pc-based
AUTOMATION

Embedded Automation
and PC-based Automation

SIEMENS

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Servomotors for
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of Automation and Drives

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PC-based Automation

Catalog ST PC · April 2007

The products contained in this catalog can also be found in the e-Catalog CA 01.
Order No.:
CD: E86060-D4001-A100-C5-7600
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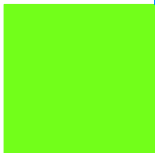
SIEMENS

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Siemens Automation and Drives.
Welcome

More than 70,000 people aiming for the same goal: increasing your competitiveness. That's Siemens Automation and Drives.

We offer you a comprehensive portfolio for sustained success in your sector, whether you're talking automation engineering, drives or electrical installation systems. Totally Integrated Automation (TIA) and Totally Integrated Power (TIP) form the core of our offering. TIA and TIP are the basis of our integrated range of products and systems for the manufacturing and process industries as well as building automation. This portfolio is rounded off by innovative services over the entire life cycle of your plants.

Learn for yourself the potential our products and systems offer. And discover how you can permanently increase your productivity with us.
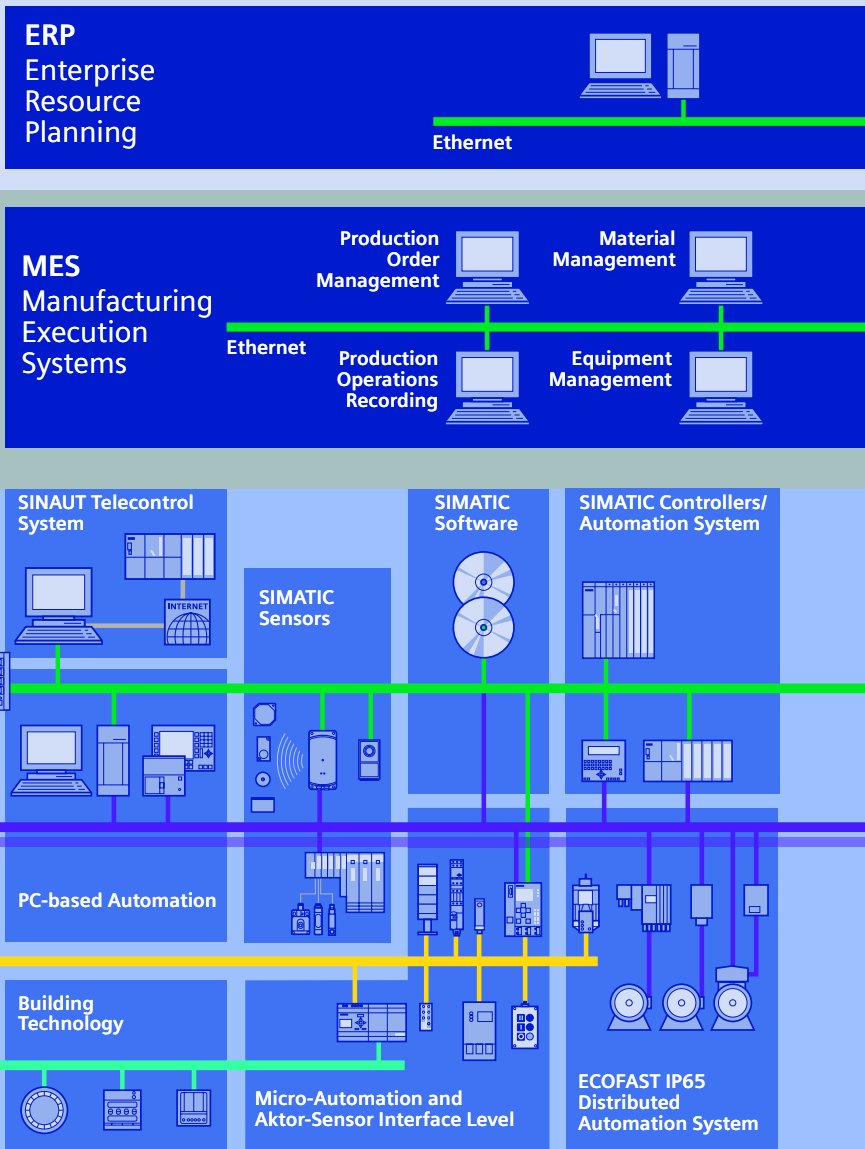
Your regional Siemens contact can provide more information. He or she will be glad to help.
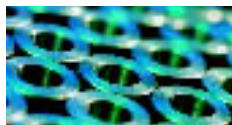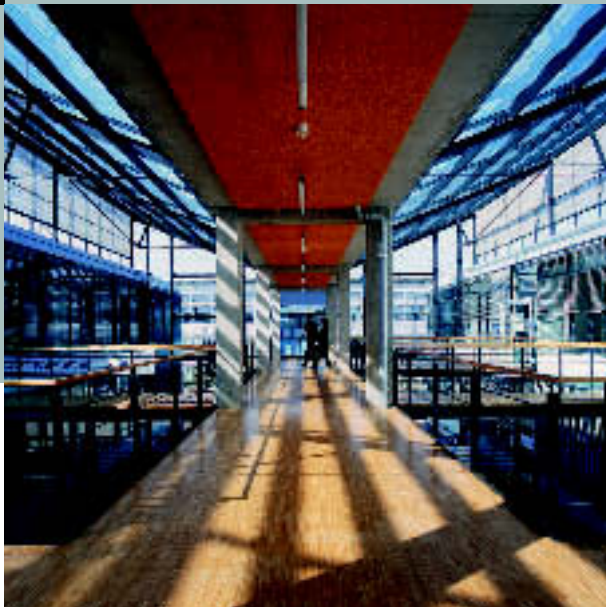
Sharpen your competitive edge.
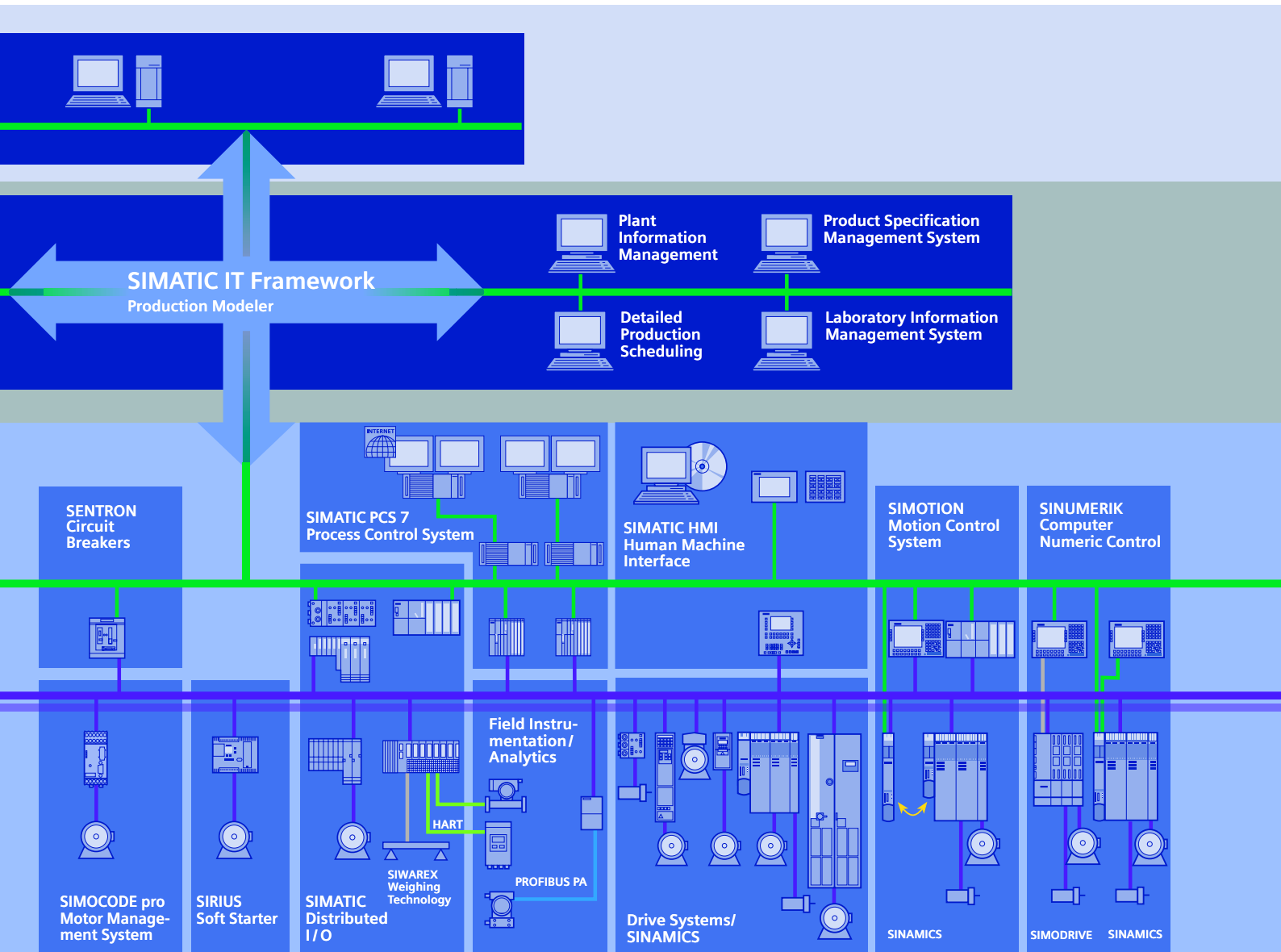# Totally Integrated Automation

With Totally Integrated Automation (TIA), Siemens is the only manufacturer to offer an integrated range of products and systems for automation in all sectors - from incoming goods to outgoing goods, from the field level through the production control level to connection with the corporate management level.

On the basis of TIA, we implement solutions that are perfectly tailored to your specific requirements and are characterized by a unique level of integration. This integration not only ensures significant reductions in interface costs but also guarantees the highest level of transparency across all levels.

ERP
Enterprise
Resource
Planning

Ethernet

MES
Manufacturing
Execution
Systems

Ethernet

Production Order Management
Material Management
Production Operations Recording
Equipment Management

Control

SIMATIC NET Industrial Communication
SINAUT Telecontrol System
SIMATIC Software
SIMATIC Controllers/ Automation System
SIMATIC Sensors

PROFINET
Industrial Ethernet
Safety Integrated
PROFIBUS
PC-based Automation
AS-Interface
KNX/EIB
GAMMA *instabus*

Building Technology
Micro-Automation and Aktor-Sensor Interface Level
ECOFAST IP65 Distributed Automation System

It goes without saying that you profit from Totally Integrated Automation during the entire life cycle of your plants – from the first planning steps, through operation, right up to modernization. Consistent integration in the further development of our products and systems guarantees a high degree of investment security here.
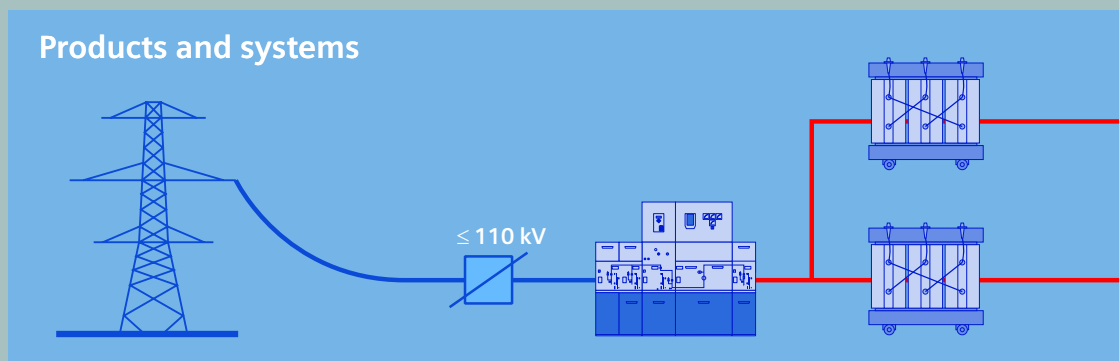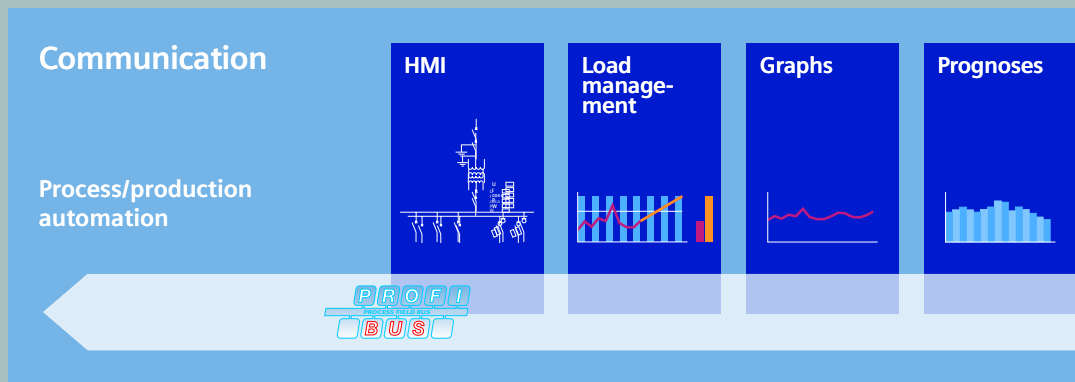
Totally Integrated Automation makes a crucial contribution towards optimizing everything that happens in the plant and thus creates the conditions for a significant increase in productivity.

SIMATIC IT Framework
Production Modeler

Plant Information Management

Product Specification Management System

Detailed Production Scheduling

Laboratory Information Management System

SENTRON Circuit Breakers

SIMATIC PCS 7 Process Control System

INTERNET

SIMATIC HMI Human Machine Interface

SIMOTION Motion Control System

SINUMERIK Computer Numeric Control

Field Instrumentation / Analytics

HART

SIWAREX Weighing Technology

PROFIBUS PA

SIMOCODE pro Motor Management System

SIRIUS Soft Starter

SIMATIC Distributed I / O

Drive Systems/ SINAMICS

SINAMICS

SIMODRIVE   SINAMICS

Integrated energy distribution from a single source.
Totally Integrated Power

Totally Integrated Power (TIP) brings together all the components of electrical energy distribution into an integrated whole. Thus TIP provides the answer to growing market demands in the planning, construction and use of utility buildings and industrial buildings.

On the basis of TIP, we offer integrated solutions for energy distribution, from medium voltage to the power outlet. Totally Integrated Power is based here on integration in planning and configuring as well as on perfectly matched products and systems.

Communication

Process/production automation

HMI

Load management

Graphs

Prognoses

Products and systems

≤ 110 kV

Planning and configuration

Totally Integrated Power offers communication and software modules for connecting the energy distribution systems to industrial automation and building automation. This enables the implementation of significant savings potential.

Main-tenance

- Substation
- Distribution
- Maintenance task

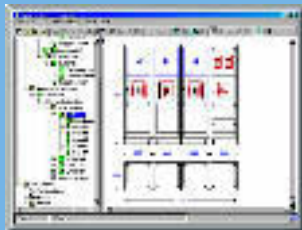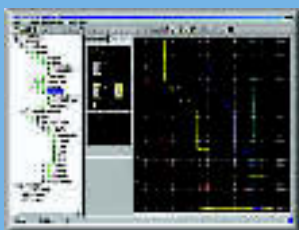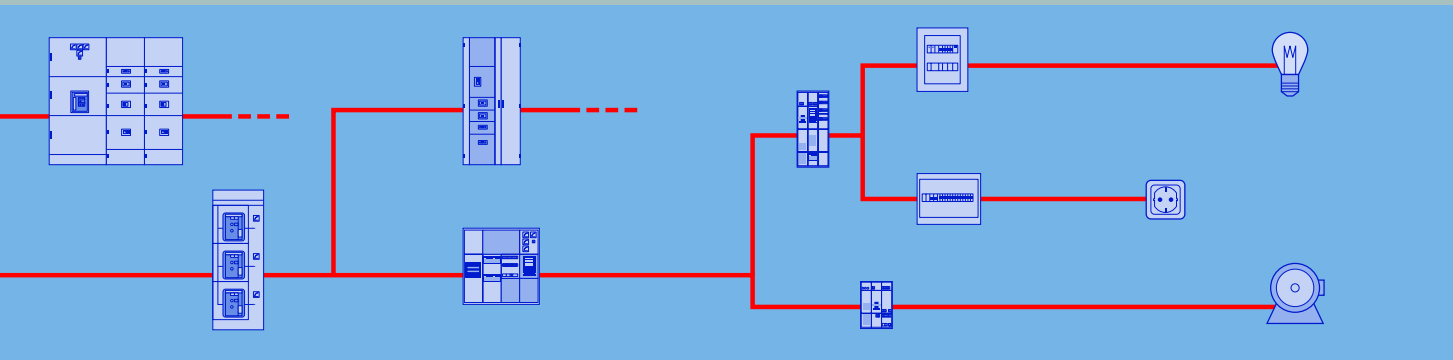|	
Hall 1	Air conditioning system checkup
Distribution 3	Replacing circuit breaker contacts
Infeed II	Replacing meters

Message/ error manage- ment

Selective protection

Protocols

Power quality

Cost center

Building automation

EIB *instabus* EIB **KNX** ● ● ● ●

Technology with a future –
PC-based Automation

Overview

Why PC-based Automation or embedded automation?

The PC is a unique success story, and many areas of everyday life are unimaginable without it. PC know-how is taken for granted nowadays, and standards have been produced (hardware components, operating system, GUIs, communication etc.) which have become interesting for a growing number of applications because of the constantly increasing performance and lower cost of the PCs.

In the automation engineering sector, the small number of PC applications – particularly for visualization purposes – have developed in the meantime into comprehensive applications for complex tasks.

This has basically been promoted by two aspects:

- The PC offers new possibilities with respect to flexibility, cost reductions and time-to-market together with enormous increases in performance.
- PC technologies provide new application possibilities in a standardized environment on the one hand, and also permit simple interfacing of such PC-based solutions to the office world.

Automation solutions based on these technologies thus inevitably lead to integration of all important components (visualization, logic control, motion control, distributed I/O, IT integration etc.) either as a PC-based Automation system or as an embedded automation system which combines the capabilities of the classic PLC world with the openness and performance of the PC world.

Embedded Automation

In recent years, it has been possible to produce a new class of embedded PC as a result of the rapid development in PC technology.

Technologies are being applied which increase the ruggedness of such devices to a new level. A modern embedded PC no longer requires a fan thanks to new, low-power processors and an appropriate enclosure design.

Furthermore, rotating mass storage units are no longer required as the conventional hard disk is replaced by a flash memory card. Extremely compact, powerful and rugged embedded automation systems for use at machine level can then be produced based on a compact embedded operating system (XPe) and in association with software PLCs, visualization software and technology or motion control functions. Embedded automation offers an additional customer benefit, since the logic control, visualization and technology or motion control functions have already been installed in the corresponding versions and are ready for use. This results in time savings for the engineering/commissioning of your applications.

Advantages of PC-based Automation

- Cost savings through integration
- Benefiting from continuous PC innovations
- Simple communication through integral network interfaces
- Simple utilization of business SW (e.g. MS Office) / own SW (C++/VB...)
- Standardization means a wider selection
- High investment protection
- High system availability
- Utilization of known PLC engineering tools (STEP 7)
- Interchangeability of parameter settings and user software
- Integral diagnostics/signaling functions
- Optimum integration with visualization, motion control, industrial PC, distributed I/O, communication, IT world etc. (PC-based Automation)
- Openness of IT world
- Open for non-Siemens components

Additional advantages of embedded automation

Siemens offers a complete range of automation products for PC-based and embedded automation which – with the experience of the market leader – have been developed on the basis of Totally Integrated Automation and are part of the large SIMATIC family.

- Ready-to-use, rugged embedded automation products for control, visualization and motion control
- High ruggedness and freedom from maintenance with embedded automation
- Data retentivity
- High degree of flexibility and openness

Siemens PC-based & embedded automation

A whole range of possibilities – automation solutions from Siemens: always your first choice for every automation task.

www.siemens.com/pcbased

A whole range of possibilities
PC-based Automation

Manufacturing Execution Systems

Make the most of your PC: following data acquisition, you can then use PC-based Automation for optimum data processing. Maintenance schedules for entire production areas, production tracking, batch management, data archiving, statistics generation – all these tasks can be ideally implemented on your PC with SIMATIC IT solutions.

Visualization

Visualization tasks and PC-based Control can be ideally combined on a single PC.
Visualization covers all functions from operation, plant display, message management, measured value archiving and recipe management. ProTool/Pro, WinCC flexible and WinCC are HMI systems with optimized interfaces for SIMATIC WinAC.

Networks

PC-based Automation facilitates integration of the machine level and the IT world on a single platform. Using Industrial Ethernet and PROFIBUS, SIMATIC NET ensures communication with higher-level control systems as well as I/O at the field level.

Logic Control

The PC can already take over many classical control functions today. The Siemens controller for PC-based Automation is SIMATIC WinAC:
WinAC provides a range of scaleable solutions from Slot PLCs up to Software PLCs – also with real-time and deterministic features – as well as for embedded applications. WinAC is optimally embedded in the Windows world and includes appropriate interfaces for visualization components. Special optional packages are available for interfacing technological functions.

Motion Control

Use your PC to perform complex technological tasks typical for motion control. Coupled axes, winder controls or electronic cams can be optimally implemented as PC-based solutions. With the expanded PROFIBUS for drive controls (isochrone mode or broadcast mode), modern digital drives can be optimally controlled.

Industrial PC

The reliable and innovative industrial PCs constitute the optimum PC hardware platform for PC-based Automation from Siemens. We provide a powerful spectrum of industry-standard PCs with high system availability and high investment security in box form, rack form and panel PC design (SIMATIC PC) as well as modular industrial microcomputers (SICOMP IMC).
New expansions in hardware and software such as the SIMATIC PC DiagMonitor diagnostics/signaling software and the SIMATIC PC Image Creator software for preventive data backup increase the system availability in PC-based Automation applications even further.

Input / Output

The standardized PROFIBUS provides an interface to the open world at the fieldbus level. Its system architecture facilitates fast configuration and rapid startup. With the SIMATIC ET 200 system, Siemens provides a complete spectrum of block, modular and IP65 I/Os.

Drives

Variable-speed drives and servo motors feature the highest dynamic performance and excellent dynamic response. The modular, rugged design, also in distributed systems, helps to save costs during the design phase and in the daily production process.
Siemens supplies a complete spectrum of converters based on the latest technology, ranging from standard drives up to high dynamic drives. And PROFIBUS ensures seamless integration from configuring to diagnostics.

PC-based Automation in the system environment

Siemens PC-based Automation is easily integrated in the automation environment with SIMATIC. Engineering is based on the tried and tested SIMATIC Industry Software (e.g. STEP 7) and permits unique integration of the SIMATIC products used.
The optimum configuration for an automation task can thus always be selected depending on the required features.
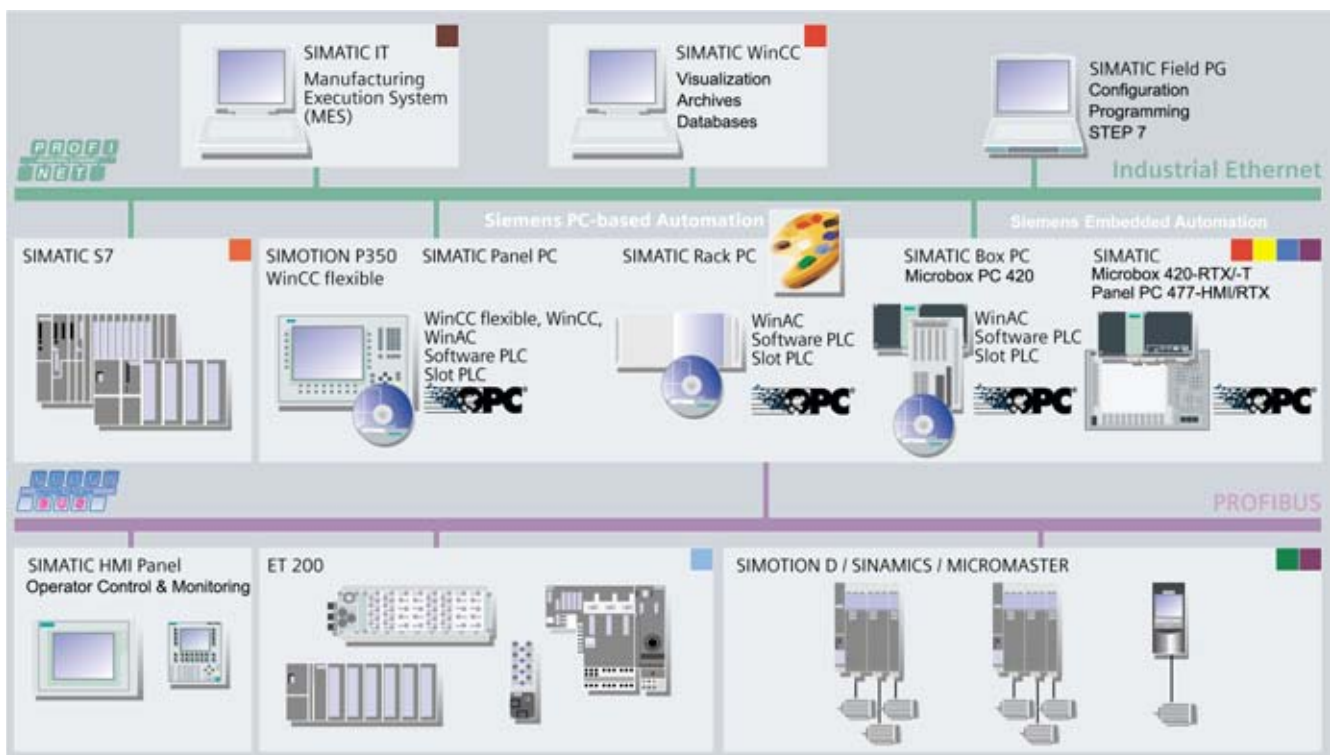
Technology with a future –
PC-based Automation

Application examples

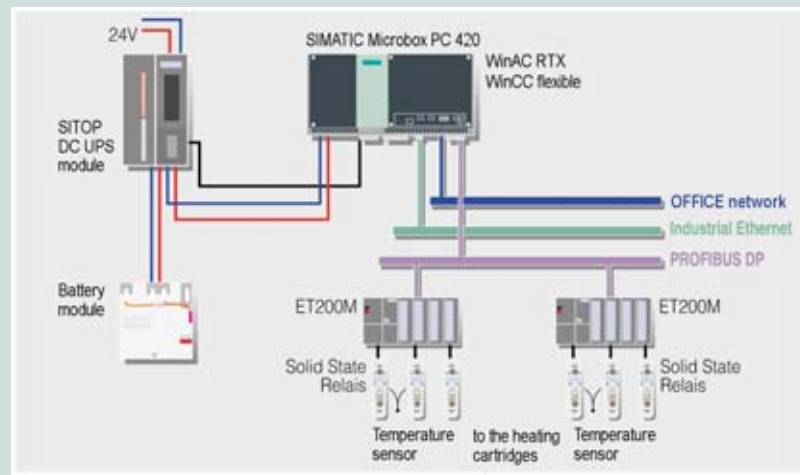### Temperature control: Hot runner technology for injection molding machines

Initial situation

- No central solution for hot runner controls
- High number of channels required
- Comfortable operation required
- Very fast hot runner control
- Grouping option required
- Self-setting for control parameters required
- High control accuracy, no overshoot
- Wide range of sensors and high accuracy (e.g. PT1000)

The advantages of the Siemens PCbA solution

- Extremely compact
- Visualization + control functionality in one Microbox
- Scalable up to channel numbers of max. 160 controllers
- User-friendly, centralized operator input over WinCC flexible under XP Pro
- Fully fledged PLC (WinAC) is included, that is, it can be expanded for a specific customer
- Can be networked with other plant sections, e.g. via S7 communication

The system concept

Measurement of foil thickness

Initial situation

High precision, uniform thickness of the entire width is a decisive quality criterium when producing plastic foils.

