SIMATIC IPC

The More Industrial PC

Brochure · June 2012

SIMATIC IPC

Answers for industry.

SIEMENS

SIMATIC IPC

The more industrial PC

The more industrial PC

To enable our customers to implement tasks of increasing complexity at less risk and with less outlay, Siemens has been offering hardware and software that is both innovative and guaranteed to remain available over the long term for more than two decades.
Machine and plant builders, system integrators and end customers alike benefit from the wide range of possibilities thanks to:

- Reliable industrial PCs with mainboards developed in house
- Assembly in Germany to the highest standards of quality to ensure high system availability and greater productivity
- Compact, innovative design in various construction types with higher performance and greater functionality
- Uniform front panels with widescreen displays for harmonized design of machines and plants
- Ready-to-use bundles and software packages
- Customized Automation for individual products, systems, turnkey and industry-specific solutions
- Service and support period of between 9 and 11 years for reducing the Total Cost of Ownership (TCO)

NEW Nanopanel PC SIMATIC IPC277D with 15" and 19" widescreen displays (page 28).
Industrial Thin Client SIMATIC ITC with 12" to 22" widescreen displays for distributed solutions over large distances (page 33).
MATLAB / Simulink and WinAC S20 Wizard for rapid development, simulation and integration of complex open and closed-loop control algorithms (page 44).

The success story "Made in Germany"

Back in 1983, Siemens was the first supplier to offer standard PC technology with industrial characteristics. Since then, Siemens have continuously registered new milestones with SIMATIC Industrial PCs, for example:

- 2006 – The first industrial PC family with Intel Core2 Duo processors
- 2009 – The first and, until now, only supplier of a software controller with safety functions that has been certified by the German Technical Inspectorate (TÜV)
- 2010 – The first manufacturer of an integrated, high-end industrial PC family with new-generation i7/i5/i3 Intel Core processors
- 2011 – The first manufacturer of an embedded industrial PC family with new-generation Intel Atom processors (presented with the iF product design award in 2011 and 2012)
- 2012 – The first supplier of HMI/IPC devices with widescreen fronts (presented with the iF product design award in 2012)

With 19.5% market share in the industrial sector in 2010 (source: IMS Research 2011), Siemens is the global market leader in industrial PCs and therefore the leading systems supplier of PC-based automation.

Multimedia guide for PC-based Automation
siemens.com/video-pc-based-getting-started

SIMATIC Rack PC –
versatility and power in 19" format
from page 16

SIMATIC Box PC –
compact and rugged for universal application
from page 20

SIMATIC Panel PC –
rugged and powerful with brilliant displays
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Distributed operator control and monitoring
also over long distances
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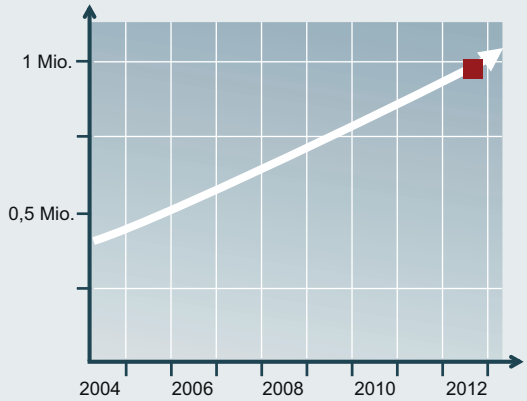
Siemens responds to the constant stream of new challenges presented by rapidly expanding global markets with its consistent development of IPC platforms. The basis for this success is the excellent quality and reliability of products developed and assembled in Germany.

Number of PC-based SIMATIC systems in the field



Siemens has more than doubled the number of PC-based systems in the field over the past 9 years to over a million devices.

Device versions for special requirements
from page 34

PC-based Control and HMI software
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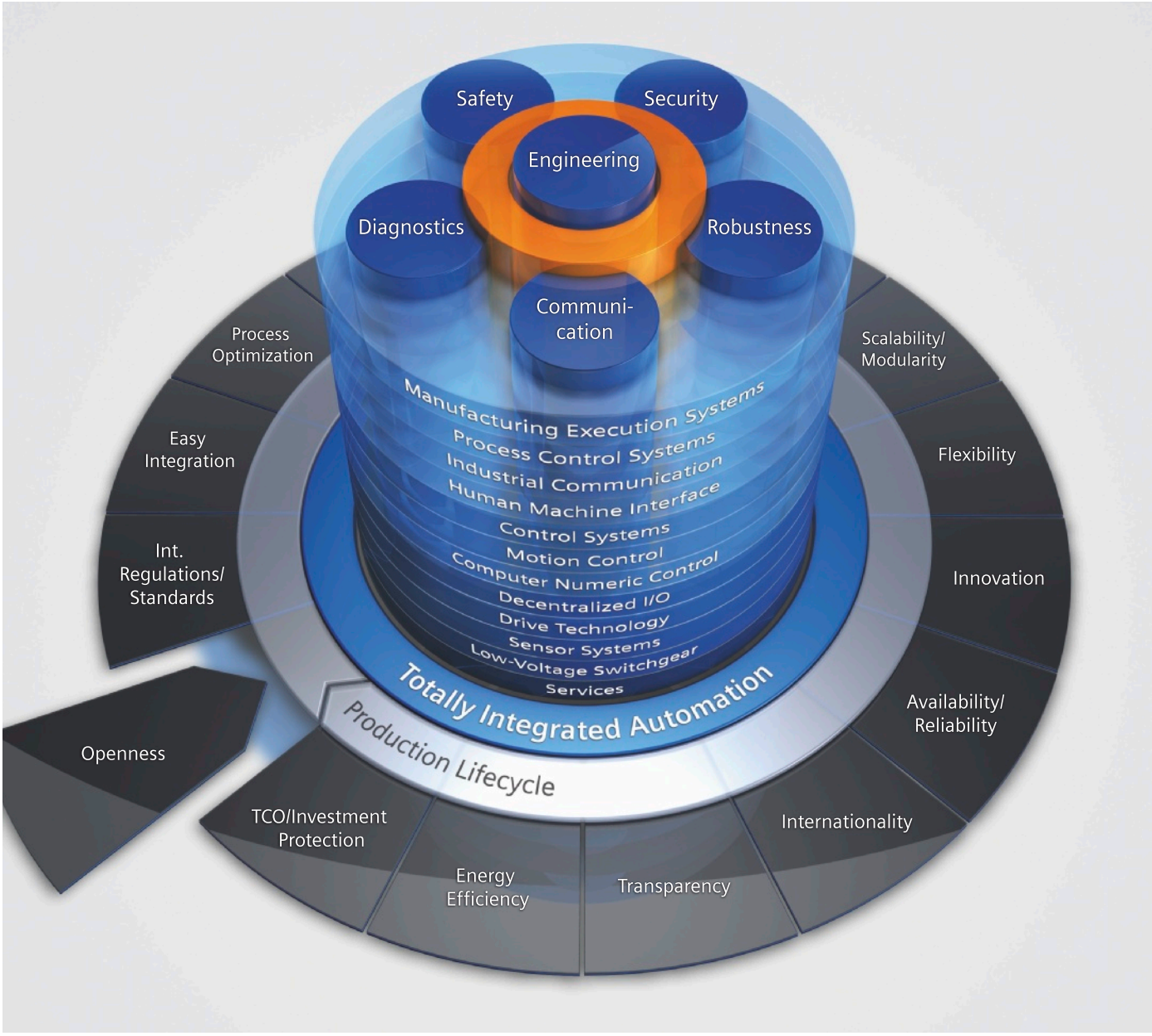
Totally Integrated Automation

Rely on new productivity standards for sustained competitive advantages



To be able to respond to the increasing international competitive pressure, it is more important than ever to consistently make full use of the potential for optimization – over the complete lifecycle of a machine or plant.

Optimized processes reduce the total cost of ownership, shorten the time to market, and improve quality. This perfect balance between quality, time, and costs is now, more than ever, the decisive success factor in industry.

Totally Integrated Automation is optimally aligned to all requirements and open for international standards and third-party systems. With its six characteristic system features, Totally Integrated Automation supports the complete lifecycle of a machine or plant. The complete system architecture offers holistic solutions for every automation segment on the basis of a comprehensive range of products.

SIMATIC: more efficient and systematic automation

SIMATIC, a core component of Totally Integrated Automation, includes a variety of standardized, flexible, and scalable products – such as the SIMATIC IPCs presented in this brochure.

SIMATIC is currently considered to be the global number one in automation. One of the decisive reasons for this is that SIMATIC exhibits the six system features of Totally Integrated Automation:

- Engineering
- Communication
- Diagnostics
- Safety
- Security
- Robustness

In addition, SIMATIC features two additional system features:

- Technology
- High availability

You can find more about the system features and the resulting advantages in the following chapter “System features”.

System characteristics

Engineering

Maximum engineering efficiency –
in all phases of the lifecycle of the machine and plant
With SIMATIC you are opting for an integrated engineering environment. Efficient software supports you over the complete lifecycle of your machine or plant – from the planning and design stages through configuring and programming as far as commissioning, operation and upgrading. With its integration capability and harmonized interfaces, SIMATIC software permits a high degree of data consistency – throughout the entire engineering process.
With the Totally Integrated Automation Portal (TIA Portal) Siemens has redefined engineering. The new engineering framework TIA Portal combines the automation software tools SIMATIC STEP 7, SIMATIC WinCC and SINAMICS StartDrive in a single development environment.
www.siemens.com/tia-portal

Communications

Maximum data transparency spanning all automation levels –
on the basis of well-proven standards
SIMATIC creates the foundations for unlimited integration in communication – and thus for maximum transparency on all levels, from the field and control level to the operations management level all they way up to the corporate management level. SIMATIC relies on international, cross-vendor standards which can be combined flexibly: PROFINET, the leading Industrial Ethernet standard, and PROFIBUS, the global No. 1 fieldbus.
www.siemens.com/industrial-communication

Diagnosis

Minimization of downtimes –
through efficient diagnostics concepts
All SIMATIC products feature integrated diagnostic functions with which a fault can be identified and eliminated to provide increased system availability.
Even with larger plants, the Maintenance Station provides you with a uniform view of the maintenance-relevant information of all automation components.
www.siemens.com/maintenance

Safety

Protection of personnel and machinery –
within the framework of an integrated complete system
SIMATIC Safety Integrated offers TÜV-certified products, which facilitate compliance with relevant standards: IEC 62061 up to SIL 3, EN ISO 13849-1 up to PL e, as well as EN 954-1.
Due to the integration of safety technology in standard technology, only one controller, one I/O, one engineering, and one bus system are required. Thus the system advantages and comprehensive functionality of SIMATIC are also available for fail-safe applications.
www.siemens.com/safety

Data security in the networked world – through harmonized, scalable security systems
Due to the increased use of Ethernet connections penetrating the field level, security issues are gaining in importance in industry. For comprehensive protection of a plant, a variety of suitable measures must be implemented. These range from the company organization and its guidelines regarding protective measures for PC and control systems through to protection of automation cells by segmenting the network. Siemens follows the cell protection concept and offers, with the modules of the SCALANCE series and the Security modules, components for building up protected cells.
www.siemens.com/industrialsecurity

Security

Maximum industrial suitability – through increased ruggedness
Each standard product from the SIMATIC range is characterized by the highest quality and ruggedness and is perfect for use in industrial environments. Specific system tests ensure the planned and required quality. SIMATIC components meet all relevant international standards and are certified accordingly. Temperature and shock resistance are defined in the SIMATIC quality guidelines, as are vibration resistance or electromagnetic compatibility.
For demanding to extreme rated conditions, special versions such as SIPLUS extreme or special versions of SIMATIC ET200 are available. These include an increased degree of protection, extended temperature ranges, and exceptional environmental stress.

Ruggedness

More possibilities, less complexity – due to integrated technology functionality
Counting and measuring, cam control, closed-loop control, or motion control: Integrate technological tasks in many different combinations and degrees of complexity without system discontinuities into the world of SIMATIC – easily, conveniently, consistently.
Parameter assignment and programming are implemented in the familiar STEP 7 environment.
www.siemens.com/simatic-technology

Technology

Maximum availability – with integrated redundancy concepts
Siemens offers a comprehensive redundancy concept to ensure high availability for the entire plant: from the field level to the control level all the way up to the management level. For example, field-tested controllers ensure high availability through bumpless switching with automatic event synchronization.
www.siemens.com/simatic-high-availability-systems

Fault tolerance

www.siemens.com/simatic-features

SIMATIC IPC – The more industrial PC

More ruggedness and system availability

More ruggedness and industrial suitability

Already the product design meets the high demands placed on industrial compatibility. SIMATIC IPCs stand out due to the following special characteristics:

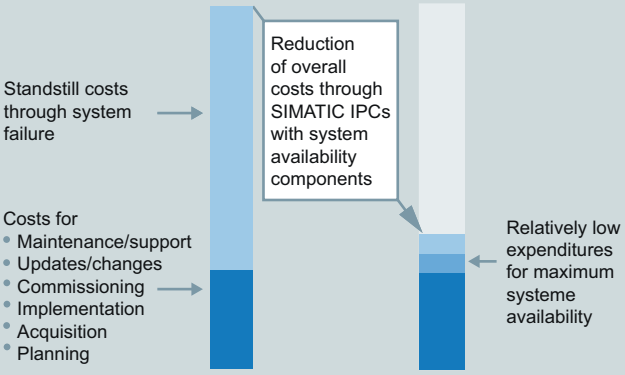
- Mainboards developed in-house
- Rugged enclosure designs with high electromagnetic compatibility (EMC) and degrees of protection up to IP65/NEMA 4
- Integrated industrial power supplies (to NAMUR) and redundant power supplies that can be swapped during normal operation
- High-quality components with high MTBF, which also facilitate 24-hour operation even in the extended temperature range
- High vibration/shock resistance thanks to special hard disk holders
- Lockable plug connectors and card retainers
- Internal USB interface, e.g. for a software dongle
- Installed and activated Microsoft operating systems for time savings during installation
- Service-friendly, modular device design for the fast replacement of defective components
- Restore CD/DVD for restoration of the delivery state

More system availability

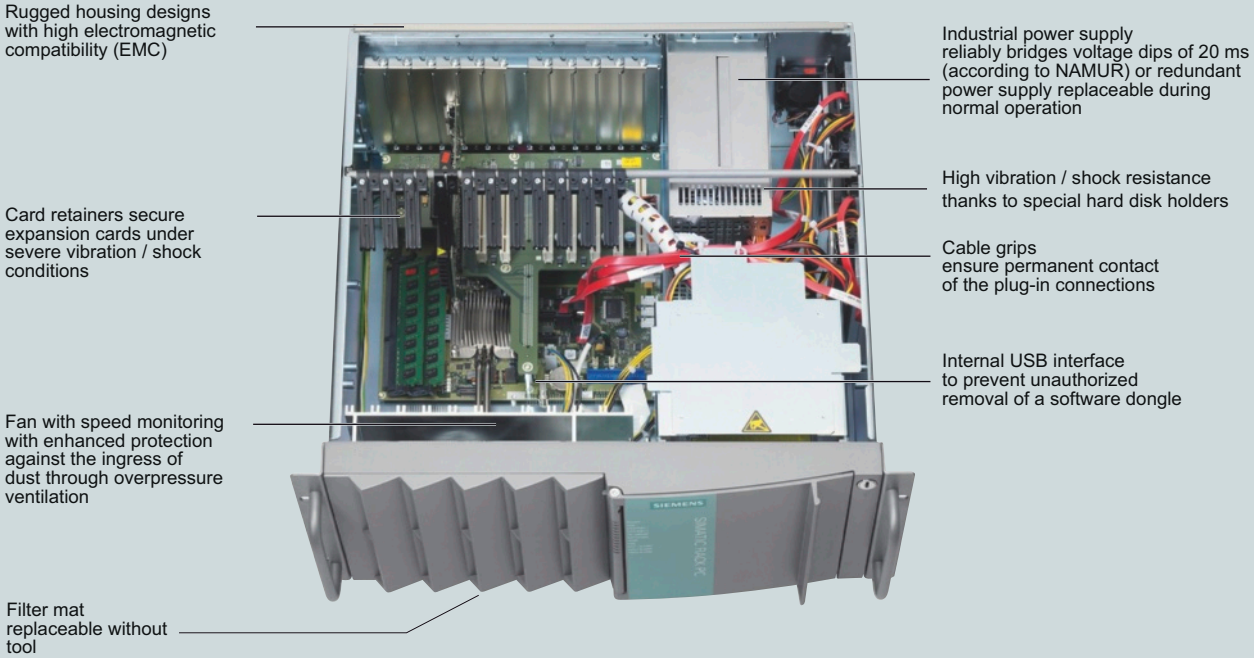
The consequential costs of system failures and downtimes are essential aspects when assessing an automation solution's total cost of ownership (TCO). Thanks to their product features and numerous optional products, SIMATIC IPCs sustainably ensure a high system availability and decisively contribute to the reduction of consequential costs – for maximum productivity and efficiency.

➜ *More details on page 36.*

Total cost of ownership (TCO)
for plants with high availability requirements



Measures for greater ruggedness and industrial compatibility, based on a SIMATIC Rack PC



More product diversity and selection options

SIMATIC IPCs are available with large product diversity in various designs and with different functionalities:

- Rack PCs – flexible and powerful in 19" design
- Box PCs – compact and rugged for universal application
- Panel PCs – rugged and powerful with brilliant displays

Industrial monitors and Thin Clients are available for distributed operator control and monitoring.

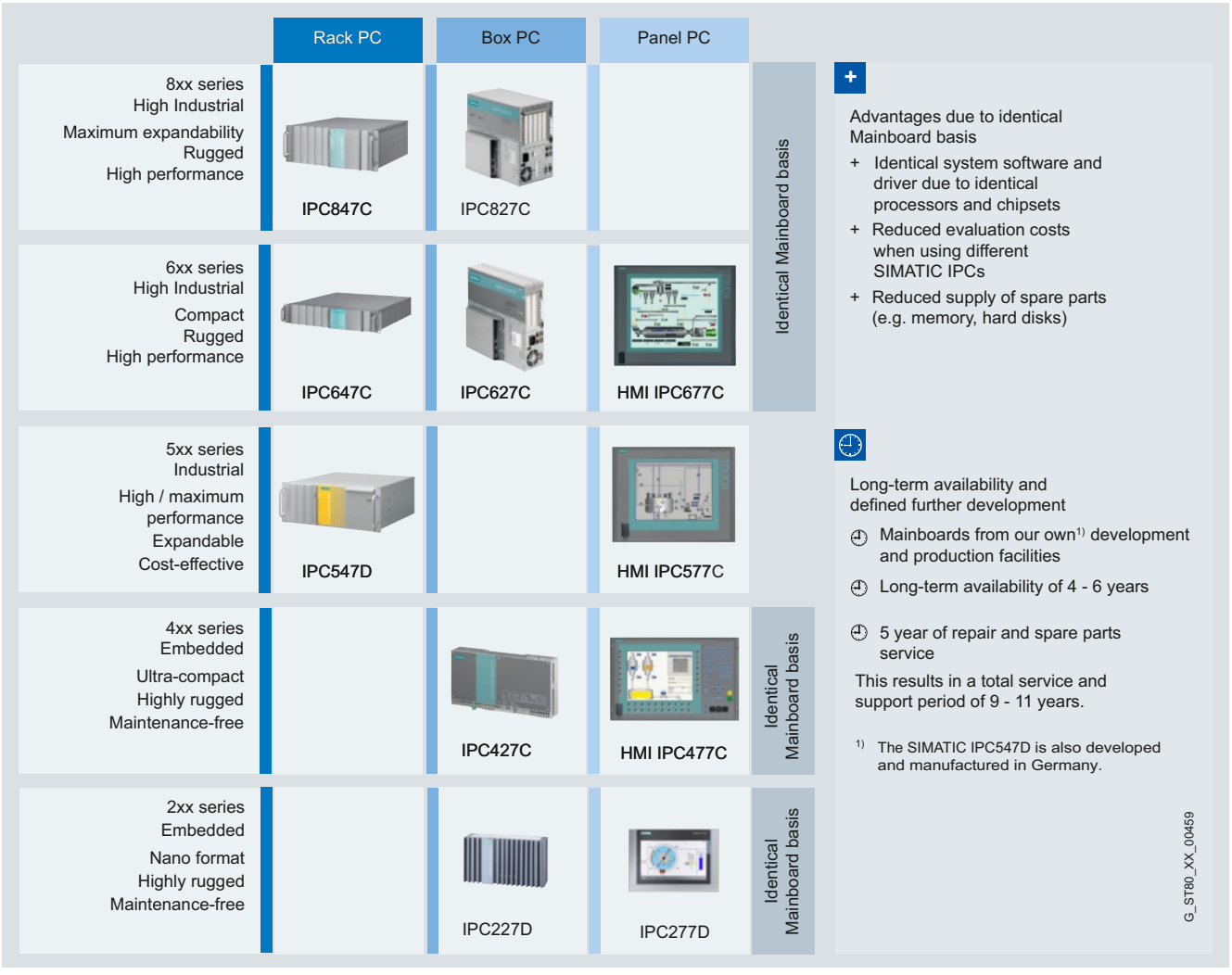
Special requirements are fulfilled by HMI devices with all-round protection, devices with stainless steel fronts and intrinsically safe devices for hazardous areas.

And with Customized Automation, you get individual products and systems – precisely tailored to your requirements. This saves you time, improves your profitability and increases your competitive advantage.

The integrated industrial SIMATIC IPC platforms offer a high degree of flexibility through individual selection options. For example, the following products are available on identical mainboard basis:

- The IPC227D also as a compact IPC277D with widescreen displays of 7" and above
- The IPC427C also as a compact HMI IPC477C with brilliant display
- The IPC627C also as a flexible HMI IPC677C with brilliant display
- The IPC847C also as a compact IPC647C of only two height units, and the same footprint

You can order SIMATIC IPCs in various configurations. Our online configurator supports you with selecting processors, memory configurations, drives, add-on cards and pre-installed, already activated operating systems:
siemens.com/ipc-configurator



More application options

SIMATIC IPCs are employed in many applications and sectors. They are perfectly equipped and suitable for open- and closed-loop control, visualization, measuring and testing, data processing and communication tasks as well as for gateways and as network transition.

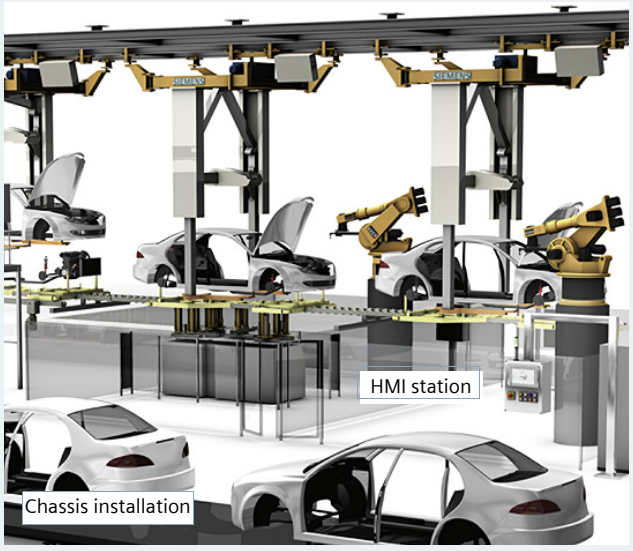
SIMATIC IPCs are playing an increasingly important role in the context of intelligent energy management.

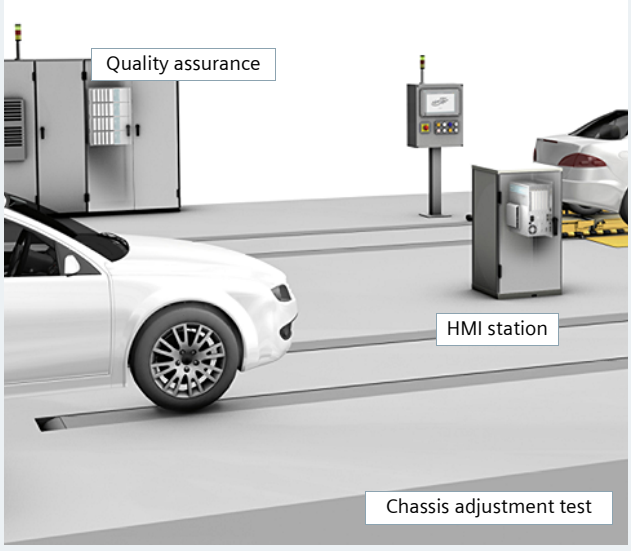
You will find application examples animated in 3D at:
siemens.com/pc-based-applications

The main applications of SIMATIC IPCs are manifold:

- Automotive industry (e.g. test bays, paint lines)
- Semiconductor and electronics industry (e.g. diffusion plants)
- Regenerative energy (solar, wind)
- Chemical and pharmaceutical industry (e.g. table presses, fermenters)
- Oil, gas and water (e.g. water treatment, water supply)
- Foodstuff industry (e.g. filling systems, fruit presses)
- Stock-keeping and logistics (e.g. high-bay warehouses, conveyor technology)
- Mechanical engineering (e.g. printing machines, textile machines, CD/DVD production)

Application examples of SIMATIC IPCs in the automotive industry





Body construction

The compact and rugged embedded HMI IPC477C with WinAC RTX software PLC and WinCC is used for control and visualization directly on the machine.

Chassis installation: HMI station

In the chassis installation plant, the compact and powerful SIMATIC HMI IPC677C is used as an HMI station for system operation and monitoring.

Engine and transmission construction

Engine and transmission construction poses high requirements in terms of EMC, dirt and heat. For monitoring and control of the test bays, the rugged SIMATIC IPC847B is employed.
Bolt data acquisition and quality control is performed locally by the maintenance-free and extremely compact embedded IPCs Nanobox PC IPC227D and Microbox PC IPC427C.

Chassis adjustment test bench

- HMI station
  For the acquisition and fast processing of large volumes of data collected from roller test bays or chassis adjusting test bays, SIMATIC IPC627Cs are employed with Flat Panel monitors or HMI IPC677C with WinCC as the HMI station up to 30 meters away.

- Quality assurance
  The information and data processing system for monitoring and saving quality data and machine states requires maximum performance.
  The powerful SIMATIC IPC847C in a control cabinet is used for quality assurance. Large-area display of production/quality data is possible using the SIMATIC HMI Net Panel with a 46-inch screen diagonal.

Application examples of SIMATIC IPCs in shipbuilding

Permanent vibrations, strong rolling on rough seas, and corrosive, salty climates – the electronics on ships is exposed to exceptionally harsh operating conditions. Most SIMATIC IPCs satisfy these requirements. They can therefore also be used for controlling ballast tank pumps, for example, to keep a ship level during loading and unloading.

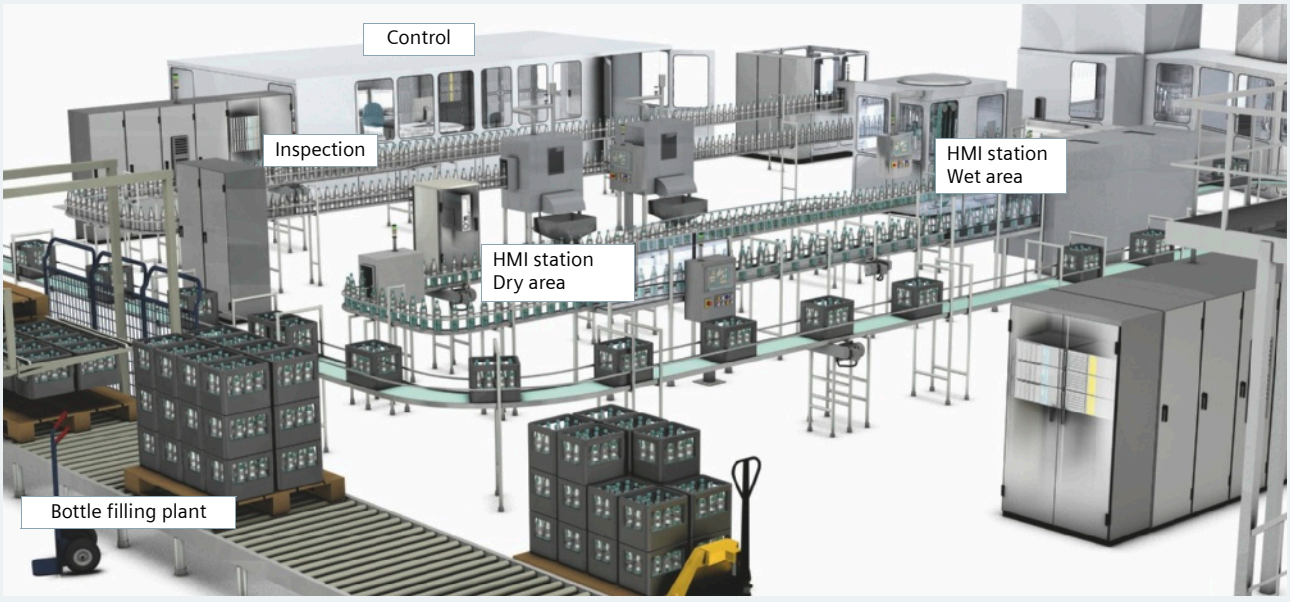
They have the following certificates/marine approvals:

- GL (Germanische Lloyd)
- BV (Bureau Veritas)
- LRS (Lloyds Register of Shipping)
- ABS (American Bureau of Shipping)
- DNV (Det Norske Veritas)
- NKK (Nippon Kaiji Kyokai)

The flat panel monitors also have RMRS approval

(Russian Maritime Register).

Application examples of SIMATIC IPCs in the food and beverages industry



Control room (MES level)

Large quantities of data have to be rapidly processed or visualized in the control room. The powerful SIMATIC IPC547D reliably handles visualization of the production line, display and recording of plant faults, recipe management, as well as the documentation of quality data.

Inspection

The SIMATIC IPC847C provides a high performance and, with up to 11 PCI/PCI-Express slots, high expandability for vision systems for fast inspection e.g. of bottles for faults, for positioning and printing of labels, or for level monitoring.

