576 6633	+49 (221)576 6630
Erlangen	+49 (9131)7 31048	+49 (9131)7 35263
Essen	+49 (201)816 1580	+49 (201)816 1522
Frankfurt	+49 (69)797 7358	+49 (69)797 7131
Hamburg	+49 (40)2889 4230	+49 (40)2889 4430
Hanover Laatzen	+49 (511)877 2241	+49 (511)877 1320
Karlsruhe	+49 (721)595 4183	+49 (721)595 6667
Langen	+49 (69)797 5608	+49 (69)797 5567
Leipzig	+49 (341)210 2049	+49 (341)210 2049
Mannheim	+49 (621)456 1328	+49 (621)456 1460
Munich	+49 (89)9221 6213	+49 (89)9221 6201
Nuremberg	+49 (911)654 6127	+49 (911)654 7630
Saarbrücken	+49 (681)386 2598	+49 (681)386 2397
Stuttgart Weilimdorf	+49 (711)137 6001	+49 (711)137 6210

Country	Phone	Fax
Argentina	+54 (1) 3408400	+54 (1) 3408400 3163
Australia	+61 (3) 9420 7274	+54 (3) 9420 7500
Austria	+43 (1) 1707 29886	+43 (1) 1707 53730
Belgium	+32 (2) 536 2905	+32 (2) 536 2880
Brazil	+55 (11) 7947 1999 ext. 3013	+55 (11) 7947 1888
China	+86 (21) 6213 2050 ext. 301	+86 (21) 6213 5538
Denmark	+45 (7640) 5151	+45 (7640) 5143
England	+44 (161) 446 5760	+44 (161) 446 5772
Finland	+358 (9) 5105 3303	+358 (9) 5105 3661
France	+33 1 49 22 31 60	+33 1 49 22 29 42
India	+91 22 7577115	+91 22 7577106
Italy	+39 (02) 6676 3490	
Japan	+81 (3) 5423 8502	+81 (3) 5423 8737
Mexico	+52 (5) 328 2456	+52 (5) 328 2058
Netherlands	+31 (70) 333 3858	+31 (70) 333 3878
Poland	+48 (22) 670 9166	+48 (22) 670 9169
Portugal	+351 (1) 75 73234	+351 (1) 75 89333
Singapore	+65 (740) 7150	+65 (740) 7196
South Africa	+27 (12) 309 0149	+27 (12) 309 0142
South Korea	+82 (2) 3420 4880	+82 (2) 3420 4889
Spain	+34 (91) 514 8400	+34 (91) 514 9217
Sweden	+46 (8) 728 1462	+46 (8) 728 1703
Switzerland	+41 (1) 749 1304	+41 (1) 749 1284
Taiwan	+886 (2) 2376 1849	+886 (2) 2378 8958
Thailand	+66 (2) 716 4609	+66 (2) 716 4601
USA	+1 (423) 461 2497	+1 (423) 461 2094

In countries not listed above, please contact your local service representative. He will arrange for your repairs to be carried out.

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