To achieve this high quality a measuring head with radioactive ray emitter above and a sensor below the foil are moved back and forth across the running foil.

Use of the radiation attenuation enables extensive mathematical calculations to be carried out in order to determine the exact thickness of the foil at every position. Deviations in foil thickness can thus be easily corrected.

The advantages of the Siemens PCbA solution

- Visualization takes place using WinCC and control by using WinAC RTX on one PC.
- Evaluation of extensive measurement data requires complex mathematical algorithms.
- These are implemented using C++. The seamless, high performant integration of these algorithms into the STEP 7 program is achieved using the ODK (Open Development Kit).
- In order to visualize the large amount of measurement curves, data exchange between WinAC RTX and WinCC is carried out rapidly using a hard disk cache. This functionality is also implemented with ODK.
- The interconnection of the standardized technology function is carried out using a CFC (Continous Function Chart).

The system concept
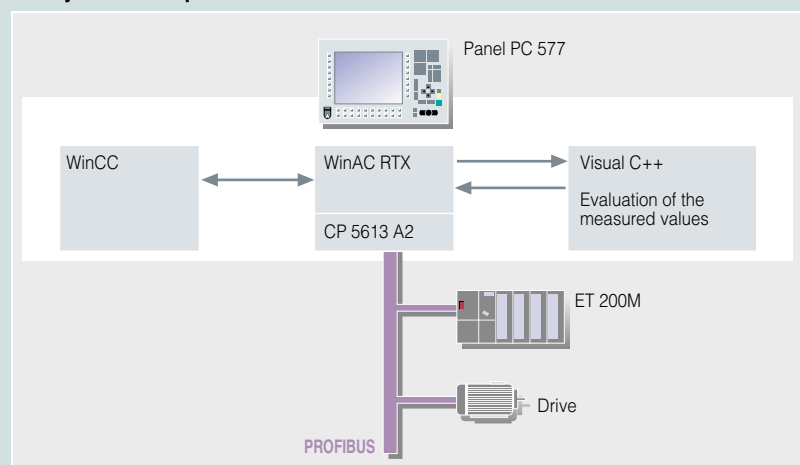
## PC based control of varnishing lines for automobile plastic parts

Initial situation

For reasons of quality assurance and product liability, varnishing line manufacturers decided to use a superordinated computer to archive process data of a varnishing line for flat parts which rapidly developed into a PC based automation system with control tasks.

The advantages of the Siemens PCbA solution

- Performance of the PC based control WinAC Basis
- Coupling to Linux server using Industrial Ethernet optical fiber net
- Open and flexible for extensions
- Integration into the available automation concept possible
- Archiving and backup of process data and production data acquisition

The system concept
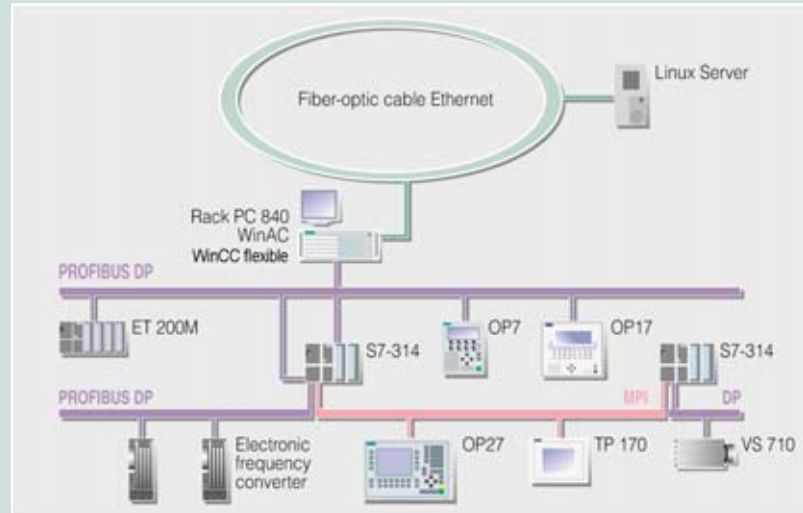
## Sawing machines with PC based technology control

Initial situation

Integration of specific knowledge regarding tools and materials into the automation solution is required for sawing machines. Optimum processing power, openness and ease of use are provided by a robust industrial PC, containing a slot PLC, among other things, which coordinates rapid and safe movement of all positioning axes.

In addition, telediagnostics using Ethernet or ISDN is vitally important for manufacturers whose saws are distributed on a world-wide basis.

The advantages of the Siemens PCbA solution

- PC-based control WinAC Slot compatible with SIMATIC S7-400
- Coupling to Host Server via Ethernet for archiving of production data
- Remote maintenance is carried out using ISDN
- Visualization of Visual Basic is achieved using an integrated OPC server
- Current technological knowledge can be enhanced
- Quick calculation of cutting data and coordination of several positioning axes

The system concept
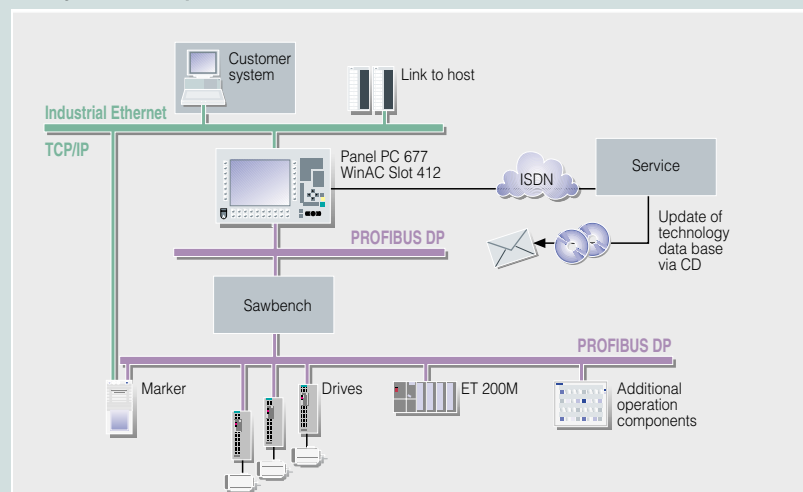
Technology with a future –
PC-based Automation

Application examples

### Foil-wrapping systems

Initial situation

Depending on the customer request, foil packaging systems or envelope systems do the picking and packaging of the most diverse flyers, address pages and various inserts. This is accomplished at a clock speed of up to 15,000 packages per hour.

The advantages of the Siemens PCbA solution

• SIMOTION P350 handles the machine control, the online cam function computation and visualization
• Networking entirely via PROFIBUS
• High-quality packaging at high clock-pulse rate
• Savings on packaging material; the down-stream shrink tunnel is no longer required
• Short retooling times thanks to automatic retooling axes
• Low maintenance costs through fully electric drives systems instead of mechanical line shafts

Modular mechanical equipment manufacture through simple integration of additional components

The system concept
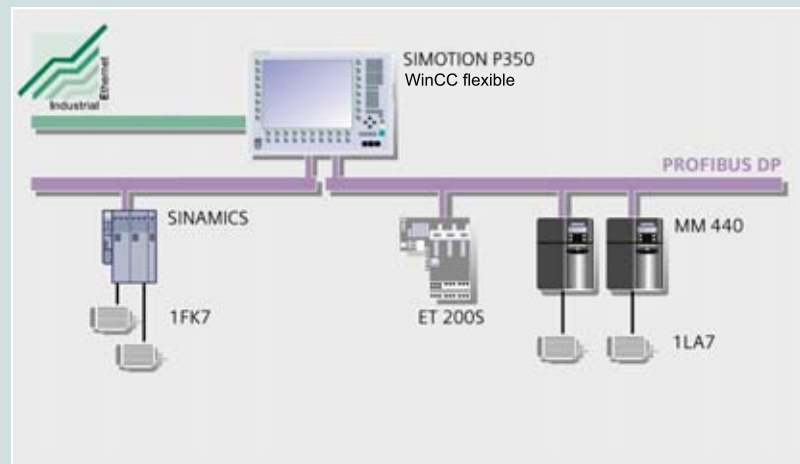
### SIMOTION in handling systems

Initial situation

These removal devices are used, for example, in fully automatic manufacturing of plastic parts. After every spraying procedure the robot arm picks up the part and places it in its respective storage facility.

The advantages of the Siemens PCbA solution

• SIMOTION P350 handles the complete machine control and also offers an intuitive user interface for startup, programming of axes, programming of positioning records, file management and fault diagnostics
• Simple engineering
• Integration of the flexible HMI system for defining traversing records and entering PLC and drive parameters
• Highly dynamic system with the fastest positioning times and flexible programming

Simple integration into existing injection molding machine controls

**The system concept**
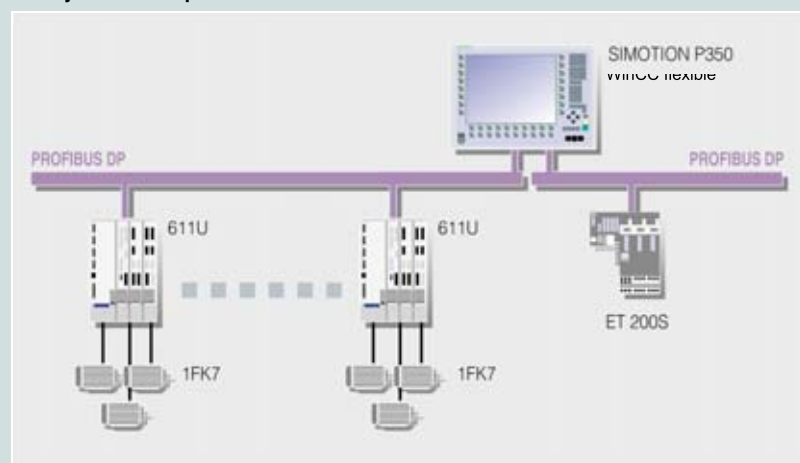
PC-based control in automobile test bays

Initial situation

Test bays in the automobile industry require fault-free operation and high quality. Control, processing, archiving and visualization of the measured data require a high-performance system that offers openness and flexibility for connection to different bus systems and for the use of software.

The advantages of the Siemens PCbA solution

- Flexible, service and maintenance-friendly system with Windows XP-Embedded in conjunction with SIMATIC WinAC
- Reduction of the integration overhead thanks to integral interfaces such as PROFIBUS, Ethernet and CAN, and flexibility in the use of modules for different bus systems, e.g. PC/104
- System availability concept guarantees round-the-clock operation and reduces downtime costs
- Fan-free, heat-resistant operation to 50 °C saves on additional cooling measures
- High level of investment security thanks to long-term availability of the components

The system concept
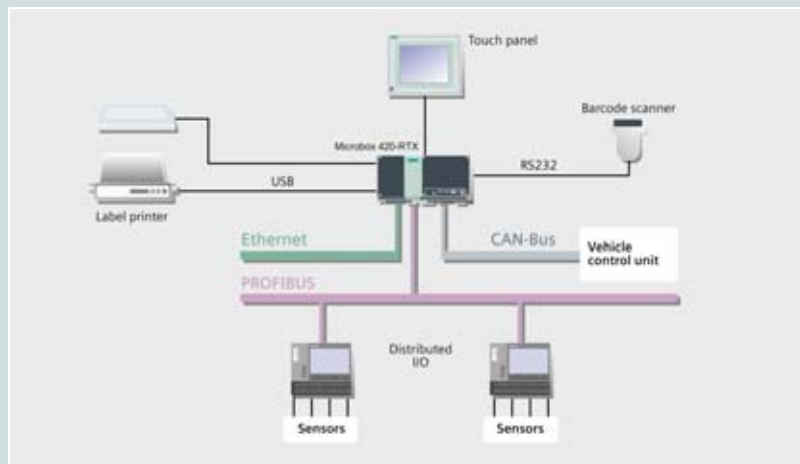

PC-based control in the semiconductor industry

Initial situation

In the semiconductor industry, high quality and fault-free operation round-the-clock are decisive criteria. A high-performance system that guarantees high-speed and precise production of the semiconductors is required for controlling the machines, monitoring the production system and processing the production data.
High flexibility and openness are also required for connecting to the production control system and machine engineering system.

The advantages of the Siemens PCbA solution

- Compact, rugged industrial PCs with powerful processors and the latest technology enable high processing performance
- Pre-installed systems save time and costs when integrated into the overall system
- WinCC ToolLink-EDA (equipment data acquisition) enables diagnostics of process and machine data in real time
- System availability concept with integral RAID1 functionality and remote monitoring with SIMATIC PC DiagMonitor ensures fault-free 24-hr operation
- High investment security through long-term availability of the components
- International certification and worldwide support guarantee global use

The system concept
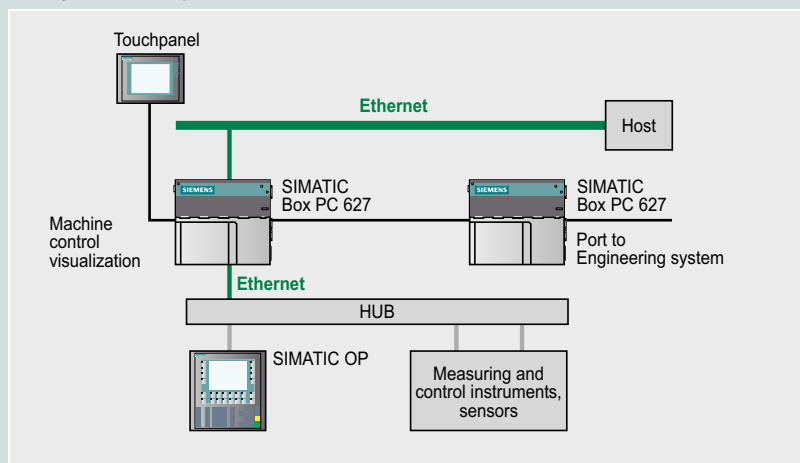
Protecting the environment and resources

Environmental Sustainability

Environmental protection will continue to grow in importance as a result of progressive urbanization and global population growth. These global mega-trends make the careful and sustainable handling of natural resources a central challenge.

We are convinced that every individual - and especially every company - has an ecological responsibility. At Siemens Automation and Drives, we stand by this conviction. Our high environmental protection goals are part of our strict environmental management. We investigate the possible effects of our products and systems on the environment right back at the development stage. We concern ourselves, for example, with the question of how to reduce power consumption in plant operation - and we offer appropriate solutions, such as our energy-saving motors that cut power consumption in industrial manufacturing by up to 40% thanks to their high efficiency levels.

Our products and systems comply with the EC Directive RoHS (Restriction of Hazardous Substances). All the relevant Siemens AG sites are, of course, certified in accordance with DIN EN ISO 14001.

Our commitment goes well beyond compliance with the relevant directives and legislation: we are an active driving force behind environmental protection, through further development of environmental management systems, for example, and we are involved in professional associations such as the German Electrical and Electronic Manufacturers Association (ZVEI).

Embedded Automation

2

Embedded Automation

Introduction

Overview

An embedded PC or embedded device is combined with automation software (e.g. software PLC, HMI system, etc.) and is ready-for-use.

Windows XP Embedded or Windows CE can be used as operating systems.

SIMATIC Embedded Automation comprises:

- PLC
- Technology
- Visualization
- Data processing
- Communication

on a common embedded PC platform.

Microbox 420-RTX

The Microbox 420-RTX is an embedded PC combined with WinAC RTX 2005 and is ready-for-use.

The combination links the openness of PC-based controllers with the ruggedness of a conventional PLC: flexible software and powerful, scalable hardware in an open, compact system.

An automation system is thus available to users with which strict real-time automation tasks can be handled on a compact and rugged platform. In addition, this platform offers flexibility and effective integration into the overall task. This also includes the close connection with data processing or logistic systems, as well as the link to technological tasks such as motion or vision systems. Windows XP Embedded is used as the operating system.

Microbox 420-T

The Microbox 420-T is a product of SIMATIC Embedded Automation, and belongs to the family of technology controllers. It is a ready-to-use DIN rail Microbox PC 420 with standard PC interfaces and preinstalled software:

- WinAC RTX with technology function
- PLCopen-compliant motion control blocks
- Windows XP Embedded
- SOFTNET PG communications package.

It offers the openness and flexibility of a PC together with high ruggedness resulting from the absence of hard disks and fans.

The most important interfaces for communication with the drive environment are already onboard:

- Eight digital outputs
- Two PROFIBUS connectors: isochronous PROFIBUS (DP) DRIVE interface, PROFIBUS DP interface.

Panel PC 477-HMI and Panel PC 477-HMI/RTX

The Panel PC 477-HMI already includes the Runtime version of the HMI software WinCC flexible.

The Panel PC 477-HMI/RTX includes the high-performance control software WinAC RTX in addition to the Runtime WinCC flexible.

Both panels are available in 12" and 15" front versions, either with touch or key functionality.

As a result of their compact design, the Panel PCs 477-HMI and 477-HMI/RTX represent the ideal combination of control and HMI functionalities on one platform, and additionally offer the openness of a PC-based system.

Multi Panels MP 277 and MP 370

- Like operator panels, multi panels (MP) are used for controlling and monitoring machines locally.
- Their functionality can be expanded by the installation of additional Windows CE applications (multi panel and panel options)
- SIMATIC MP 277 devices on the basis of Windows CE combine the rugged construction of operator panels with the flexibility of PCs.
- With the SIMATIC MP 277, the data in the message buffer are retained even when the panel is disconnected from the power supply, without battery backup.

Embedded Automation

■ Overview

- Quick start in automation solutions with embedded PC platforms.
  - SIMATIC WinAC RTX pre-installed and ready to use on Microbox PC 420
  - PROFIBUS and Industrial Ethernet completely configured for use in a SIMATIC environment
  - Configuring and programming with SIMATIC STEP 7 via Industrial Ethernet or PROFIBUS
- Robust operation
  - Diskless operation based on Compact Flash card (CF card) and Windows XP embedded
  - Operation without fan
- Flexibility of a PC-based automation environment
  - Free memory space available on CF card for further PC applications
  - Use of WinAC ODK with SIMATIC WinAC RTX
  - Connectivity for USB devices, flat-panel monitor or screen
  - PC104+ cards pluggable
- Data retentivity for WinAC RTX even without uninterruptible power supply (UPS)

■ Application

The SIMATIC Microbox 420-RTX combines the advantages of PC-based control solutions and classic PLC solutions: Its flexibility permits the integration of various applications of an automation solution on one and the same hardware. The fanless and diskless configuration of the Microbox PC enables installation directly at the machine and in harsh environments. Using the Ethernet and PROFIBUS interfaces, the system can be integrated in existing automation environments (SIMATIC world, Siemens drive systems) with only little effort.

Microbox RTX is the preferred platform if the following criteria have to be met:

- Ultra-compact „headless" operation
- Use with separate screen
- Integration of various tasks such as control, technology functions or data processing on one hardware platform
- Use of application-specific hardware and software
- Machine-level use

■ Ordering data   Order No.

Configuration

SIMATIC Microbox 420-RTX Memory: 512 MB SDRAM-133, 2 x 100/100 Mbit/s Ethernet RJ45, 4 x USB and 1 x serial (COM1), 1 slot for Compact Flash Drive, Watchdog, temperature monitoring	F	**6ES7 675-■B■30-0■A0**
Software configuration:		
• WinAC RTX		1
Processor:		
• Celeron 400 MHz, 100 MHz FSB, PROFIBUS DP12		B
• Celeron 650 MHz, 100 MHz FSB, PROFIBUS DP12		D
• Pentium III 933 MHz, 133 MHz FSB, PROFIBUS DP12		F
Mass data storage:		
• 1 GB CompactFlash, pre-installed XP embedded and SW		P
• 2 GB CompactFlash, pre-installed XP embedded and SW		Q

Delivery versions (ex stock)

SIMATIC Microbox 420-RTX WinAC RTX, Pentium III 933 MHz, 133 MHz FSB, PROFIBUS DP12, 2 GB CompactFlash Card, pre-installed Windows XP embedded and Software	**6ES7 675-1BF30-0QA0**

F) Subject to export regulations: AL: N and ECCN: 5D002ENC3

Embedded Automation

2

SIMATIC Microbox 420-T

Overview

- A quick start in automation solutions with embedded PC platforms
  - SIMATIC WinAC RTX with integrated technology and motion control preinstalled ready for use on Microbox PC 420
  - PROFIBUS and Industrial Ethernet completely configured for use in a SIMATIC environment
  - configuring and programming with SIMATIC STEP 7 via Industrial Ethernet or PROFIBUS
- Robust operation
  - diskless operation based on Compact Flash card (CF card) and Windows XP embedded
  - fanless operation
- Flexibility of a PC-based automation environment
  - free memory space available on CF card for additional PC applications
  - use of WinAC ODK with SIMATIC WinAC RTX
  - connectivity for USB devices, flat-panel monitor or screen.
- Data retentivity for WinAC RTX and integrated technology even without uninterruptible power supply (UPS)

Application

The SIMATIC Microbox 420-T combines the advantages of PC-based control solutions and classic PLC solutions: It offers the flexibility required for integrating the different tasks of an automation solution (software PLC WinAC RTX with integrated technology and motion control) on a single hardware platform. The fanless and diskless configuration of the Microbox PC enables installation directly at the machine and in harsh environments. Using the Ethernet and PROFIBUS interfaces, the system can be integrated into existing automation environments (SIMATIC world, Siemens drive systems) with little effort.

Microbox 420-T is the preferred platform if the following criteria for the automation solution have to be met:

- Ultra-compact, "headless" operation
- Integration of different tasks such as controlling, technology functions and motion control as well as PC functionality, data processing, communication and IT integration on a single hardware platform
- Use with remote screen
- Use of application-specific hardware and software
- Machine-level use

Design

The SIMATIC Microbox 420-Ts consist of the following components:

- Microbox PC 420 with
  - 933 MHz Intel Pentium III processor
  - 512 MB RAM, 1 GB CF card
  - integral PROFIBUS DP interface
  - integral isochronous PROFIBUS DP interface
  - DVI-I interface, 4 x USB and RS 232 (COM1)
  - Windows XP embedded
- SIMATIC WinAC RTX 2005 with integrated technology and motion control incl. SIMATIC NET OPC server
- SIMATIC SOFTNET PG

Optional:

- Open Development Kit SIMATIC WinAC ODK:
  - for linking C/C++ -Code in SIMATIC WinAC RTX.
  - for integrating external software (technological programs) or PC components (e.g. scanner, PC cards for measured value acquisition).

SIMATIC Microbox 420-T

■ Function

- Control:
  Several processing levels are available for optimum control of processes with WinAC RTX:
  - cyclic program processing
  - alarm processing
  - time of day and date-controlled execution

- Technology / Motion Control:
  PLCopen-compliant function blocks are available for optimum motion control application solutions. The integrated motion control functions are identical with those of the technology CPUs. The user program of a CPU 31xT-2 DP is compatible with a Microbox 420-T.

- Retentivity:
  The controller can save up to 30 KB of retentive data on an integrated, non-volatile memory. No UPS is required.
  Full retentivity of all process values can be achieved with any commercial UPS.

- Access to process values:
  The SIMATIC NET OPC server supplied with the Microbox 420-T permits open access to all process values. This inter-face allows any visualization or data processing system to be linked to the Microbox 420-T.

- Communication:
  The Windows Automation Center (WinAC) can be pro-grammed with SIMATIC STEP 7 via the integral Industrial Ethernet interface. The SIMATIC NET SOFTNET-PG communi-cation package is already installed for this purpose. It can also be linked via the PROFIBUS DP interface.

- Use of additional software:
  Users may install software products for support in specific applications. Windows XP Embedded is designed to facilitate integration of typical add-on packages.