Plant monitoring and operation

- Wet area: HMI station
  The SIMATIC HMI IPC677C with WinCC visualization software and a stainless steel front is ideally suited to the wet area, e.g. for cleaning, filling and individual transportation of open bottles.
  Mounted on a gantry, it undertakes machine operation and monitoring, e.g. for visualizing faults or intervening for maintenance work.

- Dry area: HMI station
  The SIMATIC IPC627C reliably handles plant monitoring in the dry area as well as control of crate filling and transportation. A remote flat panel monitor connected up to 30 meters away permits plant monitoring on site.

More networking options with PROFINET onboard

For easy integration in PROFINET networks and consistently real-time-capable communication from the corporate management level down to the field level, the SIMATIC IPCs optionally offer PROFINET onboard. Real-time, IT communication as well as TCP/IP are thus possible on a single line.

The intelligent controller architecture with integrated 3-port switch facilitates the flexible and easy assembly of line or tree topologies. Integration of existing fieldbus systems, e.g. PROFIBUS, is supported.
The integrated PROFINET interface of SIMATIC IPCs can be used for:

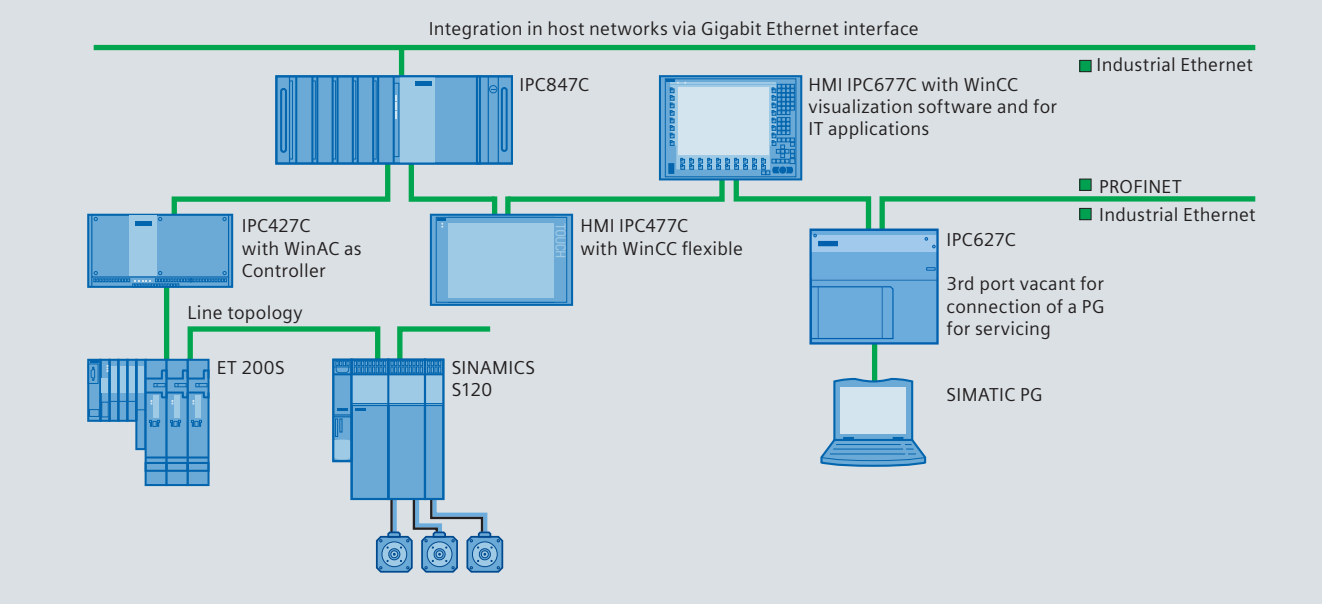
- Direct connection of distributed I/Os and drives, for example with WinAC RTX as controller
- Use as additional standard Windows interface via the integrated switch, e.g. for TCP/IP communication or visualization applications with WinCC.
- Use of the new functions, e.g. Shared Device, Media Redundancy Protocol (MRP)

Compared to conventional solutions, PROFINET reduces costs for the installation and integration of system components by 30 to 35%.

Advantages at a glance

- The PROFINET onboard interface saves one slot, which can be used for other PC cards
- The intelligent controller architecture with integrated 3-port switch (ERTEC 400) improves the PC system performance by reducing the processor load
- Full support of the software PLC WinAC RTX and the fail-safe variant WinAC RTX F
- Optimized integration of SIMATIC IPCs in PROFINET configuration (STEP 7 and NCM-PC)
- Efficient self-diagnostics via status LEDs for eased commissioning and diagnostics

Real-time communication
PROFINET offers scalable real-time communication RT and IRT for all requirements in automation. Real-Time (RT) is used for time-critical process data – i.e. for cyclical user data or event-controlled alarms. For this purpose, PROFINET uses an optimized real-time communication channel. Its performance exceeds that of conventional fieldbuses. For especially challenging applications, there is the hardware-supported real-time communication Isochronous Real-Time (IRT) – for example for motion control applications and high-performance applications in factory automation.



Easy integration of SIMATIC IPCs in PROFINET networks over the PROFINET interface with integrated 3-port switch

More quality, safety and environmental protection

Industrial PCs from Siemens offer maximum quality due to self-developed mainboards and innovative technologies for reliable continuous operation in an industrial environment. The units and even their mainboards are manufactured in Germany. They are tested at our in-house test center to ensure reliable compliance with all technical data and specifications.

Development quality
Our experienced development teams are pursuing a common goal: The fulfillment of all customer requirements on the basis of maximum quality standards, with high long-term availability and compatibility. For this purpose, for example, we implement two test runs with 40 prototypes each. These include, e.g.:
- Stress test for CPU, graphics, memory, drives, etc.
- Measurement and validation of all important signals

During the design phase, the thermal simulation allows for the construction of devices with an optimized heat dissipation concept.

Production quality
We audit our suppliers, for example, to ensure their qualification and thus the production of industrial PCs with maximum quality and consistently good properties. Furthermore, we produce in air-conditioned halls with consistent temperature/air humidity and store components in nitrogen.
Special test procedures are also used, e.g.:
- 100% x-ray test of the equipped PCB
- 100% testing of components and cables for functionality
- 100% run-in test: system test of all components, 36-hour heat test at 40 °C in climatic exposure test cabinet (this corresponds to a 6-week long-term test to avoid early failures).
- 100% final inspection of all manufactured devices

Together with the type tests which accompany series production, our customers receive products with 100% functionality which comply with all technical specifications.

Logistics quality
With a production capacity of over 100,000 PCs, our main logistics objective is the reliable adherence to delivery promises. Our uniform quality assurance concept ensures that our customers receive the product in the quality it was manufactured, e.g. by checking the packaging and transport quality.

Field quality
Maximum reliability of our SIMATIC IPCs in the field also requires optimum support during daily use. Regular inspection of the products from our production lines show that we not only observe and guarantee the CE and UL approvals, but also greatly exceed them.

Environmental protection
Environmental protection throughout the complete product lifecycle is ensured by the Siemens standard SN 36350-1 for environmentally-sound product design.

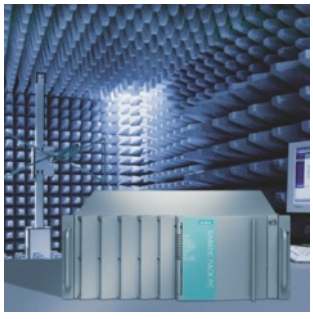
Production
Hazardous material is consistently listed in our production, environmentally-friendly alternatives are considered and replaced by new production procedures. All components and auxiliary material comply with the EU RoHS directives.

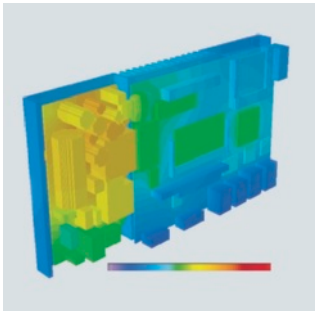
Packaging and logistics
SIMATIC IPCs are packaged and transported in an environmentally-friendly and resource-friendly way, e.g. through:
- Returnable or reusable transport packaging
- Any packaging materials can be completely recycled
- Fewer individual deliveries due to collective deliveries.

Operation
The long service life of SIMATIC IPCs reduces waste and the use of resources. Environmentally-friendly operation with low maintenance and energy costs are ensured by:
- Energy-saving mobile processors
- Fewer fans and hard disks
- Intel AMT and Wake-on-LAN functionality

Disposal
SIMATIC IPCs can be recycled and disposed of in an environmentally-friendly way, e.g. through:
- Recycling marks on metal enclosures/plastic parts
- Minimization or omitting composite material

SIMATIC IPC – See the quality
siemens.com/simatic-ipc-video-quality


EMC test


Thermal simulation


X-ray test


36-hour run-in test at 40 °C

More continuity and long-term availability

Production in Germany

Experience has shown: In-house production and development have a direct influence on the quality, and guarantee reliable compliance with the high SIMATIC quality standards.

Advantages at a glance

- We can control innovation steps more effectively and adjust them to the market requirements.
- Communication of the product roadmaps specifically and actively supports you as a user with the migration of your PC solutions.

SIMATIC IPCs are equipped with selected, high-quality brand components with a high MTBF (mean time between failures). The environmentally compatible devices comply with the RoHS and WEEE directives.

Competence leads to security

Thanks to our in-house development, we are able to comprehensively cater to your wishes and realize customer-specific requirements. All our development departments are made up of experts for every PC component with close contact to our supplier partners.

Long-lasting concepts

With SIMATIC IPCs you can implement long-term concepts thanks to:

- Availability of 4 to 6 years (at least 1.5 years for IPC547D)
- 5-year repair and spare parts service (IPC547D: 3 years) after expiry of the active marketing period

This results in a total service and support period of 9 – 11 years following market launch. Upon request, you can also be provided with systems permanently tailored to a specific application, so-called design freeze systems – complete and ready for operation.

Defined continuity

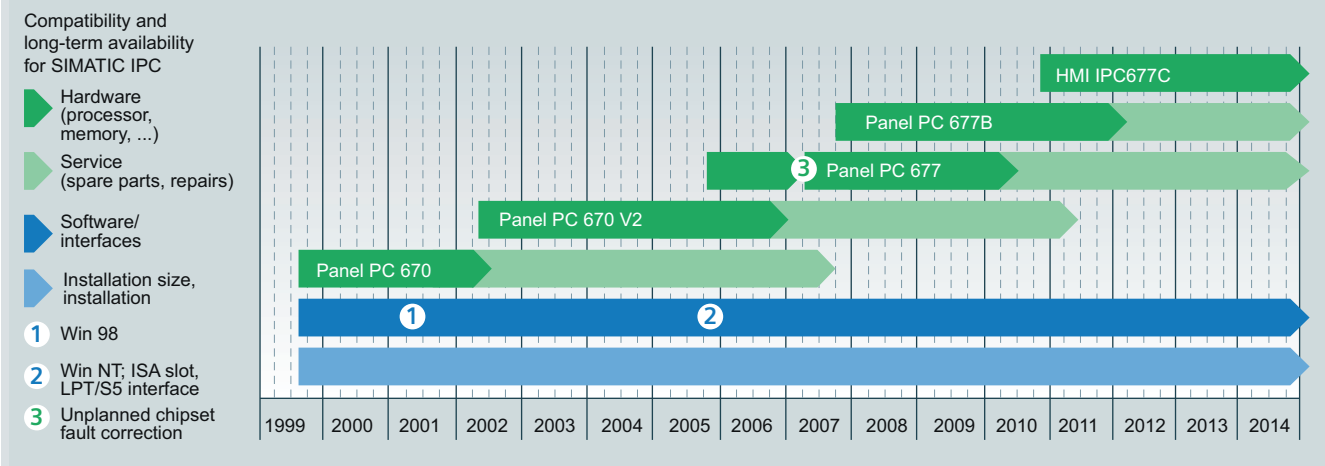
Already prior to the development of the mainboards, close coordination with the suppliers' roadmaps is ensured.

Hardware and software compatibility

If practical, the mechanical dimensions of SIMATIC IPCs are compatible with the design of their predecessors. Together with the high compatibility of the interfaces, this provides you with the additional advantage of easy and fast integration.

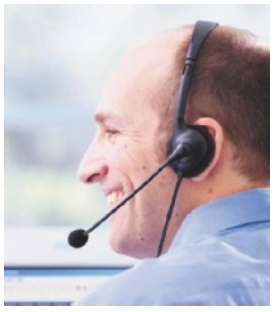
You can use your existing user software on a new device without program changes over several device generations.
You are still provided, e.g., with operating systems such as Windows XP, and can still even use modern software such as the SIMATIC IPC DiagMonitor under Windows 2000.

Within a device generation, SIMATIC IPCs offer a particularly high degree of image compatibility. This enables you to install the unchanged software image (operating system, drivers and application). This minimizes your adjustment expenditures.



SIMATIC IPCs offer maximum compatibility and long-term availability with a minimum 6-month overlapping period in case of innovations and new device generations, as well as a total service and support period of 9 – 11 years following market launch.

More service and support



Whoever uses an industrial PC from Siemens has a system which operates reliably round-the-clock on 365 days of the year. To make sure this remains so, we have established an appropriate service and support concept for fast and efficient help – not only for fault cases.

Global online support

Whether important technical documentation, comprehensive FAQs, tools and downloads, or newsletters – we provide you with quick help and support around-the-clock via the Internet, together with comprehensive expertise covering all sectors and application areas of SIMATIC IPCs.

Worldwide: 24-hour availability

The SIMATIC hotline is available 24 hours a day, 365 days a year. Our engineers offer ample experience in development, system commissioning and system tests, and incorporate the development and production departments in solving your problem. They can therefore assist you even with difficult cases.

Worldwide: Always within reach

Siemens has 36 repair centers in 29 countries, and subsidiaries in 190 countries. As a user, you are thus provided with the maximum of competent support – from PC repairs in our Repair Centers down to on-site servicing.

Service tool PED – Product Equipment Data

With the PED service tool, you can identify and manage device and component data of SIMATIC IPCs/PGs online and worldwide by means of standard Internet browsers.

Your advantages with PED

- Fast and exact determination of device data (e.g. delivery date, release version, hardware equipment, spare parts, etc.) at any time
- Support with device/system documentation (e.g. through printout of device information)

siemens.com/ped

Project support

You require support with the dimensioning and options of a PC-based automation project or even engineering support? Specifically for this purpose, Siemens has established PC-based Competence Centers in China, Germany, and Italy, with experts who closely cooperate with the development department and competently support you.

siemens.com/automation/partner

SIMATIC Rack PC

Flexible, powerful industrial PCs in 19" design

SIMATIC Rack PCs are flexible industrial PC systems in 19" design with high system availability for high-performance applications.

Suitable for horizontal and vertical[2] application, they facilitate the realization of manifold tasks:

- Measuring, open- and closed-loop control of industrial processes
- Visualization of production processes
- Image processing, e.g. within the scope of quality inspections
- Data acquisition and management, e.g. for recipe management
- Intelligent energy management
- Industrial server applications with the highest system performance/availability and data security

	IPC547D Maximum performance at an attractive price with 2nd gen. Intel Core processors	**IPC647C** Maximum compactness and industrial functionality with Intel Core processors	**IPC847C** Maximum expandability and industrial functionality with Intel Core processors
Available operating systems (preinstalled and activated)	Windows XP Professional / Windows 7 Ultimate (32/64-bit) / Windows Server 2008 (32-bit) / Server 2008 R2 (64-bit)		
Available memory media			
Installed internally (SATA HDD, SATA SSD)	500 GB or 1 TB, 50 GB SSD, RAID1 2 x 1 TB	–	250 GB, 50 GB SSD
Internally in vibration/shock absorb. hard disk support (SATA HDD)	–	250 GB, 500 GB, 2 x 500 GB, RAID1 2 x 500 GB	
Installed in swap frame (SATA HDD, SATA SSD, SAS)	500 GB, 2 x 500 GB, RAID1 2 x 1 TB, RAID5 3 x 1 TB, 50 GB SSD, RAID1 2 x 1 TB and 50 GB SSD	250 GB, 2 x 500 GB, RAID1 2 x 500 GB, RAID1 2 x 1 TB SAS[1], 50 GB SSD	250 GB, 2 x 500 GB, RAID1 2 x 500 GB, RAID5 3 x 500 GB, RAID1 2 x 1 TB SAS[1], RAID5 3 x 1 TB SAS[1], 50 GB
Networking options (onboard)	2 x Gigabit Ethernet	2 x Gigabit Ethernet; 1 x MPI/PROFIBUS (optional) 1 x PROFINET (3 ports, optional)	
Expandability with cards	4 x PCI, 1 x PCIe x8 (1 lane), 1 x PCIe x16 (4 lanes), 1 x PCIe x16	2 x PCI, 1 x PCI-Express x 16 or 1 x PCI, 1 x PCI-Express x 8 (4 lane), 1 x PCI-Express x16	7 x PCI, 1 x PCI-Express x16 or 3 x PCI-Express x4 7 x PCI, 1 x PCI-Express x16
Long-term availability			
Availability	At least 1.5 years	4 to 6 years	4 to 6 years
Repair and spare parts service	Additional 3 years	Additional 5 years	Additional 5 years
Industrial compatibility			
Shock / vibration / dust protection	1 *g* / 0.2 *g* / ■	5 *g* / 0.5 *g* / ■	5*g* / 0.5 *g* / ■
Ambient temperature in operation	5 ... 40 °C	5 ... 50 °C	5 ... 50 °C
Options for increased system availability			
RAID configurations (RAID1/RAID5)	■ / ■	■ / –	■ / ■
RAID controller (onboard / PCIe x8)	■ / –	■ / ■	■ / ■
Diagnostics software: DiagMonitor	■	■	■
Remote access (Intel AMT)	■	■	■
Redundant power supply (AC)	■	■	■
Backup software Image & Partition Creator	■	■	■

[1] Hardware RAID controller with Zero-Maintenance Cache Protection Module (ZMM)

[2] IPC547D and IPC847C

SIMATIC IPC547D – Maximum performance at an attractive price with 2nd generation Intel Core processors

SIMATIC IPC547D is a high-performance industrial PC in 19" format (4 HU). It offers maximum computing, system and graphics performance for high-speed processing of large volumes of data, e.g. in industrial image processing or process visualization at ambient temperatures up to 40 °C.

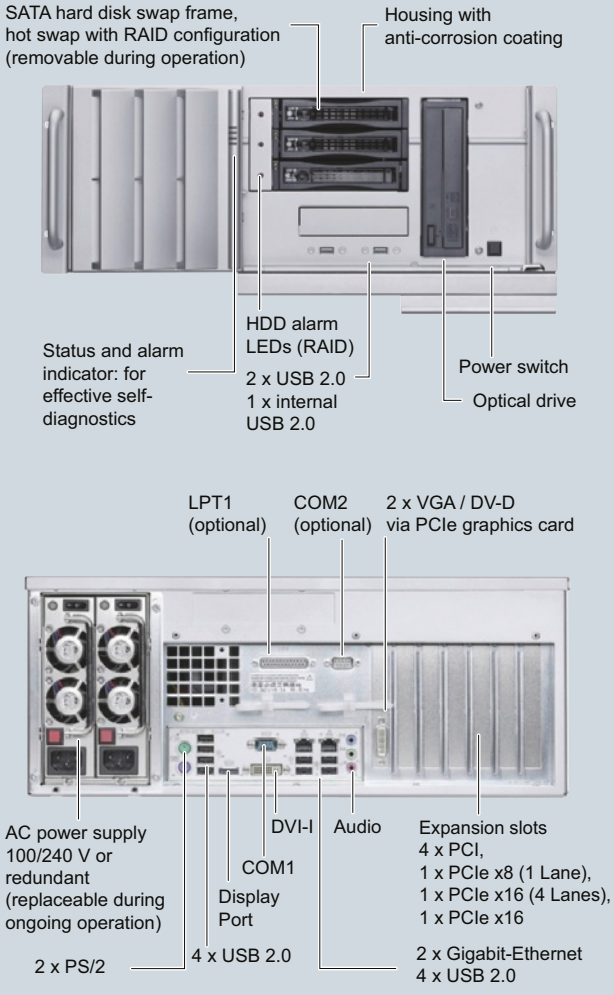
With its 7 spare PCI/PCIe slots for long extension cards, it has a flexible expansion capability:

- 4 x PCI
- 1 x PCIe x8 (1 lane), 1 x PCIe x16 (4 lanes), 1 x PCIe x16

SIMATIC IPC547D – Advantages:

- Maximum performance and fast system response:
  - Intel Core processors 2nd gen. (up to i7 with 4C/8T)
  - Powerful onboard HD graphics integrated into the CPU
  - DDR3 memory technology up to 32 GB
  - 64-bit operating systems Windows 7 and Windows Server 2008 R2
- Extremely high system availability and data security
  - RAID controller onboard for up to 3 hard disks in RAID 5 network in hot-swap frame
  - Solid-state Drive (SSD) with 50 GB (High Endurance)
  - Redundant power supply (hot-swap)
  - Front LED display for efficient diagnosis of temperature, fan and hard disks in the RAID network
- Remote access via Intel AMT (see page 37)
- High data transmission rates and redundancy thanks to two teaming-capable Intel Gigabit Ethernet connections
- Multi-monitoring with up to 4 monitors via optional PCI-Express x16 graphics card and onboard graphics
- 11 x Hi-Speed USB 2.0 ports, two of which on the front and one internal port with optional locking, e.g. for a software dongle
- Wake-on-LAN functionality for timed start-up from a central point, over the network
- High-quality industrial design:
  - Full-metal enclosure with high electromagnetic compatibility
  - High level of dust protection and low noise generation through fan-controlled overpressure ventilation

SIMATIC IPC547D: Connections and Expansions



With the optional tower kit, the IPC547D can be converted for use as an industrial workstation or server in control rooms and technical offices.
The minimal enclosure depth enables space-saving installation in 19" cabinets of 500 mm depth and above.

SIMATIC IPC647C – Maximum compactness and industrial functionality with Intel Core processors (i7, i5, i3)

The SIMATIC IPC647C is a rugged and extremely compact industrial PC in 19" design (2 HU). It is particularly suitable for space-saving implementation of fast computing and visualization tasks, e.g. image and data processing or industrial server applications and shipbuilding. With a height of only 2 HU and a shallow mounting depth, it optimally utilizes the space in 19" standard control cabinets (from 500 mm).

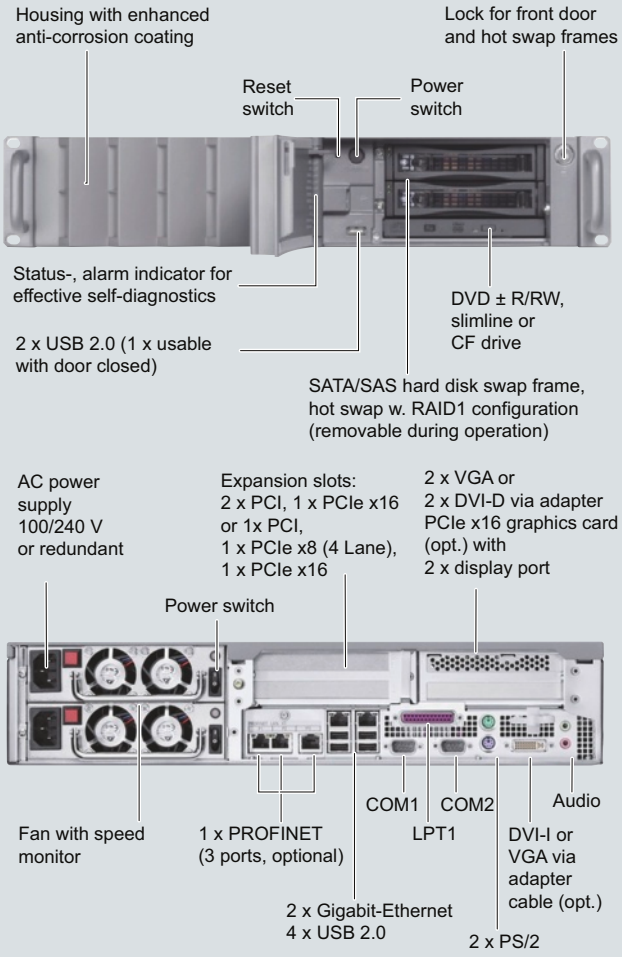
Despite its high compactness, it can be flexibly scaled and expanded due to three long slots:

- 2 x PCI, 1 x PCIe x16 or
- 1x PCI, 1x PCIe x8 (4 lane), 1x PCIe x16

SIMATIC IPC647C/847C –
One platform, many advantages:

- High performance and extremely fast system response:
  - Intel Core processors (i7, i5, i3)
  - Powerful onboard HD graphics integrated into the CPU
  - DDR3 memory technology
- Maximum system availability and data security
  - RAID controller onboard or hardware RAID SAS controller (PCIe x8)[1)] with 1 TB SAS HDD
  - Solid-state Drive (SSD) with 50 GB (High Endurance)
  - ECC RAM, work memory with error correction
  - Redundant power supply (hot-swap)
- Remote access via Intel AMT (see page 37)
- Optional PROFIBUS or PROFINET interface with three ports for cost-effective connection of distributed field devices or to couplings with SIMATIC S7
- High data transmission rates and redundancy thanks to two teaming-capable Gigabit Ethernet connections
- Multi-monitoring with up to 4 monitors via optional PCI-Express x16 graphics card and onboard graphics
- DVI-VGA adapter for analog monitor (optional)
- 7 x Hi-Speed USB 2.0 ports, two of which on the front and one internal port, e.g. for a software dongle
- Energy-efficient industrial PCs:
  - Low power consumption thanks to the latest mobile technology
  - Wake-on-LAN functionality for timed start-up of the IPCs from a central point, over the network

SIMATIC IPC647C: Connections and Expansions



Special features of SIMATIC IPC647C/847C:

Innovative USB interface concept: This enables a USB flash drive inserted into the internal interface or at the front to be operated with the door closed, e.g. as software dongle. This offers considerable protection against misuse, also for the drives, On/Off buttons and Reset buttons that are accessible from the front.

Front LED display for efficient self-diagnostics, e.g. for simple identification of a faulty hard disk in the RAID group by HDD1, HDD2 or HDD3 ALARM (IPC847C).

1) Zero-Maintenance Cache Protection Module

SIMATIC IPC847C – Maximum expandability and industrial functionality with Intel Core processors (i7, i5, i3)

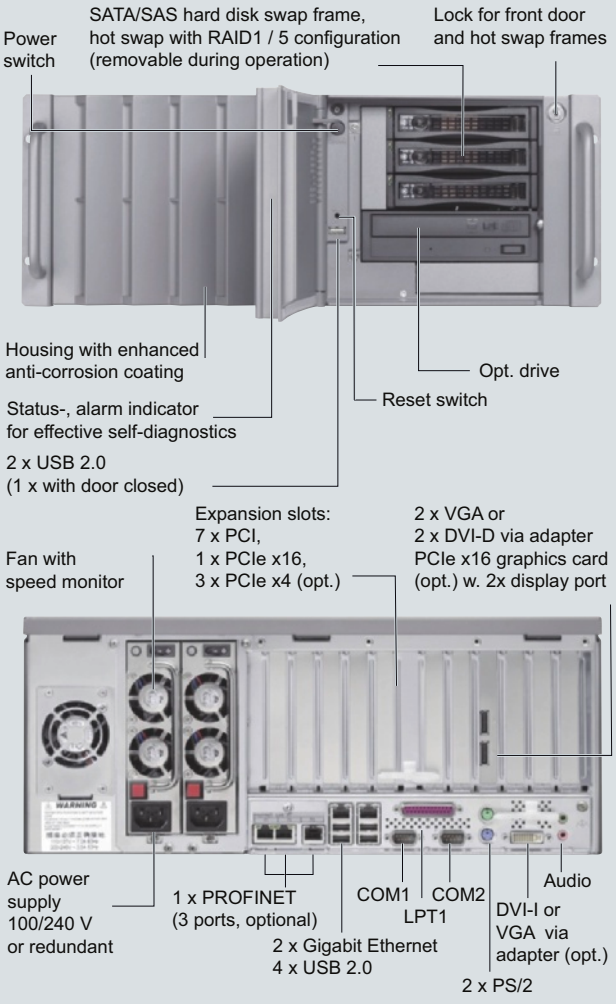
The SIMATIC IPC847C is a rugged and extremely expandable industrial PC in 19" design (4 HU).
It offers high investment protection thanks to outstanding long-term availability and ensures reliable operation in particularly harsh industrial environments, e.g. with high dust, temperature and shock loads.

Due to its high computing power and PCI-Express technology, the IPC847C is the perfect platform for high-performance applications, for example in measuring systems, test bays, or industrial image processing applications or server applications.

The SIMATIC IPC847C is extremely flexible and expandable due to its 8 or optionally 11 free PCI/PCI-Express slots:
- 7 x PCI, 1 x PCIe x16 or
- 7 x PCI, 1 x PCIe x16 and 3 x PCIe x4

SIMATIC IPC647C and IPC847C can be flexibly implemented thanks to:
- Minimal housing depth for space-saving installation in 19" control cabinets of 500 mm depth and more
- Removable 19" brackets for use as desktop IPC, as well as an optional tower kit for the IPC847C (see page 48)
- Preparation for telescopic rail mounting for service-friendly installation in the control cabinet

SIMATIC IPC847C: Connections and Expansions



Options for industrial server applications

NEW

Maximum system performance/availability and data security:

- SAS hard disks with 1 TB in RAID1/5 configuration in hot-swap frame
- Hardware RAID controller (PCIe x8) with Serial Attached SCSI (SAS) and Zero-Maintenance Cache Protection Module (ZMM)
- Monitoring of the redundant power supply (each module) and the SAS hard disks / hardware RAID controller using the SIMATIC IPC DiagMonitor diagnostics software
- 64-bit operating system Windows Server 2008 R2

- Rugged, with long-term availability and identical performance features, the same footprint, and installation, interface and software compatibility.
- High-quality industrial design:
  - Vibration and shock-absorbing hard disk holder
  - Reliable dust protection and low noise due to fan-controlled pressurized cooling
- Easy servicing:
  - Front fan can be replaced without tools
  - Only one screw needs to be removed to quickly open the enclosure
  - Hard disks and power supply unit can be replaced during operation
- Additional internal USB interface for protection against unauthorized removal of a USB flash drive, e.g. for a software dongle.

