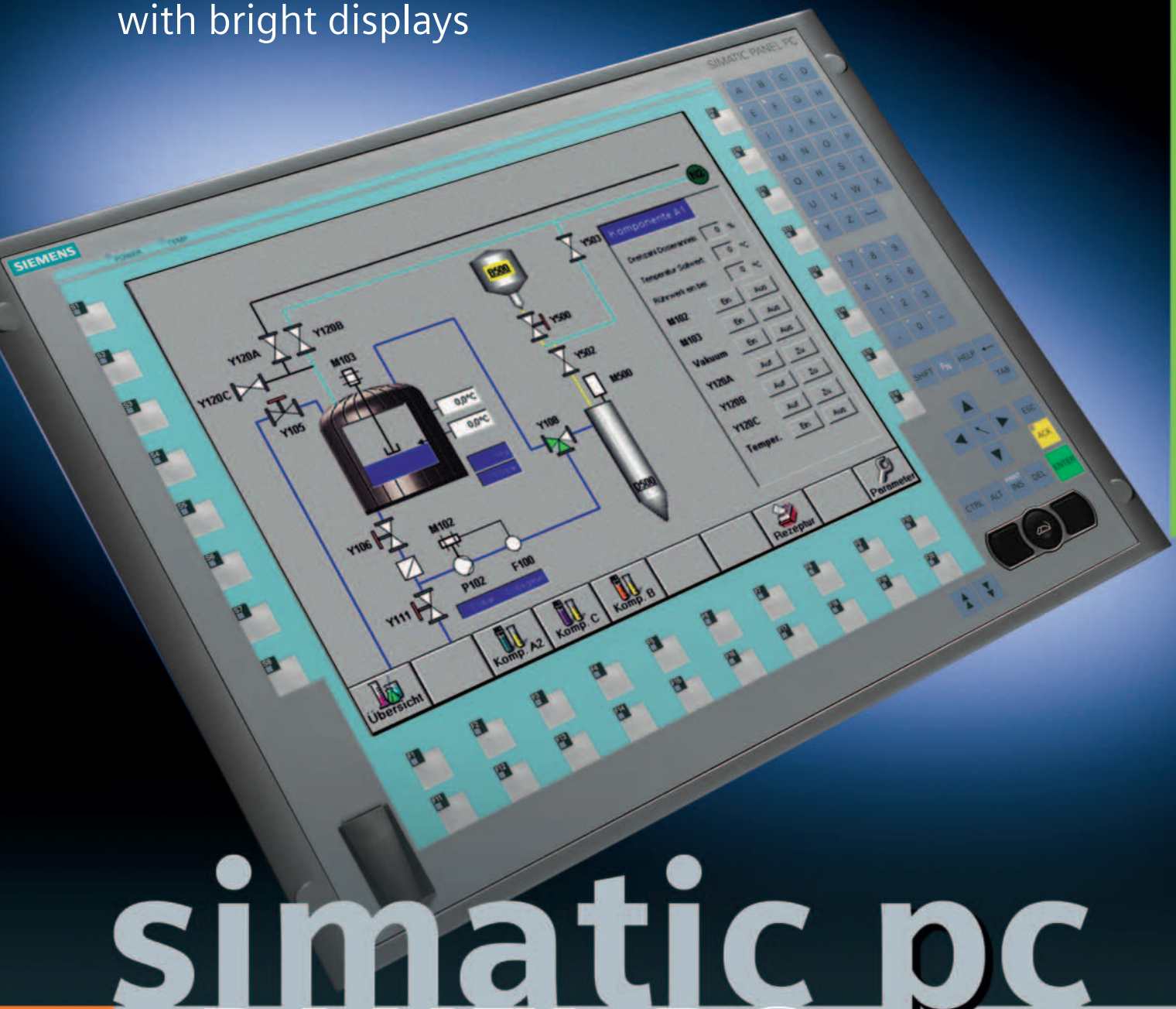
SIMATIC Panel PC

Rugged and powerful industrial PCs
with bright displays



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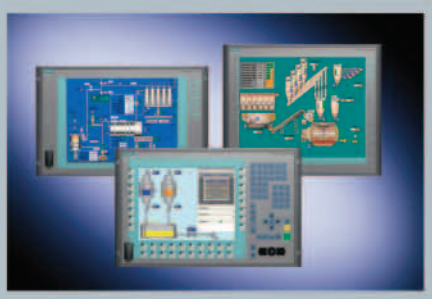
PANEL PC



SIEMENS

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SIMATIC Panel PC
Rugged and powerful industrial PCs with bright displays

You wish to operate and monitor your plant with the same equipment with which you also solve other automation tasks? Do you need hardware that is industrial and rugged? You attach importance to flexibility, meaning that it must be possible to expand the hardware and software of your automation solution at any time? And concerning display quality, you certainly want the best?

SIMATIC Panel PCs exhibit their great strengths at machine-level HMI, but are also open for further tasks as powerful industrial PCs: open-loop control, closed-loop control, data processing and motion control are just a few examples.

Ruggedness and increased industrial capability part of the package

Already the product design complies with the high demands placed on industrial capability. The SIMATIC Panel PCs are characterized by the following special features:

- High-quality modules and components with high MTBF, which also permit 24-hour use in an expanded temperature range;
- High vibration/shock resistance as a result of special hard disk suspension, locked connectors and card retainers;
- Rugged housing design with high electromagnetic compatibility (EMC) and integral industrial power supplies (according to NAMUR);
- High degrees of protection up to IP 65/NEMA 4
- Easy-to-service equipment for rapid replacement of defective components;
- A restore CD is included, which can quickly restore the system to factory settings.

Thanks to their rugged design, SIMATIC Panel PCs are ideally suited for production processes in harsh industrial environments. Operation via the touchscreen or membrane keyboard meets all requirements. The rugged front panels are equipped with bright displays in different sizes up to 19". Various Panel PC performance classes have the same mounting cutout so that you can respond flexibly at any time to changing requirements.