■ Ordering data

Order No.

|		
SIMATIC Microbox 420-T	D	**6ES7 675-3AG30-0PA0**
PC-based Control system with SIMATIC WinAC RTX 2005, integrated technology with Motion Control and SIMATIC SOFTNET PG, installed ready for use on a SIMATIC Microbox PC 420 with Intel PIII processor 933 MHz, 512 MB RAM, 1 GB CF card, PROFIBUS DP interface, isochronous PROFIBUS DP (DRIVE) interface, Windows XP embedded		

D) Subject to export regulations: AL: N and ECCN: 5D992B1

Embedded Automation

2

SIMATIC Panel PC 477-HMI, -HMI/RTX

Overview
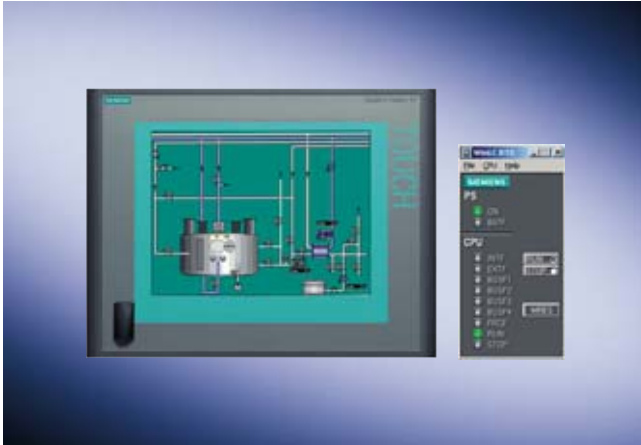
SIMATIC Panel PC 477 HMI and HMI/RTX

- Quick start in automation solutions with embedded automation
  - SIMATIC WinCC flexible RT preinstalled and ready-to-run (Panel PC 477-HMI) or SIMATIC WinCC flexible and SIMATIC WinAC RTX preinstalled and ready-to-run (Panel PC 477-HMI/RTX)
  - PROFIBUS and Industrial Ethernet completely configured for use in a SIMATIC environment
  - configuration and programming with SIMATIC WinCC flexible ES and SIMATIC STEP 7 via Industrial Ethernet or PROFIBUS
- Robust operation
  - diskless operation based on Compact Flash card (1 GB CF card) and Windows XP embedded
  - fanless operation
- Flexibility of a PC-based automation environment
  - open for additional PC applications
  - expandable with PC/104+ cards
  - connectivity for USB devices, flat-panel monitor or screen
  - use of WinAC ODK with SIMATIC WinAC RTX
- Data retentivity for WinAC RTX even without uninterruptible power supply (UPS)

Application

The SIMATIC Panel PC 477 combines the ruggedness of an embedded platform with the openness of a PC perfectly.

Its flexibility permits the integration of various applications of an automation solution on one and the same hardware. The fanless and diskless configuration of the Panel PC enables installation directly at the machine and in harsh environments. Using the Ethernet and PROFIBUS interfaces, the system can be integrated into existing automation environments (SIMATIC world, Siemens drive systems).

Panel PC 477 is the preferred platform if the following criteria have to be met for the automation solution:

- Compact, rugged and maintenance-free
- Integration of various tasks such as visualization, control or data processing on one hardware platform
- Use of application-specific hardware and software
- Machine-level use

Ordering data

	Order No.		Order No.

Panel PC configuration

SIMATIC Panel PC 477 embedded   6AV7 84■ - 0■■1 0 - 0■B 0

Fronts with USB 2.0 interface; 512 MB SDRAM main memory; Windows XP embedded operating system

Front panels:
- 12" TFT Touch — **1**
- 12" TFT Key — **2**
- 15" TFT Touch — **3**
- 15" TFT Key — **4**

Power supply:
- 24 V DC — **A**
- 110/230 V AC, power cable for Europe — **B**

Processor/PROFIBUS:
- Intel Celeron 650 MHz — **C**
- Intel Celeron 650 MHz, PROFIBUS DP 12 (on-board) — **D**
- Intel Pentium 3, 933 MHz — **E**
- Intel Pentium 3, 933 MHz, PROFIBUS DP 12 (on-board) — **F**

Mass storage:

With operating system, Windows embedded preinstalled
- CompactFlash 512 MB — **B**
- CompactFlash 1 GB — **C**
- CompactFlash 2 GB — **D**

With operating system and HMI, WinCC flexible pre-installed, Windows XP embedded preinstalled
- CompactFlash 1 GB, RT 128 PT — **F**
- CompactFlash 1 GB, RT 512 PT — **G**
- CompactFlash 1 GB, RT 2048 PT — **H**
- CompactFlash 2 GB, RT 128 PT — **R**
- CompactFlash 2 GB, RT 512 PT — **S**
- CompactFlash 2 GB, RT 2048 PT — **T**

With operating system and HMI/RTX Windows XP embedded preinstalled, Win AC RTX preinstalled and configured
- CompactFlash 1 GB, RT 128 PT — **L**
- CompactFlash 1 GB, RT 512 PT — **M**
- CompactFlash 1 GB, RT 2048 PT — **N**
- CompactFlash 2 GB, RT 128 PT — **U**
- CompactFlash 2 GB, RT 512 PT — **V**
- CompactFlash 2 GB, RT 2048 PT — **W**

Accessories

Cover foil for Panel PCs 477/577/677/877

For protecting the touch screen against dirt/scratches
- for 12" Touch — **6AV7 671-2BA00-0AA0**
- for 15" Touch — **6AV7 671-4BA00-0AA0**

Labeling strips for Panel PCs 477/577/677/877   6AV7 672-0DA00-0AA0

For labeling softkeys and function keys, blank, supplied in sets of 10

Non-heating apparatus cable for SIMATIC Box- and Panel PC

SIMATIC PC power cable, 230 V AC, angled, 3 m, for:
- Germany — **6ES7 900-1AA00-0XA0**
- United Kingdom — **6ES7 900-1BA00-0XA0**
- Switzerland — **6ES7 900-1CA00-0XA0**
- USA — **6ES7 900-1DA00-0XA0**
- Italy — **6ES7 900-1EA00-0XA0**
- China — **6ES7 900-1FA00-0XA0**

Expansion components

SIMATIC PC/PG DiagMonitor V3.1   B   **6ES7 648-6CA03-1YX0**

Software tool for monitoring SIMATIC PCs, with manual, on CD-ROM (ger/en)

SIMATIC PC/PG Image & Partition Creator   **6ES7 648-6AA04-0YX0**

Software tool for data backup and hard-disk partitioning for SIMATIC PCs, with manual, on CD-ROM (ger/en/fr/sp/it)

3.5" USB disk drive   A   **6FC5 235-0AA05-1AA2**
With 1 m connecting cable

Compact Flash Card
- 256 MB — A — **6ES7 648-2BF01-0XC0**
- 512 MB — A — **6ES7 648-2BF01-0XD0**
- 1 GB — A — **6ES7 648-2BF01-0XE0**
- 2 GB — A — **6ES7 648-2BF01-0XF0**

SIMATIC PC USB-FlashDrive   A   **6ES7 648-0DC30-0AA0**
1 GB, USB 2.0, metal enclosure, boot capability

Expansion kit PC/104   A   **6AG4 070-0BA00-0XA0**
For integration of PC/104 modules (packing unit contains 6 expansion frames)

Industrial HUB 4   A   **6AV6 671-3AH00-0AX0**
4 x USB 2.0, IP65 for cabinet door or DIN rail

A) Subject to export regulations: AL: N and ECCN: EAR99H
B) Subject to export regulations: AL: N and ECCN: EAR99S

Embedded Automation

2

SIMATIC MP 277 (incl. INOX)

■ Overview

- Like operator panels, Multi Panels are used for machine operation and monitoring.
- Content of message buffer is retained even when panel is disconnected, without batteries
- Their functions can be expanded by the installation of additional Windows CE applications (Multi Panel and Panel options)
- SIMATIC MP 277 devices on the basis of Windows CE combine the rugged construction of Operator Panels with the flexibility of PCs
- Pixel-graphics 7.5" or 10.4" TFT display, color (64k colors)
- *MP 277 10" Key*:
  38 system keys, 36 user-configurable and freely inscribable function keys (28 with LEDs)
  MP 277 8" Key:
  38 system keys, 26 user-configurable and freely inscribable function keys (18 with LEDs)
  MP 277 8" and MP 277 10" Touch:
  Touchscreen (analog/resistive)
- All interfaces (e.g., MPI, PROFIBUS DP, USB, Ethernet) are on-board

The MP 277 is also available *with a stainless steel front panel*, and therefore meets the high requirements of, e.g., the food and beverage industry.

■ Design

- Compact design with low mounting depth
- The mounting dimensions of the 10" devices correspond to those of their predecessor
- The front is resistant to various oils, greases and standard detergents
- Degree of protection IP65/NEMA 4x/NEMA 12 (front) or IP20 (rear)
- Plug-type terminals for a 24 V DC power supply
- Interfaces:
  - RS 485/RS 422 interface for process connections (MPI, PROFIBUS DP up to 12 Mbit/s)
  - USB for mouse, keyboard, printer, barcode reader and downloading/uploading the configuration
  - Ethernet (TCP/IP) for exchanging data with a higher-level PC, connection of a network printer and downloading/ uploading the configuration; a control link to SIMATIC S7 is possible
- Slot for SD/MultiMedia card

■ Ordering data   Order No.

SIMATIC MP 277	
Multi Panel with	
• 8" color TFT display, Touch ꟷF	**6AV6 643-0CB01-1AX0**
• 10" color TFT display, Touch ꟷF	**6AV6 643-0CD01-1AX0**
• 8" color TFT display, Keyboard ꟷF	**6AV6 643-0DB01-1AX0**
• 10" color TFT display, Keyboard ꟷF	**6AV6 643-0DD01-1AX0**
• 10" color TFT display, Touch ꟷF with stainless steel front with mounting accessories	**6AV6 643-8AD10-0AA0**
SIMATIC MP 277 8" Touch ꟷF **Starter Package**	**6AV6 652-3MB01-0AA0**
consisting of:	
• SIMATIC MP 277 8" Touch	
• SIMATIC WinCC flexible 2005 SP1	
• SIMATIC HMI Manual Collection	
• Voucher for Software Update Service for 1 year	
• MPI cable	
• PC/PPI cable (RS 232)	
SIMATIC MP 277 10" Touch ꟷF **Starter Package**	**6AV6 652-3PB01-0AA0**
consisting of:	
• SIMATIC MP 277 10" Touch	
• SIMATIC WinCC flexible 2005 SP1	
• SIMATIC HMI Manual Collection	
• Voucher for Software Update Service for 1 year	
• MPI cable	
• PC/PPI cable (RS 232)	
Configuring	
with SIMATIC WinCC flexible	See chapter 6
Configuration set ꟷF	**6AV6 622-0BA01-0AA0**
consisting of:	
• WinCC flexible Standard engineering software	
• Documentation DVD, 5 languages (german, english, french, italian, spanish)	
• RS 232 cable (5 m)	
• MPI cable, 5 m	
Application/Options	
When configuring with WinCC flexible	
• WinCC flexible /Sm@rtAccess	See chapter 6
• WinCC flexible /Sm@rtService	See chapter 6
• WinCC flexible /OPC server	See chapter 6

F) Subject to export regulations: AL: N and ECCN: 5D002ENC3

■ **Ordering data**	Order No.
Documentation (to be ordered separately)	
MP277 operating instructions	
• German	**6AV6 691-1DJ01-0AA0**
• English	**6AV6 691-1DJ01-0AB0**
• French	**6AV6 691-1DJ01-0AC0**
• Italian	**6AV6 691-1DJ01-0AD0**
• Spanish	**6AV6 691-1DJ01-0AE0**
User Manual WinCC flexible Compact/ Standard/Advanced	
• German	**6AV6 691-1AB01-0AA0**
• English	**6AV6 691-1AB01-0AB0**
• French	**6AV6 691-1AB01-0AC0**
• Italian	**6AV6 691-1AB01-0AD0**
• Spanish	**6AV6 691-1AB01-0AE0**
User Manual WinCC flexible communication	
• German	**6AV6 691-1CA01-0AA0**
• English	**6AV6 691-1CA01-0AB0**
SIMATIC HMI Manual Collection [B]	**6AV6 691-1SA01-0AX0**
Electronic documentation, on DVD	
5 languages (English, French, German, Italian and Spanish); contains: all currently available user manuals, manuals and communication manuals for SIMATIC HMI	

B) Subject to export regulations: AL: N and ECCN: EAR99S

■ **More information**

Additional information is available in the Internet under:

http://www.siemens.com/mp

Do you need a specific modification or option for the products described here? Then look up "Customized products", where you will find information about additional sector-specific products that can be ordered as well as about options for customer-specific modification and adaptation.

Embedded Automation

2

SIMATIC MP 370 (incl. INOX)

■ Overview

- Like operator panels, Multi Panels are used for controlling and monitoring machines locally.
- Their functionality can be expanded by the installation of additional Windows CE applications (Multi Panel and Panel options)
- SIMATIC MP 370 devices on the basis of Windows CE combine the ruggedness of Operator Panels with the flexibility of PCs
- Pixel-graphics 12.1" or 15.1" TFT display, color (256 colors)
- The MP 370 15" Touch is also available with a stainless steel front (DIN EN 1672-2). The stainless steel front is appropriate e.g. for the increased demands of the food and beverages industry.
- *MP 370 12" Keys*:
  38 system keys, 36 user-configurable and freely-inscribable function keys (36 with LEDs)
- *MP 370 12" and MP 370 15" Touch*:
  Touchscreen (analog/resistive)
- All interfaces (e.g., MPI, PROFIBUS DP, USB, Ethernet, serial) are on-board

■ Application

The SIMATIC MP 370 Multi Panels can be used wherever machines and systems are controlled and monitored locally – in production, process and building automation alike. They are used in a wide range of industries and applications which can be extended by means of the Multi Panel options, e.g. through presentation of HTML documents via Microsoft Pocket Internet Explorer.

Windows CE fulfills the basic requirements for use in harsh industrial environments. The diskless and fanless design permits their use even where dust or vibration limits the use of a PC. Short power-up times mean the Multi Panels are soon ready to use.

The MP370 15" Touch with stainless steel front has been additionally designed for all industries requiring such. The front can be disinfected, and does not influence the quality e.g. of foods (assuming regular cleaning). Cleaning can be carried out using pressurized water with a jet of 100 l/min at 1 bar from a distance of 2.5 to 3 m. Liquids flow off automatically from the front panels.

■ Ordering data

		Order No.
SIMATIC MP 370		
Multi Panel with		
• 12" Color TFT display, Touch	F	**6AV6 545-0DA10-0AX0**
• 12" Color TFT display, Keyboard	F	**6AV6 542-0DA10-0AX0**
• 15" Color TFT display, Touch	F	**6AV6 545-0DB10-0AX0**
• 15" Color TFT display, Touch with stainless steel front incl. mounting accessories	F	**6AV6 545-8DB10-0AA0**

Configuration

MP 370 configuring set	D	**6AV6 622-0BA01-0AA0**
Consisting of:		
• WinCC flexible Standard engineering software		
• Documentation DVD, 5 languages (English, French, German, Italian, Spanish)		
• RS 232 cable (5 m)		
• MPI cable (5 m)		

Documentation (to be ordered separately)

MP 370 Manual (ProTool)	
• German	**6AV6 591-1DB10-2AA0**
• English	**6AV6 591-1DB10-2AB0**
• French	**6AV6 591-1DB10-2AC0**
• Italian	**6AV6 591-1DB10-2AD0**
ProTool User Manual for configuring Windows-based systems	
• German	**6AV6 594-1MA06-1AA0**
• English	**6AV6 594-1MA06-1AB0**
• French	**6AV6 594-1MA06-1AC0**
• Italian	**6AV6 594-1MA06-1AD0**
• Spanish	**6AV6 594-1MA06-1AE0**
ProTool User Manual Communication for Windows-based systems	
• German	**6AV6 596-1MA06-0AA0**
• English	**6AV6 596-1MA06-0AB0**
• French	**6AV6 596-1MA06-0AC0**
• Italian	**6AV6 596-1MA06-0AD0**
• Spanish	**6AV6 596-1MA06-0AE0**
SIMATIC HMI Manual Collection B	**6AV6 691-1SA01-0AX0**
Electronic documentation, on DVD	
5 languages (English, French, German, Italian and Spanish); contains: all currently available user manuals, manuals and communication manuals for SIMATIC HMI	

B) Subject to export regulations: AL: N and ECCN: EAR99S
D) Subject to export regulations: AL: N and ECCN: 5D992B1
F) Subject to export regulations: AL: N and ECCN: 5D002ENC3

■ More information

Additional information is available in the Internet under:
http://www.siemens.com/mp

Note

Do you need a specific modification or option for the products described here? Then look up "Customized products", where you will find information about additional sector-specific products that can be ordered as well as about options for customer-specific modification and adaptation.
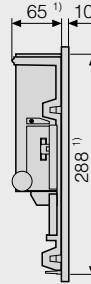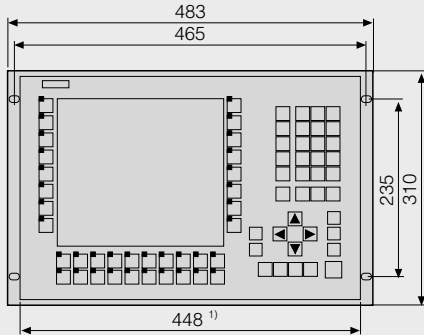
Embedded Automation

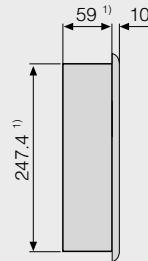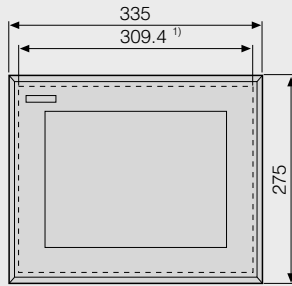## SIMATIC MP 370 (incl. INOX)

■ Dimension drawings

Dimensions in mm

```
483
465
235  310
448 1)
```
```
65 1)  10
288 1)
```

1) Panel cutout (W x H) in mm: 450 x 290

MP 370 12" Key

Dimensions in mm

```
335
309.4 1)
275
```
```
59 1)  10
247.4 1)
```

1) Panel cutout (W x H x D) in mm: 310 x 248 x 59

MP 370 12" Touch

Dimensions in mm

```
400
366
310
```
```
69  10
288
```
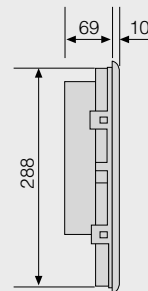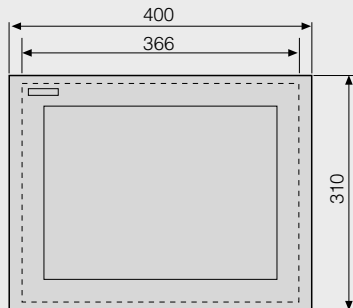
Panel cutout (W x H) in mm: 368 x 290

MP 370 15" Touch

Embedded Automation

◼ Overview

- The software PLC which runs under Windows CE, can be installed on the multifunctional platform MP 370 12" and MP 370 15".
- The cost-optimized solution for deterministic processes in conjunction with a rugged hardware platform. At the same time it is ideal for applications in which large amounts of data are processed.
- Ideal for tasks directly at the machine when a user-friendly user interface is extremely important or the control task demand large programs and extensive data memory.

◼ Application

Processing large volumes of data

WinAC MP has a large user memory for the PLC user program and user data.

The limits for the user memory can be adapted to suit the application depending on whether the emphasis is on large volumes of data in the PLC or demanding visualization.

Installation directly at the machine

WinAC MP is suitable for use directly at the machine in hostile environments or as a cell controller in a system network. SIMATIC MP 370 also constitutes a rugged hardware platform without a fan and without rotating mass storage.

SIMATIC WinAC MP, ProTool and MP 370 are perfectly matched to each another. This increases the operational reliability in every situation over the service life.

The underlying operating system Windows CE V3.0 ensures deterministic operation for WinAC MP. The excellent computing capacity of the MP 370 allows fast execution speeds for PLC user programs combined with fast update speeds and short display building times for visualization.

◼ Ordering data   Order No.

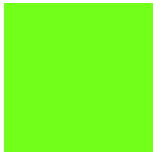| SIMATIC WinAC MP V3.1		
Software-based PC-based control system under Windows CE; CD-ROM with electronic documentation (ger, en, fr)		
Single License	B	**6ES7 671-0EC02-0YA0**

B) Subject to export regulations: AL: N and ECCN: EAR99S

Embedded Automation

2

Industrial PC

3

Industrial PC

General information

■ Overview

Professional automation solutions place a wide range of different requirements on the industrial PC used (vibration, cold, dust, heat, steam) year in, year out and round the clock. SIMATIC PCs are the ideal industry-standard PC platforms for this purpose.

SIMATIC PC offers

- High system availability
- High investment protection
- Maximum industrial functionality

A wide range of different designs are available to suit different applications:

SIMATIC Rack PC

Flexible, high-performance industrial PC for installation in 19" racks.

SIMATIC Box PC

Compact, rugged industrial PC for universal installation.

SIMATIC Panel PC

Rugged, high-performance industrial PC with brilliant display.

SIMATIC PCs can be individually configured. Any additional customer requirements, such as visual design or hardware expansions, can be implemented project-specifically.

Compatible expansion components are available for individual expansion of the system availability.

SIMATIC PC – more industrial PC for your money

The following symbols have been developed to enable a simple representation of the SIMATIC PC's outstanding product features:

Symbol	Description
	Maximum computer performance due to state-of-the-art PC technology
	Can be expanded with supplementary modules
	High investment protection due to long product service life (at least 2.5 years) and long spare-parts availability (at least 5 years)
	High system availability due to data backup options (e.g. RAID1 system)
	High system availability due to efficient device diagnostics (e.g. monitoring, logging and message functions via LAN with SIMATIC PC DiagMonitor)
	High system availability due to maintenance-free system configuration (e.g. without fans or hard disks)
	High degree of resistance to vibration and shock loads and high ambient temperatures
	Space-saving system design due to extremely small outside dimensions
	Distributed and centralized PC display concept possible
	Realtime features (with RMOS)

■ Benefits

Minimization of downtimes thanks to high system availability

- Guaranteed continuous 24-hour operation
- Efficient self-diagnostics
- Solutions for data backup (preventive data backup)
- Service-friendly equipment construction (for modification and servicing)

Reduction in outlay thanks to high investment security

- High product continuity for hardware and software
- Clear development stages thanks to in-house development and manufacturing (Made in Germany)
- Worldwide service and support

Reduced costs due to appropriate industrial functionality

- Industrial compatibility matched to requirements
- Wide spectrum of construction types
- Configurable PC hardware
- Optimized integration in the SIMATIC environment (Totally Integrated Automation)
- Systems are supplied ready to switch on

Overview

SIMATIC Rack PCs provide flexible, high-availability industrial PC systems for powerful yet compact applications using 19" technology.

Two device classes are available for different requirements:

- **SIMATIC Rack PC IL 43** – maximum performance at an affordable price
- **SIMATIC Rack PC 847B** – maximum expandability for excellent industrial functionality with Intel Core 2 Duo technology

Shared industrial functionality

- High EMC: CE mark for industrial applications
- Operating system pre-installed and activated for fast commisioning
- Overpressure ventilation concept with fan on the front and dust filter
- Designed for 24-hour continuous operation
- Integrated parameterizable monitoring functions (temperature, fan, watchdog)
- Service-friendly device design
- Lockable front cover
- Prepared for mounting on a telescopic rail

SIMATIC Rack PC IL 43 – maximum performance at an affordable price

State-of-the-art technology

- State-of-the-art Intel technology
- High performance and scalability
- PCI and PCI Express slots
- Gigabit Ethernet

Industrial compatibility

- Dust protection
- Service-friendly
- CE mark for industrial and office applications
- Transport safety for expansion cards
- Monitoring functions

High system availability

- Monitoring and diagnostics functions
- RAID1 configuration (mirrored drives), optionally in "hot swap" frames

Investment protection

- Innovation cycle 15 to 18 months
- Guaranteed spare parts availability for at least 3 years

SIMATIC Rack PC 847B – maximum expandability for excellent industrial functionality with Intel Core 2 Duo technology

High system performance

- Maximum system performance for complex measuring, image processing and visualization tasks through use of Intel Core 2 Duo processors

High system availability

- Monitoring and diagnostic functions (front LEDs) SIMATIC PC DiagMonitor
- RAID1 configuration (mirrored drives), optionally in "hot swap" frames

High degree of industrial capability

- Protected against high vibration and shock load during operation
- Wide operational temperature range
- High service friendliness
- PCI and PCI Express slots
- High flexibility and expansibility of components
- Integrated PROFIBUS DP/MPI interface(optional)

High investment protection

- High continuity of the components/design
- Motherboard developed and manufactured by Siemens
- Innovation cycle 2.5 to 3 years
- Guaranteed spare parts availability for at least 5 years

Industrial PC
SIMATIC Rack PC

Introduction

■ **Overview** (continued)

	SIMATIC Rack PC IL 43	SIMATIC Rack PC 847B
Design		
19" rack, 4HU, Prepared for telescopic rails, horizontal/vertical installation 19" fixing bracket can be removed from outside	●	●
Tower Kit (optional)	●	●
General features		
Processor	Intel Pentium 4 551/651, 3.4 GHz, 800 MHz FSB Intel Pentium 4 531, 3.0 GHz, 800 MHz FSB Intel Celeron D 352 3.2 GHz, 533 FSB Intel Celeron D 331, 2.66 GHz, 533 MHz FSB	Intel Core 2 Duo T7400, 2.16 GHz, 667 MHz FSB Intel Core 2 Duo T5500, 1.66 GHz, 667 MHz FSB Intel Celeron M 440, 1.86 GHz, 533 MHz FSB
Main memory	256 MB, expandable up to 4 GB	256 MB, expandable up to 4 GB
Expansion slots	4 x PCI (long) 1 x PCI Express x16 2 x PCI Express x1 (long)	7 x PCI (long) 1 x PCI Express x16 3 x PCI Express x4 (long) optional
Graphics	on board (1x VGA) PCIe graphics card (2 x VGA or 2 x DVI) optional	on board (1 x VGA) Add card (1 x DVI) optional PCIe graphics card (2 x VGA or 2 x DVI) optional
Operating system	none	none
• preinstalled/supplied on Restore CD	Windows 2000 Professional multilanguage Windows XP Professional multilanguage Windows Server 2003 with 5 clients multilanguage	Windows 2000 Professional multilanguage Windows XP Professional multilanguage Windows Server 2003 with 5 clients multilanguage
• to be ordered separately	▬ [2]	RMOS3 V3.40 (available soon)
• available on request, project-specifically	Linux [1] other	Linux [1] (available soon) other
Interfaces		
PROFIBUS/MPI	–	12 Mbit/s (compatible with CP 5611), optional
Ethernet	1 x 10/100/1000 Mbit/s	2 x 10/100/1000 Mbit/s
USB 2.0 (high current)	6 x, 2 x at front	6 x, 2 x at front
VGA / Audio	1 x / yes	1 x / yes
Drives		
SATA hard disks		
• Internal installation	●	●
• Installation at the front in the swap frame	●	●
RAID1 SATA hard disks		
• Internal installation	●	●
• Installation at the front in the swap frame	●	●
Optical drives		
• DVD-ROM	●	●
• DVD-ROM/CD-RW	●	▬
• DVD±R/RW	●	●
Slots	6 x (2 x internal, 4 x at front)	6 x (2 x internal, 4 x at front)
Ambient condition [3]		
Vibration load/shock loading during operation	0.2 g / 1 g	0.5 g / 5 g
Ambient temperature in operation	With maximum configuration: 5 - 40 °C	With maximum configuration: 5 - 50 °C

● available
▬ not available

1) Suitable for specific LINUX versions in accordance with the specifications of the Siemens manufacturer's declaration "Suitable for LINUX", see http://www.siemens.com/simatic-pc/suited-for-linux (Linux is a trademark of Linus Torvald)
2) Expandable via plugin card.
3) Restrictions in use of DVD-ROM/CD-RW or DVD±R/RW and hard disks in swap frames.