SIMATIC Box PC

Compact and rugged industrial PCs for universal applicability

SIMATIC Box PCs are particularly rugged and reliable industrial PCs in compact design for universal installation in machines, control enclosures and control cabinets. They are characterized by high performance and low space requirements, ease of maintenance, as well as flexible mounting positions and assembly options.

From the ultra-compact and maintenance-free version for DIN rails, all the way to the IPC with high expansion capability and maximum performance, the compact Box PCs fulfill almost any requirements. Manifold tasks can be realized with the SIMATIC Box PCs:

- Measuring, open- and closed-loop control of process and machine data
- Industrial image processing with data acquisition and processing
- Decentralized visualization with SIMATIC Flat Panels

	IPC227D Nanobox PC with maximum flexibility – absolutely maintenance-free – optimized performance – with Intel Atom processors	**IPC427C** Powerful embedded industrial PC – ultra-compact and maintenance-free – with Intel Core2 Duo processors
Available operating systems (preinstalled and activated)	Windows Embedded Standard 7 / Windows Embedded Standard 2009 / Windows 7 Ultimate / XP Professional	Windows Embedded Standard 7 / Windows Embedded Standard 2009 / Windows 7 Ultimate / XP Professional
Available storage media (SATA HDD, SATA SSD, CF Drive)	HDD 250 GB; SSD 50 GB (High Endurance); SSD 80 GB (standard) 1 x CFC up to 16 GB (can be replaced from the outside)	HDD 250 GB; SSD 50 GB (High Endurance); SSD 80 GB (standard) 1 x CFC up to 16 GB (can be replaced from the outside), second CFC up to 16 GB internally
Networking options (onboard)	2 x Gigabit Ethernet 1 x PROFINET with RT (via standard Ethernet)	2 x Gigabit Ethernet [1] 1 x MPI/PROFIBUS (optional) 1 x PROFINET (3 ports, optional)
Expandability with cards	1 x PCIe (optional)	Up to 3 x PCI-104 (with expansion frame)
Integrated retentive memory	MRAM 512 MB (optional), 128 KB of which usable for WinAC	Battery-backed SRAM 2 MB, 128 KB of which usable for WinAC
Long-term availability		
Availability	4 to 6 years	4 to 6 years
Repair and spare parts service	Additional 5 years	Additional 5 years
Industrial compatibility		
Shock/vibration	15 *g* / 1*g*	15 *g* / 1*g*
Ambient temperature during operation	0 ... 50 °C	0 ... 55 °C
Options for increased system availability		
Mirror disk technology (RAID1)	–	–
Diagnostics software: DiagMonitor	■	■
Remote access (Intel AMT)	–	–
Backup software: Image & Partition Creator	■	■

[1] With PROFINET onboard 1 x Ethernet

Flexible installation positions and mounting options

SIMATIC Box PCs are optimized for flexible implementation in confined spaces in the switching cabinet and directly at the machine:

- For easy installation and fast cabling, all the interfaces are accessible from one side
- Versatile mounting possibilities and installation positions with retention of assured characteristics, such as ambient temperatures up to 55 °C:
  - Mounting on standard rails without tools (IPC227D/427C)
  - Flexible wall mounting with interfaces above or below
  - Space-saving portrait mounting with a small footprint
  - Side mounting with the smallest space requirement

➜ *More details on page 48.*

	IPC627C Maximum performance in a minimum of space with Intel Core processors	**IPC827C** Maximum performance and expansion capability with Intel Core processors
Available operating systems (preinstalled and activated)	Windows 7 Ultimate (32 and 64-bit) / Windows XP Professional / Windows Embedded Standard 2009	Windows 7 Ultimate (32 and 64-bit) / Windows XP Professional / Windows Embedded Standard 2009
Available storage media (SATA HDD, SATA SSD, CF Drive)	HDD 250, 500 GB; 2 x 250 GB; SSD 50 GB (High Endurance); RAID1, 2 x 250 GB; 1 x CFC up to 8 GB, second internal CFC up to 8 GB optional	HDD 250, 500 GB; 2 x 250 GB; SSD 50 GB (High Endurance); RAID1, 2 x 250 GB; 1 x CFC up to 8 GB, second internal CFC up to 8 GB optional
Networking options (onboard)	2 x Gigabit Ethernet 1 x MPI/PROFIBUS (optional) 1 x PROFINET (3 ports, optional)	2 x Gigabit Ethernet 1 x MPI/PROFIBUS (optional) 1 x PROFINET (3 ports, optional)
Expandability with cards	2 x PCI or 1 x PCI and 1 x PCIe x16	3 x PCI, 1 x PCIe x4 and 1 x PCIe x16
Integrated retentive memory	Battery-backed SRAM 2 MB, 128 KB of which usable for WinAC	
Long-term availability		
Availability	4 to 6 years	4 to 6 years
Repair and spare parts service	Additional 5 years	Additional 5 years
Industrial compatibility		
Shock/vibration	5 *g* / 1*g*	5 *g* / 1*g*
Ambient temperature during operation	5 ... 55 °C	5 ... 55 °C
Options for increased system availability		
Mirror disk technology (RAID1)	■	■
Diagnostics software: DiagMonitor	■	■
Remote access (Intel AMT)	■	■
Backup software: Image & Partition Creator	■	■

SIMATIC IPC227D – Nanobox PC with maximum flexibility – absolutely maintenance-free – power-optimized with Intel Atom

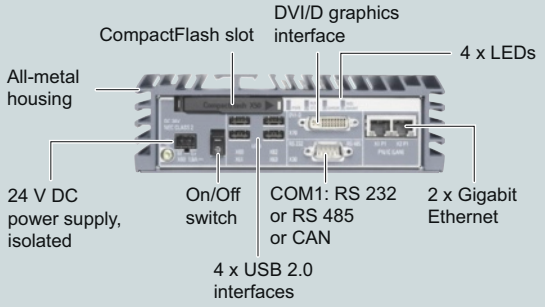
The Nanobox PC SIMATIC IPC227D is a particularly compact and flexible embedded industrial PC. It is power-optimized with Intel Atom processors of the latest generation E6x0 and is suitable for implementing simple open-loop control, data collection or communication tasks.

The Nanobox PC SIMATIC IPC227D received the coveted iF product design award for its innovative product design.

SIMATIC IPC227D – Advantages:

- Low power consumption:
  - Intel Atom processors E6x0 (power-optimized)
  - Integrated 24 V industrial power supply
  - Wake-on-LAN functionality for timed start-up from a central point, over the network
- Extremely high system availability and data security
  - Solid-state drive (SSD) with 50 GB (High Endurance), 80 GB (standard) or CompactFlash Drive
  - 512 KB non-volatile retentive memory (opt.)
  - Front LED display for efficient self-diagnostics
  - Pre-installed local diagnostics software
- High data transfer rates and redundancy thanks to two teaming-capable Gigabit Ethernet connections, one of which can optionally be used as a PROFINET interface with real-time functionality
- High degree of flexibility for interfaces and expansions
  - 4 x Hi-Speed USB 2.0 ports
  - 1 x RS232 optionally also as RS485 or CAN
  - 1 x PCIe slot (optional)
  - or 3 x additional serial interfaces (opt.)
  - or 4 x digital inputs and outputs, 24 V DC (opt.)
- High-quality industrial design for continuous use round-the-clock at ambient temperatures up to 50 °C:
  - Absolutely maintenance-free, no hard disk, no fan, and operation without a battery is possible
  - Full-metal enclosure with high electromagnetic compatibility
  - High resistance to vibration and shock
  - Dust protection
  - CE, UL, shipbuilding approvals

SIMATIC IPC227D: Connections and Expansions



COM option
additional: COM2-4: RS 232

IO option
additional: 4 x dig. IN /
4 x dig. OUT, 24 V

PCIe option
additional: extension slots
1 x PCIe (x1)

With a housing volume of approximately one liter and compact dimensions of 191 x 100 x 60 mm (W x H x D), the Nanobox PC SIMATIC IPC227D fits in small control boxes, as well as directly in a machine or the machine stand. All its interfaces are on one side, so the device can be cabled up easily. It can be installed with considerable versatility in four different mounting variants: standard rail, wall, portrait and side mounting.

➜ *More details on page 48.*

The SIMATIC IPC227D is also available as a compact Nanopanel PC SIMATIC IPC277D with brilliant widescreen displays of 7" upwards.

➜ *More details on page 28.*

The Nanobox PC with long-term availability is configurable online and is supplied with a preinstalled and activated operating system. For fast commissioning, turnkey bundles are offered complete with visualization and/or control software.

➜ *More details on page 46.*

SIMATIC IPC427C – Powerful embedded industrial PC – ultra-compact and maintenance-free with Intel Core2 Duo processors

The Microbox PC SIMATIC IPC427C is the high-performance embedded industrial PC for standard rail, wall or portrait mounting and optimally suited for the space-saving implementation of high-speed measuring, open-loop control, closed-loop control, HMI and communication tasks, e.g., directly in the machine or on ships.

For high performance in maintenance-free continuous operation 24 hours a day at ambient temperatures of up to 55 °C it is equipped with:

- Intel processors up to Core2 Duo
- DDR3 memory technology up to 4 GB
- Intel GMAX4500 Graphics Media Accelerator
- Solid-state drive (SSD) 50 GB (High Endurance) or 80 GB (standard) and CF cards

Three PCI-104 expansion slots and a multitude of interfaces make it universally applicable.

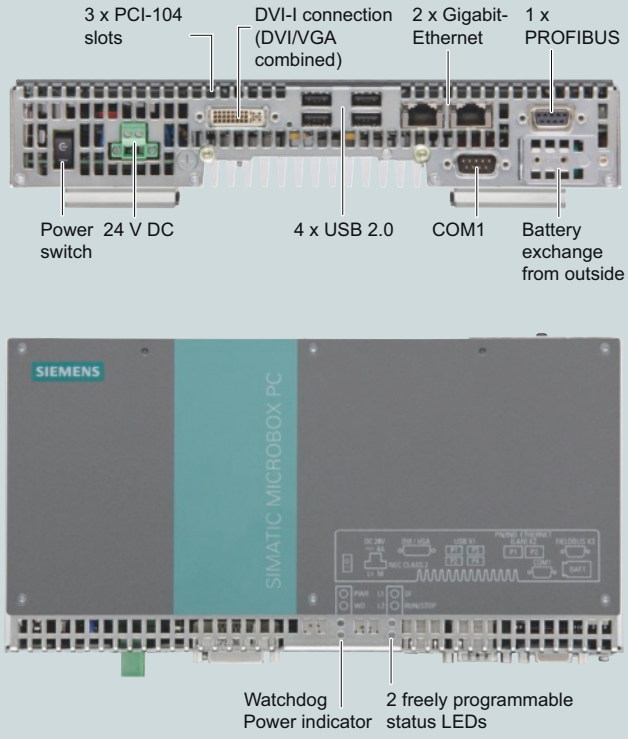
- Two Gigabit Ethernet connections (teaming-capable) for flexible communication with the control and field levels.
- Four USB 2.0 interfaces and an optional PROFIBUS connection or a PROFINET interface with three ports for high adjustability and flexibility for measuring and open-loop and closed-loop control tasks.

Its components such as PCI-104 modules (optional), battery, RAM or CompactFlash card can easily be replaced when installed. It offers increased system availability through:

- Integrated monitoring functions for bulk storage, battery, temperature and program execution
- Front-side LED solution for efficient self-diagnostics, e.g. for the status display of critical operating states
- Integrated power supply with electrical isolation and mains failure bridging.

Process data can be reliably saved in the event of a power failure thanks to a battery-backed SRAM.

SIMATIC IPC427C: Connections and Expansions



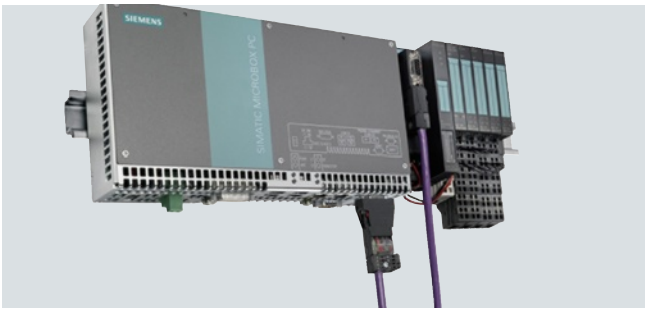
The IPC427C is also available as a compact HMI IPC477C with brilliant displays.

➜ *More details on page 29.*

The SIMATIC IPC427C can be easily and flexibly expanded with a central I/O. Turnkey systems with pre-installed software are available as embedded bundles for PC-based Automation.

➜ *More details on pages 46/47.*

With the front portrait assembly kit, the IPC427C is attached to the mounting wall with its smallest surface and thus saves valuable mounting space (at ambient temperatures of up to 50 °C). When using the kit, the user interfaces are arranged on the front for improved user-friendliness.



The SIMATIC IPC427C can be easily snapped onto a DIN rail, e.g. in combination with an ET 200S

Further mounting options:

- Portrait assembly with interfaces arranged on the bottom/top
- Wall mounting with brackets

SIMATIC IPC627C – Maximum performance in a minimum of space with Intel Core processors

The Box PC SIMATIC IPC627C impresses users with its high compactness and performance.

It is suitable for demanding measuring, open-loop and closed-loop control tasks at ambient temperatures of up to 55 °C and can be used in shipbuilding.

NEW The Box PC SIMATIC IPC627C is now available optionally with UL certification Class I / Division 2 for operation in potentially explosive atmospheres, for example, in the oil and gas or petrochemical industry.

Despite its compact design, it can be flexibly scaled and expanded due to two slots:

- 2 x PCI or
- 1 x PCI and 1 x PCIe x16

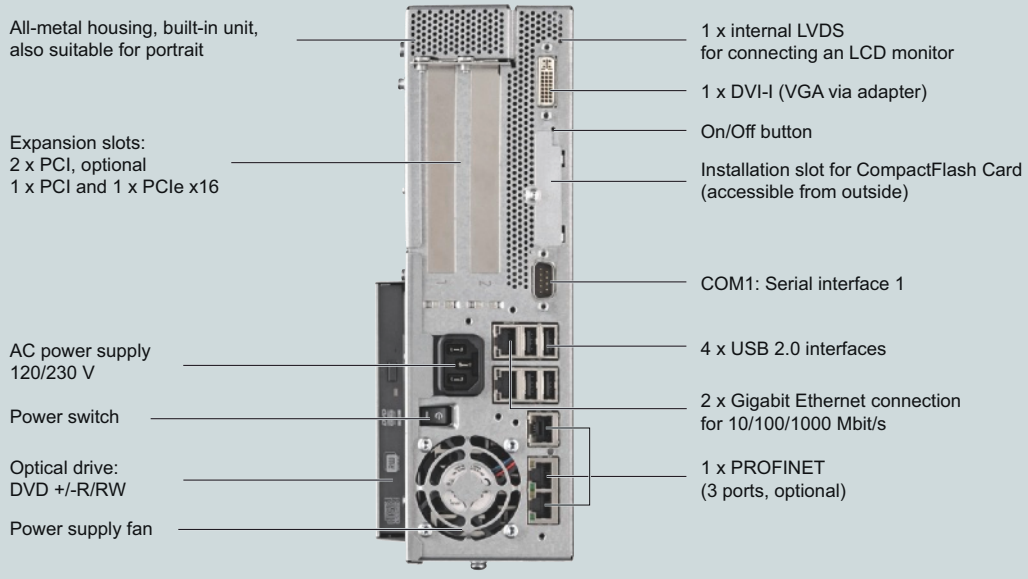
It is also available as a compact HMI IPC677C with brilliant displays for operator control and monitoring applications.

➜ *More details on page 31.*

SIMATIC IPC627C/IPC827C –
One platform, many advantages:

- High performance and extremely fast system response:
  - Intel Core processors (i7, i3)
  - Powerful onboard HD graphics integrated into the CPU
  - DDR3 memory technology
- Extremely high system availability and data security thanks to
  - RAID controller onboard
  - Solid-state Drive (SSD) with 50 GB SATA, High Endurance)
  - ECC RAM, work memory with error correction
- Remote access via Intel AMT (see page 37)
- Optional PROFIBUS or PROFINET interface with three ports for cost-effective connection of distributed field devices or to couplings with SIMATIC S7
- High data transmission rates and redundancy thanks to two teaming-capable Gigabit Ethernet connections
- 4 x Hi-Speed USB 2.0 ports
- Energy-efficient industrial PCs:
  - Low power consumption thanks to the latest mobile technology
  - Wake-on-LAN functionality for timed start-up of the IPCs from a central point, over the network, e.g. after a shutdown weekend.

SIMATIC IPC627C: Connections and Expansions



SIMATIC IPC827C – Maximum performance and high expansion capability with Intel Core processors

The SIMATIC IPC827C Box PC is a rugged and flexibly expandable control cabinet PC for machine-level use in 24-hour continuous operation at ambient temperatures of up to 55 °C.

Flexible scaling and expansion thanks to five slots:
- 3 x PCI
- 1 x PCIe x16
- 1 x PCIe x4

For configuring low-maintenance systems and also those without a hard disk, the IPC827C is equipped with:
- a CompactFlash drive slot easily accessible from the outside, and
- Solid-state drive with 50 GB (SATA, High Endurance).

Features of SIMATIC IPC627C and IPC827C:

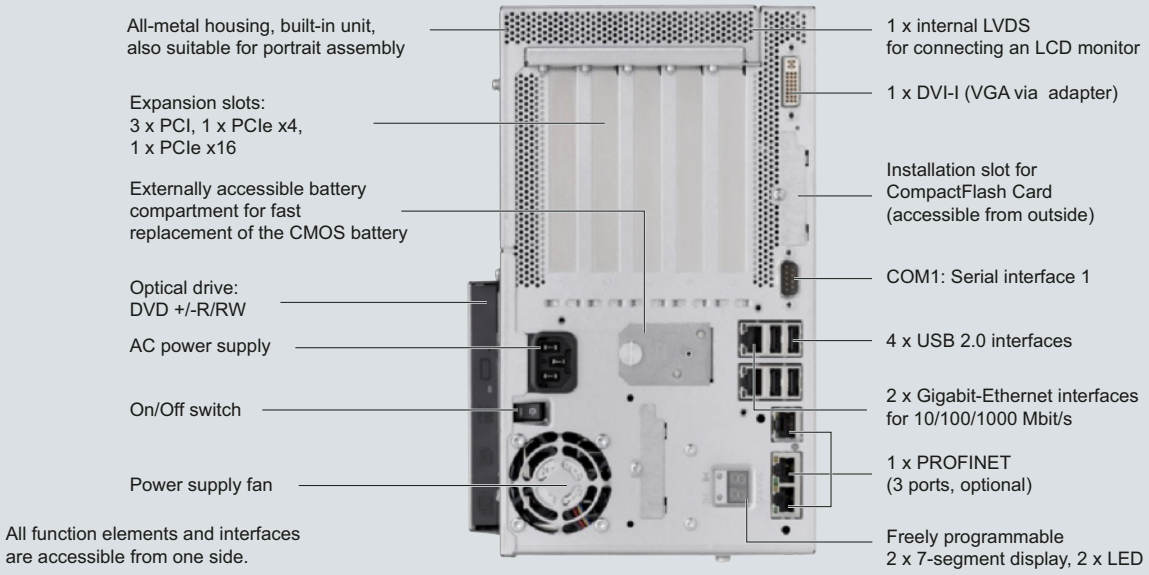
- Rugged with long-term availability and the same footprint
- High-quality industrial design with vibration/ shock-absorbing hard-disk holders
- Fast diagnostics of the operating state and display of the BIOS start procedure by means of two freely programmable 7-segment displays with two additional status LEDs, e.g. for acknowledgements during data transmission.

- Fast replacement of the CMOS battery even when installed due to externally accessible battery compartment.

- Flexible installation in control cabinets with a high level of user friendliness with guaranteed properties, such as 55 °C ambient temperature, due to front/book assembly kit and mounting brackets. All function elements can therefore be accessed from the front.

➜ *More details on page 48.*

SIMATIC IPC827C: Connections and Expansions

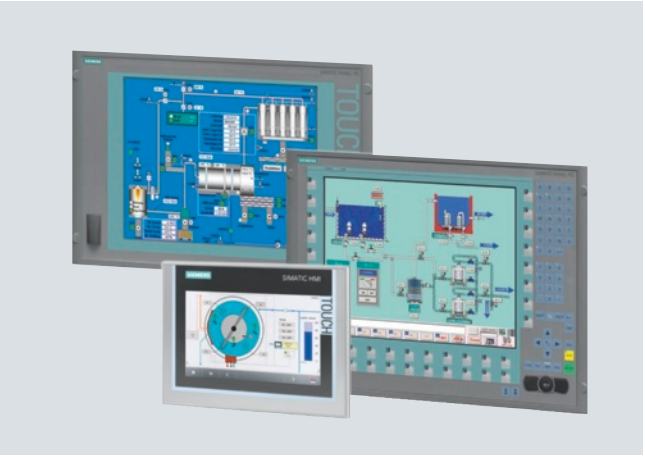


SIMATIC Panel PC

Rugged and powerful industrial PCs with brilliant displays

SIMATIC Panel PCs demonstrate their great strengths in machine-level operation and monitoring applications and master further tasks as powerful industrial PCs: Open- and closed-loop control, data processing and motion control are just a few examples.

Thanks to their rugged design, SIMATIC Panel PCs are ideally suited for production processes in harsh industrial environments. Operation via the touch screen or membrane keyboard meets all requirements in this application area.
The rugged fronts (IP65) are equipped with luminous displays in different sizes. USB interfaces on the front facilitate start-up and service.
Panel PCs of different performance classes feature the same installation dimensions, which enables you to respond flexibly to changing requirements any time.



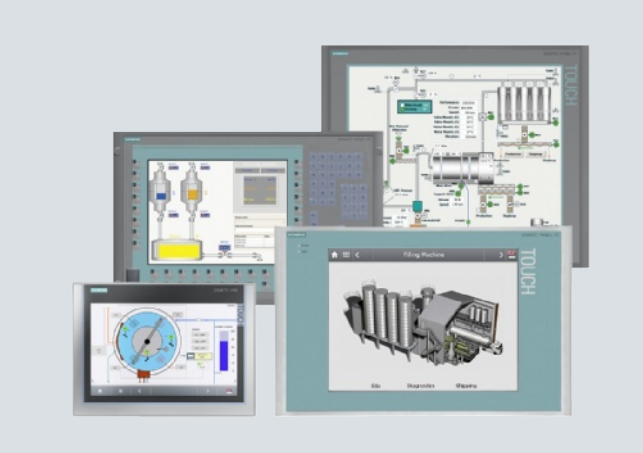
	IPC277D Nanopanel PC – absolutely maintenance-free – optimized performance with Intel Atom processors	**HMI IPC477C** [1] Compact, rugged and maintenance-free in embedded technology with Intel Core2 Duo processors
Available operating systems (preinstalled and activated)	Windows Embedded Standard 7 / Windows Embedded Standard 2009 / Windows 7 Ultimate / Windows XP Professional	Windows Embedded Standard 7 / Windows Embedded Standard 2009 / Windows 7 Ultimate / Windows XP Professional
Available storage media (SATA HDD, SATA SSD, CF Drive)	SSD 50 GB (High Endurance); SSD 80 GB (standard); 1 x CFC up to 16 GB (can be replaced from the outside)	SSD 50 GB (High Endurance); SSD 80 GB (standard); 1 x CFC up to 16 GB, second CFC up to 16 GB can be replaced from the outside
Networking options (onboard)	2 x Gigabit Ethernet 1 x PROFINET with RT (via standard Ethernet)	2 x Gigabit Ethernet [2] 1 x MPI/PROFIBUS (optional) 1 x PROFINET (3 ports, optional)
Expandability with cards	–	–
Integrated retentive memory	MRAM 512 KB (optional), 128 KB of which usable for WinAC	Battery-backed SRAM 2 MB, 128 KB of which usable for WinAC
Mounting depth	From 66 mm	Above 62 mm
Long-term availability		
Availability	4 to 6 years	4 to 6 years
Repair and spare parts service	Additional 5 years	Additional 5 years
Industrial compatibility		
Shock/vibration	5*g* / 1*g*	5*g* / 1*g*
Ambient temperature	0 ... 50 °C	0 ... 50 °C
Options for increased system availability		
Mirror disk technology (RAID1)	–	–
Diagnostics SW: DiagMonitor	■	■
Remote access (Intel AMT)	–	–
Backup software: Image & Partition Creator	■	■

1) Device also available with all-round IP65 protection
2) With PROFINET onboard 1 x Gigabit Ethernet

SIMATIC Panel PCs are equipped with innovative HMI fronts with high resolution and a wide viewing angle for brilliant, highly accurate display, better readability and a high degree of operating comfort.

They offer a high level of flexibility in the choice of:

- Widescreen displays from 7" Touch with up to 40% more visualization area
- Widescreen devices can also be installed upright
- 4:3 displays with 12" and 15" Touch/Key and 19" Touch
- Stainless steel front with 15"
- All-round protection to IP65 with 15" or 19"
- Variants for hazardous areas, and with high luminosity for use in daylight conditions (see page 35)
- Special energy-saving variants with continuously dimmable backlighting



Devices are also available in individual, customer-specific designs for special requirements (see page 49).

	HMI IPC577C Industrial functionality at an attractive price with Intel Core2 Duo processors	**HMI IPC677C** Maximum performance and flexibility with Intel Core processors
Available operating systems (preinstalled and activated)	Windows Embedded Standard 7 / Windows Embedded Standard 2009 / Windows 7 Ultimate / Windows XP Professional	Windows 7 Ultimate (32/64-bit) / Windows XP Professional / Windows Embedded Standard 2009
Available storage media (SATA HDD, SATA SSD, CF Drive)	HDD 250 GB; SSD 50 GB (High Endurance); SSD 80 GB (standard), 1 x CFC up to 8 GB can be replaced from the outside	HDD 250, 500 GB; 2 x 250 GB; SSD 50 GB (High Endurance); RAID1, 2 x 250 GB; 1 x CFC 8 GB, second CFC 8 GB (opt.)
Networking options (onboard)	2 x Gigabit Ethernet 1 x MPI/PROFIBUS (optional) 1 x PROFINET (3 ports, optional)	2 x Gigabit Ethernet 1 x MPI/PROFIBUS (optional) 1 x PROFINET (3 ports, optional)
Expandability with cards	1 x PCI	2 x PCI or 1 x PCI and 1 x PCIe x16
Integrated retentive memory	Battery-backed SRAM 2 MB, 128 KB of which usable for WinAC	
Mounting depth	From 84 mm (incl. DVD-R/W)	Above 104 mm
Long-term availability		
Availability	4 to 6 years	4 to 6 years
Repair and spare parts service	Additional 5 years	Additional 5 years
Industrial compatibility		
Shock/vibration	5 *g* / 0.5*g* [2]	5 *g* / 1*g*
Ambient temperature	5 ... 45 °C (or 5 ... 50 °C in installation space if max. 40 °C at the front) [3]	5 ... 50 °C [1]
Options for increased system availability		
Mirror disk technology (RAID1)	–	■
Diagnostics SW: DiagMonitor	■	■
Remote access (Intel AMT)	–	■
Backup software: Image & Partition Creator	■	■

1) The same conditions apply for the 19" versions as for the HMI IPC577C.

2) with CF or SSD: 5*g* / 1*g*

3) with CF or SSD: 5 ... 50 °C

SIMATIC IPC277D – Nanopanel PC
– absolutely maintenance-free – power-optimized with Intel Atom

SIMATIC IPC277D is equipped with brilliant touch displays of 7", 9", 12", 15" or 19" that can also be installed upright). Its rugged widescreen fronts offer more freely-configurable display area, high resolution and a large viewing angle. With backlighting that can be dimmed by 100%, it is suitable for high-luminescence display with low power consumption.

The IPC277D is also available as a compact Nanobox PC SIMATIC IPC227D with maximum flexibility for interfaces, expansions and mounting possibilities.

➜ *More details on page 22.*

The Nanopanel PC with long-term availability is configurable online and is supplied with a preinstalled and activated operating system. For fast commissioning, turnkey bundles are offered complete with visualization or control software.

➜ *More details on page 46.*

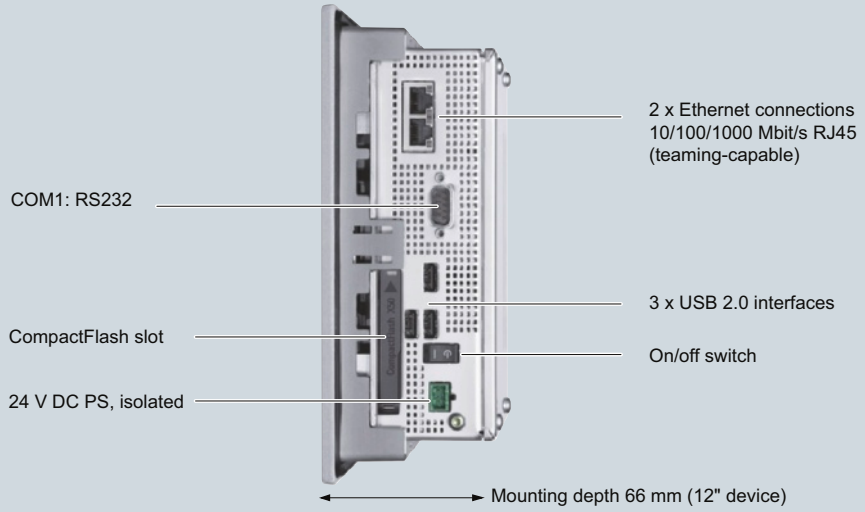
The Nanopanel PC SIMATIC IPC277D received the coveted iF product design award for its innovative product design.