Long-term availability

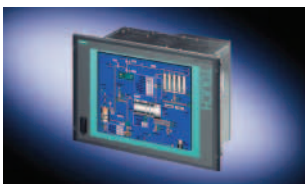
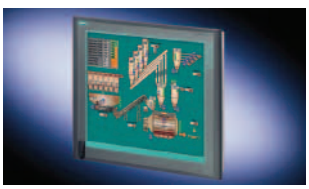
SIMATIC Panel PCs apply state-of-the-art PC technology. At the same time, the own development and production of the motherboards guarantees long-term availability. Spare parts last distinctly longer than conventional PCs.

Options for the individual configuration

The availability can be increased even further using a range of hardware and software options which can be exactly matched to the respective requirement. Thus, potential failures, for example, can be prevented with mirror disks or downtimes be minimized using a second hard disk. Errors are detected and localized quickly using diagnostics software. All Panel PCs can be optionally connected to PROFINET.

	Panel PC 477 Very compact, rugged and maintenance-free	**Panel PC 577** Industrial functionality at an affordable price	**Panel PC 677** Maximum performance – compact and with excellent communication skills	**Panel PC 877** Maximum performance – highly flexible
Available operating systems	WinXP embedded	WinXP, Win2000	WinXP, Win2000	WinXP, Win2000
Available storage media	Compact Flash 512 MB, 1 GB	HDD min. 40 GB	HDD min. 40 GB	HDD min. 40 GB
Networking options (onboard)	2 x Ethernet (10/100 Mbit/s); 1 x MPI/PROFIBUS	1 x Ethernet (10/100/1000 Mbit/s)	2 x Ethernet (10/100 Mbit/s); 1 x MPI/PROFIBUS	1 x Ethernet (10/100 Mbit/s); 1 x MPI/PROFIBUS
Expandability with cards	3 x PC104plus	3 PCI	2 PCI	5 PCI (2 of which are PCI/ISA)
Long-term availability				
Ordering availability	3 – 4 years	2 years	3 – 4 years	3 – 4 years
Spare parts availability	5 years	3 years	5 years	5 years
Industrial capability				
Shock/vibration	5 g / 1 g	1 g / 0.25 g	5 g / 1 g	5 g / 1 g
Options to increase system availability				
Second hard disk			Yes	Yes
Mirror disk technology (RAID1)			Yes	Yes
DiagMonitor	Yes		Yes	Yes
Partition & Image Creator	Yes	Yes	Yes	Yes

Content


SIMATIC Panel PC 477 and PC 577

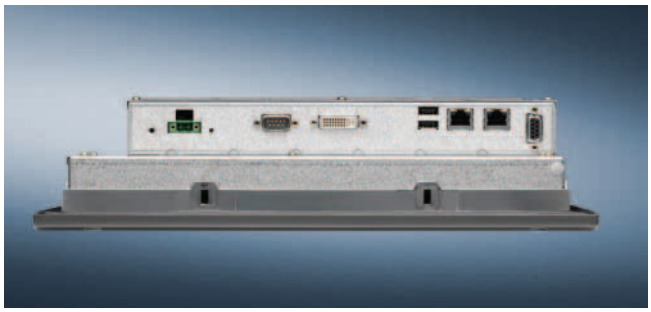
SIMATIC Panel PC 477
Compact, rugged and maintenance-free

Panel PCs must provide the design engineer with a maximum of freedom for the machine layout, and provide the planning engineer with possibilities for increasing productivity. During process operation, protection against unauthorized access and freedom from maintenance are particularly required in addition to ruggedness.

The SIMATIC Panel PC 477 satisfies these requirements particularly well: with a mounting depth of only 75 mm and display sizes of 12" and 15", the operator panel of the machine can be exactly matched to the requirements of the respective solution.

The Windows XP embedded operating system offers the openness of a PC, but simultaneously guarantees the security of an embedded system. Resistant to vibration and shock since no hard disk and fan required. The Panel PC 477 is therefore service-friendly and maintenance-free. Increased protection against viruses and unauthorized modifications to programs increases the data consistency.

Two onboard Ethernet interfaces and one PROFIBUS interface (optional) are available for communication. The Panel PC 477 can be expanded using 3 PC 104 plus cards and the 3 USB ports, one of which is at the front.



SIMATIC Panel PC 577
Industrial functionality at an attractive price

Affordably priced and with fully-developed functionality, the SIMATIC Panel PC 577 is an ideal entry-level device for the Industrial Panel PC class. External devices, such as external hard disks for data backup, can be connected via five high-speed USB ports (one of which is on the front panel). The Gigabit Ethernet interface enables the fast transfer of large data quantities.

The compact design of the SIMATIC Panel PC 577, which includes 3 PCI slots, permits the installation even under crowded conditions in the control cabinet or control panel. A high degree of electromagnetic capability makes the PC 577 series ideal for use in the vicinity of machines.

SIMATIC Panel PC 677 and PC 877
Maximum performance for harsh industrial applications

These new SIMATIC Panel PCs boast open PC platforms for harsh industrial applications. Equipped with powerful processors, the systems are suitable for complex visualization tasks and the processing of large quantities of data.

The SIMATIC Panel PC 677 and the Panel PC 877 are available in many styles with attractive faceplate designs. They are operated via touchscreen or pushbuttons.

Increased system availability and data security can be achieved using the optional RAID 1 mirror disk system. The vibration-absorbing and shock-absorbing suspension of the hard disk module also contributes toward further increasing the system ruggedness.

Panel PC 677 – compact and with excellent communication skills

The Panel PC 677 is based on the latest 2nd generation Intel Pentium Mobile technology.

With 2 available PCI slots, it features a particularly shallow mounting depth. Two Ethernet connections and the integrated PROFIBUS/MPI interface provide versatile communication options. What's more, 5 high-speed USB ports (one of which is on the front panel) to, for example, connect external mass storage devices, as well as a serial port are available.

Panel PC 877 – the highly flexible version

The Panel PC 877 has 5 available slots.
In addition to the onboard interfaces (Ethernet, USB2.0 and PROFIBUS/MPI), ISA slots, parallel ports, serial ports and PS/2 ports establish the compatibility to existing legacy hardware.