3

■ Benefits

Rugged design

The overall design aims to achieve maximum safety in case of vibration and shock loads. For example, a special vibration-absorbing suspension of the hard disk ensures absolute operational reliability, even at high mechanical loads. A well-designed ventilation concept ensures that even the maximum configuration can support high operating temperatures – and dust protection is included.

Service-friendly device design

Particular attention was paid to making servicing extremely simple. PC components (e.g. slots, memory modules) can be accessed using a handle. Fan filters and fans can be replaced without tools even if installed.

Options

SIMATIC Rack PC can be ordered in custom configurations and is supplied ready for use. The design's high system availability can be further extended by means of additional data backup options (e.g. RAID1 system, SIMATIC PC Image Creator) and a highly-efficient self-diagnosis SW program (SIMATIC PC DiagMonitor).

Integrated interfaces

An on-board Gbit Ethernet interface is available for communication in the office world or at the control level. Integrated USB interfaces on the rear and front panels make connecting I/O devices from the PC world (e.g. external hard disks for mobile data backup, keyboard, external mouse for operation) child's play. For advanced graphics applications, a free PCI Express slot or a high-performance graphics card for the connection of two monitors are available.

Expandability

With up to 11 free PC slots, the SIMATIC Rack PC offers maximum leeway for expansions at a minimum mounting depth of 19".

Continuity

Due to continuity in the availability of identical components, such as motherboards designed and produced by Siemens, the SIMATIC Rack PC offers high investment security.

Long-term functionality of the hardware and software is also ensured. Long-term availability of PC components from the Intel embedded line ensure high investment protection.

Industrial PC
SIMATIC Rack PC

SIMATIC Rack PC IL 43

■ Overview

The SIMATIC Rack PC IL 43 is a high-performance industrial PC in 19" rack-format design (4 HU), which is particularly well suited to high-performance industrial PC applications installed in a 19" cabinet.

It offers:
- High-level performance
- Attractive price

■ Benefits

High productivity thanks to faster data processing
- State-of-the-Art PC technology (e.g. Intel Hyper-Threading (HT) and Extended Memory 64 (EM64T) processor technology)
- High-level performance (e.g. Intel 945G Express Chipset, DDR2 memory supporting dual-channel technology)
- High data transfer rates (e.g. with serial ATA hard disks, Gbit Ethernet)

Cost minimization through time savings
- Configured, turn-key systems
- Preinstalled operating systems for fast commissioning
- Integrated interfaces for communication in the Office environment or at the control level

Cost reductions thanks to investment protection
- High performance reserves for future application expansions
- Guaranteed spare parts availability of the components (3 years)
- Can be ordered in custom configurations and supplied ready for use

Minimization of downtime through increased system availability
- Integrated, parameterizable monitoring functions
- Data backup solutions (preventive data backup)
- Service-friendly design (modifications, servicing)
- RAID1 configurations, also in hot-swap frames

■ Application

The SIMATIC Rack PC IL 43 offers system integrators, control cabinet makers, plant engineers, and mechanical engineers a 19" rack PC platform for high-performance applications and IT applications on the control and cell levels.

It can be used for:
- Process and visualization applications
- Industrial image processing
- Quality assurance/monitoring tasks
- Measuring and control tasks
- Data acquisition/management

The SIMATIC Rack PC IL 43 has CE certification for use in the industrial sector as well as in residential and commercial areas, and small businesses. In addition to the industrial applications, it can also be used in building automation or in facilities open to the public.

◼ Design

- All-metal 19" casing (4 HU) for high electromagnetic compatibility and mechanical ruggedness; externally painted, prepared for mounting on telescopic rails
- Horizontal and vertical installation is possible, can be used as an industrial tower PC by using the appropriate kit.
- Lockable front flap for authorized access to front swap media, command elements (Reset, Power), USB interface, front fan and dust filter
- Dust protection by means of overpressure ventilation using bearing-seated front fan via filter
- Card retainer for PC modules for safe transport (vibration and shock)
- 6 slots for installing drives:
  - On the front: 1 x 3.5"; 3 x 5.25"
  - Internal: 2 x 3.5"
- Processor:
  - Intel Pentium 4 651, 3.4 GHz, 800 MHz FSB, 2048 KB second level cache, with Hyper-Threading (HT) technology and Extended Memory 64 (EM64) technology
- Standard main memory configuration 256 MB, DDR2 533 SDRAM, expandable up to 4 GB
- Drives:
  - 120 GB serial ATA hard disk (internal)
  - DVD-ROM drive
  - Diskette drive: 1.44 MB, 3.5"
- Grafics on-board, in the Intel GMA950 Chipset, up to 2048 x 1536 pixels, 75 Hz, 16-bit colors
- Interfaces:
  - LAN 10/100/1000 Mbit/s Ethernet interface (RJ45)
  - 4 x USB 2.0 at the rear, 2 x USB 2.0 at the front
  - 2 x PS/2, 1 x COM1, 1 x LPT, 1 x VGA
  - Audio: Line In-/Out, Mic
- Free slots for expansions:
  - 4 x PCI long
  - 1 x PCI Express x16
  - 2 x PCI Express x1 long
- Power supply: AC 100 – 240 V (wide range), 50/60 Hz

Optional additional equipment:

- Processor:
  - Intel Pentium 4 551, 3.4 GHz, 800 MHz FSB, 1024 KB second level cache, with HT and EM64 technology
  - Intel Pentium 4 531, 3.0 GHz, 800 MHz FSB, 1024 KB second level cache, with HT and EM64 technology
  - Intel Celeron D 352, 3,2 GHz, 533 MHz FSB, 512 KB second level cache, with EM64 technology
  - Intel Celeron D 331, 2,66 GHz, 533 MHz FSB, 256 KB second level cache
- Main memory expansion up to 3 GB DDR2 533 SDRAM (configured as dual channel for top performance)
- PCI Express graphics card x16, (Dual Head: 2 x VGA or 2 x DVI), 128 MB, up to 2048 x 1536 pixels, 75 Hz, 32-bit colors
- Serial ATA hard disks with NCQ technology:
  - installation internally or at the front ("Hot Swap" in RAID1 configuration)
  - 2 x 120 GB
  - RAID1, 2x 120 GB (RAID Controller on-board)
- DVD-ROM/CD-RW or DVD±R/RW (Dual Layer)
- 1 x COM2 at rear
- Preinstalled operating systems
- SIMATIC PC DiagMonitor [1]
- SIMATIC PC/PG Image Creator [1]

1) Further information can be found under *"Expansion components"*

Front of SIMATIC Rack PC IL 43, with open front flap

Rear side SIMATIC Rack PC IL 43

For modification of the PC into an **Industrial Tower PC**, a tower kit can be ordered as accessory. See

Industrial PC
SIMATIC Rack PC

SIMATIC Rack PC IL 43

■ **Ordering data**　　　　Order No.　　　　　　　　　　　　　　　　　Order No.

3

Configuration

SIMATIC Rack PC IL 43　J　**6AG4 011-2 ■■■■ - ■■■ 0**

Interfaces:
1 x Gbit LAN (RJ45);
1 x serial (COM1);
1 x parallel (LPT);
1 x VGA;
4 x USB 2.0,
2 x USB at the front;
2 x PS/2; Audio;
7 slots (4 x PCI long,
1 x PCI Express x16,
2 x PCI Express x1);
Temperature and fan monitor-
ing; watchdog; card retainer;
110/230 V power supply

Processor:

- Celeron D 331　　　　　　　　　　　　**A**
  (2.66 GHz, 533 MHz FSB,
  256 KB SLC)

- Celeron D 352　　　　　　　　　　　　**B**
  (3.2 GHz, 533 MHz FSB,
  512 KB SLC)

- Pentium 4 531　　　　　　　　　　　　**C**
  (3.0 GHz, 800 MHz FSB,
  1024 KB SLC, HT, EM64T)

- Pentium 4 551　　　　　　　　　　　　**D**
  (3.4 GHz, 800 MHz FSB,
  1024 KB SLC, HT, EM64T)

- Pentium 4 651　　　　　　　　　　　　**E**
  (3.4 GHz, 800 MHz FSB,
  2048 KB SLC, HT, EM64T)

Drives:

- 120 GB HDD SATA; internal　　　　　**A**

- 2 x 120 GB HDD SATA;　　　　　　　**B**
  internal

- RAID1 (2 x 120 GB　　　　　　　　　**C**
  HDD SATA, mirror disks,
  RAID Controller on-board);
  internal

- 120 GB HDD SATA in swap　　　　　**G**
  frame; front

- 2 x 120 GB HDD SATA in　　　　　　**H**
  swap frame; front

- RAID1 (2 x 120 GB　　　　　　　　　**J**
  HDD SATA, mirror disks,
  RAID Controller on-board) in
  swap frame; Hot-Swap; front

Memory configuration:

- 256 MB DDR2 SDRAM　　　　　　　　**0**
  (1 x 256 MB), single channel

- 512 MB DDR2 SDRAM　　　　　　　　**1**
  (2 x 256 MB), dual channel

- 1.0 GB DDR2 SDRAM　　　　　　　　**2**
  (2 x 512 MB), dual channel

- 2.0 GB DDR2 SDRAM　　　　　　　　**3**
  (2 x 1.0 GB), dual channel

- 3.0 GB DDR2 SDRAM　　　　　　　　**4**
  (2 x 1.0 GB, 2 x 512 MB),
  dual channel

Configuration (continued)

SIMATIC Rack PC IL 43　J　**6AG4 011-2 ■■■■ - ■■■ 0**

Optical drives:

- 1.44 MB FDD & DVD-ROM　　　　　　**1**

- 1.44 MB FDD &　　　　　　　　　　　**2**
  DVD-ROM/ CD-RW

- 1.44 MB FDD & DVD ± R/RW　　　　**3**

Expansion (HW):

- without expansion (HW)　　　　　　　**0**

- serial interface (COM2)　　　　　　　**1**

- serial interface (COM2) +　　　　　　**2**
  PCI Express graphics card
  (DH: 2 x VGA or 2 x DVI,
  128 MB)

Operating system
(preinstalled):

- Windows 2000 Professional　D　　　**J**
  Multilanguage
  (Ger, En, Fr, It, Sp), SP4

- Windows XP Professional　　　　　　**K**
  Multilanguage
  (Ger, En, Fr, It, Sp), SP2

- Windows Server 2003　　　　　　　　**M**
  with 5 Client Multilanguage
  (Ger, En, Fr, It, Sp), SP1

- without operating system　D　　　　**X**

Expansion (SW) / Power cable:

- SIMATIC PC DiagMonitor　　　　　　**A**
  Software included; European
  power cable

- SIMATIC PC Image Creator　G　　　**B**
  Software included [1];
  European power cable

- SIMATIC PC DiagMonitor &　　　　　**C**
  Image Creator Software [1]
  included; European power
  cable

- without expansion (SW);　　　　　　**X**
  European power cable

- without expansion (SW);　　　　　　**Y**
  China power cable

[1] Not in combination with Windows 2003 Server
D) Subject to export regulations: AL: N and ECCN: 5D992B1
G) Subject to export regulations: AL: N and ECCN: 4A994
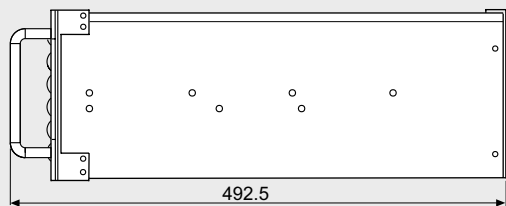J) Subject to export regulations: AL: N and ECCN: 5D992B2

3

■ Ordering data

	Order No.		Order No.

Preferred versions (ex stock)

SIMATIC Rack PC IL 43 — **6AG4 011-2CA01-0XX0**

Pentium 4 531 (3.0 GHz, HT);
120 GB HDD SATA, internal;
256 MB DDR2 SDRAM
(2 x 128 MB), dual channel;
1.44 MB FDD & DVD-ROM;
without operating system,
Interfaces:
1 x Gbit LAN; 1 x VGA;
1 x serial, 1 x parallel;
6 x USB 2.0, 2 x USB at the front;
2 x PS/2; Audio;
European power cable

SIMATIC Rack PC IL 43 — **6AG4 011-2CA12-1JX0**

Pentium 4 531 (3.0 GHz, HT);
120 GB HDD SATA, internal;
512 MB DDR2 SDRAM
(2 x 256 MB), dual channel;
1.44 MB FDD & DVD-ROM/
CD-RW; Windows 2000
Professional Multilanguage
(Ger, En, Fr, It, Sp); SP4
Interfaces:
1 x Gbit LAN; 1 x VGA;
2 x serial, 1 x parallel;
6 x USB 2.0, 2 x USB at the front;
2 x PS/2; Audio;
European power cable

SIMATIC Rack PC IL 43 — **6AG4 011-2DA11-1JX0**

Pentium 4 551 (3,4 GHz, HT);
120 GB HDD SATA, internal;
512 MB DDR2 SDRAM
(2 x 256 MB), dual channel;
1.44 MB FDD & DVD-ROM;
Windows 2000 Professional
Multilanguage
(Ger, En, Fr, It, Sp); SP4
Interfaces:
1 x Gbit LAN; 1 x VGA;
2 x serial, 1 x parallel;
6 x USB 2.0, 2 x USB at the front;
2 x PS/2; Audio;
European power cable

A) Subject to export regulations: AL: N and ECCN: EAR99H

Accessories

Memory expansion

- 256 MB (1 x 256 MB) DDR2 533 SDRAM — **6ES7 648-2AF20-0GA0**
- 512 MB (2 x 256 MB) DDR2 533 SDRAM, kit for dual channel technology — A — **6ES7 648-2AF30-0GB0**
- 1 GB (2 x 512 MB) DDR2 533 SDRAM, kit for dual channel technology — A — **6ES7 648-2AF40-0GB0**
- 2 GB (2 x 1 GB) DDR2 533 SDRAM, kit for dual channel technology — A — **6ES7 648-2AF50-0GB0**

Swap frame withdrawable unit for hard disks — **6ES7 648-0EB00-1BA0**

SIMATIC PC accessories,
withdrawable HDD swap frame
for 3.5" hard disk, serial ATA
(without hard disk)

Tower Kit — **6ES7 648-1AA00-0XC0**
For modification of the PC into an
Industrial Tower PC

Adapter cable for graphics card — **6ES7 648-3AC00-0XA0**

SIMATIC PC accessories,
Y adapter cable for DualHead,
PCI Express x16 graphics card
for closing of two digital screens
(2 x DVI)

Filter mats — **A5E00246975**
for Rack PC IL 43
Packing unit = 10 pcs.

Power cable, straight, 3 m

- Germany, France, Spain, Netherlands, Belgium, Sweden, Austria, Finland — **6ES7 900-0AA00-0XA0**
- United Kingdom — **6ES7 900-0BA00-0XA0**
- Switzerland — **6ES7 900-0CA00-0XA0**
- USA — **6ES7 900-0DA00-0XA0**
- Italy — **6ES7 900-0EA00-0XA0**
- China — **6ES7 900-0FA00-0XA0**

Input media

- **SIMATIC PC keyboard** German/international, USB port — **6ES7 648-0CB00-0YA0**
- **USB mouse** (optical, 3 buttons) for PG and PC with adapter — A — **6ES7 790-0AA01-0XA0**

Memory media

SIMATIC USB Flash Drive — A — **6ES7 648-0DC30-0AA0**
1 GB, USB 2.0,
metal enclosure, bootable

Communication products

Power supplies and UPS

Industrial PC
SIMATIC Rack PC

SIMATIC Rack PC IL 43

3

Dimension drawings

492.5

465.1

483

101.6

176.5

SIMATIC RACK PC IL

Dimensions mm

433.5

449

G_KT01_EN_00165

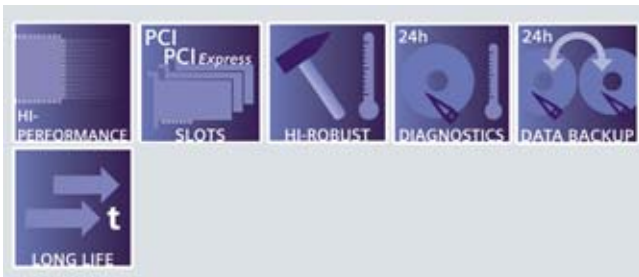**SIMATIC Rack PC 847B**

3

Overview

The SIMATIC Rack PC 847B is a very rugged, high-performance industrial PC in 19" rack design (4 HU) with excellent industrial functionality.

It offers:

- Maximum expandability
- Maximum ruggedness
- Intel Core 2 Duo technology

Benefits

High productivity thanks to faster data processing

- State-of-the-art PC technology (e.g. Intel Core 2 Duo and Extended Memory 64 (EM64T) processor technology)
- High-level performance (e.g. Intel 945GM Express Chipset, DDR2 memory supporting dual-channel technology)
- High data transfer rates (e.g. with Serial ATA hard disks, dual Gbit Ethernet)

Reduction in standstill times thanks to high system availability

- Efficient self-diagnostics (front panel LEDs, SIMATIC PC DiagMonitor)
- Data backup solutions (preventive data backup)
- Service-friendly design (modifications, servicing)

Cost reductions through high investment security

- High product continuity through long-term secure functionality in hardware and software (support for Legacy interfaces, components from Intel-Embedded Roadmap)
- Guaranteed spare parts availability of the components (5 years)

Reduced costs through high industrial functionality

- High industrial capability through extremely rugged, dust-protected design, even against strong vibration and impact loads, and with high temperatures (ventilation design)
- Integral component of Totally Integrated Automation (TIA) due to integrated PROFIBUS/MPI interface and two Gbit Ethernet interfaces, system-tested SIMATIC Software package
- High flexibility and expandability (up to 11 spare slots)

Cost minimization through time savings

- Configured, turn-key systems
- Preinstalled operating systems for fast commissioning
- Integrated interfaces for communication on the field or process control level

Application

The SIMATIC Rack PC 847B provides machine, systems and control cabinet engineering companies with a high-performance and highly flexible 19" rack PC platform for machine-oriented industrial applications:

- Measuring, open-loop control and closed-loop control of process and machine data
- Visualization of manufacturing sequences
- Computing and processing of images within the scope of quality inspections
- Data acquisition and management

The SIMATIC Rack PC 847B is certified to CE for industrial applications.

Industrial PC
SIMATIC Rack PC

SIMATIC Rack PC 847B

Design

- All-metal 19" casing (4 HU) for high degree of mechanical rug-gedness (vibration/shock) and high EMC; prepared for mounting on telescopic rails
- Horizontal and vertical installation is possible, can be used as Industrial Tower PC by using the appropriate kit
- Lockable front flap for authorized access (access protection) to front swap media, command elements (Reset, Power), USB interface, front fan and dust filter
- Opening of the enclosure cover with only one screw and re-placement of PC components (e.g. PC cards or HDD) with a single tool
- Replacement of front fan and dust filter without special tools
- Dust protection by means of overpressure ventilation using bearing-seated front fan via filter
- Card retainer for reliable operation of PC modules in the event of vibrations and shocks
- 6 slots for installing drives
  - On the front: 1 x 3.5"; 3 x 5.25"
  - Internal: 2 x 3.5" (in the optional vibration-damping drive bracket or in the fixed hard disk support)
- Processor:
  - Intel Core 2 Duo T7400 (2,16 GHz, 667 MHz FSB, 4 MB L2 Cache with Extended Memory 64 (EM64) technology)
- Standard main memory configuration 256 MB DDR2 677 SDRAM, expandable up to 4 GB
- Drives:
  - 80 GB serial ATA hard disk (internally on the fixed hard disk support)
  - Disk drive: 1.44 MB, 3.5"
- Graphics on-board on the PCI Express bus, Intel GMA950 integr. in Chipset, up to 2048 x 1536 pixels, 75 Hz, 16-bit colors
- Interfaces:
  - 2 x LAN 10/100/1000 Mbit/s Ethernet interface (RJ45)
  - 4 x USB 2.0 at the rear, 2 x USB 2.0 at the front
  - 2 x PS/2, COM1, COM2, LPT1, VGA
  - Audio: Line Out, Mic
- Free slots for expansions:
  - 7 x PCI long
  - 1 x PCI Express x16 long
  - 3 x PCI Express x4 long (optional)
- Power supply: AC 110/230 V, 50/60 Hz

Optional additional equipment:

- Processor:
  - Intel Core 2 Duo T5500 (1.66 GHz, 667 MHz FSB, 2 MB L2 Cache with Extended Memory 64 (EM64) technology)
  - Intel Celeron M 440 (1.86 GHz, 533 MHz FSB, 1 MB L2 Cache)
- Main memory expansion up to 4 GB DDR2 667 SDRAM (configured as dual channel for top performance from 2 GB upwards)
- PCI Express graphics card x16, (Dual Head: 2 x VGA or 2 x DVI), 128 MB, up to 2048 x 1536 pixels, 75 Hz, 32-bit colors
- Graphics expansion ADD card through PCI Express x16 slot, (1 x DVI) for connection of a digital monitor
- Serial ATA hard disks with NCQ technology:
  - installation internally or at the front ("Hot Swap" in RAID1 configuration)
  - 1 x or 2 x 160 GB
  - RAID1, 2 x 160 GB (RAID Controller on-board)
- DVD-ROM or DVD+/-R/RW
- PROFIBUS/MPI on-board, CP 5611-compatible
- Preinstalled operating systems
- SIMATIC PC DiagMonitor[1]
- SIMATIC PC/PG Image Creator[1]

1) Further information can be found under *"Expansion components"*

Front of SIMATIC Rack PC 847B, with open front flap

Rear side SIMATIC Rack PC 847B

For modification of the PC into an **Industrial Tower PC**, a tower kit can be ordered as accessory.
See *"Ordering data-Accessories"*.

■ Ordering data

| | Order No. | | | Order No. |

Configuration

SIMATIC Rack PC 847B   J   **6ES7 643-8 ■■■■ - ■■■■**

Interfaces: 2 x 10/100/
1000 Mbit/s Ethernet (RJ45);
1 x Graphics (VGA); 2 x COM;
1 x LPT; 2 x PS/2;
4x USB 2.0 at the rear,
2 x USB 2.0 at the front;
Audio; temperature and fan
monitoring; watchdog;
slots: 6 (3 x 5.25",
1 x 3.5" external access;
2 x 3.5" internal access)

Processor, motherboard:
- Celeron M 440   **A**
  (1.86 GHz, 1 MB L2 Cache),
  motherboard without field bus
- Celeron M 440 (1.86 GHz,   **B**
  1 MB L2 Cache), mother-
  board with PROFIBUS/MPI
- Core 2 Duo T5500 (1.66 GHz,   **G**
  2 MB L2 Cache, EM64-T),
  motherboard without field bus
- Core 2 Duo T5500 (1.66 GHz,   **H**
  2 MB L2 Cache, EM64-T),
  motherboard with
  PROFIBUS/MPI
- Core 2 Duo T7400 (2.16 GHz,   **K**
  4 MB L2 Cache, EM64-T),
  motherboard
- Core 2 Duo T7400 (2.16 GHz,   **L**
  4 MB L2 Cache, EM64-T),
  motherboard with
  PROFIBUS/MPI

Drives:
- 80 GB HDD SATA;   **A**
  0.5 g vibr., 5 g shock, intern.
- 160 GB HDD SATA;   **B**
  0.5 g vibr., 5 g shock, intern.
- 2 x 160 GB HDD SATA;   **C**
  0.5 g vibr., 5 g shock, intern.
- RAID1 (2 x 160 GB HDD   **D**
  SATA, mirror disks);
  0.5 g vibr., 5 g shock, intern.
- 80 GB HDD SATA;   **G**
  0.3 g vibr., 3 g shock, intern.
- 80 GB HDD SATA in swap   **H**
  frame; front
- 160 GB HDD SATA in swap   **K**
  frame; front
- 2 x 160 GB HDD SATA in   **M**
  swap frame; front
- RAID1 (2 x 160 GB HDD   **P**
  SATA) in swap frame; for
  hot swapping; front

Memory configuration:
- 256 MB DDR2 SDRAM   **0**
  (1 x 256 MB), single channel
- 512 MB DDR2 SDRAM   **1**
  (1 x 512 MB), single channel
- 1 GB DDR2 SDRAM   **2**
  (1 x 1 GB), single channel
- 2 GB DDR2 SDRAM   **3**
  (2 x 1 GB), dual channel
- 4 GB DDR2 SDRAM   **4**
  (2 x 2 GB), dual channel

J) Subject to export regulations: AL: N and ECCN: 5D992B2

Configuration (continued)

SIMATIC Rack PC 847B   J   **6ES7 643-8 ■■■■ - ■■■■**

Swap media:
- FDD   **0**
- DVD-ROM, without FDD   **1**
- DVD+/-RW, without FDD   **2**
- DVD-ROM & FDD   **3**
- DVD+/-RW & FDD   **4**

Bus unit/ hardware expansion:
- 8 slot bus unit: [2]   **0**
  7 x PCI, 1 x PCIe x16;
  w/o hardware expansion units
- 8 slot bus unit: [2]   **1**
  7 x PCI, 1 x PCIe x16 assigned;
  + DVI extension adapter (DVI)
- 8 slot bus unit: **2**
  7 x PCI, 1 x PCIe x16 assigned;
  + graphics card PCIe x16,
  DH (2 x DVI or 2 x VGA)
- 11 slot bus unit: [2]   **3**
  7 x PCI, 1 x PCIe x16,
  3x PCIe x4;
  w/o hardware expansion units
- 11 slot bus unit: [2]   **4**
  7 x PCI, 1 x PCIe x16 assign.,
  3 x PCIe x4; + DVI extension
  adapter (DVI)
- 11 slot bus unit: **5**
  7 x PCI, 1 x PCIe x16 assign.,
  3 x PCIe x4; + graphics card
  PCIe x16, DH (2 x DVI or
  2 x VGA)

Operating system:
- Windows 2000 Professional,   **A**
  MUI (Ger, En, Fr, It, Sp), SP4
- Windows XP Professional,   **B**
  MUI (Ger, En, Fr, It, Sp), SP2
- Windows Server 2003   **M**
  Standard Edition w. 5 clients,
  MUI (Ger, En, Fr, It, Sp), SP1
- without operating system   **X**

Software expansion:
- with SIMATIC PC DiagMonitor   **A**
- with SIMATIC PC Image   **B**
  Creator Software[1]
- with SIMATIC PC DiagMonitor   **C**
  & Image Creator [1] software
- without software   **X**

Power cable, county-specific
cable:
- 110/230 V industrial power   **0**
  unit with Namur; power cable
  for Europe
- 110/230 V industrial power   **1**
  unit with Namur; power cable
  for United Kindom
- 110/230 V industrial power   **2**
  unit with Namur; power cable
  for Switzerland
- 110/230 V industrial power   **3**
  unit with Namur; power cable
  for USA
- 110/230 V industrial power   **4**
  unit with Namur; power cable
  for Italy
- 110/230 V industrial power   **5**
  unit with Namur; power cable
  for China

1) Not in combination with Windows 2003 Server
2) Delivery expected: end of June 2007

Industrial PC
SIMATIC Rack PC

SIMATIC Rack PC 847B

■ **Ordering data** Order No. Order No.