SIMATIC IPC277D – Advantages:

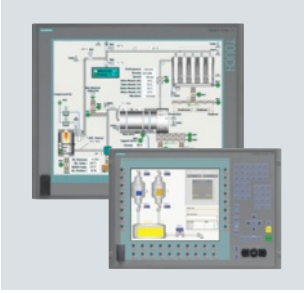
- High performance at low power consumption:
  - Intel Atom processors E6x0 (power-optimized)
  - Integrated 24 V industrial power supply
  - Wake-on-LAN functionality for timed start-up from a central point, over the network
- Extremely high system availability and data security
  - Solid-state drive (SSD) with 50 GB (High Endurance), 80 GB (standard) or CompactFlash Drive
  - 512 KB non-volatile retentive memory (opt.)
  - Preinstalled diagnostics software
- High data transfer rates and redundancy thanks to two teaming-capable Gigabit Ethernet connections, one of which can optionally be used as a PROFINET interface with real-time functionality
- High flexibility in terms of interfaces
  - 3 x Hi-Speed USB 2.0 ports
  - 1 x RS232
- High-quality industrial design for continuous use round-the-clock at ambient temperatures up to 50 °C:
  - Absolutely maintenance-free, no hard disk, no fan and operation without a battery is possible
  - High electromagnetic compatibility
  - High resistance to vibration and shock
  - CE, UL, shipbuilding approvals

SIMATIC IPC277D: Connections and expansions

Bottom view



SIMATIC HMI IPC477C – Compact, rugged, and maintenance-free in embedded technology, with Intel Core2 Duo processors



The SIMATIC HMI IPC477C in powerful Core2 Duo technology with high-performance graphics perfectly meets the requirements placed upon a rugged, maintenance-free and safe system: With its shallow mounting depth and display sizes of 12", 15", or 19", the operating portion of a machine can be precisely adjusted to the needs of the respective solution.

The SIMATIC HMI IPC477C can be used in shipbuilding and is also available with complete IP65 protection for mounting direct on a support bracket.

➜ *More details on page 34.*

It is also available as a compact Microbox PC SIMATIC IPC427C with high flexibility for interfaces, expansions and mounting possibilities.

➜ *More details on page 23.*

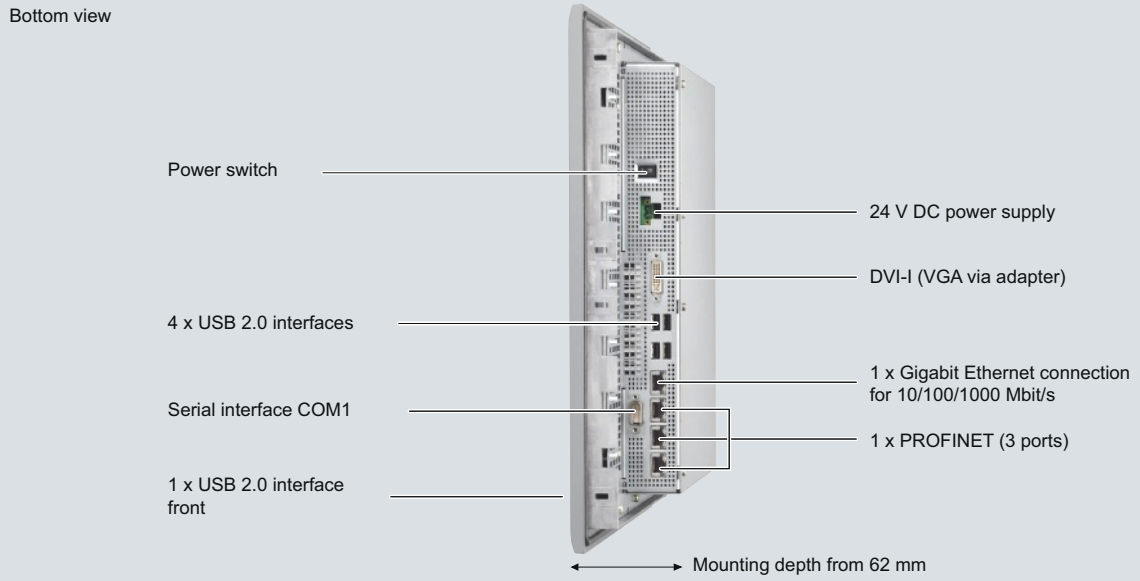
The HMI IPC477C with long-term availability is configurable online and is supplied with a preinstalled and activated operating system. For fast commissioning, turnkey bundles are offered complete with visualization or control software.

➜ *More details on page 46.*

SIMATIC HMI IPC477C – Benefits:

- High performance at low power consumption:
  - Intel Core2 Duo processors
  - Integrated 24 V industrial power supply
  - Wake-on-LAN functionality for timed start-up from a central point, over the network
- Extremely high system availability and data security
  - Solid-state drive (SSD) with 50 GB (High Endurance), 80 GB (standard) or up to two CompactFlash drives
  - 2 MB retentive memory (opt.)
  - Preinstalled diagnostics software
- High data transfer rates and redundancy
  - Two teaming-capable Gigabit Ethernet connections or
  - optionally also with a PROFIBUS interface onboard or
  - 1 x Gigabit Ethernet onboard and 1 x PROFINET interface
- High flexibility in terms of interfaces
  - 5 x high-speed USB 2.0 ports, one of which is arranged on the front
  - 1 x RS232
- High-quality industrial design for continuous use
- Round-the-clock up to 45°C ambient temperature:
  - Maintenance-free without hard disk, without fan
  - High electromagnetic compatibility
  - High resistance to vibration and shock
  - CE, UL, shipbuilding approvals

SIMATIC HMI IPC477C: Connections and expansions for the PROFINET version



SIMATIC HMI IPC577C – Industrial functionality at an attractive price with Intel Core 2 Duo processors

With its attractive price and tried-and-tested functionality, the SIMATIC HMI IPC577C is the ideal entry-level device into the class of industrial panel PCs.

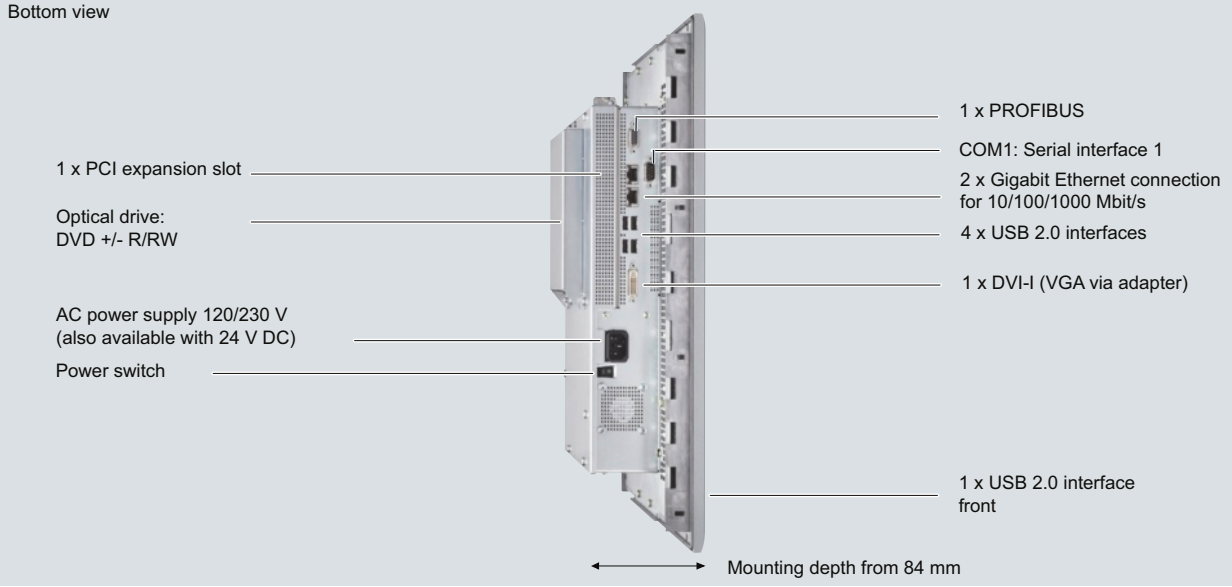
Thanks to its compact design with a spare PCI slot, the device can be expanded and still be used in confined space conditions in the control cabinet or control panel.

Due to the high level of electromagnetic compatibility, the HMI IPC577C is also suitable for use at machine level. It is operated via touch screen displays of 12", 15" and 19" or keyboard variants with 12" and 15" displays.

SIMATIC HMI IPC577C – Benefits:

- High performance and fast system response:
  - Intel Core processors (low voltage)
  - Main memory expansion up to 4 GB
  - DDR3 memory technology
- High system availability and data security
  - Solid-state drive (SSD) with 50 GB (SATA, SLC) or
  - CompactFlash drive, optionally in place of 250 GB hard disk
  - Preinstalled diagnostics software
- Optional PROFIBUS or PROFINET interface with three ports for cost-effective connection of distributed field devices or to couplings with SIMATIC S7
- High data transmission rates and redundancy thanks to two teaming-capable Gigabit Ethernet connections
- High flexibility in terms of interfaces
  - 5 x high-speed USB 2.0 ports, one of which is arranged on the front
  - 1 x RS232
  - 1 x PCI
- High-quality industrial design for continuous use
- Round-the-clock up to 50°C ambient temperature:
  - High electromagnetic compatibility
  - High resistance to vibration and shock
  - CE, UL approvals

SIMATIC HMI IPC577C: Connections and expansions for the PROFIBUS version



SIMATIC HMI IPC677C – Maximum performance and flexibility with Intel Core processors

SIMATIC HMI IPC677C is impressive as an open PC platform for harsh industrial conditions. Equipped with powerful Intel Core processors, it is ideally suited to demanding visualization tasks and for processing large volumes of data.

Despite its compact design, it can be flexibly scaled and expanded due to two slots:

- 2 x PCI or
- 1 x PCI and 1 x PCIe x16

The SIMATIC HMI IPC677C is equipped with brilliant displays in sizes 12", 15" or 19" with an attractive front design. Operation is realized via the touch screen or the keys.
A version without display is available as Box PC SIMATIC IPC627C.

➜ *More details on page 24.*

The HMI IPC677C is approved for shipbuilding.

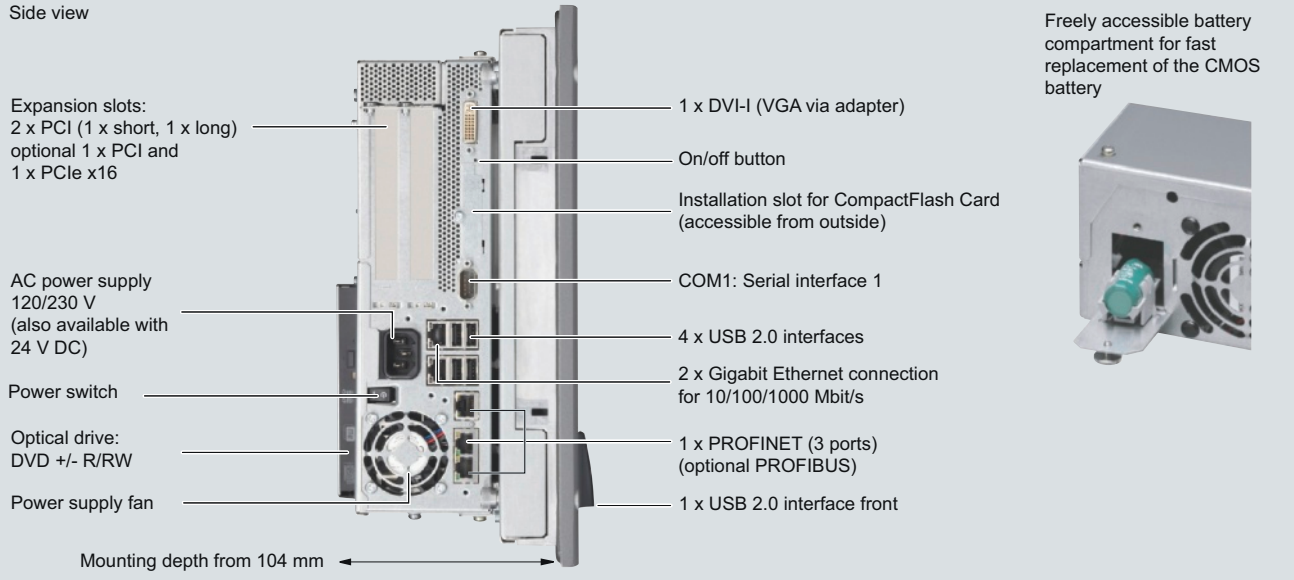
The 19" touch variant is now also available with explosion protection. An INOX variant with a 15" touch display is available for implementation in the food and beverages industry.

➜ *More details on page 34.*

SIMATIC HMI IPC677C – Benefits:

- High performance and extremely fast system response:
  - Intel Core processors (i7, i3) and main memory expansion up to 8 GB
  - Powerful onboard HD graphics integrated into the CPU
  - DDR3 memory technology
- Extremely high system availability and data security:
  - RAID controller onboard
  - Solid-state drive (SSD) with 50 GB (SATA, SLC)
  - ECC RAM, work memory with error correction
  - Retentive data memory for storing the process data after a voltage drop
- Remote access via Intel AMT (see page 37)
- Optional PROFIBUS or PROFINET interface with three ports for cost-effective connection of distributed field devices or to couplings with SIMATIC S7
- High data transmission rates and redundancy thanks to two teaming-capable Gigabit Ethernet connections
- 5 x high-speed USB 2.0 ports, one of which is arranged on the front
- Energy-efficient Industrial PC:
  - Low power consumption thanks to the latest mobile technology
  - Wake-on-LAN functionality for timed start-up of the IPC over the network, e.g. after a shutdown weekend.

SIMATIC HMI IPC677C: Connections and expansions for the PROFINET version



Distributed operator control and monitoring

with Flat Panel Monitors and Thin Clients

SIMATIC offers two different design concepts for industrial PC-based visualization and control solutions requiring a spatially divided setup of the operator panel and the industrial PC or server: SIMATIC Flat Panel Monitors for small-scale separated solutions over a distance of up to 30 meters and Industrial Thin Clients SIMATIC ITC, for single, or multiple operator stations, separated over unlimited distance over Industrial Ethernet.

SIMATIC Flat Panel Monitors – Distributed operation and monitoring with quick response times

SIMATIC Flat Panel Monitors are available as displays only, or with touch screen operation in sizes of 12", 15" and 19", as well as 12" and 15" with key operation.

The devices can be separated from the industrial PC at distances of up to 30 m via a DVI or VGA interface and offer quick response times for no-lag image refreshing, e.g. for inching or curve display. They are designed for operation at high levels of vibration or shock, as well as in dusty and humid atmospheres. The 19" devices are ATEX-certified and are approved for use in marine engineering.

Industry-compatible Flat Panel Monitors of 12", 15" and 19" with touch and key operation

Industrial Thin Clients SIMATIC ITC – for cost-optimized and versatile client-server architectures

Client-server architectures offer the advantage that the "expensive" computing performance is only required on the servers. The inexpensive client is only used to input and output data. Actual data processing is performed by the server on which the software is running.

Central administration of several operator panels on one server and easy cabling of the low-cost and maintenance-free Thin Clients over almost unlimited distances makes client-server solutions particularly inexpensive and versatile.

Industrial Thin Clients SIMATIC ITC with widescreen touch displays in sizes 12", 15", 19" and 22", with the iF product design award

The Industrial Thin Clients have the same attractive front design in widescreen format as SIMATIC Nanopanel PCs and HMI Comfort Panels. This presents a uniform, high-quality look for machines and plants.

Powerful and rugged in widescreen format

The new Industrial Thin Clients SIMATIC ITC are available with widescreen touch displays in the sizes 12", 15", 19" and 22". The powerful devices are equipped with a 1.2 gigahertz Intel Celeron processor, a 512 megabyte main memory with DDR3 storage technology and a Gigabit LAN interface for fast communication with other systems. A 24 V power supply is integrated as well as two USB interfaces for connecting a mouse and keyboard.

SIMATIC ITCs are extremely rugged and maintenance-free, because they have no wear parts such as fans or hard disks and feature rugged cast aluminum fronts: Ideal for machine based operator control and monitoring in the industrial environment. You will find information on an all-round IP65-protected version on page 34.

Versatile communication

SIMATIC ITCs can be operated at an almost unlimited distance from the industrial PC or server over PROFINET or Industrial Ethernet. The Gigabit LAN interface ensures fast communication that is either conducted by means of standard protocols, such as Remote Desktop (RDP) or Virtual Network Computing (VNC) to a PC or via Sm@rtServer, for example, to a SIMATIC HMI Panel. Web-based applications can be operated using the integrated web browser functionality of the ITC.

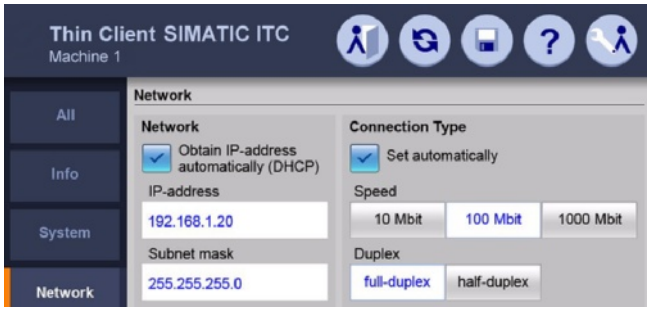
RDP is included in almost every Microsoft operating system today, so a server can be accessed or remotely operated from a single Thin Client once RDP has been activated.

When RDP is used with Windows server operating systems, it is also possible to operate several Thin Clients on a single server. The principle: The applications which can be accessed by the clients are defined on the server. The clients can then connect themselves automatically to the applications released on the server.
With VNC, however, two or more operator panels can display a "cloned" desktop with identical screen content. Depending on the connection, the server can be, for example, a SIMATIC HMI Comfort Panel or a SIMATIC IPC. Two or more Thin Clients can be operated depending on the server's performance.

With the multi-session function, parallel connections are possible to several servers with fast switchover, e.g. two computers connected to one Thin Client. For high availability, connections can also be configured to redundant servers in RDP mode. A user-friendly setup wizard supports quick and easy commissioning and integration in existing networks.

Siemens offers the SmartServer for system-wide communication with all HMI operator stations. With this inexpensive solution for additional WinCC workstations, several users can operate safely in a coordinated manner by means of command interlocks.

Web-based content can be displayed by using the Thin Client as a Web Client, e.g. for diagnosis of the Siemens devices on the network via a diagnostics website. The mirroring function enables display contents to be accessed directly from the control room, e.g. to support the on-site operator.

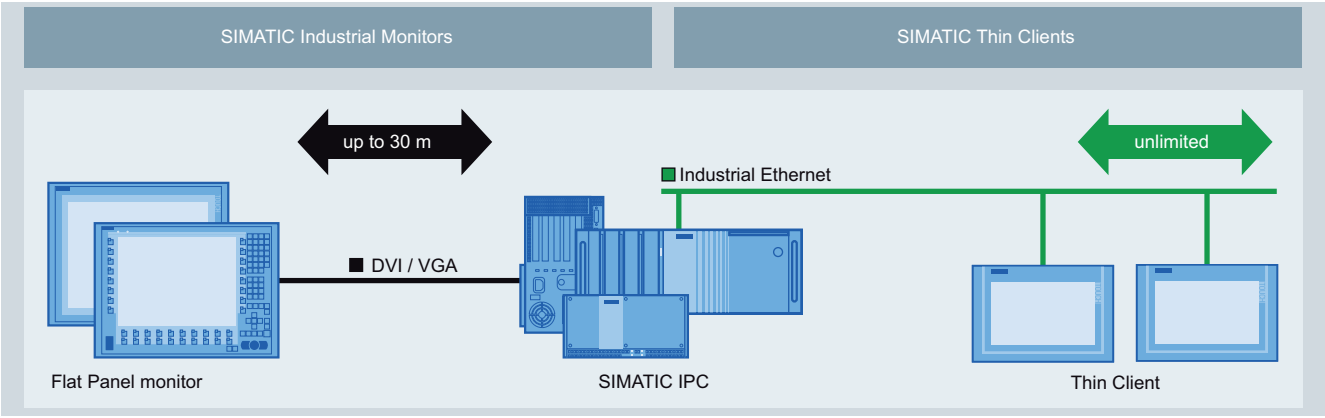


SIMATIC ITS are ready to use and quick to configure. The new version of the software tool Remote Configuration Center (RCC) performs central device management for several Thin Clients, for example, for easy IP address assignment or for firmware update installation in parallel.

Flat Panel Monitor or Thin Client?

Numerous operating concepts can be implemented with both configurations. There are, however, a few points that favor one solution or the other:

- Flat Panel Monitors are used for:
  - Fast image construction, e.g for curve display, 3D data or videos
  - Very short operating times, e.g. for inching mode
  - Commissioning of the IPC directly in the plant, or changing the BIOS settings
- Thin Clients are used for:
  - Slower image construction
  - Longer distances to the PC or server
  - Multiple operator stations and servers



SIMATIC Flat Panel Monitors and Thin Clients for maximum flexibility with distributed operator control and monitoring

Device variants for special requirements

All-round protection and stainless-steel fronts

The HMI devices with all-round protection supplement the portfolio of the tried and tested built-in units with especially rugged operator panels in an attractive design. The devices are dimensioned for support bracket or stand assembly and offer an overall IP65 protection.

Panel PCs with stainless steel front are designed for use in the food and beverages industry. They are characterized by easy cleaning and disinfection, high resistance, splitter protection of the display and high degree of protection.

Completely protected HMI devices

The series is technically based on available built-in devices:
- SIMATIC HMI IPC477C PRO 15" and 19"
- SIMATIC Flat Panel Monitor PRO 15" and 19"
- SIMATIC Thin Client PRO 15"

The devices can be mounted on various support bracket and stand systems via a flexible mechanical system. Thus they can be optimally used on machines without requiring a control cabinet. This facilitates ergonomic operation at various positions in systems or production lines. The devices are connected to support bracket systems from different manufacturers by means of adapters, optionally on the top or bottom of the device. Both options are provided as standard.

Due to their low weight, the HMI devices with all-round protection can be mounted easily and quickly. The backplane can be removed easily – e.g. for subsequent installation of cables or replacing memory cards – and thus ensures a high degree of service friendliness even when the device is already mounted on the machine.
The HMI devices with all-round protection offer modular expansion capability. The corresponding expansion units can be attached on left or right side of the operator panels.

This way, the system can be easily expanded with plant-specific mechanical buttons or other add-on units (e.g. Emergency Stop) and thus adjusted to many different requirements. The degree of protection IP65 is retained for the entire system even after installation.

Advantages at a glance

- Operator panels with all-round IP65 protection for mounting on support arms or stands
- Removable backplane hood for optimum service friendliness
- Maximum compactness and low weight for easy mounting
- Easy adjustability to changing requirements thanks to modular expansions

SIMATIC HMI IPC677C 15" Touch INOX

Stainless steel front	
Material/surface	Stainless-steel 1.4301, polyester foil/polished, grain size 240
Seal	EPDM
Features	Optimized rack profile, angled surfaces, tested hygiene with LGA symbol 5664018
Degree of protection	Front: IP66K, rear: IP20

The HMI IPC677C can also be customized as an ergonomic operator station to a high degree of protection (up to IP66K all-round) built into a stainless-steel control box.

SIMATIC Flat Panel Monitor PRO 19" and HMI IPC477C PRO 15" with expansion units, e.g. KP8 key panel

Stainless-steel HMI operator station with SIMATIC HMI IPC677C

Intrinsically safe SIMATIC Panel PCs and Thin Clients

Rugged SIMATIC Panel PCs and thin clients are now available in an intrinsically safe version for hazardous areas in Ex Zones 1/21 and 2/22. They can be used with flammable gases, vapors and dust/air mixtures, in the manufacturing of petrol, medicines and cement and in the processing of flour and grain, as well as in shipbuilding.

SIMATIC HMI Panel PC Ex and SIMATIC HMI Thin Client Ex can be implemented without special measures, such as costly enclosures or additional certification procedures, directly in hazardous areas of Zones 1/21 and 2/22. The devices are highly resistant to vibration and shock and are certified for use in shipbuilding. The chassis devices feature a high degree of protection of IP66 at the front and IP65 at the rear for direct implementation outdoors at ambient temperatures from minus 20 °C to plus 50 °C. For use down to minus 30 °C, an enclosure with heating is available as an option.

SIMATIC HMI Panel PC Ex

The rugged Panel PC is equipped with a 1.6 GHz Intel Atom processor and offers high-performance computing with heat losses of only 2.5 W. The device operates without a fan, rotating bulk memory and battery and is therefore completely maintenance-free.

Manifold configuring options
- 15" or 19" displays with touch screen functionality and eight function keys. The 15" device is available as an option with an especially brilliant display for use in daylight.
- CompactFlash cards with 4 or 16 GB, 100 GB hard disk
- Ethernet networking is available either electrically over copper cables at 10/100 Mbit/s (Ex e) or optically over fiber-optic cables at 100 Mbit/s (Ex op is)
- Windows XP Professional or XP embedded operating system
- Stainless-steel enclosure for different mounting possibilities

The following are available as accessories:
- Digital KVM Box for monitor operation of the SIMATIC HMI Thin Client Ex
- USB drive, intrinsically safe, 16 GB
- USB drive, intrinsically safe, 16 GB, with recovery function
- USB drive, 16 GB, with recovery function
- Ethernet switch with FOC
  - 4 x 100 Base Tx
  - 1 x 100 Base Fx (MTRJ) Ex op is

SIMATIC HMI Thin Client Ex

SIMATIC HMI Thin Client Ex can be connected as a thin client or monitor over Ethernet at an almost unlimited distance from the associated computer unit.

In thin client mode, the remote protocols RDP or RealVNC are used for communication with the server.

In monitor mode, the PC is connected over a digital KVM box for keyboard, video and mouse signals which can communicate over Ethernet either directly or via a switch with the remote HMI station in the hazardous area.

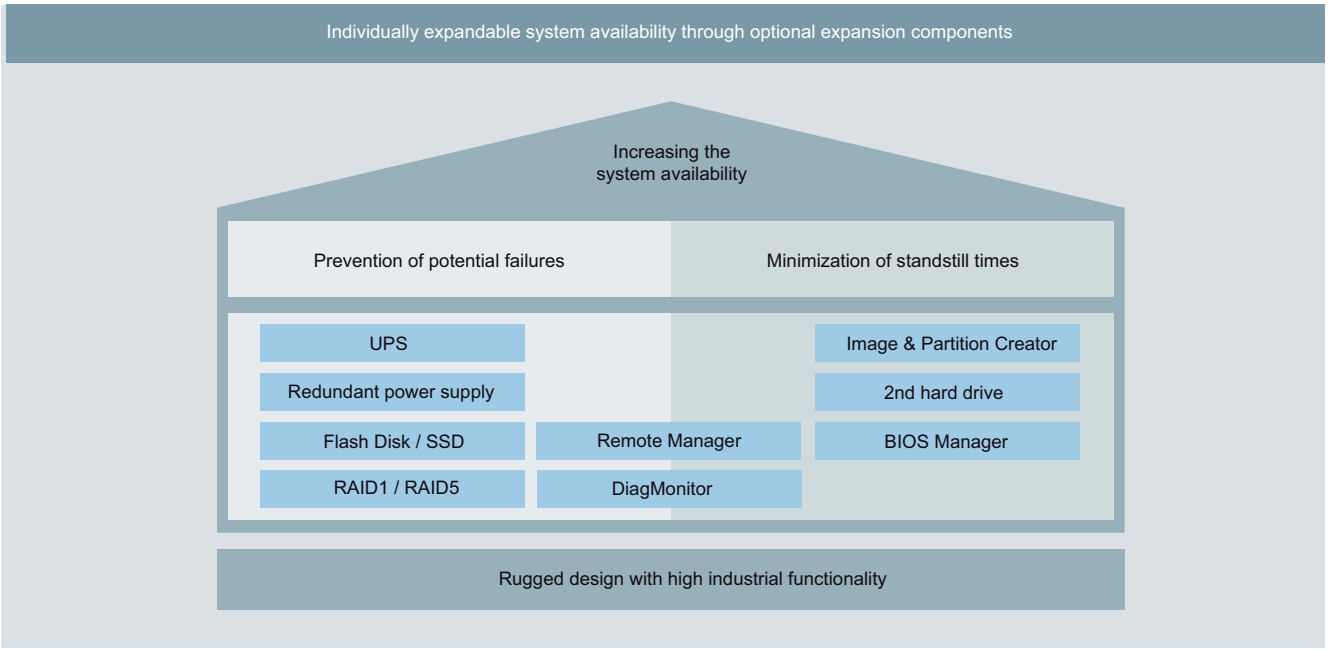
Advantages at a glance

- Can be used directly in hazardous areas of Zones 1/21 and 2/22 without special measures
- Extremely rugged and totally maintenance-free for use directly at the machine, outdoors and in shipbuilding
- Brilliant 15"/19" displays with touch screen functionality and function keys, as well as a 15" display for use in daylight
- Flexible configuration and easy integration in the existing infrastructure

SIMATIC HMI Panel PC Ex and Thin Client Ex with brilliant 15"/19" displays

Individually expandable system availability

The rugged design and high industrial suitability make SIMATIC industrial PCs highly available. For applications with individual system availability requirements, we offer a matched range of optional expansion components. This enables you to detect potential failures early and to effectively minimize actual downtimes.



Avoiding potential failures – to prevent the damage from happening

Options for the prevention of potential failures include:
- Uninterruptible power supplies (UPS)
- Redundant power supply (see rack PC from page 16 onwards)
- Flash disk and SSD as safe bulk memory
- RAID1/RAID5 configuration

SIMATIC IPC DiagMonitor – intelligent and comprehensive diagnostics, local or remote

To allow early detection of potential failures in the field, the SIMATIC IPC DiagMonitor software tool provides intelligent and comprehensive diagnostics and signaling functions which allow you to carry out preventive maintenance in due time.

Remote Management through remote access to industrial PCs – with SIMATIC IPC Remote Manager

With the new SIMATIC IPC Remote Manager software package and the Intel AMT functions of the SIMATIC IPCs with Intel Core processors i7/i5, central server concepts can be implemented using password-protected remote access. These support fast, low-cost maintenance, fault rectification and management.

Minimization of downtimes – to get your system up and running again quickly

Once a system has come to a standstill due to a fault, it is of the essence to minimize such downtimes and the respective costs. SIMATIC IPCs therefore offer expansion options to rapidly restore your system's operability.