Remote-mount configuration

The design of a remote-mount computer configuration using the SIMATIC Panel PCs 677/877 has again been considerably simplified compared to the previous model, and also become significantly cheaper.

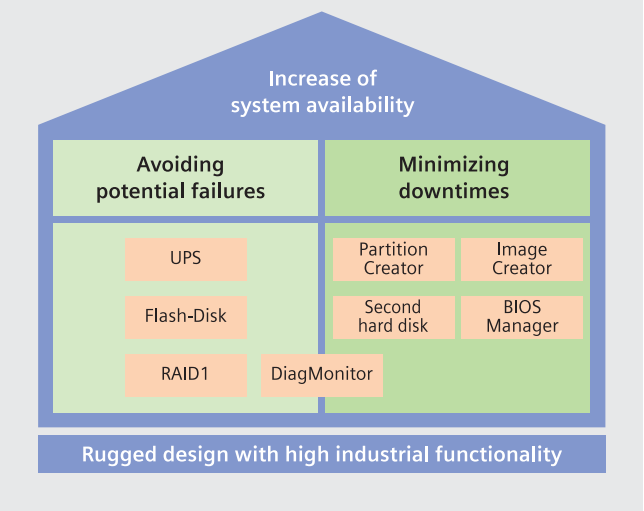
The *SIMATIC Panel PC Remote Kit* makes it possible – even subsequently – to install the operator panel and computing unit in separate locations: Simply disconnect the operator panel from the computing unit, attach the remote kit to the operator panel and connect it to the computing unit with the included cable.

With the remote-mount configuration, PC-based visualization and control solutions can be implemented under environmental conditions necessitating the separation of the operator panel and computing unit. This may be necessary, for example, with protruding operating arms where extreme accelerations may occur and weight has to be reduced.

The Remote Kit can be used with all available PC 677/877 devices and is available with a 24 V DC or 110/220 V AC power supply for covering distances between 5 and 30 m.

Options
For individually expandable system availability

The availability of a plant is decisive for its productivity. The rugged design and high industrial capability mean that the SIMATIC industrial PCs have a high fault tolerance. A matched range of hardware and software options is available for applications with special system availability demands. PC solutions can then be optimized simply and reliably, and matched to the individual availability requirements.



Uninterruptible power supply (UPS)

The power supply for high industrial requirements fitted to SIMATIC PCs covers voltage dips up to 20 ms (Namur requirement). The uninterruptible SITOP and Masterguard power supplies in 24 V DC or 115/230 V AC, or customized UPSs, are available for nonstop applications in the event of power failures.

RAID1 configuration (mirror disks)

A further improvement can be achieved using a RAID1 configuration. In this case, all data is saved in parallel on two hard disks by automatic mirroring.

If one of the two drives fails, all user data is still nevertheless retained. The redundant architecture provides the following benefits:

- Reliable avoidance of data losses in case of failures, since it is highly improbable that the two disks will fail simultaneously.
- If one hard disk fails, the system remains operational.
- Automatic data security without the user having to intervene.

SIMATIC PC DiagMonitor

The PC diagnostics/alarming software SIMATIC PC DiagMonitor detects possible hardware and software faults at an early stage. Diagnostics alarms are automatically forwarded to the user via LAN, e-mail or text message, or forwarded by the OPC to directly supply the alarm to the software application (e.g. WinCC flexible, WinCC, WinAC or other OPC-compatible software). The integrated time synchronization function permits operation of the industrial PCs without CMOS battery. This further reduces the maintenance costs.

The SIMATIC PC DiagMonitor monitors, reports and visualizes the operating states of SIMATIC PCs both locally and remote. DiagMonitor alarms the user, executes programs automatically and records all results. Faults are thus detected at an early stage and potential system failures efficiently avoided.

Monitoring	Reporting	Visualizing	Alarming	Responding and recording
• PC hardware functions • Internal device temperature • Fan • Disk status • System states • Operating hours counter meter	• Violation of permissible operating temperature • Fan failure/fault • Hard disk problems • Program interruption in case of watchdog timeout • Maintenance intervals (user-selectable)	• Diagnostic LEDs on each device • Locally on the monitor of the device • Via LAN on the central server • Graphic measured data display	• LAN • Text message on mobile phone • E-Mail to relevant person • OPC and/or SNMP to user software	• Activates reset (watchdog) • Executes programs automatically (batch/executable files) • Records events (log file)

Functions of the SIMATIC PC DiagMonitor

Options
To minimize downtimes

Second hard disk

The use of a second hard disk provides the user with the following benefits:

- Simple and fast data backup of the complete installation and user data in combination with the SIMATIC PC/PG Image Creator.
- Following the destruction of the software installation or in the event of a defective hard disk, the system can immediately be used again following the booting from the backup disk.
- Fast downloading of the last saved hard disk image onto the work disk shortens the downtime.

A range of data backup tools that are simple to use have been developed for the SIMATIC PC/PG user, with which data losses can be avoided and a reliable state be restored.

SIMATIC PC/PG Image Creator

Preventive data backup is extremely simple with the SIMATIC PC/PG Image Creator:

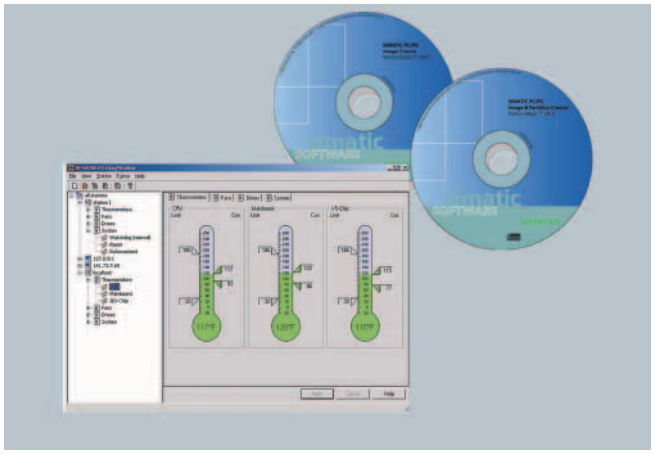
- Simple saving of hard disk contents and partitioning via a menu-driven user interface.
- Fast, Bit-precise restoring of the last saved data version saves time compared to a new installation and significantly reduces the downtime.
- Easy duplication of complete software images for devices with the same equipment and purpose enables the rapid replacement of complete devices when servicing.
- Saving of the hard disk image on an additional storage medium (2nd hard disk, CD writer, external USB drive) or downreloading from this drive medium to the hard disk.