Accessories

Memory expansion	A	
• 256 MB DDR2 667 SDRAM, SO DIMM		**6ES7 648-2AG20-0HA0**
• 512 MB DDR2 677 SDRAM, SO DIMM		**6ES7 648-2AG30-0HA0**
• 1 GB DDR2 667 SDRAM, SO DIMM		**6ES7 648-2AG40-0HA0**
• 2 GB DDR2 667 SDRAM, SO DIMM		**6ES7 648-2AG50-0HA0**

Swap frame withdrawable unit for hard disks **6ES7 648-0EB00-1BA0**

SIMATIC PC accessories, withdrawable HDD swap frame for 3.5" hard disk, serial ATA (without hard disk)

Filter mats A5E01064980

for Rack PC 847B
Packing unit = 10 pcs.

Power cable, straight, 3 m

• Germany, France, Spain, Netherlands, Belgium, Sweden, Austria, Finland	**6ES7 900-0AA00-0XA0**
• United Kingdom	**6ES7 900-0BA00-0XA0**
• Switzerland	**6ES7 900-0CA00-0XA0**
• USA	**6ES7 900-0DA00-0XA0**
• Italy	**6ES7 900-0EA00-0XA0**
• China	**6ES7 900-0FA00-0XA0**

A) Subject to export regulations: AL: N and ECCN: EAR99H

Accessories (continued)

Tower Kit **6ES7 648-1AA00-0XD0**
For modification of the PC into an Industrial Tower PC

Input media

• **SIMATIC PC keyboard** German/international, USB port		**6ES7 648-0CB00-0YA0**
• **USB mouse** (optical, 3 buttons) for PG and PC with adapter	A	**6ES7 790-0AA01-0XA0**

Memory media

SIMATIC USB Flash Drive 1 GB, USB 2.0, metal enclosure, bootable	A	**6ES7 648-0DC30-0AA0**

Communication products
see page 7/1

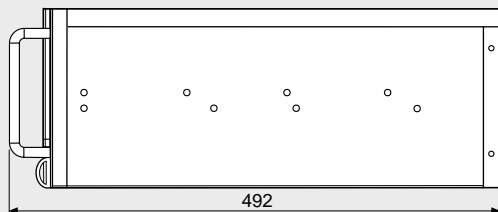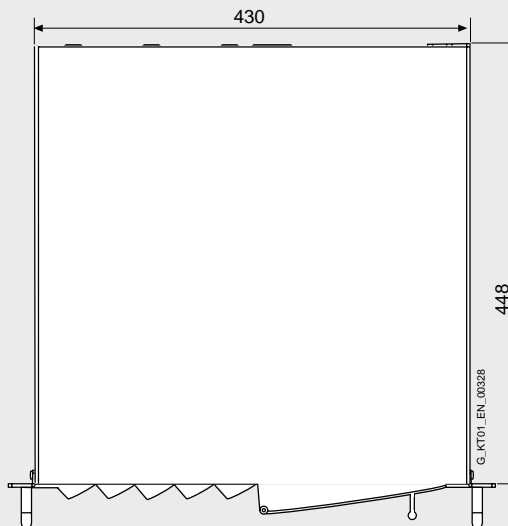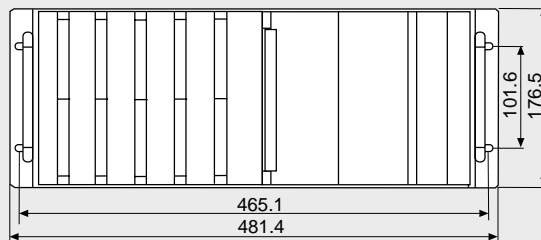*Power supplies and UPS*
see page 3/87

RMOS3 real-time operating system
see page 3/71

■ **Dimension drawings**

Dimensions in mm

■ **Overview**

SIMATIC Box PCs provide mechanical engineers, plant engineers and control cabinet makers with particularly rugged industrial PC systems for use in powerful yet compact applications.

Three device classes are available for various requirements:

- **SIMATIC Microbox PC 420 / 427B** – ultra-compact and maintenance-free: the flexible embedded industrial PC
- **SIMATIC Box PC 627 / 627B** – maximum performance in the most restricted space / with Intel Core 2 Duo technology
- **SIMATIC Box PC 840** – powerful and flexible

Shared industrial functionality

- High vibration/shock load during operation
- Wide operational temperature range
- Extremely compact
- High service friendliness
- Operating system preinstalled and activated for fast startup
- Integrated parameterizable monitoring functions (temperature, fan, watchdog)
- Designed for 24-hour continuous operation
- Integrated PROFIBUS/MPI interface (optional)
- Guaranteed spare parts availability for at least 5 years
- Innovation cycle at least 2.5 years
- High continuity of the components/design
- Motherboard developed and manufactured by Siemens
- Installation and software compatible with predecessor model
- Long-term availability of PC components from the Intel embedded line
- Certification for global marketing
- System-tested with SIMATIC components

SIMATIC Microbox PC 420 – ultra-compact and maintenance-free

SIMATIC Microbox PC 427B – ultra-compact and maintenance-free: the flexible embedded industrial PC

- Operation without fan thanks to CompactFlash
- High performance with highly compact design
- Optimized for embedded applications
- Integrated in Totally Integrated Automation (TIA) thanks to PROFIBUS interface
- Expandable with as many as 3 PC/104-Plus slots or PCI-104 slots
- Efficient self-diagnostics (e.g. DiagMonitor, BIOS Manager)

SIMATIC Box PC 627 – maximum performance in the most restricted space

SIMATIC Box PC 627B – maximum performance in the most restricted space / with Intel Core 2 Duo technology

- Maximum system performance for complex measuring, control and visualization tasks through use of Intel Core 2 Duo processors
- Highly compact design for space-saving and flexible installation as result of:
  - Compact housing design (volume 6 liters)
  - Flexible installation with mounting brackets or
  - Portrait installation kit
  - PROFIBUS interface (optional) on board
  - RAID1 controller on board
- Highly rugged for direct installation in machine since the maximum processor performance is provided at an ambient temperature up to 55 °C and high shock and vibration resistance is provided in all mounting positions
- High system availability through battery-backed SRAM as memory for WinAC data, with 2 x 7-segment display and 2 signal LEDs (freely programmable)

SIMATIC Box PC 840 – powerful and flexible

- High flexibility and expandability of the components (5 spare slots)
- High industrial compatibility resulting from extremely rugged design
- High-performance even at high temperatures

Industrial PC
SIMATIC Box PC

3

■ **Overview** (continued)

	SIMATIC Microbox PC 420	SIMATIC Microbox PC 427B	SIMATIC Box PC 627	SIMATIC Box PC 627B	SIMATIC Box PC 840 V2
Design					
Rail or wall mounting	●	●	–	–	–
Wall or panel-mounting	–	–	●	●	●
General features					
Processor	Intel Pentium III 933 MHz Intel Celeron 650 MHz Intel Celeron 400 MHz	Intel Pentium M 1.4 GHz, 400 MHz FSB Intel Celeron M 1 GHz, 400 MHz FSB, SLC Intel Celeron M 900 MHz, 400 MHz FSB	Intel Pentium M 760 2.0 GHz, 533 MHz FSB Intel Pentium M 730 1.6 GHz Intel Celeron M 370 1.5 GHz	Intel Core 2 Duo T7400 2.16 GHz, 667 MHz FSB, 4 MB SLC Intel Core 2 Duo T5500, 1.66 GHz, 677 MHz FSB, 2 MB SLC Intel Celeron M 440 1.86 GHz, 533 MHz FSB, 1 MB SLC	Intel Pentium 4 2.8 GHz Intel Pentium 4 2.4 GHz Intel Pentium 4 Mobile 2.2 GHz Intel Celeron 2.0 GHz
Main memory	128 MB, expandable up to 2 GB	256 MB, expandable up to 2 GB	128 MB, expandable up to 2 GB	256 MB, expandable up to 4 GB	256 MB, expandable up to 2 GB
Static RAM	128 KB	2 MB	–	–	–
Free expansion slots	up to 3 x PC/104-*Plus* (with expansion frames)	up to 3 x PCI-104 (with expansion frames)	2 x PCI (3/4 long)	2 x PCI (3/4 long) or 1 x PCI-Express x 4 / 1 x PCI (3/4 long)	1 x PCI short, 1 x PCI long, 2 x ISA/PCI (shared) long, 1 x ISA long
Graphics	on board	on board	on board	on board	on board
Operating system	none	none	none	none	none
• preinstalled/enclosed on restore CD	Windows XP embedded, in combination with CF Card ≥ 512 MB or hard disk Windows XP Professional Multilanguage; in combination with hard disk	Windows XP embedded, in combination with CF Card ≥ 512 MB or hard disk Windows XP Professional Multilanguage; in combination with hard disk	Windows 2000 Professional Multilanguage Windows XP Professional Multilanguage Windows XP Embedded	Windows 2000 Professional, Multilanguage Windows XP Professional Multilanguage; Windows XP Embedded English on 2 GB CompactFlash	MS-DOS 6.22 (English), Windows NT (Ger/Eng), Windows 2000 Professional Multilanguage Windows XP Professional Multi-Language
• can be ordered separately	RMOS3 V3.40	RMOS3 V3.40	RMOS3 V3.40	RMOS3 V3.40	RMOS3 V3.40
• project-specific on request	Linux[1] other	Linux[1] other	Linux[1] other	Linux[1] other	other
Interfaces					
PROFIBUS / MPI	12 Mbit/s (CP 5611-compatible), optional	12 Mbit/s (CP 5611-compatible), optional	12 Mbit/s (CP 5611-compatible), optional	12 Mbit/s (CP 5611-compatible), optional	12 Mbit/s (CP 5611-compatible), optional
Ethernet	2 x 10/100 Mbits	2 x 10/100/ 1000 Mbits	2 x 10/100 Mbits	2 x 10/100/ 1000 Mbits	1 x 10/100 Mbits
USB 2.0	4 x (2 x high current, 2 x low current)	4 x (high current)	4 x (high current)	4 x (high current)	2 x (high current)
VGA, LVDS, DVI	1 x DVI-I (DVI and VGA)	1 x DVI-I (DVI and VGA)	1 x DVI-I (VGA via adapter, included), internal LVDS	1 x DVI-I	1 x DVI-I (VGA via adapter, included), internal LVDS

● available
– not available

1) Suitable for certain Linux versions in accordance with the specifications of the Siemens producer explanation "Suitable for Linux",
   see: *http://www.siemens.com/simatic-pc/suited-for-linux* (Linux is a trademark of Linus Torvald)

■ **Overview** (continued)

3

	SIMATIC Microbox PC 420	SIMATIC Microbox PC 427B	SIMATIC Box PC 627	SIMATIC Box PC 627B	SIMATIC Box PC 840 V2
Drives					
Hard disk	EIDE; 2.5" (optional)	SATA; 2.5" (optional)	SATA; 3.5" 2 x SATA; 2.5"/RAID1	SATA; 3.5" 2 x SATA 2.5" 2 x SATA 2.5"/RAID1	EIDE; 3.5" 2 x SATA; 2.5"/RAID1
Flash Drive					
• SIMATIC PC CompactFlash Card	●	●	●	●	●
	Optional: • 256 MB • 512 MB • 1 GB • 2 GB	Optional, can be inserted from the outside: • 256 MB • 512 MB • 1 GB, 2 GB internal, no access: • 1 GB, 2 GB	can be inserted from the outside	can be inserted from the outside	Optional instead of hard disk: • 512 MB • 1 GB
Optical drives					
• Can be connected externally via USB interface, not included in scope of supply	●	●	●	●	●
• DVD-ROM	—	—	●	—	●
• DVD+/-RW	—	—	●	●	●
Ambient conditions					
Vibration load/Shock load during operation	1 g / 15 g (with Flash Drive)	1 g / 15 g (with Flash Drive)	1 g / 5 g	1 g / 5 g	1 g / 5 g
Ambient temperature during operation	max. configuration: 0 ... 50 ℃ (with Flash Drive) 5 ... 40 ℃ (with hard disk)	max. configuration: 0 ... 55 ℃ (with Flash Drive, Derating) 5 ... 40 ℃ (with hard disk)	max. configuration: 5 ... 50/55 ℃ (with 20/10 W load on PCI bus) 5 ... 45 °C	max. configuration: 5 ... 50/55 ℃ (with 20/10 W load on PCI bus) 5 ... 45 °C	max. configuration: (5 ... 55 °C with Intel Pentium 4 Mobile processor) 5 ... 45 °C

● available

— not available

■ **Benefits**

Compact dimensions

With a maximum mounting depth of 100 mm (80 mm without CD-ROM), the SIMATIC Box PCs 627/627B can be used even in the smallest of spaces. The space-saving portrait assembly is possible with the Box PC 627/627B.
The SIMATIC Microbox PCs 420/427B are ultra-compact and rugged devices for DIN rail mounting or wall mounting and for use in the machine: mounting depth from 47 mm.

Rugged design

All designs aim to achieve maximum safety in the case of vibration and shock loads. For example, a special vibration-absorbing suspension of the hard disk ensures absolute operational reliability, even at high mechanical loads. A Flash drive slot, easily accessible from outside, is available for setting up low-maintenance, fault-tolerant, diskless systems.
Thanks to its fan-free design and use of Compact Flash cards, the Microbox PCs are especially suitable for maintenance-free 24-hour continuous operation.

Service-friendly device design

The computer units can be easily opened for rapid replacement of components. The inside of the device is easily accessible for future expansions.

Integrated interfaces

On SIMATIC Box PCs, all interfaces are located on one side. Box PCs can be interfaced with the control/cell level via onboard Ethernet interfaces and communicate in the field via an integrated PROFIBUS interface, which is available as an option. External monitors or displays can be connected through a VGA or DVI-I interface (VGA and DVI) and LVDS (Box PC 627/627B/840).

Flexibility

With its 5 free PC slots, the SIMATIC Box PC 840 in particular offers considerable leeway for expansions. All Box PCs have CE certification for use in industrial applications and domestic/commercial applications and can therefore be used in building automation or public installations in addition to industrial applications.

Continuity

Due to continuity in the availability of identical components, such as motherboards designed and produced by Siemens, the SIMATIC Box PCs offer high investment security. Long-term functionality is also assured for the hardware (e.g. ISA, PC/104) and software (e.g. Windows NT). Long-term availability of PC components from the Intel embedded line ensures high investment protection.

Options

SIMATIC Box PCs can be ordered in custom configurations and are supplied ready for use. The high system availability by design can be further extended by means of additional data back-up options (e.g. RAID system, SIMATIC PC/PG ImageCreator) and a highly efficient SW program for self-diagnosis (SIMATIC PC DiagMonitor).

Industrial PC
SIMATIC Box PC

SIMATIC Microbox PC 420

Overview

The SIMATIC Microbox PC 420 is a high-performance, rugged industrial PC for installation at the machine.

It is:

- Highly compact
  (262 mm wide, 134 mm high, depth from 47 mm)
- maintenance-free, since without rotating parts

Benefits

Minimization of downtime through increased system availability

- Completely maintenance-free operation, since no fan is installed
- Efficient self-diagnostics (SIMATIC PC DiagMonitor)
- Data backup solutions (preventive data backup)
- Service-friendly design (modifications, servicing)

Cost reductions through high investment security

- High product continuity through long-term secure functionality in hardware and software
- Motherboard from Siemens own development and production facilities
- Secure replacement availability of the components (5 years)

Reduced costs through high industrial functionality

- High industrial capability through extremely robust design, even against strong vibration and impact loads and with high temperatures
- Integral component of Totally Integrated Automation (TIA) thanks to integrated PROFIBUS/MPI and Ethernet interfaces, system-tested SIMATIC software package

Cost reduction through time savings

- Configured, turn-key systems
- Preinstalled operating systems for fast commissioning
- Integrated interfaces for communication on the field or process control level

Application

The SIMATIC Microbox PC 420 provides mechanical engineers, plant engineers, and switch cabinet manufacturers with a high performance, compact PC platform for application at the machine or in the process, and applications in the industrial environment for:

- Measuring and controlling of process and machine data (e.g. automated washing systems, robot controls)
- Operating and visualization tasks with separate display/ monitor solutions (e.g. information terminals, large-scale displays)
- Communication tasks as gateway or server

Typical applications of the Microbox PC 420 range from automation computers fully integrated in TIA with, for example, WinAC, to the C/C++ based automation solution with the proven realtime and multifunction capable operating system SICOMP RMOS3 through to general "stand-alone" IT applications.

For software products that require Windows XP Professional, the combination of Windows XP Professional Multilanguage is available preinstalled on hard disk.

The Microbox PC 420 has CE certification for use in the industrial sector as well as in residential and commercial areas, and small businesses. In addition to industrial applications, it can also be used in building services automation or in facilities open to the public.

Due to the fan-free design and use of SIMATIC PC Compact Flash memories, there are no rotating parts and the system availability is increased.

■ **Design**

- All-metal casing, resistant to vibrations and shocks, also with high electromagnetic compatibility
- Screw fitting of PC104-Plus modules for reliable operation even when subjected to vibration and impact
- Processor:
  Intel Celeron 400 MHz, 100 MHz FSB, 256 KB
  Second Level Cache
  Intel Celeron 650 MHz, 100 MHz FSB, 256 KB
  Second Level Cache
  Intel Pentium III mit 933 MHz, 133 MHz FSB, 512 KB
  Second Level Cache
- Standard main memory configuration
  128 MB, 256 MB or 512 MB
- Drives
  - Flash Drive (option)
    256 MB
    512 MB
    1 GB
    2 GB
  - Hard disk: EIDE; 2.5" (option)
  - Optical drives can be connected externally via USB interface, not included in scope of supply
- Graphics on board, on AGB bus: DVI-I: VGA (analog) and DVI (digital)
  CRT resolution: from 640 x 480 pixels up to 1280 x 1024 pixels
  DVI resolution: from 640 x 480 pixels up to 1024 x 768 pixels
- Interfaces (accessible from one side):
  2 x LAN 10/100 MBit/s Ethernet interface (RJ45)
  z.B. PROFINET I/O
  4 x USB port (V2.0/high speed, 2 x high current, 2 x low current)
  Legacy: 1 x COM1 (RS232),
- Free slots for expansion:
  up to 3 x PC/104-*Plus* (with expansion frames)
- Power supply: 24 V DC (20.4 ... 28.8 V)

Optional additional equipment:

- PROFIBUS/MPI on-board, CP 5611-compatible
- Preinstalled operating system: Windows XP Embedded
- Windows XP Professional preinstalled

Lower side of SIMATIC Microbox PC 420

Industrial PC
SIMATIC Box PC

SIMATIC Microbox PC 420

◼ **Ordering data**	Order No.		Order No.

Configuration

			Accessories	

SIMATIC Microbox PC 420 ^J **6AG4 040-0A◼◼0 - 0◼◼0**
Celeron 400 MHz,
100 MHz FSB; 128 MB
SDRAM-133 (1 x 128 MB);
without HD; without
Flash Drive; without operating
system; with 24 V DC power
supply

Processor:

• Celeron 400 MHz; 100 MHz FSB	**A**
• Celeron 400 MHz; 100 MHz FSB, PROFIBUS DP 12	**B**
• Celeron 650 MHz; 100 MHz FSB	**D**
• Celeron 650 MHz; 100 MHz FSB, PROFIBUS DP 12	**E**
• Pentium III 933 MHz, 133 MHz FSB	**G**
• Pentium III 933 MHz, 133 MHz FSB, PROFIBUS DP 12	**H**

Memory capacity:

• 128 MB SDRAM-133 (1 x 128 MB)	**1**
• 256 MB SDRAM-133 (1 x 256 MB)	**2**
• 512 MB SDRAM-133 (1 x 512 MB)	**3**

Drives:

• without HD, without CompactFlash Card	**X**
• 40 GB HDD EIDE	**A**
• 256 MB CompactFlash Card	**M**
• 512 MB CompactFlash Card	**N**
• 1 GB CompactFlash Card	**P**
• 2 GB CompactFlash Card	**Q**

Operating system:

• without operating system		**X**
• preinstalled Windows XP Embedded	^J	**A**
• Windows XP Professional Multilanguage (Ger, En, Fr, It, Sp), SP1		**B**

A) Subject to export regulations: AL: N and ECCN: EAR99H
J) Subject to export regulations: AL: N and ECCN: 5D992B2

Accessories

Expansion kit PC/104	**6AG4 070-0BA00-0XA0**
For integration of PC/104 modules in the SIMATIC Microbox PC 420. Package contains 6 expansion frames	
SIMATIC PC adapter cable	**6ES7 648-3AB00-0XA0**
DVI-I to VGA, length 250 mm	

Input media

• **SIMATIC PC keyboard** German/international, USB port		**6ES7 648-0CB00-0YA0**
• **USB mouse** (optical, 3 button) for PG and PC with adapter	A	**6ES7 790-0AA01-0XA0**

Memory media

| **SIMATIC PC CompactFlash Card**	A	
• 256 MB		**6ES7 648-2BF01-0XC0**
• 512 MB		**6ES7 648-2BF01-0XD0**
• 1 GB		**6ES7 648-2BF01-0XE0**
• 2 GB		**6ES7 648-2BF01-0XF0**
SIMATIC USB Flash Drive 1 GB, USB 2.0, metal enclosure, bootable	A	**6ES7 648-0DC30-0AA0**

Communication products
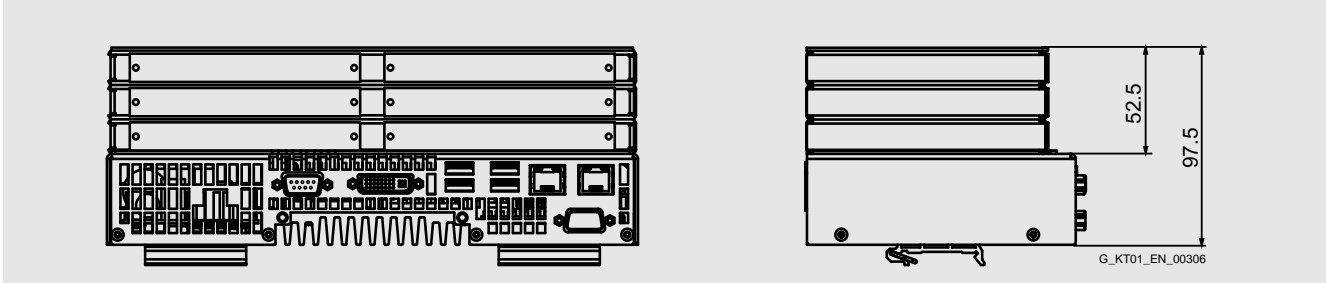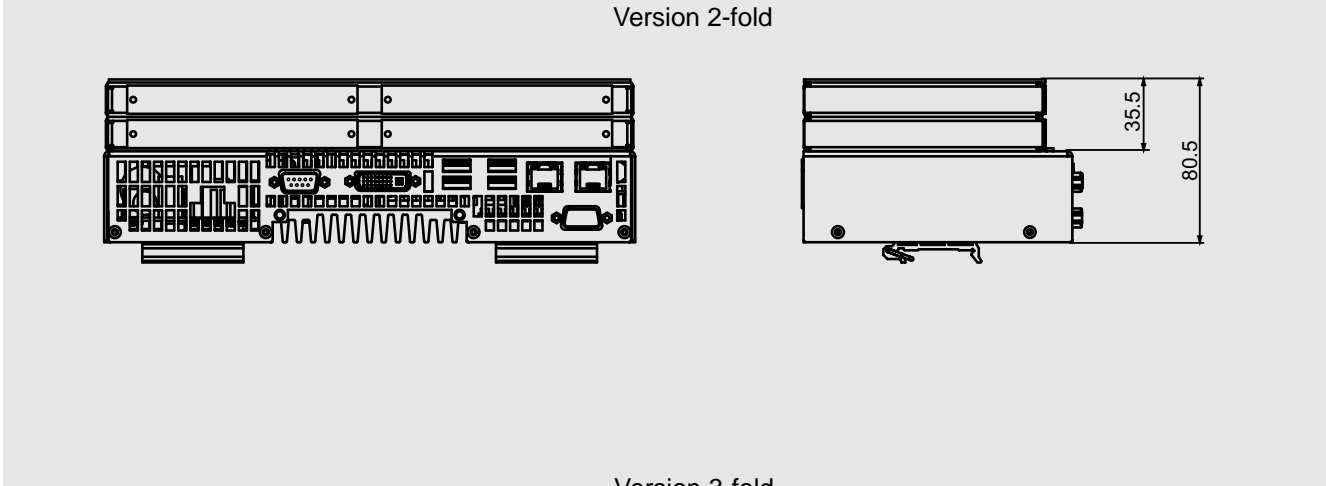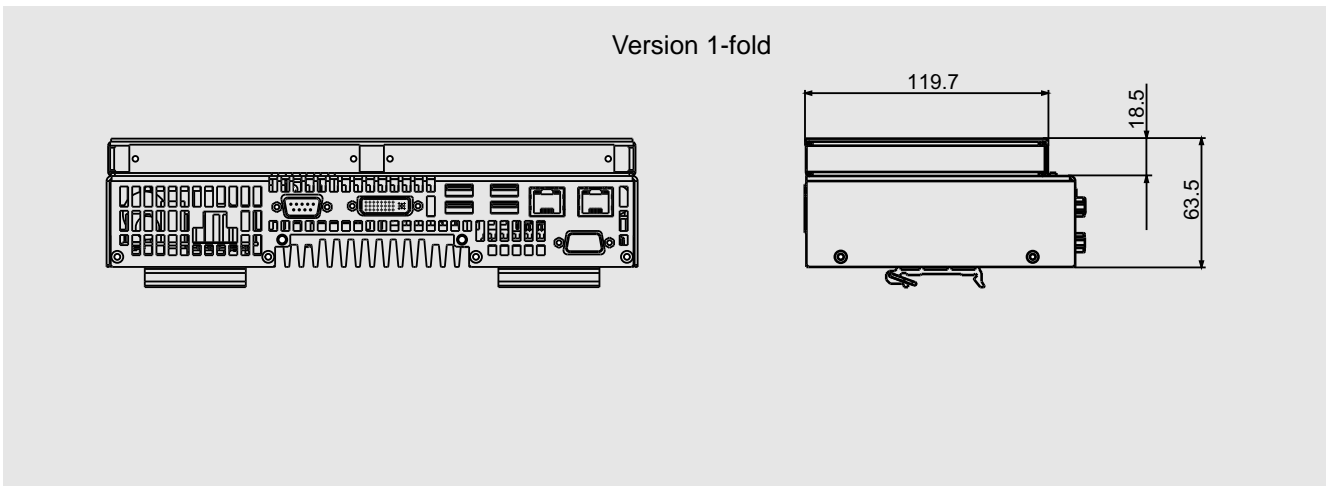see page 7/1