These include:
- Software for preventative data backup and efficient partition management, SIMATIC IPC Image & Partition Creator
- Second hard disk
- BIOS data management software SIMATIC IPC BIOS Manager

Remote Management through remote access to industrial PCs – with SIMATIC IPC Remote Manager

SIMATIC IPCs with Intel Core processors i7 and i5 are equipped with the Intel Active Management technology (Intel AMT) for password-protected remote access. With the SIMATIC IPC Remote Manager, you save time and money with maintenance and management.

SIMATIC IPC Remote Manager can be used to implement central service concepts in which SIMATIC IPCs can be remotely accessed by means of AMT functions. System or program errors can be rectified, or BIOS and program updates can be implemented without the need for on-site deployment.

Advantages at a glance

- Central service without on-site deployment
  - Remote access via password-protected HTTPS or TLS link, without additional hardware and independently of the operating system
  - Easy rectification of errors in the software, applications or operating system
  - Rapid implementation of BIOS and program updates with a subsequent restart
- Efficient energy management and service management
  - Reduced power consumption and costs due to timed coastdown, e.g. following production stop or over the weekend.
  - Reduced downtimes and costs since start-up and service work is performed outside the normal production times

Overview of functions

Keyboard Video Mouse Redirection (KVM)

The keyboard-video-mouse signal can be redirected to or from a computer in the IT department, so that an administrator can operate the computer remotely without additional hardware.

Remote reboot

The distant computer can be rebooted from a local drive, CD or a network drive. This saves the service engineer time-consuming and expensive traveling.

Remote Power Control

You can reduce the energy/operating costs with targeted switching on and off. The computer can be shut down at night or at the weekend, or it can be switched on temporarily for an update. A reset is possible at any time.

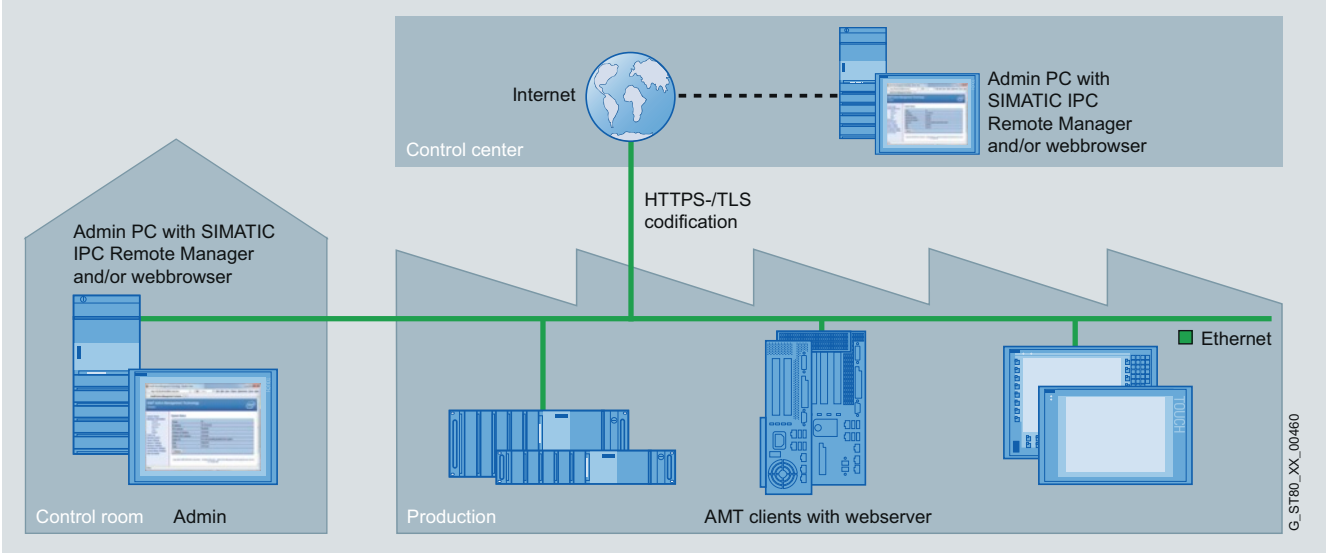
IDE redirection

To prevent time-consuming handling, for example, an ISO file located on a hard drive of the IT Management Console can be made available as a CD-ROM drive

Notes on security

Suitable protective measures (including IT security such as network segmentation) should be taken in order to ensure safe operation of the plant. For more information on the topic of industrial security, go to **siemens.com/industrialsecurity**

Configuration example on the Internet at: **siemens.com/simatic-ipc-remote-manager**

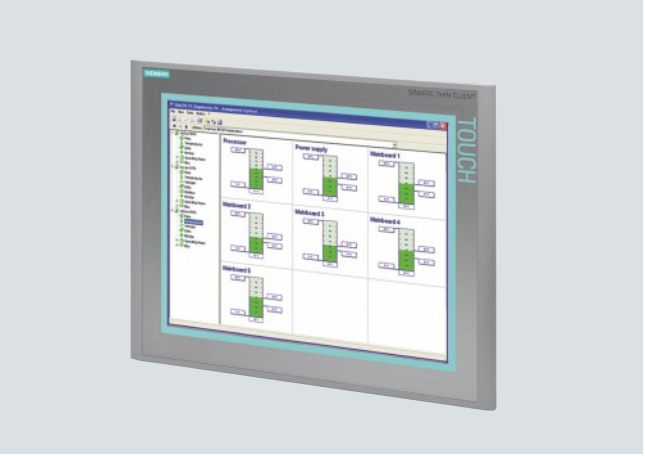


Remote access to industrial PCs with SIMATIC IPC Remote Manager

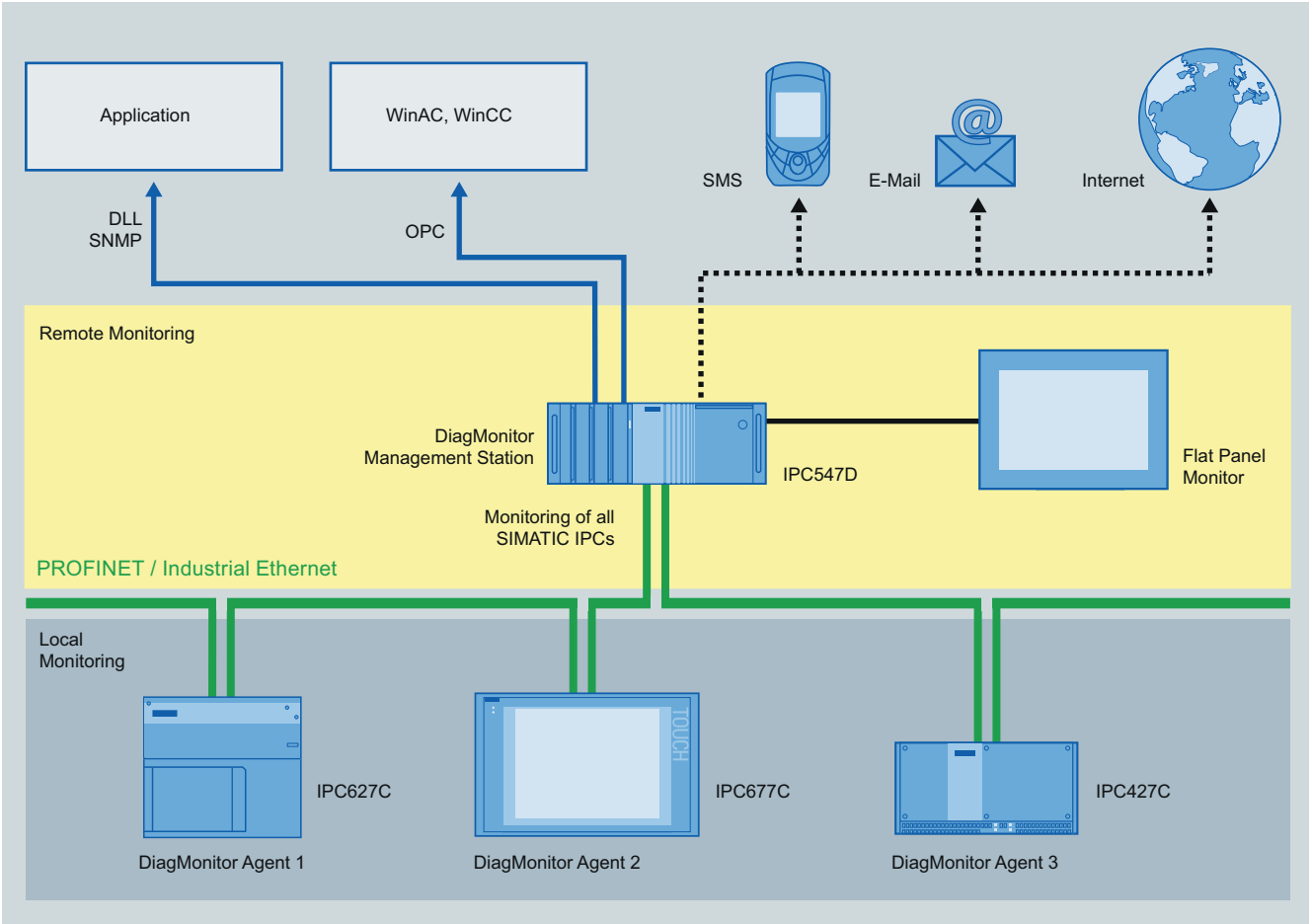
SIMATIC IPC DiagMonitor
Intelligent and comprehensive diagnostics – local or remote

The SIMATIC IPC DiagMonitor detects possible hardware and software faults. It monitors, signals and visualizes the operating states of SIMATIC IPCs both locally and remotely. You are thus able to prevent downtimes and reduce the respective costs by taking preventive measures at an early stage.

DiagMonitor alerts the user, automatically executes programs and logs all events.
This way, faults are rapidly detected and potential system failures efficiently prevented. The diagnostics messages are automatically forwarded to the user via LAN, e-mail or text message, or via OPC for direct alarm infeed in software applications (e.g. WinCC flexible, WinCC, WinAC and other OPC-capable software).



SIMATIC IPC DiagMonitor: Clear, user-friendly user interface in Windows Explorer Design

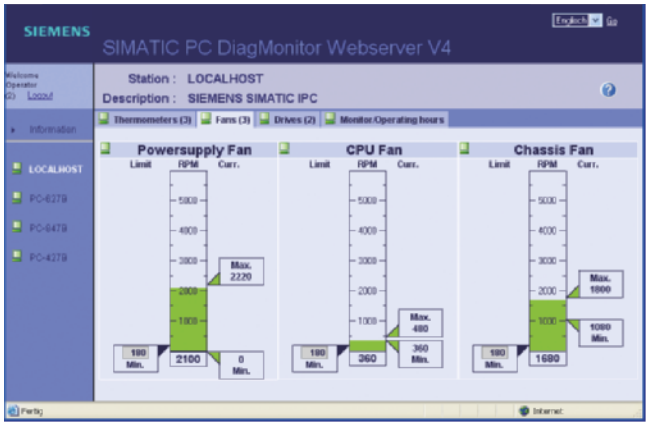


SIMATIC IPC DiagMonitor monitors, signals and visualizes the operating states of SIMATIC IPCs both locally and remotely.

DiagMonitor web server

The DiagMonitor Web server lets you view and manage the data of the stations monitored by the SIMATIC IPC DiagMonitor independent of the location, PC architecture and operating system via an Internet browser over an http or https link. Access rights to the monitoring data can be individually assigned and managed for the users.

The time synchronization function integrated in DiagMonitor facilitates operation of the industrial PCs without CMOS battery. This additionally reduces the maintenance costs.



Web server display: Online monitoring of all fan speeds (CPU and enclosure fans) as well as signaling and visualization of exceedance/shortfall or fan failure via Internet browser.

Example: Operating hours counter

Using the operating hours counter, you can define the maintenance intervals not just for your SIMATIC IPC, but also for further devices in your plant. You are thus informed on the dates for preventive maintenance measures in due time, e.g. replacement of the dust filter of the industrial PC or filter change of a pump.

Example: Text message and alerting functions

The SIMATIC IPC DiagMonitor automatically signals, among others, overshoot/undershoot of the permissible operating temperature. For example, an alarm via text message informs the servicing personnel of a violation of the permissible processor temperature caused by contaminated filter mats.

Advantages at a glance

Productivity increase – through the prevention of potential failures

- Central diagnosis of networked SIMATIC IPCs over Ethernet or Webserver (http/https)
- Diagnostics and signaling functions for PC temperature, fan, hard disks (SMART), RAID, CompactFlash, SSD, system status (watchdog)
- Operating hours counter for preventive maintenance
- Recording and evaluation of operating data;
- Integrated log function, comprehensive text messages and online help in German and English
- Own information per Web business card on:
  - Device data e.g. product designation, BIOS version, mainboard number
  - System status

Reduced costs – thanks to reduced downtimes

- Fast information via e-mail, text message and in the application via OPC and SNMP
- Individually configurable actions upon occurrence of a fault, e.g.:
  - Execution of programs, e.g. calling of the Storage Manager in the case of RAID faults
  - Restart for controlled shutting-down and restarting of the computer

Notes on security

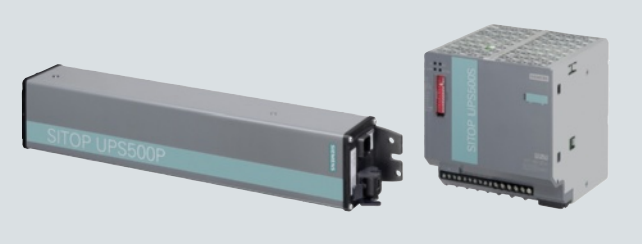
Suitable protective measures (including IT security such as network segmentation) should be taken in order to ensure safe operation of the plant. For more information on the topic of industrial security, go to **siemens.com/industrialsecurity**

Avoiding potential failures – to prevent the damage from happening

SIMATIC IPC expansion options offer protection against unnecessary consequential costs, e.g. caused by data loss, and ensure the continuously high availability of your plant.

Uninterruptible power supplies (UPS)

The rugged SIMATIC IPC power supply units back up voltage dips for up to 20 ms (acc. to NAMUR). SITOP DC UPS 24 V is available for longer power outages, as well as customized built-in UPSes. Advantage: The system can reliably save important data and shut down in a controlled manner.



SITOP UPS500 is based on high-capacitance capacitors. The maintenance-free DC UPS is available as a compact rail-mounted device (can be combined with IPC227D/427C) and with IP65 degree of protection for distributed setup, e.g. for mounting on a support arm of a SIMATIC Panel PC. Advantages:

- Long service life and reliable operation at temperatures of up to 60 °C
- Control cabinet does not have to be ventilated
- Safe coast down and correct restarting
- Software tool supports further processing and responses from the IPC

Further information:
siemens.com/sitop/ups

Flash disk and SSD as safe bulk memory

System availability can be further increased with a CompactFlash drive CFC or Solid State Drive (SSD) instead of a hard disk. These rugged bulk memories are approved for higher vibration, shock and temperature values and offer an availability which is significantly higher than that of a hard disk. They provide safe protection for your operating system and application.

The SIMATIC IPC CompactFlash cards with up to 16 GB capacity and solid-state drive with 50 GB (High Endurance), 80 GB (Standard) are system-tested with SIMATIC IPCs.

The new SIMATIC IPC CompactFlash cards with diagnostics capability can be diagnosed and monitored using the SIMATIC IPC DiagMonitor diagnostics software. By setting of the diagnostics bit, users can be informed of the need for preventive maintenance in due time.

RAID1/RAID5 configuration

SIMATIC IPCs with RAID1/RAID5 configuration ensure increased data security: Data continues to be available, even if a hard disk fails. Loss of data is thus avoided, the system continues to be operational, and the hard disk can be replaced during operation. The onboard RAID controller saves one slot, which can be used for other cards.

For industrial server applications with stringent demands on availability and performance, RAID 1 and RAID 5 configurations with hardware RAID controllers with Zero-Maintenance Cache Protection Modules (ZMM) and SAS hard disks are also available (see page 19).

RAID1 configuration (mirror disk system)

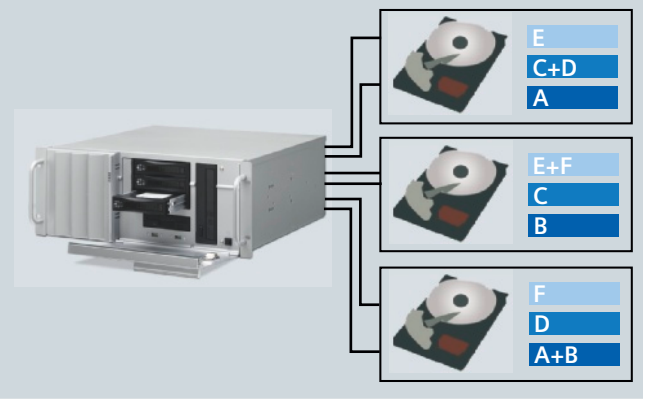
All data is saved in parallel on two hard disks by means of automatic mirroring. The advantages are:

- Very secure and user-friendly due to automatic mirroring
- After replacing a defective hard disk, the mirror disk system can be restored in just a few steps.

RAID5 configuration (block striping with distributed parity)

All data and parity information are saved on at least three hard disks. The advantages are:

- High security thanks to redundant data storage
- Good utilization of the available storage space



RAID5: High degree of data security and memory utilization through separate drives and "block striping with distributed parity".

Minimization of standstill times – so that your plant gets up and running again quickly

Once a system has come to a standstill due to a fault, it is of the essence to minimize such downtimes and the respective costs.
SIMATIC IPCs therefore offer expansion options to rapidly restore your system's operability.

SIMATIC IPC Image & Partition Creator – for data backup and partition management

SIMATIC IPC Image & Partition Creator supports you with organizing and data and partitioning SIMATIC IPCs. You can then back up data easily and restore it as well as manage partitions efficiently.

- Back-up of the hard disk image during normal operation [1] on an additional storage medium (2nd hard disk or CF card, integrated burner, USB/network drive) or restoration from this drive to a hard disk.
- Comfortable duplication of complete software fillings (cloning) of devices with the same equipment and application purpose allows for the fast replacement of complete devices in service cases.
- Reliable erasing of confidential data before disposing of data carriers.
- Expansion and reduction of existing system and data partitions without loss of data as well as creation of new and deletion of existing partitions.
- The software can be operated without the need for specialist knowledge. Wizards provide support for all functions. The function "1ClickImage" can be used to create an image or restore it with just a double-click after the initial configuration.
- The internal version management of the Image & Partition Creator manages up to nine versions of an image. The size of the images can be adapted, if required, for burning onto CDs.
- Flexible in the application thanks to:
  - Direct starting from the CD or USB FlashDrive
  - Booting of the program from the CD or bootable USB FlashDrive
  - Installation and execution via an icon.
- SIMATIC IPC Image & Partition Creator can be used independently of the type of operating system in the system to be processed, without additional drivers and without the need for installation on SIMATIC IPCs – also in service mode.

[1] Depending on operating system and application

Advantages at a glance

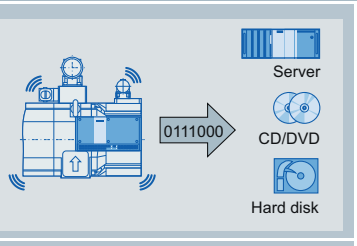
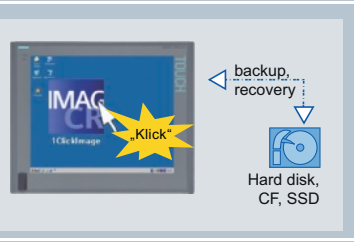
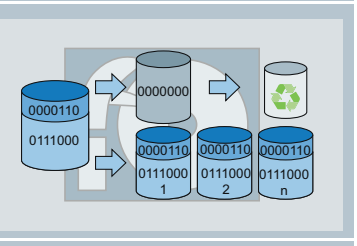


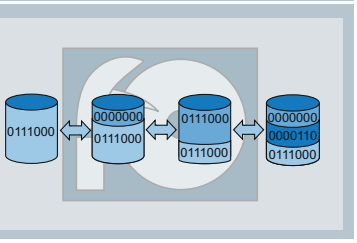
Image creation during normal operation [1] supports pre-emptive data backup without shutdown of the computer.



"1ClickImage" function for fast data back-up/restoration at the click of a mouse button (installation is necessary)



Irrevocable / secure deletion of data e.g. for removing used hard disks from service.Easy duplication (cloning) of existing software installations.



Subsequent changing of partitions (size, format, etc.) without data loss for optimizing the performance of the hard disk.

Minimization of standstill times – so that your plant gets up and running again quickly

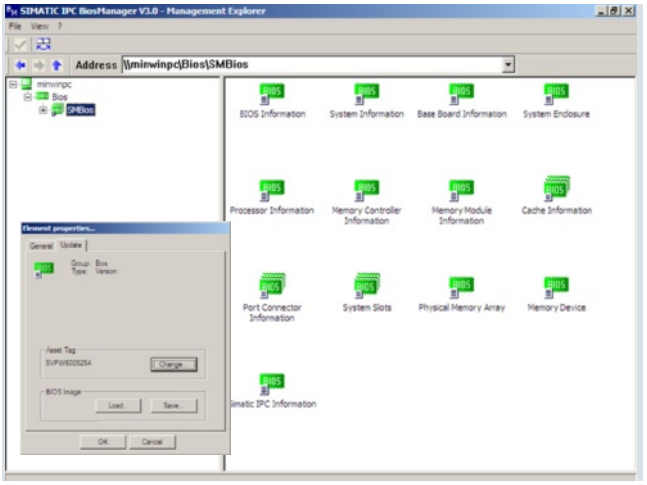
Second hard disk – as a storage location for data and image backups

SIMATIC IPC647C with a second hard disk

To increase the system availability you can use a second hard disk in a non-RAID system:

- As a storage location for data and image back-up facilitating easy and fast restoration using SIMATIC IPC Image & Partition Creator.
- As a back-up disk, so that the system can be used again immediately, in the case of a defective software installation or hard disk defect, by booting from the back-up disk set up by the SIMATIC IPC Image / Partition Creator.

SIMATIC IPC BIOS Manager – for safe and easy BIOS data management



Easy and secure BIOS data management under Windows PE

With the SIMATIC IPC BIOS Manager software tool, BIOS data of SIMATIC IPCs can be processed under Windows PE. The functionality includes the reading of and storing of BIOS CMOS data in a file and copying back of the saved BIOS setup data to the BIOS.

The SIMATIC IPC BIOS Manager offers you the following advantages:

- Easy and reliable duplication of configured CMOS data on further SIMATIC IPCs of the same design
- Simply archiving of PC system data for quality management requirements
- Straightforward implementation of BIOS updates/ BIOS restorations
- Storing of an inventory number for the device

You receive the software tool SIMATIC IPC BIOS Manager pre-installed and ready to use on the practical SIMATIC IPC Service USB FlashDrive.

➜ *More details on page 47.*

PC-based Control and HMI software

Software options for operation and monitoring

A range of hardware and software options is available for PC-based automation. Optimum interaction of these options and SIMATIC IPCs is guaranteed as a result of joint development and comprehensive system tests.

SIMATIC WinCC (TIA Portal) – Innovative HMI software

SIMATIC WinCC in the Totally Integrated Automation Portal (TIA Portal) is part of a new, integrated engineering concept which offers a uniform engineering environment for programming and configuration of control, visualization and drive solutions.

WinCC in the TIA Portal is the software for all HMI applications ranging from the simplest operation solutions with Basic Panels to SCADA applications on PC-based multi-user systems.

Maximum configuration efficiency

Compared to its predecessor, WinCC flexible, configuration efficiency has been further increased, particularly if further TIA components such as the SIMATIC S7 Controller are part of the automation solution.

The perfect interaction with STEP 7 in the TIA Portal prevents multiple entries and guarantees consistent data management at all times. All the common functions are uniform – also in terms of their presentation on the screen.

User benefits range from intuitive operation through the editors' integrated intelligence to the advantages of a shared database, which ensures maximum transparency and absolute consistency.

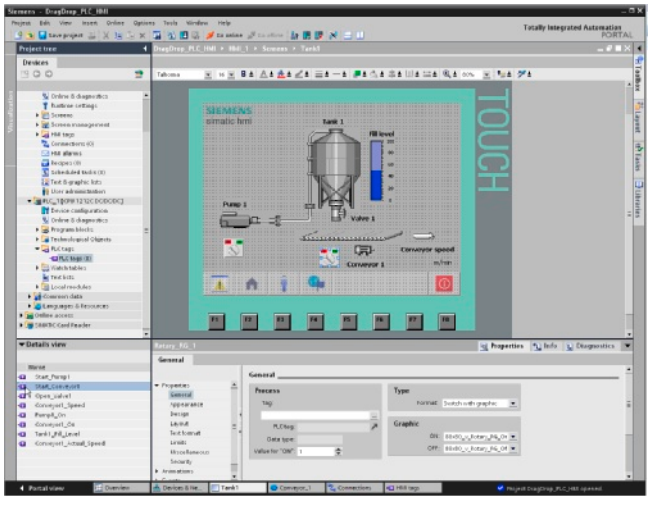
SIMATIC WinCC V7 – Scalable process visualization with plant intelligence

SIMATIC WinCC is a price- and performance-graded process visualization system for all sectors even up to the pharmaceutical industry where appropriate options comply with the requirements of 21 CFR Part 11.
WinCC offers SCADA functionality – from single-user down to distributed multi-user systems with redundant servers and cross-location solutions with Web clients. In particular, WinCC is characterized by absolute openness. Via open interfaces, system houses can develop individual applications and install system expansions on WinCC. With the integrated process database, WinCC forms the information hub for company-wide, vertical integration.

WinCC offers you the following advantages:

- Universally applicable
  - Solutions for all sectors
  - Meets requirements according to 21 CFR Part 11
  - Multilingual for worldwide use
  - Can be integrated in all automation and IT solutions
- Can be configured easily and efficiently
- Continuously scalable – also via the Web
- Open standards for easy integration
- Integrated MS SQL server for data archiving as information hub
- Increased production transparency through Plant Intelligence
- Expandable using options and add-ons

SIMATIC WinCC can be operated with server functionality on Windows Server 2008. This possibility exists for the SIMATIC Rack PCs.



Highly efficient configuration with SIMATIC WinCC (TIA Portal)

Use in a control room

Software options for open-loop control

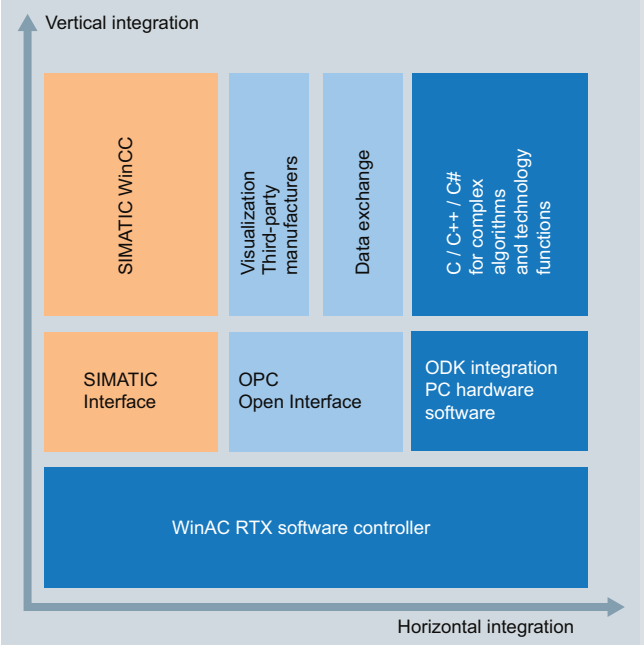
PC-based control with SIMATIC WinAC RTX

WinAC RTX enables control on the PC. The WinAC RTX software controller is used when high performance, high data volumes and at the same time hard real time are required. The optimized runtime system supports the processing of extensive and demanding PC applications in parallel with the control task. It executes on the operating systems Windows XP Professional, Windows Embedded Standard 2009/Standard 7 or Windows 7 and uses a real-time core for real time and deterministic behavior.

WinAC RTX uses the latest innovations for SIMATIC Controllers in the communication over PROFINET. Particular features are the isochronous mode over PROFINET and IRT and the web-server functionality. Isochronous mode is used for extremely fast and accurate automation solutions. Input signals are acquired, processed and output at fixed intervals. The web server automatically generates web pages, that can also be used for remote diagnostics, and permits access to a plant from any PC with the relevant authorization.

Use of SIMATIC know-how

WinAC RTX is programmed with the usual SIMATIC programming tools – with STEP 7 or, if required, also with the field-proven engineering tools, such as the IEC 61131-3-compliant languages S7-SCL or S7-GRAPH. WinAC RTX is code-compatible with SIMATIC S7, i.e. program modules created for SIMATIC S7-300 and S7-400 can be reused in WinAC RTX and vice-versa.



WinAC RTX offers open data interfaces for vertical and horizontal integration of different applications.

Fail-safe variant SIMATIC WinAC RTX F

With WinAC RTX F, a TÜV-certified (German Technical Inspectorate), fail-safe software controller for safety-oriented applications is available. The S7 Distributed Safety software (a STEP 7 option) is used for programming the fail-safe program. The PROFIsafe profile permits fail-safe communication via PROFIBUS DP and PROFINET IO.

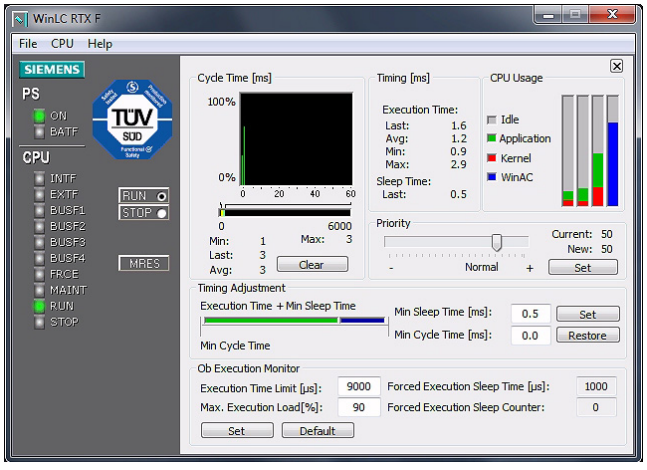
Openness and know-how protection

WinAC RTX is open to integration of technological applications, such as barcode readers, image processing, measured value acquisition and numerical controls. C/C++/C# programs can also be integrated into the WinAC RTX control program. Extremely flexible solutions can therefore be generated with access to all the hardware and software components of the PC. C / C++ / C# is frequently used to program complex technology functions. These often contain valuable know-how. C/C++/C# encapsulates these programs. The openness of WinAC RTX can therefore also be used to protect the know-how in customized functions.