SIMATIC PC/PG Image & Partition Creator

In addition to the functionality of the Image Creator, the Partition Creator contains functions for the specific modification of the hard disk partitioning:

- Increasing and decreasing existing system and data partitions.
- Creation of new partitions, deletion of existing partitions.
- Optional installation of a boot manager.
- Existing installations are retained.

Current CD/DVD writers and USB storage media can be utilized. For example, booting from CD is also possible with optical USB drives. The optimized operating menus work without a return to the DOS level. The use is additionally facilitated by an optimized Getting Started.



SIMATIC PC BIOS Manager

The SIMATIC PC BIOS Manager offers the possibility for processing special BIOS data (CMOS data) of the industrial PC. This includes reading of CMOS data from the BIOS, saving of data in a file with definition of a user text, and writing back of the saved CMOS data into the BIOS.

User benefits provided by the BIOS Manager:

- Simple and reliable duplication of configured CMOS data for other SIMATIC PCs of the same design.
- Simple storage of PC system data for quality management requirements.

Options for operator control and monitoring SIMATIC WinCC flexible

SIMATIC WinCC flexible – innovative HMI software from Micro Panel to PC

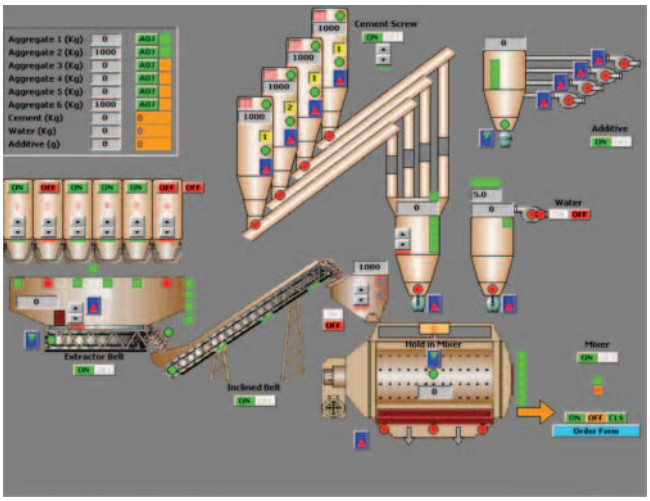
SIMATIC WinCC flexible is the innovative HMI software running under Windows for all applications at the machine level. The engineering software enables the uniform configuration of all Windows-based SIMATIC HMI operator panels – from the smallest Micro Panel up to the solution on PC.

WinCC flexible Runtime provides basic HMI functionality, including alarming and reporting systems, at an affordable price and can be expanded when required via options.

Maximum configuration efficiency

The WinCC flexible engineering software is based on the latest software technologies, available in five languages (including an ASIA version with four Asian languages) and, in addition to a simple user interface, provides the project engineer with:

- Libraries with pre-configured objects and reusable faceplates
- Intelligent tools to easily create projects, graphically configure a screen hierarchy and motion paths as well as configure mass data
- Support of multilingual configurations with automatic text translation and text export/import function



Application examples in the cement production

Innovative HMI and automation concepts

The WinCC flexible/**Sm@rtAccess** option gives operator stations access to each other's tags and screens. This enables innovative concepts based on TCP/IP communication solving the HMI and automation tasks:

- Operator stations with system-wide access to current process data and screens
- Networking of autonomous production cells
- Distributed operator stations for controlling large machines that are spread out over a large areal
- Local control center solutions with central archiving, analysis and further processing of process data
- Connection to office applications

Service and diagnostics over the Internet

The WinCC flexible/**Sm@rtService** option enables new service concepts:

- Event-driven sending of e-mails to service personnel
- Remote control from on-site stations over the Internet
- Operator station diagnostics via pre-configured diagnostics functions and screens
- Service and maintenance functions (downloading projects, downloading/uploading recipes)

Traceability and simple validation

With the options **AUDIT** and **ChangeControl,** WinCC flexible offers machine and plant manufacturers a high degree of support in fulfilling stringent quality requirements with respect to the products to be manufactured as well as to the manufacturing processes:

- User-friendly operation of GMP-relevant functions (Good Manufacturing Practice)
- Recording of operator actions in **Audit Trails**
- Revision and modification tracking of projects
- Simplified fulfillment of legal requirements for traceability according to EU 178/2002 and 21 CFR Part 11.

SIMATIC Panel PC Packages

SIMATIC Panel PC Packages with WinCC flexible Runtime software provide all the benefits of operator control and monitoring on an optimally integrated Panel PC hardware as well as cost savings compared to purchasing individual components.

Options for operator control and monitoring SIMATIC WinCC

SIMATIC WinCC – scalable process visualization with plant intelligence

SIMATIC WinCC is a **process visualization system** with powerful functions to monitor automated processes according to price and performances.

WinCC provides complete SCADA functionality under Windows for all industry sectors – from single-user systems up to distributed multi-user systems with redundant servers and site solutions with Web clients. In particular, WinCC is characterized by its absolute openness.

Its performance can easily be combined with standard or user programs, resulting in HMI solutions that precisely satisfy the practical requirements. System houses can develop their own applications via the open interfaces, where system expansions are specifically produced on the basis of WinCC.

WinCC is a state-of-the-art system with user-friendly user interfaces; it can be used in both office and production environments; it is functionally mature and reliable; it can be configured efficiently and it is scalable for simple and complex applications. With an integrated process database, WinCC forms the information hub for the company-wide, vertical integration and – with **Plant Intelligence** – provides increased production transparency.

All-purpose

The basic system is designed technology-independent and industry-independent. References across all applications and industries in plant and machine construction prove that – even in the pharmaceutical industry, where WinCC with appropriate options fulfills the requirements according to 21 CFR Part 11.