Power supplies and UPS
see page 3/87

RMOS3 real-time operating system
see page 3/71

■ **Dimension drawings**

Version 1-fold

Version 2-fold

Version 3-fold
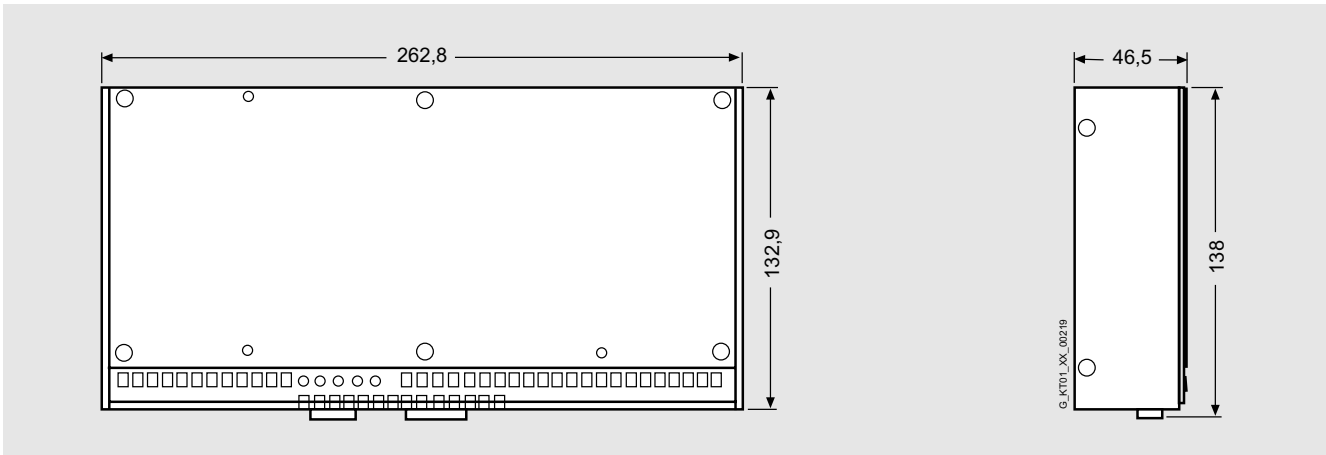
Industrial PC
SIMATIC Box PC

SIMATIC Microbox PC 427B

Overview

The SIMATIC Microbox PC 427B is a rugged embedded industrial PC for use at the machine:

- Ultra-compact
  (262 mm wide, 134 mm high, depth from 47 mm)
- Maintenance-free since e.g. no rotating parts
- Optimized, flexible embeded industrial PC

Benefits

High performance with highly compact design
- Pentium M technology up to 1.4 GHz, DDR2 memory technology up to 2 GB
- Performance-enhanced graphic

Optimized for embedded applications
- 2 MB buffered SRAM, of which 128 KB can be written within the buffer time
- Optimization of headless operation

Cost reductions through high investment security
- Long-term platform with embedded Intel components
- Innovation cycle at least 2.5 years, guaranteed availability of spare parts for 5 years
- System-tested SIMATIC software packages

Reduction in standstill times thanks to high system availability
- Completely maintenance-free 24-hour/365-day operation since no fan is installed
- Efficient self-diagnostics (SIMATIC PC DiagMonitor, SOM, status LED)
- Data backup solutions (preventive data backup)

Reduced costs through high industrial functionality
- Excellent industrial compatibility, even when subjected to extreme vibration and shock
- High degree of industrial compatibility at high temperatures because the enclosure is optimized for air cooling
- Service-friendly hardware configuration (Reset button is externally accessible, components can be replaced on site)
- Expandable with as many as 3 PC/104-Plus slots or PCI-104 slots
- Efficient self-diagnostics (SIMATIC PC DiagMonitor, BIOS manager, status LED)
- Integral component of Totally Integrated Automation (TIA) thanks to integral PROFIBUS/MPI interfaces

Application

The SIMATIC Microbox PC 427B provides mechanical engineers, plant engineers, and switch cabinet manufacturers with a high performance, compact PC platform for application at the machine or in the process, and applications in the industrial environment or for:

- Measuring, open-loop and closed-loop control of process and machine data (e.g. test beds)
- Operating and visualization tasks with separate display / monitor solutions (e.g. information terminals, large-scale displays)
- Communication tasks as gateway or server

The application spectrum of the Microbox PC 427B ranges from automation computers fully integrated in TIA with WinAC for example, through C/C++-based automation solutions with the well-proven SICOMP RMOS3 operating system with real-time and multi-function capability as far as "standalone" applications in general IT use.

For software products that require Windows XP Professional, the combination of Windows XP Professional multi-language is available, preinstalled on hard disk.

The Microbox PC 427B has CE certification for use in the industrial sector as well as in residential and commercial areas, and small businesses. In addition to industrial applications, it can also be used in building services automation or in facilities open to the public.

Due to the fan-free design and use of SIMATIC PC CompactFlash memories, there are no rotating parts and the system availability is increased. It is possible to install the CompactFlash memory either accessible externally so that it can be swapped, or internally so that it cannot be easily accessed externally.

3

■ Design

- All-metal casing, resistant to vibrations and shocks, also with high electromagnetic compatibility
- Screw fitting of PC104 modules for reliable operation even when subjected to vibration and impact
- Processor:
  - Intel Pentium M 1.4 GHz, 400 MHz FSB, SLC 2 MB, low voltage CPU
  - Intel Celeron M 1G Hz, 400 MHz FSB, SLC 512 KB, ultra low voltage CPU
  - Intel Celeron M 900 MHz, 400 MHz FSB, SLC 0 KB, ultra low voltage CPU
- Main memory configuration
  - 256 MB, 512 MB, 1 GB or 2 GB
- Drives
- Flash Drive (optional; replaceable, accessible)
  - 256 MB
  - 512 MB
  - 1 GB
  - 2 GB
  or Flash Drive (optional; internal, not accessible)
  - 1 GB
  - 2 GB
- Hard disk: SATA; 2.5" (optional)
- Optical drives, can be connected externally via USB interface, not included in scope of supply
- Graphics onboard, on AGB bus: DVI-I: VGA (analog) and DVI (digital)
  - CRT resolution: up to 1600 x 1200 pixels / true color / 60 bis 120 Hz
  - DVI resolution: up to 1600 x 1200 pixels / true color
- Interfaces (accessible from one side):
  - 2 x LAN 10/100/100 Mbit/s Ethernet interface (RJ45)
  - 4 x USB ports (V2.0 each)
  - Legacy: 1 x COM1 (RS232)
- Free slots for expansions:
  - up to 3 x PCI104 (with expansion frames)
- Power supply: 24 V DC (20.4 ... 28.8 V)

Optional additional equipment:

- PROFIBUS/MPI on-board, CP 5611-compatible
- Preinstalled Windows XP Embedded
- Preinstalled Windows XP Professional

SIMATIC Microbox PC 427B (underneath)

Industrial PC
SIMATIC Box PC

3

■ **Ordering data**   Order No.   Order No.

Configuration		*Accessories*	
SIMATIC Microbox PC 427B J **6ES7 647-7A**■■**0 - 0**■■**0**		**Expansion kit PC/104**	**6AG4 070-0BA00-0XA0**
Intel Celeron M 900 MHz, 400 MHz FSB, SLC 0 KB; 256 MB DDR2 RAM (1 x 256 MB); without HD; without Flash Drive; without operating system; 24 V DC power supply		For integration of PC/104 modules in the SIMATIC Microbox PC 427B. Package contains 6 expansion frames.	
Processor:		**Starter package** A **Microbox PC 427B**	**6ES7 647-7AF25-0AA0**
• Intel Celeron M 900 MHz, 400 MHz FSB	**A**	1.0 GHz Celeron M w. 24 V power supply, USB Flash Drive, Windows XP Embedded, expansion frames	
• Intel Celeron M 900 MHz, 400 MHz FSB, PROFIBUS DP 12	**B**	**SIMATIC PC adapter cable**	**6ES7 648-3AB00-0XA0**
• Intel Celeron M 1 GHz, 400 MHz FSB, SLC 512 KB	**E**	DVI-I to VGA, length 250 mm	
• Intel Celeron M 1 GHz, 400 MHz FSB, SLC 512 KB, PROFIBUS DP 12	**F**	*Input media*	
• Intel Pentium M 1,4 GHz, 400 MHz FSB, SLC 2 MB	**J**	**SIMATIC PC keyboard** German/international, USB port	**6ES7 648-0CB00-0YA0**
• Intel Pentium M 1.4 GHz, 400 MHz FSB, SLC 2 MB, PROFIBUS DP 12	**K**	**USB mouse** A (optical, 3 buttons) for PG and PC with adapter	**6ES7 790-0AA01-0XA0**
Memory capacity:		*Memory media*	
• 256 MB DDR2 RAM (1 x 256 MB)	**1**	**SIMATIC PC** A **CompactFlash Card**	
• 512 MB DDR2 RAM (1 x 512 MB)	**2**	• 256 MB	**6ES7 648-2BF01-0XC0**
• 1 GB DDR2 RAM (1 x 1 GB)	**3**	• 512 MB	**6ES7 648-2BF01-0XD0**
• 2 GB DDR2 RAM (1 x 2 GB)	**4**	• 1 GB	**6ES7 648-2BF01-0XE0**
Drives:		• 2 GB	**6ES7 648-2BF01-0XF0**
• without HD, without CompactFlash Card		**SIMATIC USB Flash Drive**	**6ES7 648-0DC30-0AA0**
• 60 GB HDD EIDE	**A**	1 GB, USB 2.0, metal enclosure, bootable	
• 256 MB CompactFlash replaceable (accessible)	**M**		
• 512 MB CompactFlash replaceable (accessible)	**N**		
• 1 GB CompactFlash replaceable (accessible)	**P**		
• 2 GB CompactFlash replaceable (accessible)	**Q**		
• 1 GB CompactFlash internal (not accessible)	**F**		
• 2 GB CompactFlash internal (not accessible)	**G**		
Operating system:		*Communication products* see page 7/1	
• without operating system	**X**	*Power supplies and UPS* see page 3/87	
• Windows XP Embedded pre- J installed	**A**		
• Windows XP Professional MUI	**B**	*RMOS3 real-time operating system* see page 3/71	

A) Subject to export regulations: AL: N and ECCN: EAR99H
J) Subject to export regulations: AL: N and ECCN: 5D992B2

Dimension drawings

G_KT01_XX_00333

Version 1-fold

Version 2-fold
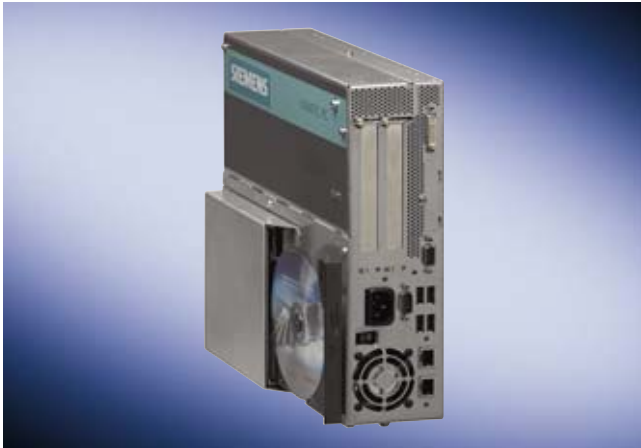
Version 3-fold

G_KT01_DE_00334

Industrial PC
SIMATIC Box PC

SIMATIC Box PC 627

3

Overview

The SIMATIC Box PC 627 is optimized for industrial PC applications and for installation at the machine:
- High-level performance
- within a very small space

Benefits

High productivity thanks to faster data processing
- High performance thanks to Intel Pentium M processor 760 (2 GHz, 2 MB second level cache, 533 MHz front side bus), Mobile Intel 915 GM Express chip set and DDR2 memory technology (performance comparable to Pentium 4 processors of the 3 GHz class)
- High data transfer rates with serial ATA hard disks

Minimization of downtime through increased system availability
- Efficient self-diagnosis (SIMATIC PC DiagMonitor)
- Data backup solutions (preventive data backup)
- Service-friendly design (modifications, servicing)

Cost reductions through high investment security
- High product continuity through long-term secure functionality in hardware and software
- Motherboard from Siemens own development and production facilities
- Secure replacement availability of the components (5 years)

Reduced costs through high industrial functionality
- High industrial capability thanks to extremely rugged design, even against strong vibration and impact loads, and with high temperatures
- Integral component of Totally Integrated Automation (TIA) thanks to integrated PROFIBUS/MPI and Ethernet interfaces, system-tested SIMATIC software package

Cost minimization through time savings
- Configured, turn-key systems
- Preinstalled operating systems for fast commissioning
- Integrated interfaces for communication on the field or process control level

Application

The SIMATIC Box PC 627 provides mechanical engineers, plant engineers, and switch cabinet manufacturers with a high performance, compact PC platform for application at the machine or in the industrial environment for:
- Measuring and controlling of process and machine data (e.g. automated washing systems, robot controls)
- Operating and visualization tasks with separate display/monitor solutions (e.g. information terminals, large-scale displays in automotive production)
- Data logging and processing (e.g. system data logging, distributed process control)
- Motion Control

The SIMATIC Box PC 627 has CE certification for use in the industrial sector as well as in residential and commercial areas, and small businesses. In addition to industrial applications, it can also be used in building services automation or in facilities open to the public.

It can also be integrated into confined spaces thanks to the minimal mounting depth of 100 mm (80 mm without CD drive).

Design

Rugged metal casing, resistant to vibrations and shocks, with high electromagnetic compatibility.
- Card retainer for reliable operation of PC modules in the event of vibrations and shocks
- Processor:
  - Intel Pentium M 760 2.0 GHz, 533 MHz FSB, 2 MB Second Level Cache
- Standard main memory configuration 128 MB, DDR2 533, expandable up to 2 GB
  Drives:
  - High-performance Serial ATA hard disk: ≥40 GB for high data throughput
  - Flash Drive: CompactFlash Card can be plugged in from the outside
- Graphics on board 1600 x 1200, 85 Hz, 32-bit colors
- Interfaces (accessible from one side):
  - 2 x LAN 10/100 MBit/s Ethernet interface (RJ45)
  - DVI-I graphics interface
  - 4 x USB 2.0
  - 1 x serial (COM1)
- Two 7-segment displays and two LEDs for the indication of status messages (user-programmable)
- Free slots for expansion:
  2 x PCI (3/4 long)
- Power supply: 110/230 V AC (autorange), 50/60 Hz

Optional additional equipment:
- Processor:
  - Intel Pentium M 730 1.6 GHz, 533 MHz FSB, 2 MB Second Level Cache
  - Intel Celeron M 370 1.5 GHz, 400 MHz FSB, 1 MB Second Level Cache
- Main memory configuration up to 2 GB
- 1 x 3.5" 80 GB Serial ATA hard disk
- RAID1, 2 x 2.5" 60 GB Serial ATA hard disks
- DVD-ROM or DVD +/- RW
- PCI interface module (optional) for COM2, LPT
- PROFIBUS/MPI on-board, CP 5611-compatible
- 24 V DC power supply module
- Preinstalled operating systems
- SIMATIC PC DiagMonitor [1]
- SIMATIC PC/PG Image Creator [1]

1) Further information can be found under *"Expansion components"*

3

Ordering data

	Order No.		Order No.

Configuration

SIMATIC Box PC 627 D **6ES7 647-6A■■■ - ■■■■**

AGP graphics on-board;
8-128 MB shared memory;
2 x 10/100 MBit/s
Ethernet RJ45;
4 x USB V2.0 (high current);
1 x serial (COM1);
RAID controller on-board;
1 x slot for CF-Card to IDE;
watchdog; temperature
monitoring; 2 PCI free

Processor/interfaces:

- Celeron M 370 1.5 GHz;
  400 MHz FSB, 1 MB SLC **A**

- Celeron M 370 1.5 GHz;
  400 MHz FSB, 1 MB SLC;
  with PROFIBUS/MPI **B**

- Pentium M 730 1.6 GHz;
  533 MHz FSB, 2 MB SLC **C**

- Pentium M 730 1.6 GHz;
  533 MHz FSB, 2 MB SLC;
  with PROFIBUS/MPI **D**

- Pentium M 760 2.0 GHz;
  533 MHz FSB, 2 MB SLC **E**

- Pentium M 760 2.0 GHz;
  533 MHz FSB, 2 MB SLC;
  with PROFIBUS/MPI **F**

Memory configuration:

- 128 MB DDR2 SDRAM
  533 SODIMM **0**

- 256 MB DDR2 SDRAM
  533 SODIMM **1**

- 512 MB DDR2 SDRAM
  533 SODIMM **2**

- 1 GB DDR2 SDRAM
  533 SODIMM **3**

- 2 GB DDR2 SDRAM
  533 SODIMM **4**

Country-specific version:

- 110/230 V AC
  power supply with Namur;
  European power cable **0**

- 110/230 V AC
  power supply with Namur;
  power cable for
  United Kingdom **1**

- 110/230 V AC
  power supply with Namur;
  power cable for Switzerland **2**

- 110/230 V I AC
  power supply with Namur;
  power cable for USA **3**

- 110/230 V AC
  power supply with Namur;
  power cable for Italy **4**

- 24 V DC power supply **5**

D) Subject to export regulations: AL: N and ECCN: 5D992B1
E) Subject to export regulations: AL: N and ECCN: EAR99

Configuration (continued)

SIMATIC Box PC 627 D **6ES7 647-6A■■■ - ■■■■**

Expansion (HW):

- without expansion (HW) **0**

- PCI interface card
  with COM2, LPT1 **1**

Drives:

- 40 GB HDD SATA **A**

- 40 GB HDD SATA
  + DVD-ROM **B**

- 40 GB HDD SATA
  + CD-R/RW/DVD (Combo) **C**

- 80 GB HDD SATA **D**

- 80 GB HDD SATA
  + DVD-ROM **E**

- 80 GB HDD SATA
  + CD-R/RW/DVD (Combo) **F**

- RAID1 2 x 60 GB SATA 2.5" **G**

- RAID1 2 x 60 GB SATA 2.5" +
  DVD-ROM **H**

- RAID1 2 x 60 GB SATA 2.5" +
  CD-R/RW/DVD (Combo) **J**

Operating system:

- Windows 2000 Professional
  MUI (Ger, En, Fr, It, Sp), SP4 **J**

- Windows XP Professional MUI
  (Ger, En, Fr, It, Sp), SP2 **K**

- Windows XP Embedded SP2
  English (min. 256 MB, no
  RAID1) **L**

- without operating system **X**

Expansion (SW):

- without expansion **0**

- SIMATIC PC DiagMonitor
  Software (included) E **1**

- SIMATIC PC/PG
  Image Creator Software
  (included) E **2**

- SIMATIC PC DiagMonitor
  & SIMATIC PC/PG
  Image Creator Software
  (included) E **3**

SIMATIC Box PC 627

Ordering data

	Order No.

Accessories

Memory expansion	A	
• 128 MB, DDR2 533, SODIMM		**6ES 7648-2AG10-0GA0**
• 256 MB, DDR2 533, SODIMM		**6ES7 648-2AG20-0GA0**
• 512 MB, DDR2 533, SODIMM		**6ES7 648-2AG30-0GA0**
• 1 GB, DDR2 533, SODIMM		**6ES7 648-2AG40-0GA0**
PCI expansion card with COM1 and LPT		**6ES7 648-2CA00-0AA0**
Portrait installation kit		**6ES7 648-1AA10-0YA0**

Power cable, 90° offset, 3 m

SIMATIC PC, power cable for 230 V AC, 90° offset, 3 m for Box PC and Panel PC

• Germany, France, Spain, the Netherlands Sweden, Belgium, Austria, Finland	**6ES7 900-1AA00-0XA0**
• United Kingdom	**6ES7 900-1BA00-0XA0**
• Switzerland	**6ES7 900-1CA00-0XA0**
• USA	**6ES7 900-1DA00-0XA0**
• Italy	**6ES7 900-1EA00-0XA0**
• China	**6ES7 900-1FA00-0XA0**

A) Subject to export regulations: AL: N and ECCN: EAR99H

	Order No.

Input media

• **SIMATIC PC keyboard** German/international, USB port		**6ES7 648-0CB00-0YA0**
• **USB mouse** (optical, 3 buttons) for PG and PC with adapter	A	**6ES7 790-0AA01-0XA0**

Memory media

CompactFlash Card

• 256 MB	**6ES7 648-2BF01-0XC0**
• 512 MB	**6ES7 648-2BF01-0XD0**
• 1 GB	**6ES7 648-2BF01-0XE0**

SIMATIC USB Flash Drive 1 GB, USB 2.0, metal enclosure, bootable	A	**6ES7 648-0DC30-0AA0**

Dimension drawings

G_KT01_XX_00233

SIMATIC Box PC 627B

3
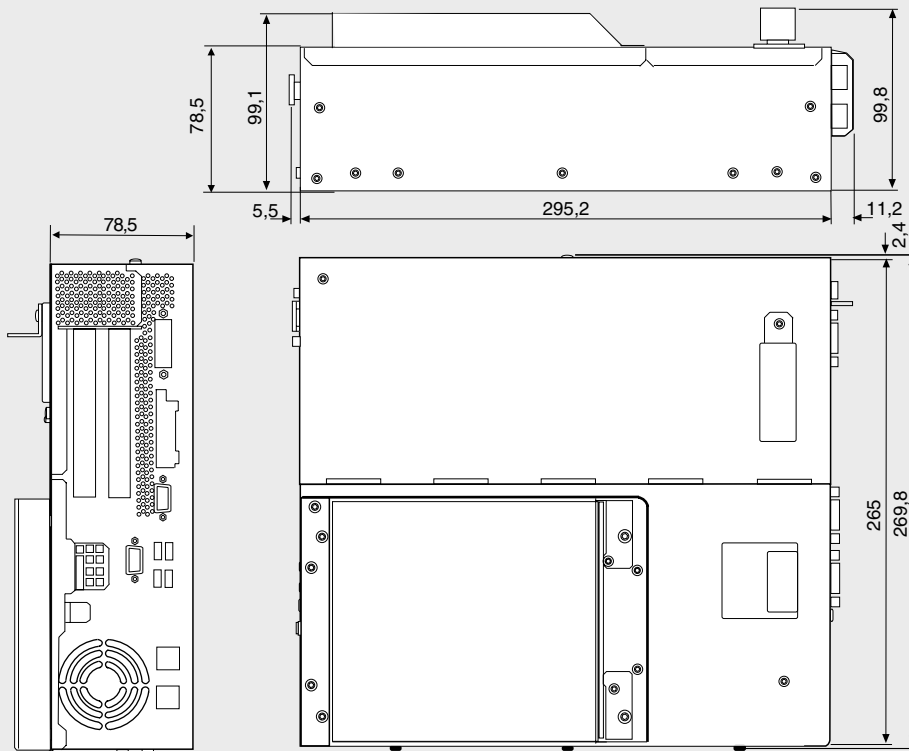
Overview

The SIMATIC Box PC 627B is optimized for high-performance PC applications and for installation direct at the machine.

It offers:

- Maximum performance
- Within a very small space
- Intel Core 2 Duo technology

Benefits

Maximum system performance for complex measuring, control and visualization tasks

- Intel processors: Core 2 Duo or Celeron M, Intel chipset: 945GM Express + ICH7R, Intel GMA 950 graphic media accelerator
- PCI-Express technology, DDR2 667 memory technology up to 4 GB, SATA hard disks up to 160 GB

Highly compact design for space-saving and flexible installation

- Compact housing design (volume 6 liters)
- Flexible installation in many different positions with mounting brackets or portrait installation kit
- On-board: PROFIBUS interface and RAID1 controller (optional)
- 2 x PCI or optionally 1 x PCI-Express x4 and 1 x PCI
- 2 LAN 10/100/1000 Mbit/s connections (Gbit LAN with teaming capability)
- 4 USB ports 2.0 (high current)

Rugged design for direct installation in the machine

- Maximum processor performance up to ambient temperature of 55 °C
- High shock/vibration resistance in all possible mounting positions
- High EMC for safe operation
- 2 Flash drives (optional)

High system availability, fast startup, maintenance and servicing

- High degree of data security thanks to mirror disk system (optional)
- Battery-backed SRAM as memory for WinAC data
- 2 x 7-segment display and 2 signal LEDS (freely programmable) for diagnostics purposes
- CMOS battery compartment accessible from outside
- Operating system preinstalled and activated, recovery and restore CDs provide help in event of system failure
- Global service and support

High investment protection

- Long-term platform with embedded Intel components
- Innovation cycle at least 2.5 years, guaranteed availability of spare parts for 5 years
- System-tested with SIMATIC components
- Certification for global marketing (cULus)
- Installation compatible for all device generations, software compatible with predecessor model

Industrial PC
SIMATIC Box PC

SIMATIC Box PC 627B

Application

The SIMATIC Box PC 627B provides mechanical engineers, plant engineers, and control cabinet makers with a high-performance, compact PC platform for application at the machine or in the industrial environment for:

- Measuring and controlling of process and machine data (e.g. automated washing systems, robot controls)
- Operating and visualization tasks with separate display/ monitor solutions (e.g. information terminals, large-scale displays in automotive production)
- Data acquisition and processing (e.g. production data acquisition, distributed process control)
- Motion Control

The SIMATIC Box PC 627B has CE certification for use in the industrial sector as well as in residential and commercial areas, and small businesses. In addition to industrial applications, it can also be used in building services automation or in facilities open to the public.