NEW

Integration of complex closed-loop controllers with MATLAB/Simulink

With the software MATLAB/Simulink from The Mathworks, processes and PID controllers can be modelled graphically and simulated. With Embedded Coder, the Simulink subsystems can be translated into C/C++ code. This code can be integrated into a WinAC ODK project and can be called and executed from the S7 program using DLL/RTDLL.
Example projects are available on the Internet that demonstrate the integration of MATLAB/Simulink subsystems with STEP 7 and WinAC ODK on a powerful PC-based controller with WinAC RTX.
These are provided as free downloads.
siemens.com/simatic-winac-odk



SIMATIC WinAC RFX F, the first fail-safe software controller for the PC.

SIMATIC S7-mEC
Rugged & modular embedded controller for DIN rails

SIMATIC S7-mEC is a modular embedded controller in S7-300 design with the latest embedded PC technology. This embedded controller combines the advantages of the tried and tested modular S7 controller with PC technology in one new device.

SIMATIC S7-mEC is characterized by:
- Maximum ruggedness without fan or hard disk
- Modularity and scalability, e.g. central expansion with S7-300 I/O and additional PC interfaces
- Commissioning, as for S7-300, by automation specialists

With the S7-mEC, standard Windows applications, applications in real-time environments, and standard PCI-104 cards can be integrated. For this purpose, it offers:
- A standard PC operating system Windows Embedded Standard and standard PC interfaces
- The latest embedded PC technology
- Openness in software and hardware

The modular embedded controller is particularly suitable for applications in which both control and data processing are of major importance. The most important applications of the S7-mEC are in special and series machine building, which also integrate additional automation tasks, e.g. HMI on one hardware platform, in addition to the control task. This means that centralized expandability with the standard SIMATIC I/O is still possible. The performance and openness of current PC technology can still be fully exploited.

The EC31 Embedded Controller is available:
- With Windows Embedded Standard operating system and Software Development Kit (SDK) for Windows programs
- Or with preinstalled SIMATIC automation software, such as the WinAC RTX (F) software controller or the WinCC flexible Runtime Advanced visualization software.

The EC31 is equipped with an integrated controller execution level system. Programming and diagnostics – as with all other SIMATIC Controllers – are performed with STEP 7.
The I/O bus interface enables signal modules (SM) and interface modules (IM) to be operated centrally for the multi-tier rack configuration. Operator control and monitoring can also be performed with installed HMI Runtime on a SIMATIC Thin Client which has access to S7-mEC data by means of standard TCP/IP mechanisms. Distances of 100 m or more can be spanned without difficulty.

Advantages at a glance
- Combination of modular S7-300 controller and embedded PC technology
- Fanless and diskless S7-300 design
- Modular expansion with central S7-300 I/O modules and PC interface modules
- Configuration and programming as for an S7 Controller with STEP 7
- Simple integration of PC applications into the controller
- Retentive data memory

EC31 can be expanded with a wide range of different standard PC modules:
- The expansion module PC (EM PC) offers several interfaces, including a Gigabit Ethernet interface with separate IP address and two slots for memory cards
- The expansion module PCI-104 (EM PCI-104) has three slots for any desired PC modules (PCI-104 and PCI-104+), e.g. bus interface modules, instrumentation or video modules, as well as memory cards and sound cards.

The following can be used:
- One or two EM PCI-104 modules or
- One EM PC or
- One EM PC and one EM PCI-104

Technical specifications	S7-mEC
Design	Modular, fanless, expandable controller in S7-300 design (EC31-RTX, EC31-HMI/RTX, EC31-RTX F)
Processor	Intel Core Duo 1.2 GHz
Work/retentive memory	1 GB / 512 KB
Operating system	Windows Embedded Standard
Software controller	WinAC RTX, WinAC RTX F
HMI Runtime software	WinCC Runtime Advanced with 128, 512 or 2 048 PowerTags incl. archives and recipes
CompactFlash	4 GB
Additional memory	Multi Media Card MMC
Interfaces	1 x PROFINET (2 ports)[1], 1 x Ethernet, 2 x USB 2.0, mouse, keyboard
EM PC (optional)	
Interfaces	2 x USB 2.0, 1 x Gigabit Ethernet (separate IP address), 1 x serial, 1 x DVI-I, 1 slot for CompactFlash card, 1 slot for SSD/Multi Media Card
EM PCI-104 (optional)	
Slots	3 x PCI-104

[1] PROFIBUS optionally via CP 5603

Software packages and ready-to-run embedded bundles

If you decide to purchase a SIMATIC software product with your SIMATIC IPC you will save money.

You can choose between:
- turnkey embedded bundles, comprising an Embedded IPC complete with pre-installed and preconfigured SIMATIC software
- and software packages, comprising a SIMATIC IPC of your choice with accompanying software to install yourself.

SIMATIC Embedded Bundles

You can purchase embedded industrial PCs at special prices in the form of SIMATIC Embedded Bundles complete with a Windows Embedded operating system and pre-installed and preconfigured SIMATIC software. The devices are ready to use and are supplied with a backup CD/DVD which can be used to restore the delivery status at any time in the future.

Perfect interaction of hardware and software

SIMATIC IPC and SIMATIC S7-mEC are equipped with an integrated, non-volatile memory. Retentive machine data up to 128 KB (mEC up to 512 KB) can be saved and secured against loss in the event of power failure.

The onboard interfaces of the industrial PCs can be used by the SIMATIC WinAC software controller for connecting distributed I/O over PROFIBUS/PROFINET. The SIMATIC S7-mEC embedded controller can be modularly expanded for this purpose using SIMATIC I/O modules, such as a PROFIBUS card.

1) not for S7-mEC and IPC2x7D

Software packages

Even if you want to configure your SIMATIC IPC with SIMATIC software yourself, you can still save money: Order the hardware and software together.
Software packages can be combined with all available SIMATIC IPCs. When any SIMATIC IPC is ordered together with SIMATIC software, a price reduction will be available. The following software products are available for selection for the software packages:
- For operator control and monitoring
  - SIMATIC WinCC Runtime Advanced (TIA Portal), including the option packages WinCC Logging and WinCC Recipes for implementation at the machine, or
  - SIMATIC WinCC flexible Runtime, including the option packages WinCC flexible/Archive and WinCC flexible/Recipes, or
  - SIMATIC WinCC V7[1)], the SCADA system for process visualization
  - SIMATIC WinCC Runtime Professional (TIA Portal)[1)]
- For open-loop and closed-loop control
  - SIMATIC WinAC RTX, the software controller for the PC, or
  - SIMATIC WinAC RTX F, the new fail-safe software controller

For further details, please ask your local SIMATIC contact: **siemens.com/automation/partner**

SIMATIC Embedded Bundles	IPC2x7D		IPC4x7C (PRO)		S7-mEC
Operating system	WES 2009	WES 7	WES 2009	WES 7	WES 2009
Operator control and monitoring					
WinCC RT			●		
WinCC RT Professional (TIA Portal)				●	
WinCC RT Advanced (TIA Portal)	● ┐	● ┐		● ┐	
WinCC flexible RT			● ┐	● ┐	● ┐
Open-loop and closed-loop control					
WinAC RTX	● ┐	● ┐	● ┐	● ┐	● ┐
WinAC RTX F	● ┘	● ┘	● ┘	● ┘	● ┘

● Available preinstalled and preconfigured
┐ Recommended combination

WES 2009 = Windows Embedded Standard 2009
WES 7 = Windows Embedded Standard 7

Original accessories for SIMATIC IPCs

More than standard – perfectly suited for industrial applications

SIMATIC original accessories ensure the reliability of your automation solution. They are system-tested with SIMATIC IPCs as well as SIMATIC programming devices and meet the high quality requirements with regard to EMC and functional application in industrial environments.

SIMATIC IPC USB FlashDrive

With the 8 GB SIMATIC IPC USB FlashDrive (USB 2.0) in SLC technology we offer you a fast and reliable memory medium for mobile data transport in a rugged metal housing.

Featuring ease of handling thanks to plug & play, the USB FlashDrive is flexible and ready for immediate use – also as a boot medium or in low-maintenance applications which have to do without floppy or optical drives.

SIMATIC IPC Service USB FlashDrive

The 8 GB Service USB FlashDrive is an indispensable tool for installing, maintaining and servicing SIMATIC IPCs.

It allows all service tasks concerning the PC to be performed problem-free.

It is ready to install thanks to preinstalled software products:

- SIMATIC IPC BIOS Manager
  for reading out PC information and updating the BIOS (downloading current BIOS versions).
- SIMATIC IPC Image & Partition Creator for quick and easy image transfer for initial software installation and restoration, backing up the PC installation created and partitioning.

SIMATIC IPC CompactFlash

Compared to hard disk drives, the application of the SIMATIC IPC CompactFlash (up to 16 GB) ensures safe data storage, particularly with higher temperatures and vibration and shock loads.

Using it makes you more independent of the market, because long-term availability of SIMATIC IPC CompactFlash is ensured. The CF cards with diagnostics capability can be monitored by the SIMATIC IPC DiagMonitor.

Central PC I/O

For especially high-speed and real-time-capable measuring tasks and open-loop and closed-loop tasks, the SIMATIC Microbox PC can be easily and flexibly expanded with centralized I/O.

Using PCI-104 expansion slots, encoders/counters as well as digital and analog I/O modules can be integrated in an expansion rack extremely compactly.

In the maximum configuration, this allows for the integration of up to 120 analog I/O, 320 digital I/O, and 12 encoder/counter interfaces.

More than standard – perfectly suited for industrial applications

Mounting kits for SIMATIC Box PC

With SIMATIC Box PCs, all interfaces are accessible from the front for user-friendliness. This means that cabling is easy and cost-effective and valuable installation space is saved.

The mounting kits for the Box PCs support a wide range of different installation angles and mounting variants:

- Mounting on DIN rails(optional for IPC227D/427C)
- Wall mounting withinterfaces arranged on the left/right/top/bottom
- Portrait assembly withinterfaces arranged on the bottom/top/front
- Side mounting

SIMATIC IPC keyboards / mouse / touch pen

Whether 19" slide-in, full-stroke or IP65 membrane keyboard: SIMATIC IPC keyboards are the ideal input devices.
Our rugged, ergonomically designed touch pen ensures optimum operating comfort. It is mounted in a special holder next to the Panel PC (cannot be detached).

NEW The optical mouse based on innovative BlueTrack technology features a pleasant, anti-slip surface coating as well as three buttons and a large scroll wheel. Thanks to the symmetrical housing design and the accurate wire routing, it is suitable for both right-handed and left-handed operators. The mouse can be used without a mouse pad on many types of surface, such as granite.

Mounting kits for SIMATIC Rack PC

The SIMATIC IPC847C and IPC547D Rack PCs can be flexibly implemented thanks to:

- Removable 19" supports for use as Desktop IPC
- Tower kit for conversion to an industrial workstation or server, e.g. for control desks and technical offices

Further information about SIMATIC accessories:
siemens.com/ipc-expansion-components

Customized Automation

Perfectly tailored to individual requirements

Customized products from the SIMATIC portfolio offer you individual adaptations and expansions to the same quality that you expect from our standard products. That applies just as much to hardware modifications as to our sector products.

For the proven standard SIMATIC products (e.g. HMI, IPC, and S7), we carry out the modifications that are necessary in order to meet your requirements.

This ranges from minor design modifications to the hardware and the installation of customer images, special tests and certifications, to changes in service, support and logistics. Depending on the extent of the modifications, we distinguish between customized design, OEM solutions, and turn-key products.

High quality standards

Customer-specific products are developed and produced like standard products in accordance with the highest quality standards based on an individual product agreement with you.

Customized products – individual in design and configuration

Customized design
with visual modification of SIMATIC products for adjustment to your individual machine and system design, e.g. by modifying the company logo or enclosure color.

These design products are exactly the same as the standard products in terms of technology and functionality.

Product modifications for OEM customers
are individual solutions based on SIMATIC standard components. They are specified, offered, developed and supplied on an individual, customer-specific basis. SIMATIC OEM products are combined according to the building block principle from standard components, customer-specific components, and any additionally required software/function expansions.

Customer-specific turnkey products
These products, such as turnkey HMI operator panels, for example, comprise the complete wiring, all connections, enclosure solutions and suitable automation devices, including the required software. These solutions only have to be installed and connected to the power supply and data networks. All product modifications are specified, quoted, developed and supplied individually for the respective solution.

Sector products

For use in special sectors, SIMATIC products are optimally equipped with additional features:

- Renewable energies such as solar/photovoltaic plants and wind turbines
- General mechanical engineering, e.g. printing machines, drilling, milling and honing machines, brake test stands, injection molding machines, or bakery ovens
- Automotive industry, e.g. body construction, robot stations, operator stations at the production line, paint shops, or in the warehousing and logistics sector
- Food and beverage industry, pharmaceutical industry, e.g. stainless steel operating stations in the hygiene sector or quality control for production and packaging
- Oil & gas, the chemical industry and shipbuilding, e.g. operator stations in hazardous areas

Examples of customized products

With Digital Express Design, SIMATIC IPC277D operator panel fronts can be designed within just seven working days, even for small quantities.

The industry-standard fronts can be customized, even with images of photographic quality and resolutions of up to 600 dpi.

The SIMATIC HMI Net Panel is the new, intelligent 46" large-scale display, ideally suited to control rooms and production areas such as in the automotive industry.

Through standards such as Thin Client and Ethernet technology, the device is easy to integrate.
It increases the plant performance by displaying specific KPIs (Key Performance Indicators) as well as providing audio support, e.g. for fault alarms with specific sounds.

Customer-specific software products

Individual software packages may include:
- Installation of customer images at the factory
- Generation of operating systems, such as Windows 7, Windows XP embedded, RMOS3 or Linux
- Integration and installation of driver software and image installation, e.g. for additional plug-in cards, controllers and memory media or for complete turnkey systems
- Specially for system integrators and plant constructors:
  - NEW S7-Open Modbus TCP PN CPU: for plant-wide Ethernet communication in industrial and infrastructure automation
  - SOFTNET S7/LINUX, SOFTBUS/LINUX and SOFTBUS/LINUX RED: provide communications capability for IT islands in the industrial LINUX environment
- Remote Operate solutions with HMI software for industrial telecontrol based on Ethernet

Service for customized products

With special service and support concepts we provide you with comprehensive support from A to Z.
The portfolio covers the entire product lifecycle and includes pre-sales and after-sales support, such as:
- Requirements analysis, concept creation, solution generation
- Competent project support from the offer through to delivery and beyond
- Individual repair concepts and a global service network
- 24-hour product support over the SIMATIC Hotline.

Examples of sector products: Flexible industrial PC for mechanical engineering and turnkey HMI operator station

Online service tool PED – Product Equipment Data

With the PED service tool, you can identify and manage device and component data of SIMATIC IPCs/PGs online and worldwide at any time by means of standard Internet browsers.
➜ *More details on page 15.*

Logistics for customized products

With individual logistics solutions for customer-specific products, you will receive agreements that are ideally tailored to your needs and which provide you with maximum planning security, for example, delivery and dispatch in accordance with Kanban or just-in-time.

Examples of individualized services

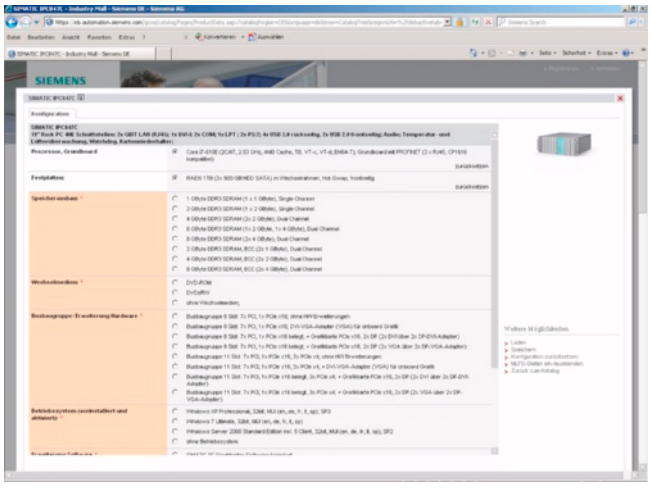
- Customer-specific certification and approval of hardware and software
- Product upgrades
- Configuration and design freeze: individual availability agreements for unchanged hardware and software versions of the products with image compatibility
- Replacement parts in centralized or decentralized spare parts storage: For individually agreed periods or, where applicable, last-time buying and storage of components
- Change notices: Individual agreements for customer information management, e.g. version updates, product discontinuation, phase-out announcements
- Individual labeling: On the device and/or product packaging, e.g. customized item/device/inventory numbers, warehouse barcodes or packing and safety instructions
- Supply of all accessories, e.g. adapter cables, keyboards or accompanying documents and manuals
- Kanban supply corresponding to the needs of the organizational units in the production sequence
- Just-in-time delivery of customer-specifically produced hardware at the exact time when it is needed in the production sequence or in the logistics chain
- Reuse of packaging instead of recycling:
  The packaging materials are reused for transporting the next delivery.

Further information: **siemens.com/customized-automation**
E-mail: **customized.automation@siemens.com**

Online Configuration and Ordering Made Easy!

With the SIMATIC IPC online configurator, you can easily and individually assemble your industrial PC online in accordance with your requirements.

Configuration faults are excluded thanks to the automatic plausibility check. The connection to the Industry Mall ensures the comfortable transfer of your data to the ordering process. The status indication provides information on the processing state of your order.



Advantages at a glance

- Complete and up-to-date SIMATIC IPC product overview
- Easy selection and configuration – configuration faults are excluded
- All options at a glance
- Easy order placement via the Mall

Take advantage of these benefits and configure your SIMATIC IPC:
siemens.com/ipc-configurator

SIMATIC IPCs are available with pre-installed and activated Microsoft operating systems, e.g.

32-bit operating systems
- Windows Server 2003/2008
- Windows XP Professional
- Windows XP Embedded
- Windows Embedded Standard 2009
- Windows Embedded Standard 7
- Windows 7 Ultimate

64-bit operating systems
- Windows Server 2008 R2
- Windows 7 Ultimate

There is no need for the usual product activation over the Internet or by phone (in the absence of an Internet connection).

The industrial PCs are ready to operate immediately, and thus your commissioning overhead is minimized and you save time and costs.

Even after servicing, following reinstallation from the Restore DVD or Recovery DVD, Windows is immediately active.

Furthermore we ensure that you can continue to obtain your turnkey SIMATIC IPC even if the operating system is no longer commercially available, for example Windows XP.

References for PC-based Automation

PC-based system for machine data acquisition optimizes the production of farming machinery

Retrofitting a woodworking machine for high performance, precision and clear diagnostics

Requirement

AGCO GmbH, one of the largest manufacturers and suppliers of tractors and farming machinery worldwide, offers high-tech solutions for agriculture.

To introduce more efficient, resource-saving and therefore cost-effective production processes in the factory, AGCO has integrated a central, plant-wide machine data acquisition system using panel PCs. Due to the need for retrofitting in the existing environment, flexible and space-saving installation of the panel PCs was paramount.

Solution

More than 200 SIMATIC HMI IPC477C PRO panel PCs with all-round protection for central machine data acquisition with communications interfacing to the production machines and the production planning computer. Mounting of the panel PCs directly at the machine without additional control boxes on stand-alone columns.

Customer benefits

Enhanced efficiency by optimizing the complete production organization through a high degree of uniformity. Consumption of resources has been minimized thanks to low-paper manufacturing. Through the easy, cost-saving, retrofitting of the panel PC directly in manufacturing on a stand, there was no need for additional installation of a control desk, and the costs could be reduced.

Requirement

Heinrich Kuper GmbH & Co. KG is an internationally active, medium-scale company in woodworking and plastics technology based in Rietberg, Germany. It specializes in retrofitting older woodworking machines. The customer required modernization of his plant with the focus on drive systems and control technology to achieve high performance and precision as well as transparent diagnostics.

Solution

In the past, machines and plants for wood-working were equipped with specially developed, proprietary controllers. In the case of retrofit projects today, future-proof standard components are used. Specialists at the Kuper company decided in favor of integrating standard automation and safety technology in a single unit with the SIMATIC WinAC RTX F software controller in a fan-free and maintenance-free IPC, the SIMATIC IPC427C Microbox PC. PROFINET as an innovative fieldbus connects distributed I/O, safety and operator panels quickly and easily.

Customer benefits

The compact PC-based automation solution multiplies the performance and precision of the plant. Implementation of PROFINET resulted in a series of additional advantages such as the diagnostics capability. Integration of standard and fail-safe automation in a single unit achieved component savings. The size of the cabinet was reduced by 20 percent and the wiring by 50 percent. The customer benefited from a high level of operating convenience and minimized machine downtimes.

Reference video on the Internet at:
siemens.com/reference-video-kuper

Innovative safety solution in PET bottle manufacturing

Requirement

With 20 years of experience in PET bottle manufacturing, beverage bottling and packing, SIPA Berchi of Parma, Italy has considerable expertise. The company required an innovative solution for the processes of blow molding, labeling, filling and sealing in the form of a PC-based solution with Safety Integrated.

Solution

Instead of a conventional controller, conventional safety cabling and a PC, the modular, PC-based embedded controller SIMATIC S7-mEC was implemented with the preinstalled, fail-safe software controller SIMATIC WinAC RTX F. The PROFINET fieldbus was used with SIMATIC ET 200S distributed I/O. Building on these innovative products, SIPA control tasks, Safety and visualization could be implemented on one integrated and rugged platform.

Customer benefits

SIPA Berchi benefited from an increase in performance for the PLC and HMI applications. SIMATIC WinAC RTX F reduced the time and costs for engineering because Safety was programmed using SIMATIC STEP 7 in the same manner as the standard PLC program.

Connecting the Safety sensors via PROFINET along with the concurrent reduction in cabling costs lowers the outlay both for new machines, and modernization. Use of a SIMATIC Thin Client as a low-cost operator station which is simply connected to the modular embedded controller via PROFINET brings further advantages.

Reference video on the Internet at:
siemens.com/reference-video-sipa-berchi

High-performance industrial PC for reliable control and monitoring of wind power plants

Requirement

All Siemens turbines for offshore wind power plants feature special technical characteristics that ensure long-term, low-maintenance operation. In contrast to sites on land, offshore wind farms are not always accessible to service teams. The basic quality requirements and standards for all components used in terms of absolute fail-safety and reliability, are therefore extremely high.

Solution

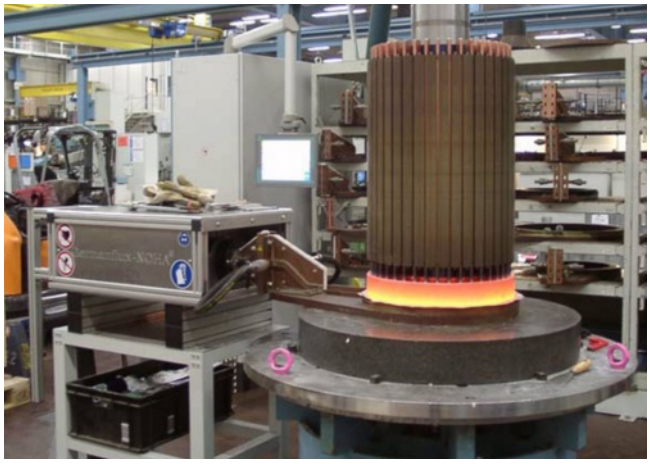
The SIMATIC Box PC of the 627 series that has been implemented matches the requirements of the solution provider all the way down the line. The industrial PC is designed for 24-hour continuous duty at ambient temperatures up to 55 °C. For reliable operation, the Box PC is installed in a solid metal housing that is resistant to shock and vibration and that demonstrates a high degree of of electromagnetic compatibility (EMC). For a high level of data security, the option of a mirror disk system with two hard disks (RAID1) was selected. The RAID1 controller is already onboard, and does not occupy a PCI slot.

The rugged, reliable hardware with extremely compact dimensions in durable industrial design also stands up to the demands of continuous operation in a harsh environment.

Customer benefits

Spanning device generations, the Box PC for universal applications offers identical mounting dimensions and fixing solutions as well as interfaces and function elements that are accessible from the front. When migrating to a successor product, there is therefore no need for adaptation to a new hardware platform. Through compliance with international standards, such as CE and UL, and worldwide service, the Box PC can be implemented round the globe.

Flexible test systems on a rack PC platform for worldwide use



Compact PC-based automation solution for induction soldering

Requirement

Automatic quality assurance systems from LXInstruments must check and document the quality of manufactured goods quickly and thoroughly. They must also be as cost-effective as possible, because they do not contribute directly to the value-adding process. A special characteristic and, at the same time, one of the greatest challenges for function test systems is that almost no two quality inspections or function checks are identical. Even the requirements of manufacturers in the same sector with similar products can differ totally.

Solution

The basis of the Open Test Platform (OTP) of LXInstruments is a SIMATIC Rack PC of the 547 series from Siemens. Seven PCI and PCI-Express slots offer sufficient opportunities for expanding the computer with special PCI instrumentation cards. The integrated Gbit LAN interfaces of the computer establish the connection to all the available instrumentation I/O. A RAID system is used to ensure that the data obtained from the measurements is stored securely. The controller required for this purpose is already integrated in the chipset of the mainboard, so it does not occupy any of the slots.

Customer benefits

For LXInstruments, the rack PC is an extremely reliable industrial PC with a high level of continuity regarding the interfaces and installation. High availability supports long-term investment security and even use in the next OTP generation. This gives planning certainty and saves costs due to simplified hardware tests.

Requirement

Germanflux-NOHA GmbH in Waldbrunn, Germany, markets the patented technique of focused infrared (FIR) radiation heating. An innovative solution was required for customers in the automotive, aerospace, traffic and energy technology, construction, plant/machine construction and medical engineering sectors. A rugged easily certified platform was required on which several tasks (control, visualization, data processing) could be performed and that would obviate the need for a control cabinet for the operator terminal.

Solution

The compact PC-based automation solution comprises: a turnkey embedded bundle based on the Microbox PC SIMATIC IPC427 with the preinstalled SIMATIC WinAC RTX automation software for controlling the heating process, acquiring process data as well as conditioning and archiving data, plus SIMATIC WinCC for displaying diverse process variables. For displaying the process data and visualizing the heating processes, SIMATIC Flat Panel monitors are used with all-round protection to IP65.

Customer benefits

Important process data such as power, temperature and time can be reliably archived to verify the production quality over the long term. This simplifies certification of plants of this type. The open system of the rugged IPC427 enables further PC applications in addition to the automation tasks to be implemented in a compact manner on one platform. Costs for cabinets are reduced thanks to the SIMATIC Flat Panel monitors with all-round IP65 protection.

Step into the world of SIMATIC

This brochure has given you an initial overview of the extensive SIMATIC portfolio for factory automation – and of the advantages for you as a machine builder and plant operator. Further information on the individual families of systems can be found in the Internet sites listed below.

S I M A T I C

SIMATIC is a principal component of Totally Integrated Automation, the comprehensive and integrated range of products and systems for automation:
www.siemens.com/tia

SIMATIC – the leading automation system for industry:
www.siemens.com/simatic

Get to know the SIMATIC consistency through its system features:
www.siemens.com/simatic-system-features

SIMATIC PCS 7	SIMATIC Controller	SIMATIC ET 200
The powerful, scalable process control system for all sectors	Powerful controller based on various hardware platforms	The distributed, modular I/O system for all requirements
www.siemens.com/simatic-pcs7	**www.siemens.com/simatic-controller**	**www.siemens.com/simatic-et200**

SIMATIC Software	SIMATIC Technology	SIMATIC HMI
Industrial software for maximum efficiency in every phase of an automation project	The comprehensive range of products for performing technological tasks	The complete range for operator control and monitoring
www.siemens.com/simatic-software	**www.siemens.com/simatic-technology**	**www.siemens.com/simatic-hmi**

SIMATIC PC-based Automation	SIMATIC IT	SIMATIC NET
Comprehensive range of hardware and software products for PC-based Automation	The basis for customer-specific, integrated MES solutions	The extensive range of products and systems for industrial communication
www.siemens.com/pc-based-automation	**www.siemens.com/simatic-it**	**www.siemens.com/simatic-net**

SIMATIC Safety Integrated	SIMATIC Sensors	SIPLUS extreme
The seamless system for safety technology that integrates smoothly and completely into standard automation	Sensors for an enormous variety of requirements in the production industry	Products for industrial applications in harsh ambient conditions and extreme environments
www.siemens.com/simatic-safety-integrated	**www.siemens.com/simatic-sensors**	**www.siemens.con/siplus-extreme**

Get more information

More information on SIMATIC PC-based Automation and SIMATIC IPCs:
www.siemens.com/pc-based-automation

The optimum configuration for your application:
www.siemens.com/ipc-configurator

Online Service Tool PED – for fast information on the equipment of your SIMATIC IPC and the management of your field inventory:
www.siemens.com/ped

After Sales Information System for SIMATIC IPC:
www.siemens.com/asis

More information on Industrial Security:
www.siemens.com/industrialsecurity

Your personal contact partner is listed at:
www.siemens.com/automation/partner

Information material for download:
www.siemens.com/simatic/printmaterial

For further details, see SIMATIC Guide manuals:
www.siemens.com/simatic-docu

Electronic ordering via the Internet with the Industry Mall:
www.siemens.com/industrymall

Siemens AG
Industry Sector
Industrial Automation Systems
Postfach 48 48
90026 NÜRNBERG
GERMANY

www.siemens.com/automation

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SIMATIC IPC

Technical specifications

Brochure · June 2012

SIMATIC IPC

Answers for industry.