Open standards for easy integration

WinCC builds on the highest possible openness and ability to be integrated: ActiveX controls for technology-specific and industry-specific expansions, manufacturer-independent process communication via OPC (OLE for process control), standard interfaces for external access to the database (WinCC OLE-DB and OPC HDA), integrated standard script languages (VB script and ANSI-C), access to data and system functions via the application programming interface using the Open Development Kit (WinCC/ODK) and user-specific expansions of WinCC editors via Visual Basic for Applications (VBA).

Integrated Process Historian as information hub

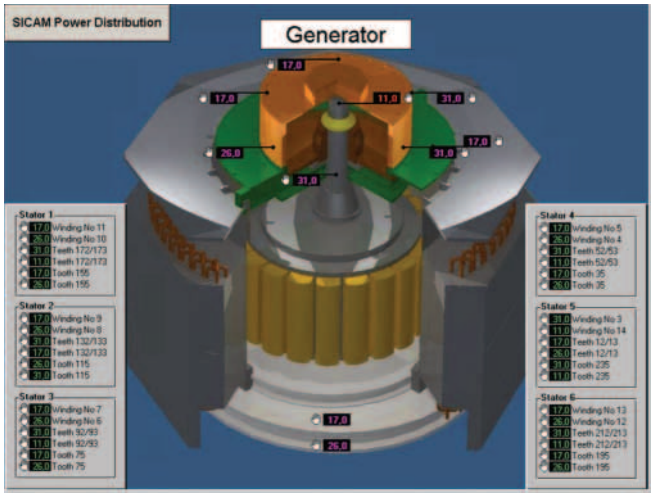
SIMATIC WinCC has already integrated a powerful and scalable Historian function based on the Microsoft SQL Server 2000 into the operating system. The possibilities afforded to users are endless: From high-performance archiving of current process data and events, long-term archiving with high data compression and backup function and up to a central information hub in the form of a company-wide Process Historian Server.

Increased production transparency through Plant Intelligence

Plant Intelligence stands for the efforts within production companies to reduce costs, prevent rejects, utilize processing equipment to its full capacity and therefore achieve high efficiency and profitability through the intelligent use of information within a plant. High system functionality (e.g. statistical functions for measured values and alarms in the basic system), openness, integrated Historian functionality and a host of options guarantee a clear production process and well-sound decisions.

SIMATIC Panel PC Packages

SIMATIC Panel PC Packages with WinCC Runtime software provide all the benefits of operator control and monitoring on an optimally integrated Panel PC hardware as well as the cost savings compared to purchasing individual components.



WinCC application example

Options for open-loop and closed-loop control SIMATIC WinAC

WinAC Software PLC – for enhanced flexibility and openness

The SIMATIC WinAC Software PLCs are available in two different versions:

- WinAC RTX (with real-time capability)
- WinAC Basic

WinAC RTX – for real-time and determinism

WinAC RTX is used where high performance, high data volume and simultaneous real-time capabilities are required for the automation task. It runs under Windows 2000 or XP Professional and utilizes the real-time core Ardence RTX to guarantee real-time and deterministic behavior.

The performance of WinAC RTX can be scaled across the PC platform. Applications range from machine-level oriented control tasks with rugged embedded PCs up to high-end applications on PCs featuring the latest technology.

WinAC Basic – the low-cost solution

WinAC Basic is an alternative for solutions where it is not necessary to guarantee a deterministic behavior. Typically, a cycle time accuracy of approximately 2 to 3 ms is achieved; this cycle time jitter is the result out of the required operating system functions. Typical applications include line and cell controls, in which different units of equipment/machines have to be coordinated and an interface is required for the data processing.

WinAC Basic is a Windows standard application and can be scaled in performance via the processor and the Windows priority.

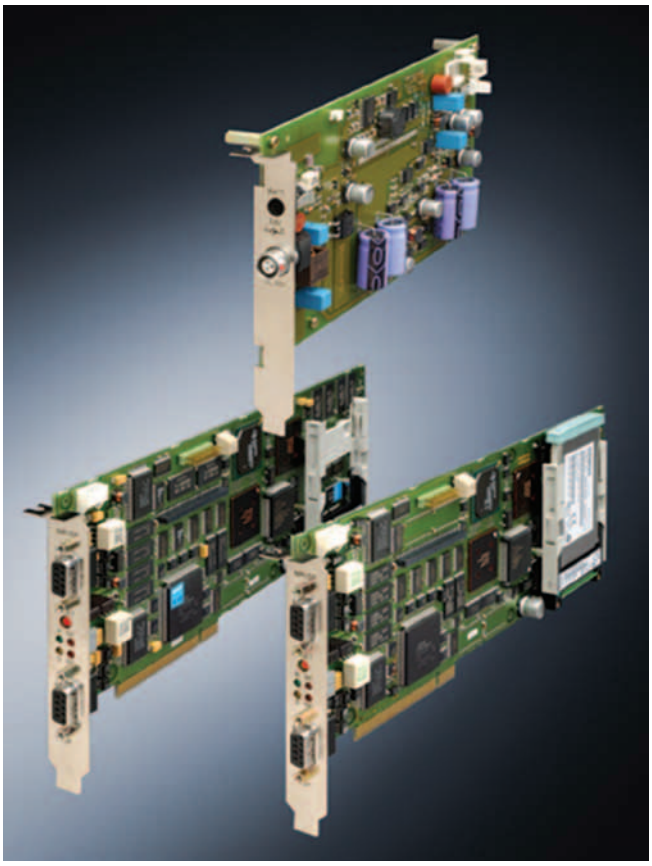
WinAC Slot PLC – for enhanced availability and operational safety

The WinAC Slot PLCs are used where enhanced availability and operational safety are required in PC-based solutions.

In performance and instruction set, the WinAC Slot PLCs are based on the powerful S7-400 CPUs and enable the control-independent of Windows.

The slot PLCs are capable of an instruction-specific restart directly continue with the user program at the point of interruption. In conjunction with an optional power supply (power supply extension board) and an external 24 V power supply, the user program of the slot PLC can be executed completely independent of the PC. Thanks to a battery backup, all data areas are non-volatile.