It can also be integrated in confined spaces thanks to the low mounting depth of 100 mm (80 mm without CD drive).

Design

Rugged metal casing, resistant to vibrations and shocks, with high electromagnetic compatibility.

- Card retainer for reliable operation of PC modules in the event of vibrations and shocks
- Processor:
  - Intel Core 2 Duo T7400 2,16 GHz, 677 MHz FSB, 4 MB Second Level Cache
- Standard main memory configuration 256 MB, DDR2 677, expandable up to 4 GB
- Drives:
  - High-performance Serial ATA hard disk: ≥ 80 GB for high data throughput
  - Flash Drive: CompactFlash Card can be plugged in from the outside
- Graphics on board 1600 x 1200, 85 Hz, 32-bit colors
- Interfaces (accessible from one side):
  - 2 x LAN 10/100/1000 Mbit/s Ethernet interface (RJ45)
  - DVI-I graphics interface
  - 4 x USB 2.0
  - 1 x serial (COM1)
- Two 7-segment displays and two LEDs for status indication (freely programmable)
- Spare slots for expansions
- 2 x PCI (3/4 length)
- Power supply: 110/230 V AC (autorange), 50/60 Hz

Optional additional components:

- Processor:
  - Intel Core 2 Duo T5500 1.66 GHz, 677 MHz FSB, 2 MB Second Level Cache
  - Intel Celeron M 440 1.86 GHz, 533 MHz FSB, 1 MB Second Level Cache
- Main memory configuration up to 4 GB
- 1 x 3.5" 160 GB Serial ATA hard disk
- RAID1, 2 x 2.5" 80 GB Serial ATA hard disks
- Integrated Compact Flash drive (instead of HDD and DVD)
- DVD+/-RW/-RAM/-DL
- PCI interface module (optional) for COM2, LPT
- PROFIBUS/MPI on board, compatible with CP5611
- 24 V DC power supply module
- Bus module with 1x PCI (265 mm) and 1x PCI Express x4 (175 mm)
- Preinstalled operating systems
- SIMATIC PC DiagMonitor[1]
- SIMATIC PC/PG Image Creator[1]

1) Further information can be found under *"Expansion components"*.

3

■ Ordering data

	Order No.		Order No

Configuration

SIMATIC Box PC 627B   6ES7 647-6B ▣▣▣ - ▣▣▣▣

Grafik onboard,
128 MB dyn. shared memory;
2 x 10/100/1000 Mbit/s
Ethernet RJ45;
4 x USB V2.0 (high current);
1 x serial (COM1),
RAID-Controller onboard;
1 x Steckplatz CompactFlash
Drive (external access);
watchdog, temperature/fan
monitoring;

Processor:

• Celeron M 440 (1.86 GHz, 1 MB L2, 533 MHz FSB)	A
• Celeron M 440 (1.86 GHz, 1 MB L2, 533 MHz FSB); PROFIBUS/MPI	B
• Core 2 Duo T5500 (1.66 GHz, 2MB L2, EM64-T, 667 MHz FSB)	D
• Core 2 Duo T5500 (1.66 GHz, 2MB L2, EM64-T, 667 MHz FSB); PROFIBUS/MPI	E
• Core 2 Duo T7400 (2.16 GHz, 4MB L2, EM64-T, 667 MHz FSB)	G
• Core 2 Duo T7400 (2.16 GHz, 4MB SLC, EM64-T, 667 MHz FSB); PROFIBUS/MPI	H

Memory configuration:

• 256 MB DDR2 667 SODIMM	0
• 512 MB DDR2 667 SODIMM	1
• 1 GB DDR2 667 SODIMM	2
• 2 GB DDR2 667 SODIMM	3
• 3 GB DDR2 667 SODIMM	4
• 4 GB DDR2 667 SODIMM	5

Country-specific version/
Power supply:

• 110/230 V AC power supply with Namur; European power cable	0
• 110/230 V AC power supply with Namur; power cable for United Kingdom	1
• 110/230 V AC power supply with Namur; power cable for Switzerland	2
• 110/230 V AC power supply with Namur; power cable for USA	3
• 110/230 V AC power supply with Namur; power cable for Italy	4
• 110/230 V AC power supply with Namur; power cable for China;	5
• 24 V DC power supply	6

Configuration (continued)

SIMATIC Box PC 627B   6ES7 647-6B ▣▣▣ - ▣▣▣▣

PC slots:

• 2 x PCI free	0
• 1 x PCI, 1 x PCIe (x4) free	1
• PCI interface card with COM2+LPT (1 PCI free)	2
• PCI interface card with COM2+LPT (1 PCIe x4 free)	3

Drives:

• 80 GB HDD SATA	A
• 80 GB HDD SATA + DVD+/-RW	B
• 160 GB HDD SATA	C
• 160 GB HDD SATA + DVD+/-RW	D
• 2 x 80 GB SATA (2.5")	E
• 2 x 80 GB SATA (2.5") + DVD+/-RW	F
• RAID1 2 x 80 GB SATA (2.5")	G
• RAID1 2 x 80 GB SATA (2.5") + DVD+/-RW	H
• installed CompactFlash drive (instead HDD, ODD, without CF)	W
• without drives	X

Operating system:

• Windows 2000 Prof. Multilanguage SP4 (En, Ger, Fr, It, Sp)	A
• Windows XP Prof. Multilanguage SP2 (En, Ger, Fr, It, Sp)	B
• Windows XP Embedded (SP2) englisch on 2 GB CompactFlash	F
• without operating system	X

Expansion:

• without expansion (SW)	0
• SIMATIC PC DiagMonitor Software included	1
• SIMATIC PC Image Creator Software included	2
• SIMATIC PC DiagMonitor & Image Creator Software included	3

Industrial PC
SIMATIC Box PC

SIMATIC Box PC 627B

■ **Ordering data**   Order No.   Order No.

Accessories	
Memory expansion ^A	
• 256 MB, DDR2 677, SODIMM	**6ES7 648-2AG20-0HA0**
• 512 MB, DDR2 677, SODIMM	**6ES7 648-2AG30-0HA0**
• 1 GB, DDR2 677, SODIMM	**6ES7 648-2AG40-0HA0**
• 2 GB, DDR2 677, SODIMM	**6ES7 648-2AG50-0HA0**
PCI expansion card with COM1 and LPT	**6ES7 648-2CA00-0AA0**
Portrait installation kit	**6ES7 648-1AA10-0YA0**
Power cable, 90° offset, 3 m	
SIMATIC PC, power cable for 230 V AC, 90° offset, 3 m for Box PC and Panel PC	
• Germany, France, Spain, the Netherlands Sweden, Belgium, Austria, Finland	**6ES7 900-1AA00-0XA0**
• United Kingdom	**6ES7 900-1BA00-0XA0**
• Switzerland	**6ES7 900-1CA00-0XA0**
• USA	**6ES7 900-1DA00-0XA0**
• Italy	**6ES7 900-1EA00-0XA0**
• China	**6ES7 900-1FA00-0XA0**

A) Subject to export regulations: AL: N and ECCN: EAR99H

Input media	
• **SIMATIC PC keyboard** German/international, USB port	**6ES7 648-0CB00-0YA0**
• **USB mouse** ^A (optical, 3 buttons) for PG and PC with adapter	**6ES7 790-0AA01-0XA0**

Memory media	
CompactFlash Card	
• 256 MB	**6ES7 648-2BF01-0XC0**
• 512 MB	**6ES7 648-2BF01-0XD0**
• 1 GB	**6ES7 648-2BF01-0XE0**
• 2 GB	**6ES7 648-2BF01-0XF0**
SIMATIC USB Flash Drive ^A 1 GB, USB 2.0, metal enclosure, bootable	**6ES7 648-0DC30-0AA0**

Communication products
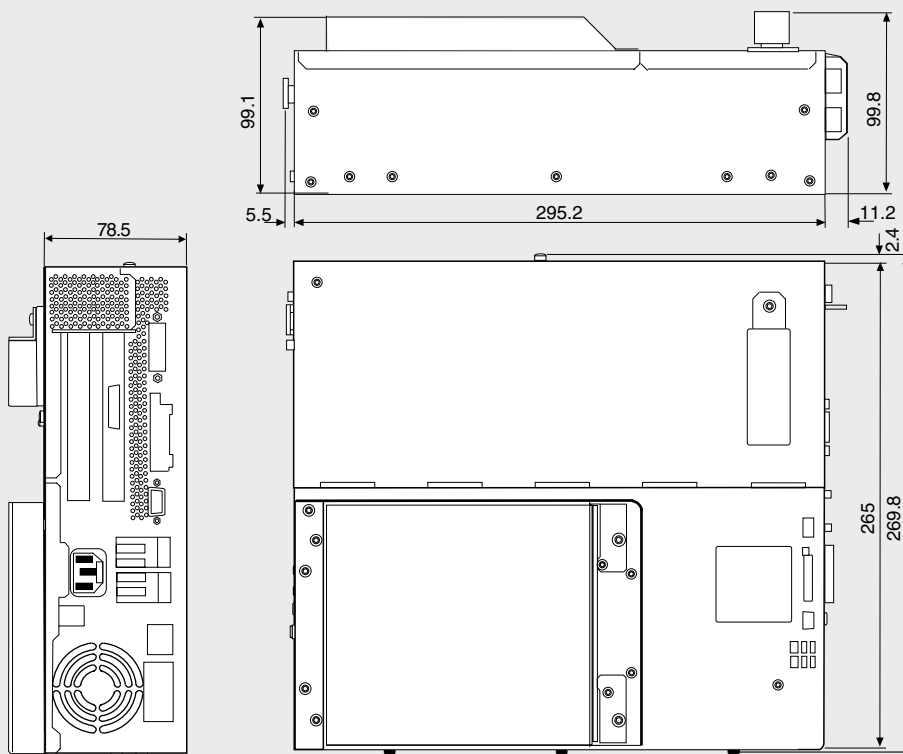see page 7/1

Power supplies and UPS
see page 3/87

RMOS3 real-time operating system
see page 3/71

■ **Dimension drawings**

Dimensions in mm

G_KT01_EN_00329

Overview

The SIMATIC Box PC 840 is ideally suited for industrial PC applications direct at the machine:

- Highly expandable (5 slots)
- High performance

Benefits

Minimization of downtimes thanks to high system availability

- Efficient self-diagnostics (SIMATIC PC DiagMonitor)
- Solutions for data back-up (preventive data back-up)
- Service-friendly equipment construction (for modification and servicing)

Reduction in outlay thanks to high investment security

- High product continuity thanks to hardware and software functionality which is safeguarded for the long-term (support of Legacy interfaces and ISA slots)
- Motherboard from Siemens own development and production facilities
- Secured availability of spare parts for components (5 years)

Reduction of costs thanks to in-depth industrial functionality

- High industrial compatibility thanks to extremely rugged design, even under extreme vibration and shock loading and at high temperatures (ventilation concept)
- Integral component of Totally Integrated Automation (TIA) thanks to integral PROFIBUS/MPI and Ethernet interfaces, system-tested SIMATIC software packages
- High flexibility and expansion capability (5 unassigned slots)

Cost reductions thanks to time savings

- Configured, turnkey systems are supplied
- Preinstalled operating systems for rapid start-up
- Integrated interfaces for communication at the field level or at the management level

Application

The SIMATIC Box PC 840 offers machine, plant and switchgear cabinet manufacturers a high-performance, expandable PC platform for industrial applications directly at the machine:

- Measurement, open and closed-loop control of process and machine data, e.g. redundant process control system, transport systems in production halls
- Operation and visualization tasks with remote display or monitor solution, e.g. concrete production machines
- Data acquisition and data processing, e.g. production data acquisition, distributed process control

The SIMATIC Box PC 840 has the CE mark for use in industrial areas and in domestic, business and commercial areas and therefore can be used in building system automation or in public buildings in addition to industrial applications.

Design

- Rugged metal casing, resistant to vibrations and shocks, with high electromagnetic compatibility
- Card retainer for reliable operation of PC modules in case of vibrations and shocks
- Processor:
  - Intel Pentium 4 2.8 GHz, 533 MHz FSB, 512 KB Second Level Cache
- Standard main memory configuration 256 MB, expandable up to 2 GB
  Drives:
  - Hard disk: ≥ 40 GB; vibration-absorbing hard disk holder ensures reliable operation even under extremely high mechanical loading
  - Disk drive: 1.44 MB, 3.5"
- Graphics on-board, on AGP bus, 1280 x 1024, 100 Hz, 32-bit colors
- Interfaces (accessible from one side):
  - Ethernet on-board
  - DVI-I graphics interface
  - 2 x USB V2.0 (high current) port
  - Legacy: PS/2, COM1, COM2, LPT1
- Frei slots for expansion:
  - 1 x PCI short, 1 x PCI long
  - 2 x PCI/ISA (shared) long
  - 1 x ISA long
- Power supply: AC 120/240 V (autorange), 50/60 Hz

Optional additional equipment:

- Processor:
  - Intel Pentium 4 2.4 GHz, 533 MHz FSB, 512 KB Second Level Cache
  - Intel Pentium 4 Mobile 2.2 GHz, 400 MHz FSB, 512 KB Second Level Cache
  - Intel Celeron 2.0 GHz, 400 MHz FSB, 128 KB Second Level Cache
- Main memory configuration up to 2 GB
- 1 x 3.5" 80 GB serial ATA hard disk
- 2 x 2.5" 40 GB (PATA) hard disks
- RAID1 system 2 x 2.5" 60 GB hard disks, (Serial ATA)
- Flash Drive (512 MB or 1 GB, Compact Flash)
- DVD-ROM or DVD +/- RW drive
- PROFIBUS/MPI on-board, CP 5611-compatible
- 24 V DC power supply module (with Pentium 4 Mobile 2.2 GHz only)
- Preinstalled operating systems
- SIMATIC PC DiagMonitor [1]
- SIMATIC PC/PG Image Creator [1]

1) Further information can be found under *"Expansion components"*

Industrial PC
SIMATIC Box PC

SIMATIC Box PC 840

Ordering data   Order No.   Order No.

3

Configuration

SIMATIC Box PC 840 V2   A   **6ES7 647-6M■■■ - ■■■■■**

AGP graphics on-board;
8/16/32 MB shared memory;
10/100 MBit/s Ethernet RJ45;
2 x USB (high current);
watchdog; temperature
monitoring; 2 PCI; 2 ISA/PCI;
1 ISA free

Processor/interfaces:

• Celeron 2.0 GHz, 400 MHz FSB, 128 KB SLC	A
• Celeron 2.0 GHz, 400 MHz FSB, 128 KB SLC; PROFIBUS/MPI	B
• Pentium 4 2.4 GHz, 533 MHz FSB, 512 KB SLC	C
• Pentium 4 2.4 GHz, 533 MHz FSB, 512 KB SLC; PROFIBUS/MPI	D
• Pentium 4 Mobile 2.2 GHz, 400 MHz FSB, 512 KB SLC	E
• Pentium 4 Mobile 2.2 GHz, 400 MHz FSB, 512 KB SLC; PROFIBUS/MPI	F
• Pentium 4 2.8 GHz, 533 MHz FSB, 512 KB SLC	G
• Pentium 4 2.8 GHz, 533 MHz FSB, 512 KB SLC; PROFIBUS/MPI	H

Memory configuration:

• 256 MB DDR266 SDRAM	1
• 512 MB DDR266 SDRAM	2
• 1 GB DDR266 SDRAM	3
• 1.5 GB DDR266 SDRAM	4
• 2 GB DDR266 SDRAM	5

Country-specific version/PS:

• 110/230 V AC power supply with Namur; European power cable	0
• 110/230 V AC power supply with Namur; power cable for United Kingdom	1
• 110/230 V AC power supply with Namur; power cable for Switzerland	2
• 110/230 V AC power supply with Namur; power cable for USA	3
• 110/230 V AC power supply with Namur; power cable for Italy	4
• 24 V DC power supply (with Pentium 4 Mobile 2.2 GHz only)	5

Expansion (HW):

• without (HW)	0

A) Subject to export regulations: AL: N and ECCN: EAR99H
D) Subject to export regulations: AL: N and ECCN: 5D992B1
E) Subject to export regulations: AL: N and ECCN: EAR99

Configuration (continued)

SIMATIC Box PC 840 V2   A   **6ES7 647-6M■■■ - ■■■■■**

Drives:

• 40 GB HDD EIDE + FDD	A
• 40 GB HDD EIDE + FDD + DVD-ROM	B
• 40 GB HDD EIDE + FDD + CD-R/RW/DVD (combo)	C
• 80 GB HDD EIDE + FDD	D
• 80 GB HDD EIDE + FDD + DVD-ROM	E
• 80 GB HDD EIDE + FDD + CD-R/RW/DVD (combined)	F
• 2 x 40 GB (2.5") + FDD	L
• 2 x 40 GB (2.5") + FDD + DVD-ROM	M
• 2 x 40 GB (2.5") + FDD + CD-R/RW/DVD (combined)	N
• RAID1 (SATA), 2 x 60 GB (2.5") + FDD (1 free PCI less)	H
• RAID1 (SATA), 2 x 60 GB (2.5") + FDD + DVD-ROM (1 free PCI less)	J
• RAID1 (SATA), 2 x 60 GB (2.5") + FDD + CD-R/RW/DVD (1 free PCI less)	K
• CompactFlash Card 512 MB + FDD	S
• CompactFlash Card 1 GB + FDD	T
• CompactFlash Card 512 MB + FDD + DVD-ROM	U
• CompactFlash Card 1 GB + FDD + DVD-ROM	V

Operating system:

• MS-DOS 6.22, En	J	A
• WinNT 4.0 Workstation En SP6a	D	C
• WinNT 4.0 Workstation Ger SP6a	D	D
• Windows 2000 Professional MUI (Ger, En, Fr, It, Sp), SP4	D	J
• Windows XP Professional MUI (Ger, En, Fr, It, Sp), SP1	D	K
• without operating system	G	X

Expansion SW:

• without expansion (SW)		0
• SIMATIC PC DiagMonitor Software included	E	1
• SIMATIC PC/PG Image Creator Software included	E	2
• SIMATIC PC/PG DiagMonitor & Image Creator Software included	E	3

G) Subject to export regulations: AL: N and ECCN: 4A994
J) Subject to export regulations: AL: N and ECCN: 5D992B2

3

Ordering data

	Order No.
Accessories	
Memory expansion ᴬ	
• 256 MB DDR SDRAM	**6ES7 648-2AD20-0EA0**
• 512 MB DDR SDRAM	**6ES7 648-2AD30-0EA0**
• 1 GB DDR SDRAM	**6ES7 648-2AD40-0EA0**
Power cable strain relief	**6ES7 648-1AA00-0XA0**
power cable strain relief for Rack PC 840, Box PC 840; 5 items per packing unit	
Power cable, 90° offset, 3 m	
SIMATIC PC, power cable for 230 V AC, 90° offset, 3 m for Box PC and Panel PC	
• Germany, France, Spain, the Netherlands Sweden, Belgium, Austria, Finland	**6ES7 900-1AA00-0XA0**
• United Kingdom	**6ES7 900-1BA00-0XA0**
• Switzerland	**6ES7 900-1CA00-0XA0**
• USA	**6ES7 900-1DA00-0XA0**
• Italy	**6ES7 900-1EA00-0XA0**
• China	**6ES7 900-0FA00-0XA0**

A) Subject to export regulations: AL: N and ECCN: EAR99H

	Order No.
Input media	
• **SIMATIC PC keyboard** German/international, USB port	**6ES7 648-0CB00-0YA0**
• **USB mouse** ᴬ (optical, 3 buttons) for PG and PC with adapter	**6ES7 790-0AA01-0XA0**
Memory media	
SIMATIC USB Flash Drive ᴬ 1 GB, USB 2.0, metal enclosure, bootable	**6ES7 648-0DC30-0AA0**

Communication products
see page 7/1

Power supplies and UPS
see page 3/87

RMOS3 real-time operating system
see page 3/71

Dimension drawings
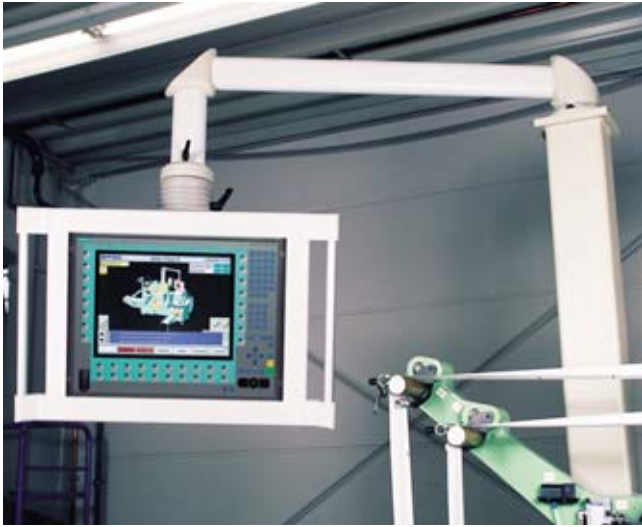

Dimensions mm

G_Kt01_EN_00163

Industrial PC
SIMATIC Panel PC

Introduction

■ Overview

SIMATIC Panel PCs are suitable thanks to their high industrial compatibility both for use in control cabinets, consoles and control panels, as well as directly on the machine. Typical areas of application can be found in both production and process automation.

There is a broad range of robust, high-performance SIMATIC Panel PCs available for different requirements.

Shared industrial functionality

- High-quality components and modules with a high MTBF (mean time between failure), which also ensure 24-hour operation in the extended temperature range.
- High swing/shock capacity of the devices through special hard-disk suspensions, locked connectors and card retainers
- Rugged housing model with high electromagnetic compatibility (EMC) and integrated industrial power supplies (also as per NAMUR)
- Service-friendly device design
- Bright, brilliant displays in different sizes up to 19"
- Same front panel mounting dimensions and uniform front design across all device families
- Rugged fronts protected from dust, humidity and chemical substances (front-side IP65 / NEMA 4 degrees of protection)

SIMATIC Panel PC 477 embedded – Compact, rugged and maintenance-free Panel PC in embedded technology

- Only 75 mm mounting depth (19" display 477B: 98 mm)
- No rotating parts (without fan and hard disk)
- High security due to the Microsoft Windows XP embedded operating system
- Ready-to-use devices with optionally preinstalled software
- HMI: Innovative HMI software WinCC flexible (incl. archives and recipes)
- HMI/RTX: like HMI, also with real-time-capable software PLC WinAC RTX
- Expandable with PC/104(+) plug-in cards
- Retentive memory on board (NV-RAM, usable with WinAC RTX)

SIMATIC Panel PC 577 – Industry functionality and high performance at an attractive price

- Expandable by 3 PCI slots
- Multifaceted interfaces (COM, LPT, PS2, audio in/out, GB Ethernet)

SIMATIC Panel PC 677 – Compact, powerful and very rugged

- High performance thanks to latest process technology from Intel
- Dual Core technology: Panel PC 677B through Intel Core2Duo 2.16 GHz
- Compact structure with simultaneous expandability through PCI/PCIe slots
- Strong communication through two Ethernet and integrated PROFIBUS DP/MPI interfaces
- Control and computer units can be separated by up to 30 m
- RAID1 controller on board
- Retentive memory on board (with 677B, NV-RAM, usable with WinAC RTX)

SIMATIC Panel PC 877 – Flexible, powerful and very rugged

- Powerful Intel Pentium 4 processors and high industrial compatibility
- Maximum flexibility through 5 expansion slots (PCI/ISA)
- Legacy interfaces (LPT, PS2)
- RAID1 controller optional
- Control and computer units can be separated by up to 30 m

Overview (continued)

	SIMATIC Panel PC 477 embedded	SIMATIC Panel PC 477B embedded	SIMATIC Panel PC 577	SIMATIC Panel PC 677	SIMATIC Panel PC 677B	SIMATIC Panel PC 877
Design						
Centralized configuration	●	●	●	●	●	●
Distributed configuration via Remote Kit	—	—	—	● 1)	● 1)	● 1)
Display						
Size	12"/15" TFT	12"/15"/19" TFT	12"/15"/19" TFT	12"/15"/15" INOX/ 19" TFT	12"/15"/17"/ 19" TFT	12"/15"/ 19" TFT
Resolution	800 x 600 / 1024 x 768	800 x 600 / 1024 x 768 / 1280 x 1024	800 x 600 / 1024 x 768 / 1280 x 1024	800 x 600 / 1024 x 768 / 1280 x 1024	800 x 600 / 1024 x 768 / 1280 x 1024	800 x 600 / 1024 x 768 / 1280 x 1024
Operating controls						
Membrane keyboard	● 2)	● 2)	● 2)	● 2)	● 2)	● 2)
Touch screen	●	●	●	●	●	● 3)
General features						
Processor	Intel Celeron 650 MHz; Intel Pentium 3 933 MHz	Intel Celeron M 1.0 GHz	Intel Celeron 2.0 GHz; Intel Pentium 4 2.4 GHz	Intel Celeron M 1.5 GHz; Intel Pentium M 1.6 GHz; Intel Pentium M 2.0 GHz	Intel Celeron M 1.86 GHz; Intel Core2Duo 1.66 GHz; Intel Core2Duo 2.16 GHz	Intel Celeron 2.0 GHz; Intel Pentium 4 2.8 GHz; Intel Pentium 4 mobile 2.2 GHz
Main memory	512 MB	1 GB	256 MB; 512 MB; 1 GB, erweiterbar auf 3 GB	256 MB; 512 MB; 1 GB; 2 GB	512 MB; 1 GB; 2 GB; 3 GB; 4 GB	256 MB; 512 MB; 1 GB; 2 GB
Expansion slots	3 x PC/104+ 4) 1 x CF slot	3 x PC/104 4) 2 x CF slot (1x accessible from outside)	3 x PCI (one slot specially prepared for WinAC slot module)	2 x PCI, 1 x CF slot	2 x PCI or 1 x PCI and 1 x PCIe 4x; 1 x CF slot	2 x PCI; 2 x PCI/ISA shared; 1 x ISA
Operating system	Windows XP embedded on CF Card	Windows XP embedded on CF Card	none; Windows 2000 Professional MUI; Windows XP Professional MUI	none; Windows 2000 Professional MUI; Windows XP Professional MUI	none; Windows 2000 Professional MUI; Windows XP Professional MUI; Windows XPembedded on CF	none; Windows 2000 Professional MUI; Windows XP Professional MUI

● available

— not available

1) With optional remote kit up to 30 m
2) 12" / 15" displays
3) 15" / 19" displays
4) With optional expansion frame

Industrial PC
SIMATIC Panel PC

Introduction

Overview (continued)

	SIMATIC Panel PC 477 embedded	SIMATIC Panel PC 477B embedded	SIMATIC Panel PC 577	SIMATIC Panel PC 677	SIMATIC Panel PC 677B	SIMATIC Panel PC 877
Interfaces						
PROFIBUS / MPI	●	●	— [1]	●	●	●
Ethernet	10/100 Mbit	10/100/1000 Mbit	10/100/1000 Mbit	10/100 Mbit	10/100/1000 Mbit	10/100 Mbit
PS/2 (Mouse/keyboard)	—	—	●	—	—	●
USB	●	●	●	●	●	●
Serial interface	●	●	●	●	●	●
Parallel interface	—	—	●	—	—	●
Audio in/out	—	—	●	—	—	—
Graphics interface	●	●	●	●	●	●
Ambient conditions						
Vibration load during operation	1 g	1 g	0,25 g	1 g	1 g	1 g
Shock load during operation	5 g	5 g	1 g	5 g	5 g	5 g
Permissible temperature during operation with maximum configuration	+5 °C to +45 °C; max. 50 °C in installation space, if at the front max. 40° C [4]	+5 °C to +45 °C; max. 50 °C in installation space, if at the front max. 40 °C	+5 °C to +45 °C	+5 °C to +45 °C; max. 50 °C in installation space, if at the front max. 40 °C	+5 °C to +45 °C; max. 50 °C in installation space, if at the front max. 40 °C	+5 °C to +45 °C; max. 50 °C in installation space, if at the front max. 40 °C [2]
Heat loss in maximum configuration						
12"/15" display	80 W / 85 W [3] [7]	80 W [7]	190 W [5]	max. 140 W [5]	max. 140 W [5]	230 W [2] [6]/ 300 W [6]
19" display	—	110 W [7]	210 W [5]	max. 163 W [5]	max. 163 W [5]	260 W [2] [6]/ 330 W [6]

● available

— not available

1) Expandable via plug-in card
2) Only with 24 V DC power supply and Pentium 4 Mobile
3) 24 V DC / 230 V AC
4) With Celeron 650 MHz; max. 45 °C with Pentium 3 933 MHz
5) 15 W taken into account for each PCI/PCIe slot
6) 10 W taken into account for each PCI/ISA slot
7) 3 W taken into account for each PC/104 slot

■ **Benefits**

High degree of industrial capability

The entire construction is designed for purely industrial use. Thus, for example, a special vibration-absorbing suspension of the hard disk ensures operational reliability, even at high mechanical loads. SIMATIC Panel PCs are thus designed for a vibration load of 1 g (Panel PC 577: 0.25 g) and a shock load of 5 g (Panel PC 577: 1 g) during operation.