SIEMENS

	SIMATIC Rack PC – Flexible, powerful industrial PCs in 19" design			SIMATIC Box PC – Compact and rugged industrial PCs	
					
	SIMATIC IPC547D	**SIMATIC IPC647C**	**SIMATIC IPC847C**	**SIMATIC IPC227D**	**SIMATIC IPC427C**
Design	19" rack, 4 HU	19" rack, 2 HU	19" rack, 4 HU	Embedded industrial PC	Embedded industrial PC
Installation	Prepared for telescopic rails, for horizontal and vertical installation, 19" mounting bracket removable from the outside; tower kit (optional) for conversion to tower PC	Prepared for telescopic rails, for horizontal installation, 19" mounting bracket can be removed from the outside	Prepared for telescopic rails, for horizontal and vertical installation, 19" mounting bracket can be removed externally; tower kit (optional) for conversion to a tower PC	DIN rail, wall mounting, portrait mounting, side mounting	on DIN rail, alternative wall mounting using supplied fixing bracket, portrait mounting using front portrait mounting kit (optional) for mounting with the smallest surface in the control cabinet
General features					
Processor	Intel Core i7-2600(4C/8T, 3.40 GHz, 8 MB cache, Turbo Boost, VT-x/-d, iAMT, EM64T) Intel Core i5-2400(4C/4T, 3.10 GHz, 6 MB cache, Turbo Boost, VT-x/-d, iAMT, EM64T) Intel Pentium Dual Core G850 (2C/2T, 2.90 GHz, 3 MB cache, VT-x, EM64T)	Intel Core i7-610E (2C/4T, 2.53 GHz, 4 MB cache, Turbo Boost, VT-x/-d, iAMT, EM64T) Intel Core i5-520E (2C/4T, 2.4 GHz, 3 MB cache, Turbo Boost, VT-x/-d, iAMT, EM64T) Intel Core i3-330E (2C/4T, 2.13 GHz, 3 MB cache, VT-x, EM64T)	Intel Core i7-610E (2C/4T, 2.53 GHz, 4 MB cache, Turbo Boost, VT-x/-d, iAMT, EM64T) Intel Core i5-520E (2C/4T, 2.4 GHz, 3 MB cache, Turbo Boost, VT-x/-d, iAMT, EM64T) Intel Core i3-330E (2C/4T, 2.13 GHz, 3 MB cache, VT-x, EM64T)	Intel Atom E660 (1.3 GHz, 2 GB RAM) Intel Atom E640 (1.0 GHz, 1 GB RAM) Intel Atom E620 (600 MHz, 512 MB RAM)	Intel Core2 Duo SU9300: (2x1.2 GHz, 800 MHz FSB, 3 MB L2 cache) Intel Core2 Solo ULV SU3300: (1x1.2 GHz, 800 MHz FSB, 3 MB L2 cache, ultra-low voltage CPU) Intel Celeron M ULV 722: (1.2 GHz, 800 MHz FSB, 1 MB L2 cache, ultra-low voltage CPU)
Main memory	From 1 GB DDR3 1333 SDRAM (dual channel support); 4 x DIMM; configurable up to 16 GB	From 1 GB DDR3 1066 SDRAM (dual-channel support); 2 x DIMM; configurable up to 8 GB, ECC optional	From 1 GB DDR3 1066 SDRAM (dual-channel support); 2 x DIMM; configurable up to 8 GB, ECC optional	From 512 MB Retentive memory: MRAM 512 KB (optional)	From 1 GB DDR3 1066 SDRAM; SODIMM; configurable up to 4 GB; retentive memory: Static RAM 2 MB
Free expansion slots	4 x PCI, 1 x PCIe x8 (1 lane), 1 x PCIe x16 (4 lanes), 1 x PCIe x16; all 312 mm long	2 x PCI, 1 x PCIe x16; all 312 mm long or 1 x PCI, 1 x PCIe x8 (4 lanes), 1x PCIe x16; all 312 mm long	7 x PCI, 1 x PCIe x16 (all long) or 7 x PCI, 1 x PCIe x16, 3 x PCIe x4; all 312 mm long	1 x PCIe (optional); 4 digital inputs and outputs, 24 V (optional)	Up to 3 x PCI-104 (with expansion frame)
Graphics	Intel HD 2000 graphics controller integrated in processor; Shared video memory up to 1.7 GB; up to 2560 x 1600 pixels / 32-bit / 60 Hz Graphics Card: NVIDIA Quadro NVS 300 (optional) Dual Head: 2 x VGA or 2 x DVI-D, PCIe x16, 512 MB; max. analog resolution (VGA): 2048 x 1536 pixels / 85 Hz; max. digital resolution (DVI): 1920 x 1200 pixels / 60 Hz	Intel HD graphics controller integrated in processor; dynamic video memory up to 1.7 GB; up to 2048 x 1536 pixels/16 bit/75 Hz; graphics card: NVIDIA Quadro NVS 295 (optional) (dual-head: 2 x VGA or 2x DVI-D over DP adapter), PCIe x16; 256 MB; max. analog resolution (VGA): 2048 x 1536 pixels / 75 Hz ; max. digital resolution (DVI): 1920 x 1200 pixels / 60 Hz	Intel HD graphics controller integrated in processor; dynamic video memory up to 1.7 GB; up to 2048 x 1536 pixels/16 bit/75 Hz; graphics card: NVIDIA Quadro NVS 295 (optional) (dual-head: 2 x VGA or 2x DVI-D over DP adapter), PCIe x16; 256 MB; max. analog resolution (VGA): 2048x1536 pixels / 75 Hz max. digital resolution (DVI): 1920x1200 pixels / 60 Hz	Integrated into Intel Atom CPU E6x0; 8 to 256 MB (shared memory); 1920 x 1200 Pixels, 60 Hz, 32-Bit color depth	Intel GMAX4500 graphics controller integrated in chipset; dynamic video memory up to 512 MB; CRT: 1920 x 1200 DVI: 1920 x 1200
Power supply / temporary voltage interruption	AC: 100-240 V, 50-60 Hz / max. 20 ms (in accordance with NAMUR) AC, redundant: 100-240 V, 50-60 Hz/max. 20 ms (optional)	100-240 V AC, 50-60 Hz / max. 20 ms (in accordance with NAMUR) AC, redundant: 100-240 V, 50-60 Hz/max. 20 ms (optional)	100-240 V AC, 50-60 Hz / max. 20 ms (in accordance with NAMUR) AC , redundant: 100-240 V, 50-60 Hz / max. 20 ms (opt.)	24 V DC; 20.4 ... 28.8 V, isolated / max. 15 ms (in accordance with NAMUR); On/Off switch	
Operating system					
Preinstalled and activated, supplied on restore CD/DVD (optionally without operating system)	Windows 7 Ultimate (32/64-bit)[1)] Windows XP Professional (32-bit)[1)] Windows Server 2008 R2 (64-bit) incl. 5 Clients[1)] Windows Server 2008 (32-bit) incl. 5 Clients[1)]	Windows 7 Ultimate (32/64-bit)[1)] Windows XP Professional (32-bit)[1)] Windows Server 2008 R2 (64-bit) incl. 5 Clients[1)] Windows Server 2008 (32-bit) incl. 5 Clients[1)] Windows Server 2003 R2 (32-bit) incl. 5 Clients[1)]	Windows 7 Ultimate (32/64-bit)[1)] Windows XP Professional (32-bit)[1)] Windows Server 2008 R2 (64-bit) incl. 5 Clients[1)] Windows Server 2008 (32-bit) incl. 5 Clients[1)] Windows Server 2003 R2 (32-bit) incl. 5 Clients[1)]	Microsoft Windows Embedded Standard 7 Windows Embedded Standard 2009 (on SSD, CF or HDD) Windows 7 Ultimate (on SSD or HDD) Windows XP Professional (on SSD or HDD)	Microsoft Windows Embedded Standard 7 (on SSD, CF or HDD) Windows Embedded Standard 2009 (on SSD, CF or HDD) Windows 7 Ultimate (on SSD or HDD) Windows XP Professional (on SSD or HDD)
Others	Project-specific: Linux [6)], others on Request	Can be ordered separately: RMOS3 V3.50 real-time operating system; project-specific: Linux [6)] others on request	Can be ordered separately: RMOS3 V3.50 real-time operating system; project-specific: Linux [6)], others on request	Project-specific: Linux [6)]	–
Packages, bundles	Packages with WinCC flexible, WinCC V7, WinCC RT Advanced, WinCC RT Professional and WinAC RTX (F)	Packages with WinCC flexible, WinCC V7, WinCC RT Advanced, WinCC RT Professional and WinAC RTX (F)	Packages with WinCC flexible, WinCC V7, WinCC RT Advanced, WinCC RT Professional and WinAC RTX (F)	Packages with WinCC flexible, WinCC RT Advanced and WinAC RTX (F), turnkey bundles with WinCC RT Advanced and/or WinAC RTX (F)	Packages with WinCC flexible, WinCC V7, WinCC RT Advanced/ Professional and WinAC RTX (F), turnkey bundles with WinCC flexible /WinCC RT Advanced and/or WinAC RTX (F); WinCC V7 or WinCC RT Professional
Drives					
Hard drives (3.5" Serial ATA with NCQ technology) / SSD / 3.5" Serial Attached SCSI (SAS) with Zero-Maintenance Cache Protection Module (ZMM)	Internal installation or in swap frame at the front: 500 GB or 1 TB; 2 x 500 GB; SSD 50 GB (SATA, High Endurance); RAID1 2 x 1 TB (SATA); RAID1 2 x 1 TB (SATA) + SSD 50 GB (SATA, SLC), RAID contr. onboard; RAID5 3 x 1 TB (SATA, RAID controller onboard) [2)]	Internal installation or in swap frame at the front: 250 or 500 GB; 2 x 500 GB; SSD 50 GB (SATA, High Endurance); RAID1 2 x 500 GB (SATA, RAID contr. onboard) [2)] RAID1 2 x 1 TB (SAS, RAID contr. PCIe x8, ZMM) [2)]	Internal installation or in swap frame at the front: 250 or 500 GB; 2 x 500 GB; SSD 50 GB (SATA, High Endurance); RAID1, 2 x 500 GB, RAID5 3 x 500 GB (SATA, RAID controller onboard)2) RAID1 2 x 1 TB, RAID5 3 x 1 TB (SAS, RAID controller PCIe x8)	None; ≥ 250 GB, 2.5"; SSD 50 GB (SATA, High Endurance); SSD 80 GB (SATA, Standard)	None; ≥ 250 GB, 2.5"; SSD 50 GB (SATA, High Endurance); SSD 80 GB (SATA, Standard)
CompactFlash Card (CFC)	–	Slot for CFC at the front (optional)	–	Slot for CFC up to 16 GB (externally accessible)	Slot for CFC up to 16 GB (externally accessible), CFC internally up to 16 GB (optional)
Optical drives	DVD-ROM or DVD ± R/RW	DVD ± R/RW, slimline	DVD-ROM or DVD ± R/RW	Connection via USB interface	Connection via USB interface
Slots	6 (internal: 2 x 3.5", front: 3 x 5.25", 1 x 3.5") or 6 (internal: 2 x 3.5", front: 3 x low-profile swap frame, 1 x 3.5")	3 (internal: 2 x 3.5", front: 1 x 12.7 mm slimline) or 3 (front: 2 x 3.5" low profile swap frames, 1 x 12.7 mm slimline)	6 (internal: 2 x 3.5", front: 3 x 5.25", 1 x 3.5") or 6 (internal: 2x 3.5", front: 3 x low-profile swap frame, 1x 5.25", 1x 3.5")	–	–
Interfaces					
PROFIBUS/MPI	–	1 x 12 Mbit/s (isolated, compatible with CP 5611) optional	1 x 12 Mbit/s (isolated, compatible with CP 5611) optional	–	1 x 12 Mbit/s (isolated, compatible with CP 5611) optional
PROFINET	–	1 x 10/100 Mbit/s (with integrated 3-port switch, compatible with CP 1616) optional	1 x 10/100 Mbit/s (with integrated 3-port switch, compatible with CP 1616), optional	PROFINET with RT (Real-Time) over Ethernet	1 x 10/100 Mbit/s (with integrated 3-port switch, CP 1616-compatible), optional

for universal use

SIMATIC IPC627C	SIMATIC IPC827C	
Box PC, built-in unit	Box PC, built-in unit	Design
Wall-mounted using supplied mounting bracket, portrait assembly using front/portrait assembly kit (optional) for mounting with the smallest surface in the control cabinet	Wall-mounted using supplied mounting bracket, portrait assembly using front/portrait assembly kit (optional) for mounting with the smallest surface in the control cabinet	Installation
		General features
Intel Core i7-610E (2C/4T, 2.53 GHz, 4 MB cache, Turbo Boost, VT-x/-d, iAMT, EM64T) Intel Core i3-330E (2C/4T, 2.13 GHz, 3 MB cache, VT-x, iAMT, EM64T) Intel Celeron P 4502 (2C/2T, 1.86 GHz, 2 MB cache)	Intel Core i7-610E (2C/4T, 2.53 GHz, 4 MB cache, Turbo Boost, VT-x/-d, iAMT, EM64T) Intel Core i3-330E (2C/4T, 2.13 GHz, 3 MB cache, VT-x, iAMT, EM64T) Intel Celeron P 4502 (2C/2T, 1.86 GHz, 2 MB cache)	Processor
from 1 GB DDR3 1066 SDRAM; DIMM; configurable up to 8 GB; ECC optional; retentive memory: static RAM 2 MB opt.	from 1 GB DDR3 1066 SDRAM; DIMM; configurable up to 8 GB; ECC optional; retentive memory: static RAM 2 MB opt.	Main memory
1 x PCI (265 mm) and 1 x PCI (175 mm) or 1 x PCI (265 mm) and 1 x PCIe x16 (175 mm)	2 x PCI (290 mm), 1 x PCI (240 mm), 1 x PCIe x4 (185 mm), 1 x PCIe x16 (240 mm)	Free expansion slots
Intel HD graphics controller integrated in processor; Dynamic video memory up to 256 MB; DVI: 2048 x 1536 / 16 bit / 75 Hz	Intel HD graphics controller integrated in processor; Dynamic Video Memory up to 256 MB; DVI: 2048 x 1536 / 16 bit / 75 Hz	Graphics
AC: 120/230 V, 50/60 Hz/max. 20 ms (in accordance with NAMUR); 24 V DC; 20.4 V ... 28.8 V	AC: 120/230 V, 50/60 Hz/max. 20 ms (in accordance with NAMUR); 24 V DC; 20.4 V ... 28.8 V	Power supply / short-term Voltage interruption
		Operating system
Windows 7 Ultimate (32/64-bit)[1)] Windows XP Professional (32-bit)[1)] Windows Embedded Standard 2009 (on CF)	Microsoft Windows 7 Ultimate (32-bit / 64-bit) [1)] Windows XP Professional (32-bit)[1)] Windows Embedded Standard 2009 (on CF)	Preinstalled and activated, supplied on restore CD/DVD (optionally without operating system)
Can be ordered separately: RMOS3 V3.50 real-time operating system; project-specific: Linux [6)], others on request		Others
Packages with WinCC flexible, WinCC V7, WinCC RT Advanced, WinCC RT Professional and WinAC RTX (F)		Packages, bundles
		Drives
none; 250 GB; 500 GB; 2 x 250 GB, 2.5"; SSD 50 GB (SATA, High Endurance) RAID1, 2 x 250 GB 2.5" (RAID controller onboard)	none; 250 GB; 500 GB; 2 x 250 GB, 2.5"; SSD 50 GB (SATA, High Endurance) RAID1, 2 x 250 GB 2.5" (RAID controller onboard)	Hard drives (3.5" Serial ATA with NCQ technology) / SSD / 3.5" Serial Attached SCSI (SAS) with Zero-Maintenance Cache Protection Module (ZMM)
Slot for CFC up to 8 GB (externally accessible); second CFC internally up to 8 GB (optional)	Slot for CFC up to 8 GB (externally accessible); second CFC internally up to 8 GB (optional)	CompactFlash Card (CFC)
DVD ± R/RW	DVD ± R/RW	Optical drives
–	–	Slots
		Interfaces
1 x 12 Mbit/s (isolated, compatible with CP 5611) optional	1 x 12 Mbit/s (isolated, compatible with CP 5611) optional	PROFIBUS/MPI
1 x 10/100 Mbit/s (with integrated 3-port switch, compatible with CP 1616), optional	1 x 10/100 Mbit/s (with integrated 3-port switch, compatible with CP 1616), optional	PROFINET

Ethernet	2 x Intel 10/100/1000 Mbit/s (RJ45), teaming-capable	2 x 10/100/1000 Mbit/s (RJ45), teaming-capable	2 x 10/100/1000 Mbit/s (RJ45), teaming-capable	2 x 10/100/1000 Mbit/s (RJ45), teaming-capable	2 x 10/100/1000 Mbit/sec (RJ45), teaming-capable [7)]
USB (2.0 high-current)	2 x USB front-mounted, 8 x USB rear-mounted, 1 x USB internal (with mech. interlocking, opt.)	2 x USB at the front (one can be used with the door closed), 4 x USB at the rear, 1 x USB internal (with mech. interlocking, opt.)	2 x USB front (one of which is usable with the door locked), 4 x USB at the rear, 1 x USB internal (with mech. interlocking, opt.)	4 x USB	4 x USB
Serial / Parallel	COM1; COM2 and LPT (optional)	COM1; COM2 / LPT1	COM1; COM2 / LPT1	COM1 (RS232, RS485 or CAN); COM2-4 (RS232, opt.)	COM1; COM2 (optional)
VGA / DVI / DisplayPort	1 x DVI-I and 1 x DisplayPort onboard; 2 x VGA or 2 x DVI-D via PCIe graphics card, optional	1 x DVI-I onboard / 1 x VGA via adapter, optional 2 x VGA or 2 x DVI-D via PCIe graphics card, optional	1 x DVI-I onboard / 1 x VGA through adapter, optional 2 x VGA or 2 x DVI-D via PCIe graphics card, optional	1 x DVI-D	1 x DVI-I (VGA via adapter), dual-head (VGA/DVI-D) via Y cable
Keyboard, mouse	2x PS/2	2 x PS/2	2 x PS/2	Connection via USB interface	Connection via USB interface
Audio	1 x Line In; 1 x Line Out; 1 x Mic.	1 x Mic.; 1 x Line Out	1 x Mic.; 1 x Line Out	–	–
Monitoring / diagnostics functions					
Basic functionality	Temperature, fan, watchdog, HDD, RAID, SSD, CMOS battery (alarm locally by means of SIMATIC IPC DiagBase software)	Temperature, fan, watchdog, HDD, RAID, CF, SSD, CMOS battery (alarm locally by means of SIMATIC IPC DiagBase software)	Temperature, fan, watchdog, HDD, RAID, CF, SSD, CMOS battery (alarm locally by means of SIMATIC IPC DiagBase software)	Temperature, watchdog, HDD, RAID, CF, SSD, CMOS battery (alarm locally by means of SIMATIC IPC DiagBase software)	Temperature, watchdog, HDD, RAID, CF, SSD, CMOS battery (alarm locally by means of SIMATIC IPC DiagBase software)
Advanced functions	Temperature, fan, watchdog, hard disks (SMART) • System/Ethernet monitoring • Operating hours counter • Communication via Ethernet; SNMP and OPC interface (optionally via SIMATIC IPC DiagMonitor software)	Temperature, fan, watchdog, hard disks (SMART) • System/Ethernet monitoring • Operating hours counter • CF diagnostics • Communication via Ethernet; SNMP and OPC interface (optionally via SIMATIC IPC DiagMonitor software	Temperature, fan, watchdog, hard disks (SMART) • System/Ethernet monitoring • Operating hours counter • CF diagnostics • Communication via Ethernet; SNMP and OPC interface (optionally via SIMATIC IPC DiagMonitor software	System monitoring • Operating hours counter for preventive maintenance • Maintenance mode • Networking (LAN); SNMP and OPC interface (optionally via SIMATIC IPC DiagMonitor software)	Temperature, watchdog, hard disks (SMART) • System/Ethernet monitoring • Operating hours counter • CF diagnostics • Communication via Ethernet; SNMP and OPC interface (optionally via SIMATIC IPC DiagMonitor software)
Remote access	via Intel Active Management Technology (iAMT) 7.0 [8)] and SIMATIC IPC Remote Manager	via Intel Active Management Technology (iAMT) 6.0 and SIMATIC IPC Remote Manager		–	–
Front LEDs	POWER, HARDDISK, TEMP, FAN, additional HDD alarm LEDs for RAID configurations behind front flap	POWER, HARD DISK; ETHERNET 1/2, PROFIBUS/MPI; SF PROFINET, WATCHDOG, TEMP, FAN, HDD1/2 ALARM	POWER, HARDDISK; ETHERNET 1/2, PN/ MPI/DP, WATCHDOG, TEMP, FAN, HDD1/2/3 ALARM	POWER, three user LEDs, bi-colored, freely programmable	POWER, WATCHDOG; two user LEDs, bi-colored, freely programmable
Ambient conditions					
Degree of protection	IP30 front, IP20 rear	IP41 front, IP20 rear	IP41 front, IP20 rear	Closed (dust protection)	IP20
Protection class	Protection class I compliant with IEC 61140	Protection class I compliant with IEC 61140	Protection class I compliant with IEC 61140	Protection class I compliant with VDE 0106 Part 1 (IEC 536)	
Vibration load during operation [3) 4)]	20 ... 58 Hz: 0.015 mm; 58 ... 200 Hz: 2 m/s^2 (approx. 0.2 *g*) according to IEC 60068-2-6	10 ... 58 Hz: 0.0375 mm; 58 ... 500 Hz: 5 m/s^2 (approx. 0.5 *g*) according to IEC 60068-2-6	10 ... 58 Hz: 0.0375 mm; 58 ... 500 Hz: 5 m/s^2 (approx. 0.5 *g*) according to IEC 60068-2-6	10 ... 58 Hz: 0.075 mm; 58 ... 500 Hz: 9.8 m/s^2 for operation with CF or SSD	
Shock load during operation [3) 4)]	9.8 m/s^2, 20 ms (approx. 1 *g*) according to IEC 60068-2-27	50 m/s^2, 30 ms (approx. 5 *g*) according to IEC 60068-2-27	50 m/s^2, 30 ms (approx. 5 *g*) according to IEC 60068-2-27	150 m/s^2, 11 ms (approx. 15 *g*) for operation with CF or SSD	
Relative humidity	5 ... 80% at 25 °C (no condensation)	5 ... 80% at 30 °C (no condensation)	5 ... 80% at 30 °C (no condensation)	5 ... 80% at 30 °C (no condensation)	
Ambient temperature during operation [5)]	5 ... 40 °C, at full processor capability	5 ... 50 °C, at full processor capability	5 ... 50 °C, at full processor capability	0 ... 50 °C (with CF or SSD), 0 ... 40 °C (with hard disk)	0 ... 55 °C (with CF), 0 ... 50 °C (with SSD), 5 ... 40 °C (with hard disk) customized 60/65 °C on request
Electromagnetic compatibility (EMC)					
Emissions	EN 61000-6-3, EN 61000-3-2 Class D, EN 61000-3-3, FCC Class A			EN 61000-6-3, EN 61000-6-4, CISPR22: 2004 Class B, FCC Class A	
Immunity					
against conducted interference on the supply cables	± 2 kV (IEC 61000-4-4, burst), ± 1 kV (IEC 61000-4-5, surge symm.), ± 2 kV (IEC 61000-4-5, surge asymm.)	± 2 kV (IEC 61000-4-4, burst), ± 1 kV (IEC 61000-4-5, surge symm.), ± 2 kV (IEC 61000-4-5, surge asymm.)	± 2 kV (IEC 61000-4-4, burst), ± 1 kV (IEC 61000-4-5, surge symm.), ± 2 kV (IEC 61000-4-5, surge asymm.)	± 2 kV (IEC 61000-4-4, burst), ± 1 kV (IEC 61000-4-5, surge symm.), ± 2 kV (IEC 61000-4-5, surge asymm.)	
on signal cables	± 2 kV (IEC 61000-4-4; burst; length > 30 m) ± 1 kV (IEC 61000-4-4, burst, length < 30 m) ± 2 kV (IEC 61000-4-5, surge, length > 30 m)	± 1 kV (IEC 61000-4-4, burst; length < 30 m), ± 2 kV (IEC 61000-4-4, burst; length > 30 m)	± 1 kV (IEC 61000-4-4, burst; length < 30 m), ± 2 kV (IEC 61000-4-4, burst; length > 30 m)	± 1 kV (IEC 61000-4-4, burst; length < 30 m), ± 2 kV (IEC 61000-4-4, burst; length > 30 m)	
to electrostatic discharge	± 4 kV contact discharge (IEC 61000-4-2), ± 8 kV air discharge (IEC 61000-4-2)	± 6 kV contact discharge (IEC 61000-4-2), ± 8 kV air discharge (IEC 61000-4-2)		± 6 kV contact discharge (IEC 61000-4-2), ± 8 kV air discharge (IEC 61000-4-2)	
to high-frequency interference	10 V/m 80% AM, 80-1000 MHz and 1.4 - 2 GHz (IEC 61000-4-3); 1 V/m 80% AM, 2.0-2.7 GHz (IEC 61000-4-3); 10 V, 10 KHz to 80 MHz (IEC 61000-4-6)			10 V/m 80% AM, 80-1000 MHz and 1.4 - 2 GHz (IEC 61000-4-3); 1 V/m 80% AM, 2.0-2.7 GHz (IEC 61000-4-3); 10 V, 10 KHz to 80 MHz (IEC 61000-4-6)	
to magnetic fields	100 A/m, 50/60 Hz (IEC 61000-4-8)	100 A/m, 50/60 Hz (IEC 61000-4-8)	100 A/m, 50/60 Hz (IEC 61000-4-8)	100 A/m, 50/60 Hz (IEC 61000-4-8)	
Approvals/guidelines					
Safety	IEC 60950-1 Second Edition; EN 60950-1:2006; UL 60950-1 Second Edition; CSA C22.2 No. 60950-1-07 Second Edition		IEC 60950-1 Second Edition; EN 60950-1:2006; UL 60950-1 Second Edition; CSA C22.2 No. 60950-1-07 Second Edition	EN 60950-1; UL 60950, CAN/CSA-C22.2 No. 60950-1, UL 508; CAN/CSA-C22.2 No. 142 or CAN/CSA-C22.2 No. 14-05	
CE mark/EU directives, approvals	For use in industrial and office areas/cULus (UL 60950), WEEE/RoHS, C-Tick	For use in industrial and office areas/cULus (UL 60950), shipbuilding, WEEE/RoHS, C-Tick	For use in industrial and office areas/cULus (UL 60950), WEEE/RoHS, C-Tick	CE, cULus (508), shipbuilding, WEEE / RoHS, C-Tick	For use in industrial and office areas/cULus (UL508 and UL60950), shipbuilding), WEEE / RoHS, C-Tick
Dimensions and weight					
Installation dimensions (W x H x D)	434 x 177 x 446 mm	430 x 88 x 448 mm	430 x 177 x 448 mm	Basic device: Approx. 191 x 100 x 60 mm	Basic unit: approx. 262 x 134 x 47 mm; Depth from front edge of DIN rail: 52 mm Additional depth per expansion (1-3): +17 mm
Weight	Approx. 19 kg	Approx. 13 kg	Approx. 19 kg	1.5 kg	Approx. 2 kg

*) *Available soon*

1) *MUI (Multi Language User Interface); 5 languages (ENG, GER, FR, SP, IT)*

2) *Hot-swap frame*

3) *Limitations when using optical drives and removable frames*

2 x 10/100/1000 Mbit/s (RJ45), teaming-capable	2 x 10/100/1000 Mbit/s (RJ45), teaming-capable	Ethernet
4 x USB	4 x USB	USB (2.0 high-current)
COM1	COM1	Serial / Parallel
1 x DVI-I (VGA via adapter), dual-head (VGA/DVI-D) via Y cable		VGA / DVI
Connection via USB interface	Connection via USB interface	Keyboard, mouse
–	–	Audio
		Monitoring / diagnostics functions
Temperature, fan, watchdog, HDD, RAID, CF, SSD, CMOS battery (alarm locally by means of SIMATIC IPC DiagBase software)		Basic functionality
Temperature, fan, watchdog, hard disks (SMART) • System/Ethernet monitoring • Operating hours counter • CF diagnostics • Communication via Ethernet; SNMP and OPC interface (optionally via SIMATIC IPC DiagMonitor software)		Advanced functions
via Intel Active Management Technology (iAMT) 6.0 and SIMATIC IPC Remote Manager		Remote access
Two LEDs, bi-colored; two 7-segment displays; freely programmable		Front LEDs
		Ambient conditions
IP20		Degree of protection
Protection class I compliant with VDE 0106 Part 1 (IEC 536)		Protection class
10 ... 58 Hz, 0.075 mm; 58 ... 500 Hz, 9.8 m/s^2 (approx. 1 *g*)		Vibration load during operation [3) 4)]
50 m/s^2, 30 ms (approx. 5 *g*)		Shock load during operation [3) 4)]
5 ... 80% at 25 °C (no condensation)		Relative humidity
55 °C/ 50 °C / 5 ... 45 °C (10 W on PCI / 20 W on PCI / maximum configuration)		Ambient temperature during operation [5)]
		Electromagnet. compatibility (EMC)
EN 61000-6-3, EN 61000-6-4, CISPR22: 2004 Class B, FCC Class A		Emissions
		Immunity
± 2 kV (IEC 61000-4-4, burst), ± 1 kV (IEC 61000-4-5, surge symm.), ± 2 kV (IEC 61000-4-5, surge asymm.)		against conducted interference on the supply cables
± 1 kV (IEC 61000-4-4, burst; length < 30 m), ± 2 kV (IEC 61000-4-4, burst; length > 30 m)		on signal cables
± 6 kV contact discharge (IEC 61000-4-2), ± 8 kV air discharge (IEC 61000-4-2)		to electrostatic discharge
10 V/m 80% AM, 80-1000 MHz and 1.4-2 GHz (IEC 61000-4-3); 1 V/m 80% AM, 2.0-2.7 GHz (IEC 61000-4-3); 10 V, 10 KHz to 80 MHz (IEC 61000-4-6)		to high-frequency interference
100 A/m, 50/60 Hz (IEC 61000-4-8)		to magnetic fields
		Approvals/guidelines
AC: EN 60950-1; UL 60950-1, CAN/CSA-C22.2 No. 60950-1-03 DC: EN 61131-2; UL 508, CSA C22.2 No. 142		Safety
For use in industrial and office areas/cULus (UL508 and UL60950), UL Class 1 Div. 2, RoHS, KCC, C-Tick, shipbuilding	For use in industrial and office areas/cULus (UL508 and UL60950), RoHS, KCC, C-Tick	CE mark/EU directives, approvals
		Dimensions and weight
298 x 100 x 301 mm (incl. mounting rail); 298 x 80 x 301 mm (incl. mounting rail, without optical drives)	298 x 175 x 301 mm (incl. mounting rail); 298 x 155 x 301 mm (incl. mounting rail, without optical drives)	Installation dimensions (W x H x D)
Approx. 7 kg	Approx. 9 kg	Weight