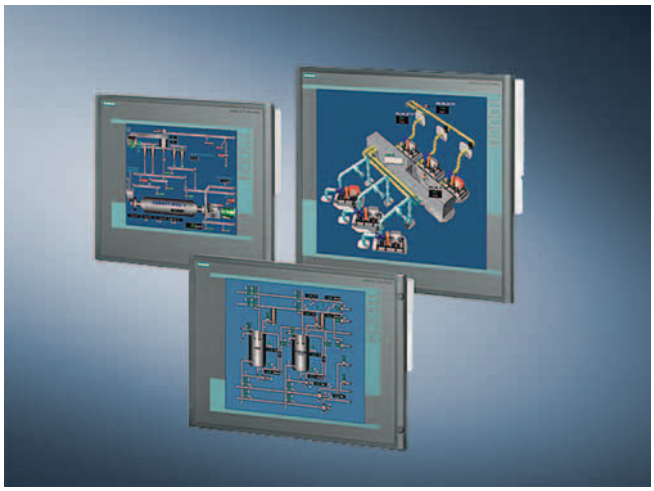
This rugged and deterministic behavior makes it possible to implement applications with increased availability and operational safety.



WinAC Slot PLC 412 and 416 with power supply extension board

SIMATIC flat panel monitors
Bright LCD monitors for industrial use

Fault tolerance, long service life and industry-compatible design are features of the SIMATIC flat panel monitors. They are fully industry-capable and can withstand even vibration loads up to 1 g and shock loads up to 5 g. The IP65/NEMA4 degree of protection means that dust and moisture do not pose a problem.



The Flat Panel monitors are equipped with a mineral glass screen, which provides high mechanical protection against pressure, scratch and guarantees increased service life and bright display clarity.

SIMATIC flat panels are available with display sizes of 12", 15" and 19" with touch operation or as a pure display unit. They are suited for the same mounting cutouts as the corresponding Panel PCs.

Improved working quality results from:

- Uniformly distributed brightness, high picture sharpness and greatly reduced reflections
- Reading angle greater than 170° horizontally and vertically

The flat panel monitors are therefore superior to conventional CRT monitors and LCD monitors. They enable fatigue-free working and reduce the probability of mistakes.

The flat panel monitors possess both the modern DVI-D digital interface as well as the analog VGA interface, and can thus be connected to existing as well as future PCs.

Flat Panel Monitors	12"	15"	19"
Resolution in pixels	SVGA (800 x 600)	XGA (1024 x 768)	SXGA (1280 x 1024)
Touchscreen (analog/resistive)	optional	optional	optional
Power supply	24 V DC / optional 110/230 V AC		
MTBF of backlight	Typically 50,000 h (at 24 h continuous operation, depending on temperature)		
USB (Universal Serial Bus)	only for integrated touch sensor		
Graphics interface	DVI-D, VGA	DVI-D, VGA	DVI-D, VGA
Degree of protection	IP65 (front) acc. to EN 60529, NEMA 4		
Vibration load during operation	Tested according to DIN IEC 68-2-6: 10 to 58 Hz: 0.075 mm, 58 to 200 Hz: 9.8 m/s^2 (1 g)		
Shock loading during operation	Tested according to DIN IEC 68-2-29: 50 m/s^2 (5 g), 30 ms, 100 shocks		
EMC	CE, EN 55011, EN 61000-6-2, EN 61000-6-4		
Ambient temperature during operation and at maximum configuration	+ 5 °C to + 45 °C, + 5 °C to + 50 °C in installation space, if 40°C at the front		
Relative humidity	Tested according to DIN IEC 68-2-3, DIN IEC 68-2-30, DIN IEC 68-2-56: 5% to 80% at 25 °C (no condensation)		
Approvals	CE, cULus (508)	CE, cULus (508)	CE, cULus (508)
Operator control unit (W x H) in mm	400 x 310	483 x 310	483 x 400
Mounting dimensions (W x H x D) without opt. drives in mm	368 x 290 x 49	450 x 290 x 51	450 x 380 x 53
Power dissipation at maximum configuration	25 W	25 W	55 W

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Technology overview

Panel PC 477
embedded

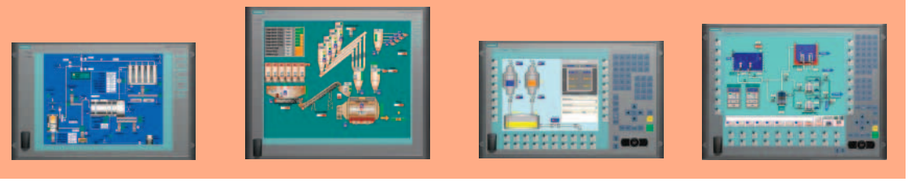
Panel PC 577

Display	12" Touch	15" Touch	12" Keys	15" Keys	12" Touch	15" Touch	19" Touch	12" Keys	15" Keys
Size in inches/resolution (pixels)	12" / SVGA (800 x 600)	15" / XGA (1024 x 768)	12" / SVGA (800 x 600)	15" / XGA (1024 x 768)	12" / SVGA (800 x 600)	15" / XGA (1024 x 768)	19" / SXGA (1280 x 1024)	12" / SVGA (800 x 600)	15" / XGA (1024 x 768)
Centralized / remote-mount configuration	• / –	• / –	• / –	• / –	• / –	• / –	• / –	• / –	• / –
Control elements									
Keyboard	–	–	•	•	–	–	–	•	•
Function keys	–	–	36	36	–	–	–	36	36
Touch screen (analog/resistive)	•	•	–	–	•	•	•	–	–
Mouse (at front)	–	–	•	•	–	–	–	•	•
General features									
Processor	Intel Celeron 650 MHz; Intel Pentium III 933 MHz				Intel Pentium 4 technology; Intel Celeron 2.0 GHz, Intel Pentium 4 2.4 GHz				
Main memory	512 MB (a single bank)				256 MB, 512 MB or 1 GB, maximum expandable up to 3 GB				
Free expansion slots	Up to 3 x PC104plus (via expansion frame)				3 x PCI (slots with card retainers)				
Operating system	Microsoft Windows XP embedded				Windows 2000 Prof. (Multilanguage [2]), Windows XP Prof. (Multilanguage [2]), optionally without OS				
Power supply	24 V DC; or 110/230 V AC, 50/60 Hz				110V/230V AC (wide-range) 50/60 Hz				
MTBF of backlight	Typically 50,000 h (at 24 h continuous operation, depending on temperature)				Typically 50,000 h (at 24 h continuous operation, depending on temperature)				
Drives									
Hard disk	Compact Flash with 512 MB or 1GB				2.5" EIDE hard disk ≥ 40 GB, vibration-damped				
DVD-R/W	–				optional				
DVD-ROM; DVD-ROM/CD-R/W	–				optional; –				
Floppy disk	optional via USB, can be ordered as accessory: 1.44 MB 3.5"				optional via USB, can be ordered as accessory; 1.44 MB, 3.5"				
Interfaces									
PROFIBUS/MPI	optional onboard, isolated, max. 12 Mbit/s, compatible with CP5611				via plug-in card				
Ethernet	2 x onboard, 10/100 Mbit/s, RJ45				onboard, 10/100/1000 Mbit/s, RJ45				
USB (Universal Serial Bus)	1 x at front (USB 2.0 high current); 2 x at rear (USB 2.0 high current)				1 x at front (USB 2.0 high current), 4 x at rear (USB 2.0 high current)				
Serial interface	COM1: 1 x V.24 (RS232)				COM1: 1x V.24 (RS232)				
Parallel interface	–				LPT1 (EPP/ECP)				
Graphics interface	VGA interface can be used for additional display unit (VGA via DVI-I plug)				VGA interface can be used for additional display unit				
Multimedia	–				Audio In/Out, microphone In				
Keyboard; mouse	USB; USB				PS/2 or USB; PS/2 or USB				
Monitoring functions									
Temperature, watchdog	onboard				onboard				
Ambient conditions									
Degree of protection	IP65 (front) acc. to EN60529, NEMA 4				IP65 (front) acc. to EN60529, NEMA 4				
Vibration load during operation	Tested acc. to DIN IEC 68-2-6: 10 - 58 Hz: 0.075 mm, 58 to 200 Hz: 9.8 m/s² (1 g)				Tested acc. to DIN IEC 68-2-6: 20 to 58 Hz: 0.0185 mm, 58 to 200 Hz: 2.5 m/s^2 (0.25 g)				
Shock loading during operation	Tested acc. to DIN IEC 68-2-29: 50 m/s² (5 g), 30 ms, 100 shocks				Tested acc. to DIN IEC 68-2-29: 10 m/s^2 (1 g), 30 ms, 100 shocks				
EMC	CE; EN 55011/61000-6-4/61000-6-2				CE, EN 55011, EN 55022, EN 50081-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4				
Ambient temperature during operation and at maximum configuration	+5° C to 50 °C (with Pentium III: +5° C to 45 °C)				+5 °C to +45 °C				
Relative humidity	Tested acc. to IEC 60068-2-78, IEC 60068-2-30: 5% to 80% at 25 °C (no condensation)				Tested acc. to DIN IEC 68-2-3, DIN IEC 68-2-30, DIN IEC 68-2-56: 5% to 80% at 25 °C (no condensation)				
Approvals	CE, UL 60950-1, UL 508, CSA C 22.2 No. 142				CE, C-Tick, cULus (508)				
Packages	–				With SIMATIC WinCC flexible, SIMATIC WinCC				
Dimensions									
Operator control unit (W x H) in mm	400 x 310	483 x 311	483 x 310	483 x 355	400 x 310	483 x 310	483 x 400	483 x 310	483 x 355
Mounting dimensions (W x H x D) without opt. drive in mm	368 x 290 x 75	450 x 290 x 75	450 x 290 x 75	450 x 321 x 75	368 x 290 x 152	450 x 290 x 155	450 x 380 x 150	450 x 290 x 137	450 x 321 x 162
Power dissipation at maximum configuration	24 V DC: max. 80 W [3] 230 V AC: max. 85 W [3]	24 V DC: max. 80 W [3] 230 V AC: max. 85 W [3]	24 V DC: max. 80 W [3] 230 V AC: max. 85 W [3]	24 V DC: max. 80 W [3] 230 V AC: max. 85 W [3]	max. 190 W [1]	max. 190 W [1]	max. 210 W [1]	max. 190 W [1]	max. 190 W [1]

1) 15 W per slot *2) GER, EN, IT, FR, SP, KOR, CHN (Traditional), CHN (Simplified), JPN* *3) 3 W per slot* *4) with Pentium 4 Mobile 2.2 GHz only* *5) 10 W per slot*