[3)] *Restrictions when operating optical drives and swap frames*

	SIMATIC IPC277D – Maintenance-free and optimized performance with Intel Atom processors					SIMATIC HMI IPC477C – Compact, rugged and maintenance-free in embedded technology						
												
Design / Display	**7" Touch**	**9" Touch**	**12" Touch**	**15" Touch**	**19" Touch**	**12" Touch**	**12" Key**	**15" Touch**	**15" Key**	**15" PRO**	**19" Touch**	**19" PRO**
Size in inches (resolution in pixels)	7" wide (800 x 480)	9" wide (800 x 480)	12" wide (1280 x 800)	15" wide (1280 x 800)	19" wide (1366 x 768)	12" SVGA (800 x 600)		15" XGA (1024 x 768)			19" SXGA (1280 x 1024)	
Front type	Touch screen	Touch screen	Touch screen	Touch screen	Touch screen	Touch screen	Keys	Touch screen	Keys	Touch screen	Touch screen	
Central / distributed configuration	■ / –					■ / –					■ / –	
Operator controls												
Keyboard / function keys / mouse	– / – / –			Via front USB interface		– / – / –	■ / 36 / ■	– / – / –	■ / 36 / ■	– / – / –	– / – / –	
Touch screen (analog/resistive)	■					■	–	■	–	■	■	
General features												
Processor	Intel Atom E660 (1.3 GHz, 2 GB RAM); Intel Atom E640 (1.0 GHz, 1 GB RAM)					Intel Core2 Duo SU9300 (2 x 1.2 GHz, 800 MHz FSB, 3 MB L2 cache); Intel Core2 Solo ULV SU3300 (1 x 1.2 GHz, 800 MHz FSB, 3 MB L2 cache, ultra low voltage CPU) Intel Celeron M ULV 723 (1.2 GHz, 800 MHz FSB, 1 MB L2 cache, ultra low voltage CPU)						
Main memory	1 GB retentive memory: MRAM 512 KB (optional)					From 1 GB DDR3 1066 SDRAM; SODIMM; configurable up to 4 GB; retentive memory: Static RAM 2 MB						
Free expansion slots	–					1 slot for CompactFlash card						
Operating system	Microsoft Windows Embedded Standard 7, Windows Embedded Standard 2009 (on SSD / CF Card); Windows 7 Ultimate (32-bit), Windows XP Professional (on SSD); project-specific: Linux [6]					Microsoft Windows Embedded Standard 7 or Windows Embedded Standard 2009 (on CF card or SSD), Windows 7 Ultimate (32-bit) or Windows XP Professional (on SSD)						
Packages, bundles	Packages with WinCC flexible, WinCC RT Advanced and WinAC RTX (F)/turnkey bundles with WinCC RT Advanced and/ or WinAC RTX (F)					Packages with WinCC flexible, WinCC V7, WinCC RT Advanced/Professional and WinAC RTX (F), turnkey bundles with WinCC flexible/WinCC RT Advanced and/or WinAC RTX (F) and WinCC V7 or WinCC RT Professional						
Power supply	24 V DC; 20.4 ... 28.8 V, isolated / max. 15 ms (in accordance with NAMUR); On/Off switch					24 V DC; 20.4 ... 28.8 V, isolated / max. 15 ms (in accordance with NAMUR); On/Off switch						
MTBF backlighting	Up to 80,000 h (under continuous 24 h operation, temperature-dependent), up to 50,000 h with 19"; dimmable from 0 - 100%					Typically 50,000 h (depending on temperature when operated continuously for 24 h)						
Drives												
Mass storage	Slot for CFC up to 8 GB (externally accessible); SSD 50 GB (SATA, High Endurance) or SSD 80 GB (SATA, Standard)					2 x slot for CFC up to 16 GB, SSD 50 GB (SATA, High Endurance) or SSD 80 GB (SATA, Standard)						
Optical drives	Connection via USB interface					Optional via USB as accessory						
Interfaces												
PROFIBUS/MPI	–					Onboard, isolated, max. 12 Mbit/s, compatible with CP 5611						
PROFINET	PROFINET with RT (Real-Time) over Ethernet					Onboard, 1 x 10/100 Mbit/s (with integrated 3-port switch, compatible with CP 1616), optional instead of PROFIBUS						
Ethernet	2 x onboard, 10/100/1000 Mbit/s, RJ45, teaming-capable					2 x onboard, 10/100/1000 Mbit/s, RJ45, teaming-capable						
USB (2.0 high-current)	3 x at the rear			3 x at the rear, 1 x at the front		1 x front-mounted (except on PRO); 4 x rear-mounted						
Serial / Parallel	COM1: 1 x V.24 (RS232)					COM1: 1 x V.24 (RS232)						
Graphics interface / keyboard / mouse	– / connected via USB ports / connected via USB ports					DVI-I for additional display unit / connected via USB ports / connected via USB ports						
Monitoring / diagnostics functions												
Basic functionality	Temperature, watchdog, CF, SSD, CMOS battery (alarm locally by means of SIMATIC IPC DiagBase software)					Temperature, watchdog, CF, SSD, CMOS battery (alarm locally by means of SIMATIC IPC DiagBase software)						
Advanced functions / remote access	System monitoring: Operating hours counter for preventative maintenance, maintenance mode, networking (LAN); SNMP and OPC interface (optionally via SIMATIC IPC DiagMonitor software)					System monitoring: Operating hours counter for preventative maintenance, maintenance mode, networking (LAN); SNMP and OPC interface (optionally via SIMATIC IPC DiagMonitor software)						
Ambient conditions												
Degree of protection	Front: IP65					IP65 (front) tested in accordance with EN 60529, NEMA 4						
EMC	CE, FFC A, EN 55022A, EN 61000-6-4, EN 61000-6-2					CE, FCCA, 55022A, EN 61000-6-4/61000-6-2						
Vibrations in operation	Tested according to: IEC 60068-2-6: 10 ... 58 Hz: 0.0375 mm, 58 ... 200: 9.8 m/s^2 (1*g*)					Tested according to DIN IEC 60068-2-6: 10 ... 58 Hz: 0.075 mm, 58 ... 200 Hz: 9.8 m/s^2 (1*g*)						
Shock load in operation	Tested according to: IEC 60068-2-27: 50 m/s^2 (5 *g*), 30 ms					Tested in accordance with DIN IEC 60068-2-27: 50 m/s^2 (5 *g*), 30 ms						
Relative humidity	Tested according to DIN IEC 60068-2-78, DIN IEC 60068-2-30: 5 ... 80% at 25 °C (no condensation)					Tested in accordance with IEC 60068-2-78, IEC 60068-2-30: 5 ... 80% at 25 °C (no condensation)						
Ambient temperature during operation	0 ... 50 °C, without fan					0 ... 45 °C						0 ... 40 °C
Certification / EU directives	CE, cULus(508), Marine					CE, cULus (508), shipbuilding (except PRO), C-Tick						
Dimensions												
Operator panel (W x H)	214 x 158 mm	274 x 190 mm	330 x 241mm	415 x 310 mm	483 x 337 mm	400 x 310 mm	483 x 310 mm	483 x 311 mm	483 x 355 mm	400 x 350 mm	483 x 400 mm	483 x 400 mm
Installation dimensions (W x H x D)	197 x 141 x 71 mm	251 x 166 x 71 mm	310 x 221 x 66 mm	396 x 291 x 73 mm	465 x 319 x 73 mm	368 x 290 x 61 mm	450 x 290 x 61 mm	450 x 290 x 65 mm	450 x 321 x 65 mm	450 x 290 x 65 mm	450 x 380 x 68 mm	450 x 380 x 68 mm
Power loss in maximum configuration	24 V DC: max. 27 W	24 V DC: max. 29 W	24 V DC: max. 37 W	24 V DC: max. 42 W	24 V DC: max. 45 W	24 V DC: max. 40 W [3]		24 V DC: max. 45 W [3]			24 V DC: max. 60 W	

*) *Available soon*

1) *With PROFINET onboard 1 Gigabit Ethernet*

2) *GER, ENG, IT, FR, SP, KOR, CHN (traditional), CHN (simplified), JPN*

3) *3 W per slot*

4) *GER, ENG, IT, FR, SP*

5) *Except 15" Touch INOX*

SIMATIC HMI IPC577C – Industrial functionality at an attractive price					SIMATIC HMI IPC677C – Performance and flexibility						
											
12" Touch	**12" Key**	**15" Touch**	**15" Key**	**19" Touch**	**12" Touch**	**12" Key**	**15" Touch**	**15" Key**	**15" Touch INOX**	**19" Touch**	**Design / Display**
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)			19" SXGA (1280 x 1024)	Size in inches (resolution in pixels)
Touch screen	Keys	Touch screen	Keys	Touch screen	Touch screen	Keys	Touch screen	Keys	Touch screen	Touch screen	Front type
■ / –					■ / –						Central / distributed configuration
											Operator controls
– / – / –	■ / – / ■	– / – / –	■ / – / ■	– / – / –	– / – / –	■ / 36 with LEDs / ■	– / – / –	■ / – / ■	– / – / –	– / – / –	Keyboard / function keys / mouse
■	–	■	–	■	■	–	■	–	■	■	Touch screen (analog/resistive)
											General features
Intel Core2 Duo SL9400 (2 x 1.86 GHz, 1066 MHz FSB, 6 MB L2 cache); Intel Core2 Solo ULV SU3300 (1 x 1.2 GHz, 800 MHz FSB, 3 MB L2 cache, ultra low voltage CPU); Intel Celeron M ULV 723 (1.2 GHz, 800 MHz FSB, 1 MB L2 cache, ultra low voltage CPU)					Intel Core i7-610E (2C/4T, 2.53 GHz, 4 MB cache, Turbo Boost, VT-x/-d, iAMT, EM64T); Intel Core i3-330E (2C/4T, 2.13 GHz, 3 MB cache, VT-x, iAMT, EM64T); Intel Celeron P 4502 (2C/2T, 1.86 GHz, 2 MB cache)						Processor
From 1 GB DDR3 1066 SDRAM; SODIMM; configurable up to 4 GB					from 1 GB DDR3 1066 SDRAM; DIMM; configurable up to 8 GB; ECC optional; retentive memory: static RAM 2 MB opt.						Main memory
1 x free PCI slot for expansions (with card retainer); 1 x slot for CompactFlash card					2 free slots for expansions: 2 x PCI or 1 x PCI and 1 x PCIe x 16 (all slots with card retainers); 1 x slot for CompactFlash card						Free expansion slots
Windows Embedded Standard 7 / Embedded Standard 2009 (eng.) on CF Card / Windows 7 Ultimate (32-bit), Windows XP Professional (MUI [2]), opt. without operating system					Windows 7 Ultimate (32/64-bit), Windows XP Professional (MUI [2]), Windows Embedded Standard 2009 (eng.); optionally without operating system						Operating system
Packages with WinCC flexible, WinCC V7, WinCC RT Advanced, WinCC RT Professional and WinAC RTX (F)					Packages with WinCC flexible, WinCC V7, WinCC RT Advanced, WinCC RT Professional and WinAC RTX (F)						Packages, bundles
24 V DC or 100-240 V AC (autorange)					110 / 230 V AC (wide-range), 50/60 Hz; or 24 V DC						Power supply
Typically 50,000 h (depending on temperature when operated continuously for 24 h)					Typically 50,000 h (depending on temperature when operated continuously for 24 h)						MTBF backlighting
											Drives
3.5" SATA hard disk drive (≥ 250 GB), slot for CFC up to 16 GB (externally accessible), SSD 50 GB (SATA, High Endurance) or SSD 80 GB (SATA, Standard)					3.5" SATA hard disk drive (≥ 250 GB), slot for CFC up to 8 GB (externally accessible); Optional: 3.5" SATA hard disk drive (≥ 500 GB), 2 x 2.5" SATA hard disk module (≥ 250 GB), single-disk configuration or RAID1 set pre-configured; RAID1 controller onboard; SSD with 50 GB (SATA, High Endurance) or second CFC holder internally (instead of hard disk and optical drive)						Mass storage
DVD±RW±R					DVD±R±RW (not in combination with option for second CFC holder internally)						Optical drives
											Interfaces
Onboard, isolated, max. 12 Mbit/s, compatible with CP 5611					Onboard, isolated, max. 12 Mbit/s, compatible with CP 5611 (optional)						PROFIBUS/MPI
Onboard, 1 x 10/100 Mbit/s (with integrated 3-port switch, compatible with CP 1616), optional instead of PROFIBUS					Onboard, 1 x 10/100 Mbit/s (with integrated 3-port switch, compatible with CP 1616), optional instead of PROFIBUS						PROFINET
2 x onboard, 10/100/1000 Mbit/s, RJ45, teaming-capable					2 x onboard, 10/100/1000 Mbit/s, RJ45, teaming-capable						Ethernet
1 x front (USB 2.0 high-current), 4 x rear (USB 2.0, 2 of which high-current)					1 x front (USB 2.0 high-current)[5], 4 x rear (USB 2.0, 2 of which are high-current)						USB (2.0 high-current)
COM1: 1 x V.24 (9-pole), LPT 1: optional via PCI plug-in card					COM1: 1 x V.24 (9-pole), LPT 1: optional via PCI plug-in card						Serial / Parallel
DVI-I for additional display unit / connected via USB ports					DVI-I for additional display unit / connected via USB ports						Graphics interface / keyboard / mouse
											Monitoring / diagnostics functions
Temperature, fan, watchdog, HDD, CF, SSD, CMOS battery (alarm locally by means of SIMATIC IPC DiagBase software)					Temperature, fan, watchdog, HDD, RAID, CF, SSD, CMOS battery (alarm locally by means of SIMATIC IPC DiagBase software)						Basic functionality
System monitoring: Operating hours counter for preventative maintenance, maintenance mode, networking (LAN); SNMP and OPC interface (optionally via SIMATIC IPC DiagMonitor software)					System monitoring: Operating hours counter for preventative maintenance, maintenance mode, networking (LAN); SNMP and OPC interface (optionally via SIMATIC IPC DiagMonitor software) / via Intel AMT 6.0 and SIMATIC IPC Remote Manager[8]						Advanced functions / remote access
											Ambient conditions
IP65 (front) tested in accordance with EN 60529, NEMA 4					IP65 (front) tested in accordance with EN 60529, NEMA 4; 15" Touch INOX: IP66K (front)						Degree of protection
CE, FCCA, EN 55022A, EN 61000-6-2, EN 61000-6-4					CE, EN 61000-6-2, EN 61000-6-4						EMC
Tested according to DIN IEC 60068-2-6: 10 ... 58 Hz: 0.075 mm, 58 ... 200 Hz: 9.8 m/s² (1*g*)					Tested according to DIN IEC 60068-2-6: 10 ... 58 Hz: 0.075 mm, 58 ... 500 Hz: 9.8 m/s² (1*g*)						Vibrations in operation
Tested in accordance with DIN IEC 60068-2-27: 50 m/s² (5 *g*), 30 ms					Tested according to DIN IEC 60068-2-29: 50 m/s² (5 *g*), 30 ms, 100 shock loads						Shock load in operation
Tested according to DIN IEC 60068-2-78, DIN IEC 60068-2-30: 5 ... 80% at 25 °C (no condensation)					Tested in accordance with DIN IEC 60068-2-78, DIN IEC 60068-2-30, 5 ... 80% at 25 °C (no condensation)						Relative humidity
0 ... 50 °C in installation space, max 40 °C if front mounted					5 ... 50 °C [6]						Ambient temperature in maximum configu-
CE, cULus (508), C-Tick					CE, cULus (508), shipbuilding, RoHS, C-Tick					add. with UL Class1 Div. 2, ATEX 22, KEMA 10ATEX0182 X Issue 1, C-Tick	**Certification / EU directives**
											Dimensions
400 x 310 mm	483 x 310 mm	483 x 310 mm	483 x 355 mm	483 x 400 mm	400 x 310 mm	483 x 310 mm	483 x 310 mm	483 x 355 mm		483 x 400 mm	Operator panel (W x H)
368 x 290 x 84 mm	450 x 290 x 94 mm	450 x 290 x 87 mm	450 x 321 x 97 mm	450 x 380 x 94 mm	368 x 290 x 123 mm	450 x 290 x 104 mm	450 x 290 x 121 mm	450 x 325 x 124 mm		450 x 380 x 130 mm	Installation dimensions (W x H x D)
max. 60 W [7]		max. 60 W [7]		max. 70 W [7]	max. 140 W [7]		max. 140 W [7]			max. 163 W [7]	Power loss in maximum configuration

[6] *19": 5 ... 45 °C or 5 ... 50 °C in installation space if max. 40 °C at the front)* [7] *Includes 15 W per slot* [8] *For IPC with Core i7, i5 processors*

	SIMATIC HMI Panel PC Ex		SIMATIC HMI Thin Client Ex		SIMATIC Thin Client			SIMATIC Industrial Thin Client	
									
Design	**15" Touch**[1]	**19" Touch**	**15" Touch**[1]	**19" Touch**	**10" Touch**	**15" Touch**	**15" PRO**	**12" Touch widescreen**	**15" Touch widescreen**
Size in inches (resolution in pixels)	15" / XGA (1024 x 768)	19" / SXGA (1280 x 1024)	15" / XGA (1024 x 768)	19" / SXGA (1280 x 1024)	10" / VGA (640 x 480)	15" / VGA (1024 x 768)		12" wide (1280 x 800)	15" wide (1280 x 800)
Front type	Touch screen, Keys		Touch screen, Keys		Touch screen	Touch screen		Touch screen with extended viewing angle	
Max. distance to computing unit	–		–		Unlimited via Ethernet			Unlimited via Ethernet	
Operator controls									
Keyboard	Available as accessory with Ex certification		Available as accessory with Ex certification		Virtual on screen			Virtual on screen	
Function keys / mouse at the front	8 function keys / –		8 function keys, pre-assigned for operation / –		– / –			– / –	
Touch screen (analog/resistive)	■		■		–			■	
General features									
Processor	Intel Atom N270 (1.6 GHz) / Mobile Intel 945GSE		Based on x86		–			Intel Celeron (1.2 GHz)	
Main memory	1 GB DDR2 SDRAM		–		–			512 MB DDR3	
Operating system	Microsoft Windows XP Prof. or Microsoft Windows Embedded Standard 2009		Closed system on the basis of Windows Embedded Standard 2009		–			–	
Graphics	Intel GMA 950 graphics controller integrated in chipset		–		–			Up to 16 million colors	
Power supply / max. power consumption	24 V DC / approx. 60 W	24 V DC / approx. 65 W	24 V DC / approx. 45 W	24 V DC / approx. 50 W	24 V DC / –			24 V DC / approx. 36 W	
Protocols supported	–		RDP, VNC		RDP, Sm@rt Access, VNC, SINUMERIK, Citrix			RDP, Sm@rt Access, VNC, SINUMERIK,	
MTBF backlighting	Typically 50,000 h		Typically 50,000 h		Typically 50,000 h			Typically 80,000 h	
Drives									
Mass storage	CompactFlash 4 GB or 16 GB (not swappable) or HDD 100 GB, USB 16 GB available as an accessory		–		–			2 GB CompactFlash, USB flash drive available as accessory	
Optical drives	Optionally over USB (not for hazardous areas)		–		–			Optionally over USB (not for hazardous areas)	
Interfaces									
Ethernet	1 x 100 Mbit/s Ex e; or fiber-optics 100 Mbit/s (SC) Ex op is		1 x 100 Mbit/s Ex e; or fiber-optics 100 Mbit/s (SC)		1 x 10/100 Mbit/s, RJ45			1 x 10/100/1000 Mbit/s, RJ45	
USB	2 x Ex i; 2 x Ex e ("Zone 1" variant) or 2 x Ex nA ("Zone 2" variant)		2 x Ex i; 2 x Ex e ("Zone 1" variant) or 2 x Ex nA ("Zone 2" variant)		1 x at the rear			2 x at the rear (USB 2.0 high current)	
Serial / Parallel	1 x RS232 or 1 x RS422/485		1 x RS232 or 1 x RS422/485		–			–	
Graphics interface	–		–		–			–	
Ambient conditions									
Degree of protection	IP66 (at the front); IP65 (at the rear)		IP66 (at the front); IP65 (at the rear)		IP20 (at the rear), IP54 (at the front), NEMA 4 (optional)		All-round IP65, enclosure type 4X	IP20 (at the rear), IP65 (at the front)	
EMC	CE, FCCA, 55022A, EN 61000-6-4/61000-6-2		CE, EN 55011, EN 61000-6-4		CE, EN 55011, EN 61000-6-4			CE, EN 61000-6-4	
Vibrations in operation (tested in accordance with DIN IEC 60068-2-6)	3 ... 22 Hz: 1 mm, 22 ... 500 Hz: 9.8 m/s² (1*g*)		3 ... 22 Hz: 1 mm, 22 ... 500 Hz: 9.8 m/s^2 (1*g*)		10 ... 58 Hz: 0.0165 mm, 58 ... 200 Hz: 9.8 m/s^2 (1*g*)	10 ... 58 Hz: 0.0165 mm, 58 ... 200 Hz: 9.8 m/s^2 (1*g*)	10 ... 58 Hz: 0.0375 mm, 58 ... 200 Hz: 1*g* on support arm; 0.5 *g* with basic adapter	10 ... 58 Hz: 0.0375 mm, 58 ... 200: 9.8 m/s2 (1 g)	
Shock load in operation (tested in accordance with DIN IEC 60068-2-29)	150 m/s² (approx. 15*g*), 11 ms when used with CompactFlash		150 m/s^2 (approx. 15*g*), 11 ms		50 m/s^2 (5 *g*), 30 ms			50 m/s2 (5 g), 30 ms	
Relative humidity (tested in accordance with DIN IEC 60068-2-3, DIN IEC 60068-2-30, DIN IEC 60068-2-56)	90 % at 40 °C (no condensation)		90 % at 40 °C (no condensation)		5 ... 85 % at 25 °C (no condensation)			5 ... 85 % at 25 °C (no condensation)	
Ambient temperature during operation	Cold restart: - 10 ... 50 °C, operation: - 20 ... 50 °C, operation with heating: -30 ... 50 °C		Cold restart: - 10 ... 50 °C, operation: - 20 ... 50 °C, operation with heating: -30 ... 50 °C		0 ... 50 °C			5 ... 50 °C	
Certification / EU directives	Version "Zone 1": II 2 (2) G Ex d e mb ib [ib] [op is], IIC T4, II 2 D Ex tD A21 IP65 T90 °C, DNV (shipbuilding), GOST-R, UL-Inmetro (Panel PC only) Version "Zone 2": II 3 (3) G Ex d e mb nA nL [nL] [op is], IIC T4, II 3 (2) G Ex d e mb nA nL [ib] [op is], IIC T4, II 3 (2) D Ex tD A22 IP65 [ibD] T90 °C, GOST-R; UL Class 1 Div. 2		Version "Zone 1": II 2 (2) G Ex d e mb ib [ib] [op is], IIC T4, II 2 D Ex tD A21 IP65 T90 °C, DNV (shipbuilding), GOST-R Version "Zone 2": II 3 (3) G Ex d e mb nA nL [nL] [op is], IIC T4, II 3 (2) G Ex d e mb nA nL [ib] [op is], IIC T4, II 3 (2) D Ex tD A22 IP65 [ibD] T90 °C, GOST-R; UL Class 1 Div. 2		CE, cULus(508)			CE, cULus (508), C-Tick ATEX zone 2/22 (available soon)	
Dimensions									
Operator panel (W x H)	440 x 340 mm	535 x 425 mm	440 x 340 mm	535 x 425 mm	335 x 275 mm	400 x 310 mm	400 x 310 x 91 mm	330 x 241	415 x 310
Installation dimensions (W x H x D)	427.5 x 327.5 x 165 mm	522.5 x 412.5 x 165 mm	427.5 x 327.5 x 165 mm	522.5 x 412.5 x 165 mm	310 x 247 x 60 mm	366 x 288 x 60 mm	None installed	310 x 221	396 x 291

[1] *Display available for use in daylight conditions (not in direct sunlight)*

SIMATIC Flat Panel Monitors										
										
19“ Touch widescreen	**22“ Touch widescreen**	**12" Touch**	**12" Key**	**15" Touch**	**15" Key**	**15" PRO**	**19" Touch**	**19" PRO**		**Design**
19" wide (1366 x 768)	22" wide (1920 x 1080)	12" / SVGA (800 x 600)		15" / XGA (1024 x 768)			19" / SXGA (1280 x 1024)			Size in inches (resolution in pixels)
Touch screen with extended viewing angle		Very smooth plastic front membrane		Very smooth plastic front membrane			Very smooth plastic front membrane			Front type
Unlimited via Ethernet		30 m		30 m			30 m			Max. distance to computing unit
										Operator controls
Virtual on screen		–	■	–	■	–	–			Keyboard
– / –		– / –	36 with LEDs / ■	– / –	36 with LEDs / ■	– / –	– / –			Function keys / mouse at the front
■		Optional	–	Optional	–	■	Optional	■		Touch screen (analog/resistive)
										General features
Intel Celeron (1.2 GHz)		–		–			–			Processor
512 MB DDR3		–		–			–			Main memory
–		–		–			–			Operating system
Up to 16 million colors		–		–			–			Graphics
24 V DC / approx. 32 W	24 V DC / approx. 53 W	24 V DC, 110/230 V AC / 35 W		24 V DC, 110/230 V AC / 40 W			24 V DC, 110/230 V AC / 55 W			Power supply / max. power consumption
RDP, Sm@rt Access, VNC, SINUMERIK,		RDP (Remote Desktop Protocol), Sm@rt Access, VNC (Virtual Network Computing)*, SINUMERIK support*, Citrix ICA*					–			Protocols supported
Typically 50,000 h	Typically 30,000 h	Typically 50,000 h (depending on temperature when operated continuously for 24 h)								MTBF backlighting
										Drives
2 GB CompactFlash, USB flash drive available as accessory		–		–			–			Mass storage
Optionally over USB (not for hazardous areas)		–		–			–			Optical drives
										Interfaces
1 x 10/100/1000 Mbit/s, RJ45		–		–			–			Ethernet
2 x at the rear (USB 2.0 high current)		Up to 2 x for additional I/O devices (optional)		Up to 2 x for additional I/O devices (optional)			Up to 2 x for additional I/O device (optional)			USB
–		–		–			–			Serial / Parallel
–		DVI-D, VGA		DVI-D, VGA			DVI-D, VGA			Graphics interface
										Ambient conditions
IP20 (at the rear), IP65 (at the front)		IP65 (at the front), NEMA 4		IP65 (at the front), NEMA 4		IP65 all-round, enclosure type 4	IP65 (at the front), NEMA 4		IP65 all-round, enclosure type 4	Degree of protection
CE, EN 61000-6-4		CE, EN 55011, EN 61000-6-2, EN 61000-6-4		CE, EN 55011, EN 61000-6-2, EN 61000-6-4			CE, EN 55011, EN 61000-6-2, EN 61000-6-4			EMC
10 ... 58 Hz: 0.0375 mm, 58 ... 200: 9.8 m/s2 (1 g)		10 ... 58 Hz: 0.0165 mm, 58 ... 200 Hz: 9.8 m/s^2 (1*g*)		10 ... 58 Hz: 0.0165 mm, 58 ... 200 Hz: 9.8 m/s^2 (1*g*)		10 ... 58 Hz: 0.0375 mm, 58 ... 200 Hz: 1 *g* on support bracket; 0.5 *g* with basic adapter	10 ... 58 Hz: 0.0165 mm, 58 ... 200 Hz: 9.8 m/s^2 (1*g*)		10 ... 58 Hz: 0.0375 mm, 58 ... 200 Hz: 1*g* on support arm; 0.5 *g* with basic adapter	Vibrations in operation (tested in accordance with DIN IEC 60068-2-6)
50 m/s2 (5 g), 30 ms		50 m/s^2 (5 *g*), 30 ms		50 m/s^2 (5 *g*), 30 ms			50 m/s^2 (5 *g*), 30 ms			Shock load in operation (tested in accordance with DIN IEC 60068-2-29)
5 ... 85 % at 25 °C (no condensation)		5 ... 80% at 25 °C (no condensation)		5 ... 80 % at 25 °C (no condensation)			5 ... 80 % at 25 °C (no condensation)			Relative humidity (tested acc. to DIN IEC 60068-2-3, DIN IEC 60068-2-30, DIN IEC 60068-2-56)
5 ... 45 °C		5 ... 50 °C		5 ... 50 °C		5 ... 45 °C	5 ... 50 °C		5 ... 45 °C	Ambient temperature during operation
CE, cULus (508), C-Tick ATEX zone 2/22 (available soon)		CE, cULus (508), optional: marine approvals, ATEX 22 (Ex), CCC, CQC		CE, cULus (508), optional: marine approvals, ATEX 22 (Ex), CCC, CQC			CE, cULus (508), optional: marine approvals, ATEX 22 (Ex), CCC, CQC			**Certification / EU directives**
										Dimensions
483 x 337	560 x 380	400 x 310 mm	483 x 310 mm	483 x 310 mm		483 x 355 mm	483 x 400 mm			Operator panel (W x H)
465 x 319	542 x 362	368 x 290 x 51 mm	450 x 290 x 51 mm	450 x 290 x 54 mm		None installed	450 x 380 x 57 mm	None installed		Installation dimensions (W x H x D)

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