Panel PC 677

Panel PC 877



12" Touch	15" Touch	19" Touch	12" Keys	15" Keys	15" Touch	19" Touch	12" Keys	15" Keys	
12" / SVGA (800 x 600)	15" / XGA (1024 x 768)	19" / SXGA (1280 x 1024)	12" / SVGA (800 x 600)	15" / XGA (1024 x 768)	15" / XGA (1024 x 768)	19" / SXGA (1280 x 1024)	12" / SVGA (800 x 600)	15" / XGA (1024 x 768)	Size in inches/resolution (pixels)
• / via Remote Kit	• / via Remote Kit	• / via Remote Kit	• / via Remote Kit	• / via Remote Kit	• / via Remote Kit	• / via Remote Kit	• / via Remote Kit	• / via Remote Kit	Centralized / remote-mount configuration
									Control elements
–	–	–	•	•	–	–	•	•	Keyboard
–	–	–	36 with LEDs	36 with LEDs	–	–	36 with LEDs	36 with LEDs	Function keys
•	•	•	–	–	•	•	–	–	Touch screen (analog/resistive)
–	–	–	•	•	–	–	•	•	Mouse (at front)
									General features
Mobile Intel 915GM Express Chipset; Intel Celeron M 370 / 1.5 GHz, 400 MHz FSB, 1 MB SLC; Intel Pentium M 730 / 1.6 GHz, 533 MHz FSB, 2 MBs SLC; Intel Pentium M 760 / 2.0 GHz, 533 MHz FSB, 2 MBs SLC					Intel Pentium 4 technology; Intel Celeron 2.0 GHz; Intel Pentium 4 2.8 GHz; Intel Pentium 4 Mobile 2.2 GHz				Processor
256 MB, 512 MB, 1 GB, 2 GB					256 MB, 512 MB, 1 GB, 2 GB				Main memory
2 x PCI (all slots with card retainers); 1 x Slot for Compact Flash Card					2 x PCI, 2 x PCI/ISA shared, 1 x ISA (all slots with card retainers)				Free expansion slots
Windows 2000 Prof. (Multilanguage [2]), Windows XP Prof. (Multilanguage [2]), optional without OS					Windows 2000 Prof. (Multilanguage [2]), Windows XP Prof. (Multilanguage [2]), optionally without OS				Operating system
110/230 V AC (wide-range) 50/60 Hz; or 24 V DC					110 V/230 V AC (autorange) 50/60 Hz; or 24 V DC (only in conjunction with Pentium 4 mobile processor)				Power supply
Typically 50,000 h (at 24 h continuous operation, depending on temperature)					Typically 50,000 h (at 24 h continuous operation, depending on temperature)				MTBF of backlight
									Drives
3.5" SATA hard disk drive ≥ 40 GB, vibration-damped; optional: 2 x 2.5" SATA hard disk module (≥ 60 GB), vibration-damped onboard RAID1 controller					3.5" EIDE hard disk ≥ 40 GB, vibration-damped; Optional: 3.5" EIDE hard disk ≥ 80 GB vibration-damped; Optional: 2 x 2.5" EIDE hard disk module ≥ 40 GB, vibration-damped Optional: RAID1 with 2 x 2.5" SATA hard disk module ≥ 60 GB vibration-damped				Hard disk
–					–				DVD-R/W
optional; optional					optional; optional				DVD-ROM; DVD-ROM/CD-R/W
optional via USB; can be ordered as accessory: 1.44 MB 3.5"					1.44 MB 3.5"				Floppy disk
									Interfaces
onboard, isolated, max. 12 Mbit/s, no plug-in card required, compatible with CP 5611					onboard, isolated, max. 12 Mbit/s, compatible with CP 5611				PROFIBUS/MPI
2 x onboard, 10/100 Mbit/s, RJ45					1 x onboard, 10/100 Mbit/s, RJ45				Ethernet
1 x at front (USB 2.0 high current), 4 x at rear (USB 2.0, of which 2 are high current)					1 x at front (USB 2.0 high current), 2 x at rear (USB 2.0 high current)				USB (Universal Serial Bus)
COM1: 1 x V.24 (9-pin)					COM1: 1 x V.24 (RS232), COM2: 1 x V.24 (RS232C)				Serial interface
optional via PCI plug-in card					LPT1 (EPP/ECP)				Parallel interface
DVI-I can be used for additional display unit (VGA via adapter)					DVI-I can be used for additional display unit (VGA via adapter)				Graphics interface
–					–				Multimedia
USB; USB					PS/2 or USB; PS/2 or USB				Keyboard; mouse
									Monitoring functions
onboard					onboard				Temperature, watchdog
									Ambient conditions
IP65 (front) acc. to EN60529, NEMA 4					IP65 (front) acc. to EN 60529, NEMA 4				Degree of protection
Tested acc. to DIN IEC 68-2-6: 10 to 58 Hz: 0.075 mm, 58 to 200 Hz: 9.8 m/s^2 (1 g)					Tested acc. to DIN IEC 68-2-6: "10 to 58 Hz: 0.075 mm, "58 to 200 Hz: 9.8 m/s^2 (1 g)				Vibration load during operation
Tested acc. to DIN IEC 68-2-29: 50 m/s^2 (5 g), 30 ms, 100 shocks					Tested acc. to DIN IEC 68-2-29: 50 m/s^2 (5 g), 30 ms, 100 shocks				Shock loading during operation
CE, EN 55011, EN 61000-6-2, EN61000-6-4					CE, EN 55011, EN 61000-6-2, EN 61000-6-4				EMC
+ 5 °C to + 45 °C or + 5 °C bis + 50 °C in installation space, if 40 °C at the front					+ 5 °C to + 45 °C or + 5 °C to + 50 °C in installation space, if 40 °C at the front [4]				Ambient temperature during operation and at maximum configuration
Tested acc. to DIN IEC 68-2-3, DIN IEC 68-2-30, DIN IEC 68-2-56: 5% to 80% at 25 °C (no condensation)					Tested acc. to DIN IEC 68-2-3, DIN IEC 68-2-30, DIN IEC 68-2-56: 5% to 80% at 25 °C (no condensation)				Relative humidity
CE, cULus (508)					CE, cULus (508)				**Approvals**
With SIMATIC WinCC flexible, SIMATIC WinCC					With SIMATIC WinCC flexible, SIMATIC WinCC				**Packages**
									Dimensions
400 x 310	483 x 310	483 x 400	483 x 310	483 x 355	483 x 310	483 x 400	483 x 310	483 x 355	Operator control unit (W x H) in mm
368 x 290 x 122	450 x 290 x 120	450 x 380 x 129	450 x 290 x 104	450 x 321 x 123	450 x 290 x 208	450 x 380 x 217	450 x 290 x 191	450 x 321 x 210	Mounting dimensions (W x H x D) without opt. drives in mm
max. 140 W [1]	max. 140 W [1]	max. 163 W [1]	max. 140 W [1]	max. 140 W [1]	24 V DC [4]: max. 230 W [5] 230 V AC: max. 300 W [5]	24 V DC [4]: max. 260 W [5] 230 V AC [4]: max. 330 W [5]	24 V DC [4]: max. 230 W [5] 230 V AC: max. 300 W [5]	24 V DC [4]: max. 230 W [5] 230 V AC: max. 300 W [5]	**Power dissipation at maximum configuration**