Performance

Thanks to the use of the latest Intel processors from ULV (Ultra Low Voltage) to Core 2 Duo technology, SIMATIC Panel PCs are flexibly scalable for your application.

• Scalable computing power
• Highest computing power
• Latest Intel processor technology
• Dual Core, ULV

Investment security

High component continuity and guaranteed availability of spare parts for up to 5 years after product phase-out are ensured e.g. through the development and production of our own motherboards. This enables long-lasting machine concepts without renewed engineering effort.

Service-friendly device design

Upgrades and exchange of components are easy thanks to the device design.

Integrated interfaces

The different already-integrated interfaces allow for various communication and expansion options. Many models are already equipped with Gigabit Ethernet and PROFIBUS DP/MPI interface.

Extendibility

Depending on the model, ISA, PCI, PCI Express, PC/104 Plus and PC/104 slots are available for individual expandability. This enables the further use of existing and new expansion cards.

Compact dimensions

Considering the desired expandability, SIMATIC Panel PCs have an extremely low mounting depth and can thus be used in very narrow installation locations.

Options

Various options enable an individual solution for your industrial application. Thus, the operator control unit can be operated separately from the computer unit by up to 30 m. The direct control key module increases the operating safety in that it can be used to run the process independently of the operating system and without delay directly on PROFIBUS DP/MPI.

Individually expandable system availability

• RAID1 configuration – high system stability through redundant data management
• SIMATIC PC DiagMonitor – Monitoring of the operating states and early detection of problems locally and in the network
• SIMATIC PC/PG Image & Partition Creator – downtime minimization through preventive data backup
• SITOP and Masterguard power supply (UPS) – Bridging of voltage dips

Industrial PC
SIMATIC Panel PC

3

■ Overview
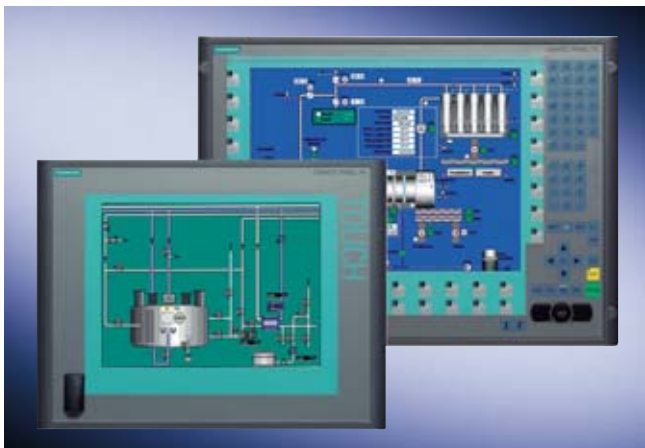
Embedded PC platform with high degree of industrial compatibility for demanding tasks in the area of PC-based automation

- Maintenance-free (without rotating parts such as fans and hard disks)
- Rugged construction:
  The PC can withstand the harshest mechanical stress and maintains reliable operation
- Compact construction (only 75 mm mounting depth)
- High investment protection
- Fast integration capability
- Front panel versions:
  - 12" and 15" TFT touch
  - 12" and 15" TFT key

■ Benefits

- High industrial capability thanks to extremely rugged design, even in the event of strong vibration and impact loads
- High degree of investment protection thanks to assured availability of spare parts (for a period of 5 years following the end of active marketing)
- High continuity of components for long-term machine concepts without renewed engineering outlay
- Savings in time and costs thanks to service-friendly equipment construction:
  - USB 2.0 ports on front and rear for quick and easy connection of additional hardware components
- High industrial capability thanks to integrated PROFIBUS DP/MPI and Ethernet interfaces
- Maintenance-free thanks to a lack of rotating parts (fans and hard disk)
- Minimization of downtime through increased system availability:
  - efficient self-diagnosis (SIMATIC PC DiagMonitor)
  - the high security and reliability of an embedded platform
- Integral component of Totally Integrated Automation (TIA): Increases productivity, minimizes the engineering outlay, reduces the lifecycle costs
- Ready-to-run, complete solutions (software is already installed and preconfigured) for visualization and automation in connection with WinCC flexible and WinAC RTX.

■ Application

SIMATIC Panel PC 477 embedded is designed for use on site at the machine where ruggedness and maximum reliability (i.e. the security of an embedded platform) are the most important requirements and the openness of a PC is also necessary (e.g. the addition of new modules and connection of peripherals such as printers, keyboards, etc.).

Due to the low mounting depth of only 75 mm, it can also be used where mounting space is at a premium.

The PC is used in both production automation and in process automation and is installed in control cabinets and desks, 19" cabinets/racks and swivel arms (gantries).

A SIMATIC Panel PC is the ideal platform for PC-based Automation:

- PC-based visualization locally at the machine with SIMATIC WinCC flexible 2005
- PC-based control with SIMATIC WinAC RTX 2005
- SIMATIC WinCC Web Client for Web-based solutions with WinCC / Web Navigator

Siemens offers a complete modular system of automation components that complement one another perfectly.

■ Design

The Panel PC 477 embedded is a compact unit comprising an operating unit with integral computer unit.

Components of the computer unit:

- Rugged metal casing, resistant to vibrations and shocks, with high electromagnetic compatibility.
- Processor:
  - Intel Celeron 650 MHz
  - Intel Pentium 3, 933 MHz
- Main memory basic configuration:
  - 512 MB
- Compact Flash Drive with preinstalled Windows XP embedded (Image) operating system
- Graphics on board (VGA analog, 1024 x 768)
- Interfaces:
  - 2 x 10/100 Ethernet on-board
  - PROFIBUS DP/MPI on-board, electrically isolated (optional)
  - 3 x USB 2.0 port, 500 mA (1 x front)
  - 1 x COM1 (RS232)
- Free slots for expansion:
  - 3 x PC/104 plus (over expansion frame)
- Power supply: 110 V/230 V AC (autorange), 50/60 Hz or 24 V DC

Optional additional equipment for OEM solutions: (customer-specific solutions)

- Second Compact Flash Drive or 2.5" hard disk (≥ 40 GB)

Components of the operator control unit:

The operator control units are available in the following versions:

12" Key

- 12.1" TFT color display, 800 x 600 pixels (SVGA)
- Membrane keyboard with international PC character set and 36 additional function keys and an integrated mouse

12" Touch

- 12.1" TFT color display, 800 x 600 pixels (SVGA)
- Resistive analog touch screen

15" Key

- 15.1" TFT color display, 1024 x 768 pixels (XGA)
- Membrane keyboard with international PC character set and 36 additional function keys and an integrated mouse

15" Touch

- 15.1" TFT color display, 1024 x 768 pixels (XGA)
- Resistive analog touch screen

They have a USB 2.0 interface on the front for connecting external I/O devices such as a mouse or keyboard and satisfy the requirements of IP65 degree of protection and NEMA 4. All operating units are also available optionally without a USB interface on the front.

Expansion components

SIMATIC PC DiagMonitor

- PC diagnostics/signaling software for early detection and diagnostics of PC problems
- Comprehensive monitoring of temperature, watchdog
- Operating hours counter for preventive maintenance
- Integrated log functions, comprehensive text messages, online help (English/German)
- Network-wide monitoring via SNMP and OPC interface possible

SIMATIC PC/PG Image & Partition Creator

- Software tool for preventive data back-up of the contents of bulk storage (CF cards, hard disks)
- Fast, bit-exact restoration of system and data partitions; user software and special installations are also backed up.
- Software tool for adaptation of hard disk partitioning

3.5" disk drive, USB

The USB diskette drive is provided for fast exchange of user data, e.g., recipes, or of files. The drive must not be used as a cyclic archiving drive. The front-panel installation and degree of protection IP54 permit data exchange from the front without opening the control cabinet door.

The device is connected via the USB interface of the Panel PC. The power is also supplied over the USB interface. The scope of delivery includes a 1 m long USB cable. The diskette drive complies with the USB 1.1 standard. 3.5" high density diskettes can be used (1.44 MB).

Operation of the USB diskette drive with SIMATIC Panel PCs:

- Windows XP: possible without separate driver
- The driver is included in the scope of supply of the operating system

SIMATIC PC USB FlashDrive

- Mobile memory medium for SIMATIC PC/PG
- Fast data transfer (USB 2.0) and high memory capacity
- Ultra-compact and rugged

Industrial USB Hub 4

- Industry-standard USB 2.0 Hub, Front IP65
- Installation in control cabinet door or on DIN rail
- Inspection window and LEDs for each of the four interfaces

Note:
Further information can be found under *"Expansion components"*.

Industrial PC
SIMATIC Panel PC

SIMATIC Panel PC 477 embedded

■ **Ordering data**   Order No.   Order No.

3

Configuration

SIMATIC Panel PC 477 embedded	**6AV7 84■ - 0■■1 0 - 0■B 0**

Front panels:
- 12" TFT Touch   **1**
- 12" TFT Key   **2**
- 15" TFT Touch   **3**
- 15" TFT Key   **4**

Power supply:
- 24 V DC   **A**
- 110/230 V AC, European power cable   **B**

Processor:
- Intel Celeron 650 MHz   **C**
- Intel Celeron 650 MHz, PROFIBUS DP 12 (on-board)   **D**
- Intel Pentium 3, 933 MHz   **E**
- Intel Pentium 3, 933 MHz, PROFIBUS DP 12 (on-board)   **F**

Mass data storage:

With operating system, preinstalled Windows embedded
- CompactFlash 512 MB   **B**
- CompactFlash 1 GB   **C**
- CompactFlash 2 GB   **D**

Delivery versions (ex stock)

12" TFT Touch 24 V DC power supply, Celeron 650 MHz, with PROFIBUS DP 12, 512 MB RAM, 1 GB CompactFlash with Windows XP embedded	D	**6AV7 841-0AD10-0CB0**
12" TFT Touch 24 V DC power supply, Pentium P3 933 MHz, with PROFIBUS DP 12, 512 MB RAM, 1 GB CompactFlash with Windows XP embedded	D	**6AV7 841-0AF10-0CB0**
12" TFT Key 24 V DC power supply, Pentium P3 933 MHz, with PROFIBUS DP 12, 512 MB RAM, 1 GB CompactFlash with Windows XP embedded	D	**6AV7 842-0AF10-0CB0**
15" TFT Touch 24 V DC power supply, Celeron 650 MHz, 512 MB RAM, 1 GB CompactFlash with Windows XP embedded	D	**6AV7 843-0AC10-0CB0**
15" TFT Touch 24 V DC power supply, Pentium P3 933 MHz, 512 MB RAM, 1 GB CompactFlash with Windows XP embedded	D	**6AV7 843-0AE10-0CB0**
15" TFT Touch 24 V DC power supply, Pentium P3 933 MHz with PROFIBUS DP12, 512 MB RAM, 1 GB CompactFlash with Windows XP embedded	D	**6AV7 843-0AF10-0CB0**
15" TFT Touch 110/230 V AC power supply, Pentium P3 933 MHz with PROFIBUS DP12, 512 MB RAM, 1 GB CompactFlash with Windows XP embedded	D	**6AV7 843-0BF10-0CB0**
15" TFT Key 24 V DC power supply, Pentium P3 933 MHz with PROFIBUS DP12, 512 MB RAM, 1 GB CompactFlash with Windows XP embedded	D	**6AV7 844-0AF10-0CB0**

D) Subject to export regulations: AL: N and ECCN: 5D992B1

Note:
For ready-to-use embedded systems with preinstalled WinCC flexible and WinAC RTX please refer to chapter 2 "Embedded Automation".

Ordering data	Order No.
Accessories	
Cover foil for Panel PCs 477/577/677/877	
For protecting the touch screen against dirt/scratches	
• for 12" Touch	**6AV7 671-2BA00-0AA0**
• for 15" Touch	**6AV7 671-4BA00-0AA0**
Labeling foil for Panel PCs 477/577/677/877	**6AV7 672-0DA00-0AA0**
For labeling softkeys and function keys, blank, supplied in sets of 10	
Non-heating apparatus cable for SIMATIC Box and Panel PC	
SIMATIC PC power cable, 230 V AC, angled, 3 m, for:	
• Germany	**6ES7 900-1AA00-0XA0**
• United Kingdom	**6ES7 900-1BA00-0XA0**
• Switzerland	**6ES7 900-1CA00-0XA0**
• USA	**6ES7 900-1DA00-0XA0**
• Italy	**6ES7 900-1EA00-0XA0**
• China	**6ES7 900-1FA00-0XA0**
Expansion components	
SIMATIC PC/PG DiagMonitor V3.1 ^B	**6ES7 648-6CA03-1YX0**
Software tool for monitoring SIMATIC PCs, incl. manual, on CD-ROM (German/English)	
SIMATIC PC/PG Image & Partition Creator	**6ES7 648-6AA04-0YX0**
Software tool for data backup and hard-disk partitioning for SIMATIC PCs, incl. manual, on CD-ROM (Ger/En/Fr/Sp/It)	
3.5" USB disk drive A	**6FC5 235-0AA05-1AA2**
With 1 m connecting cable	
Compact Flash Card	
• 256 MB A	**6ES7 648-2BF01-0XC0**
• 512 MB A	**6ES7 648-2BF01-0XD0**
• 1 GB A	**6ES7 648-2BF01-0XE0**
• 2 GB A	**6ES7 648-2BF01-0XF0**
SIMATIC USB Flash Drive A	**6ES7648-0DC30-0AA0**
1 GB, USB 2.0, metal enclosure, boot capability	
Expansion kit PC/104 A	**6AG4 070-0BA00-0XA0**
For integration of PC/104 modules (Package contains 6 expansion frames)	
Industrial USB Hub 4 A	**6AV6 671-3AH00-0AX0**
4 x USB 2.0, IP65 for control cabinet door or DIN rail	

A) Subject to export regulations: AL: N and ECCN: EAR99H
B) Subject to export regulations: AL: N and ECCN: EAR99S

Dimension drawings

Dimensions in mm

Operator panels PC 477	**G**	**K**	**T**
Touch panels			
12"	289	3	75
15"	289	3	75
Key panels			
12"	289	3	75
15"	324	3	75

All dimensions without screw protrusions

Operator control unit and complete unit

Industrial PC
SIMATIC Panel PC

SIMATIC Panel PC 477 embedded

■ **Dimension drawings** (continued)

Dimensions in mm
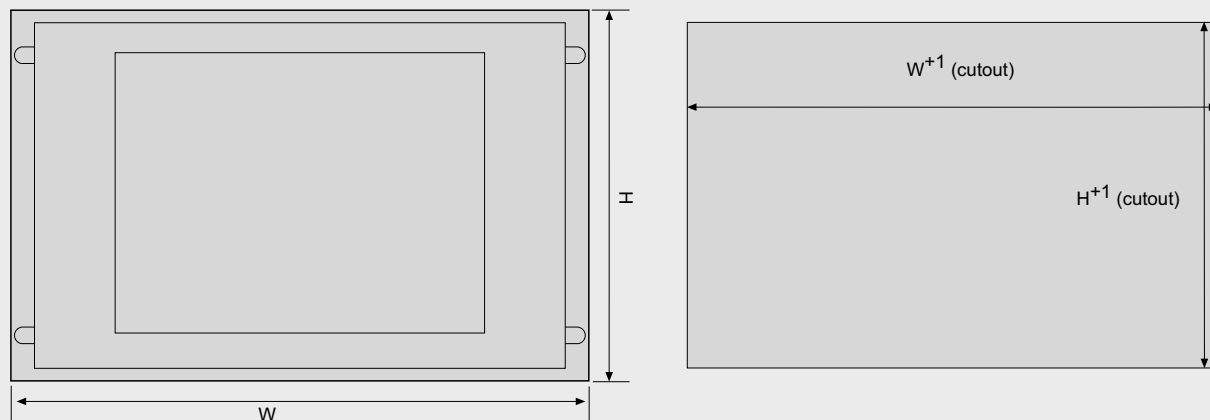
Front dimensions

Touch panels	W	H
12"	400	310
15"	483	310

Key panels	W	H
12"	483	310
15"	483	355

Installation cutouts

Touch panels	W^{+1}	H^{+1}
12"	368	290
15"	450	290

Key panels	W^{+1}	H^{+1}
12"	450	290
15"	450	321*

* In addition: two 25 x 5 mm recesses on the top side
for keyboard slide-in label channels

G_ST80_EN_00272

Installation cutout

■ **More information**

Additional information is available in the Internet under:

http://www.siemens.com/panel-pc

Note

Do you need a specific modification or expansion to the products described here? Then refer to "Customer-specific products". Information is available here about additional, generally available sector products as well as the possibilities for customer-specific modification and adaptation.

SIMATIC Panel PC 477B embedded

Overview
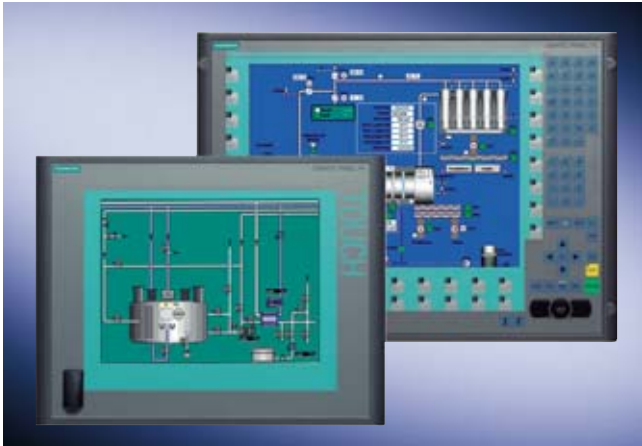
- Embedded PC platform with extremely high industrial compatibility for demanding tasks in the field of PC-based automation
- Maintenance-free (no rotating components such as fan and hard disk)
- Rugged construction: The PC is resistant to the harshest mechanical stress and is extremely reliable in operation
- Compact structure (only 75 mm mounting depth for 12"/15")
- High degree of investment protection
- Fast integration capability
- Front panel versions:
  - 12" and 15" TFT Touch
  - 12" and 15" TFT Key
  - 19" Touch (available soon) [1]

1) Start of delivery expected in August 2007.

Benefits

- Excellent industrial compatibility due to rugged construction, even when subjected to extreme vibration and shock
- High level of investment security thanks to assured spare parts availability of the components (for 5 years following the end of active marketing)
- Excellent continuity of components for machine concepts with a long service life without any new engineering costs
- Savings in time and costs due to service-friendly equipment construction:
  - Front and rear USB 2.0 interfaces for quick and easy connection of additional hardware components
- High degree of industrial functionality thanks to integrated PROFIBUS DP/MPI and Ethernet interfaces
- Maintenance-free due to lack of rotating components (fan and hard disk)
- Reduction in standstill times thanks to high system availability
  - Efficient self-diagnostics (SIMATIC PC DiagMonitor)
  - High reliability and security of an embedded platform
- Integral part of Totally Integrated Automation (TIA):
  - Enhanced productivity, reduction of engineering costs, reduction of lifecycle costs
- Turnkey complete solution is supplied (the software is already installed and preconfigured) for visualization and automation in combination with WinCC flexible and WinAC RTX.

Application

SIMATIC Panel PC 477B embedded is designed for use on site directly at the machine, whereby the focus is on a combination of ruggedness and maximum reliability (i.e. the reliability of an embedded platform) and the openness of a PC is also required (e.g. module expansion and the connection of I/O devices such as printers, keyboards, etc.).

Due to the minimal mounting depth, it can also be used in confined spaces.

The PC can be used in production automation as well as in process automation and can be mounted in control cabinets, control desks, 19" cabinets/racks and in gantries.

A SIMATIC Panel PC is the ideal platform for PC-based Automation:

- PC visualization on site at the machine with SIMATIC WinCC flexible
- PC based Control with SIMATIC WinAC RTX
- SIMATIC WinCC Web client for Web based solutions with WinCC / Web Navigator

Siemens offers a complete modular system of automation components that complement one another perfectly.

Industrial PC
SIMATIC Panel PC

SIMATIC Panel PC 477B embedded

■ Design

The Panel PC 477B embedded is a compact unit comprising an operator control unit with an integrated computing unit.

Components of the computer unit:

- Rugged metal housing, resistant to vibrations and shocks, with high electromagnetic compatibility.
- Processor:
  - Intel Celeron M 1.0 GHz
- Main memory basic configuration:
  - 1 GB (DDR2-SDRAM)
  - Battery-buffered retentive memory 2 MB
- Compact Flash Drive (internal) with preinstalled Windows XP embedded (Image) and optional software
- Graphics on board (VGA analog, 1024 x 768)
- Interfaces:
  - 2 x Ethernet on board (10/100/1000 Mbit/s)
  - PROFIBUS DP/MPI on board, potentialgetrennt
  - 5 x USB 2.0 port, 500 mA (1 x front)
  - 1 x COM1 (RS232)
  - 1 x DVI-I (for connection of a second display unit)
- Free slots for expansion:
  - 1 x Compact Flash-Slot (accessible externally)
  - 3 x PC/104 (using expansion frame)
- Power supply: 24 V DC

Components of the operator control unit:

The operator control units are available in the following versions:

12" Key

- 12.1" TFT color display, 800 x 600 pixels (SVGA)
- Membrane keyboard with international PC character set and 36 additional function keys and an integrated mouse

12" Touch

- 12.1" TFT color display, 800 x 600 pixels (SVGA)
- Resistive analog touch screen

15" Key

- 15.1" TFT color display, 1024 x 768 pixels (XGA)
- Membrane keyboard with international PC character set and 36 additional function keys and an integrated mouse

15" Touch

- 15.1" TFT color display, 1024 x 768 pixels (XGA)
- Resistive analog touch screen

19" Touch (available soon) [1]

- 19.1" TFT color display, 1280 x 1024 pixels (SXGA)
- Resistive analog touch screen

They are equipped with an USB 2.0 interface at the front for connecting external I/O devices such as a mouse or keyboard and fulfill the requirements of degree of protection IP65 and NEMA 4. All computing units are also optionally available with a front USB interface.

[1] Start of delivery expected in August 2007.

Expansion components

SIMATIC PC DiagMonitor

- PC diagnostics/alarm software for the early detection and diagnosis of PC problems
- Comprehensive monitoring of temperature, watchdog
- Operating hours counter for preventive maintenance
- Integrated log functions, comprehensive text messages, online help (English/German)
- Network-wide monitoring via SNMP and OPC interface possible

SIMATIC PC/PG Image & Partition Creator

- Software tool for preventive data back-up of the contents of bulk storage (CF cards, hard disks)
- High-speed, restoring of system and data partitions with bit accuracy; application software and special installations are also backed up
- Software tool for adaptation of hard disk partitioning

3.5" disk drive, USB

The USB diskette drive is provided for fast exchange of user data, e.g., recipes, or of files. The drive must not be used as a cyclic archiving drive. The front-panel installation and degree of protection IP54 permit data exchange from the front without opening the control cabinet door.

The device is connected via the USB interface of the Panel PC. The power is also supplied over the USB interface. A USB cable of 1 m length is included in the scope of supply. The diskette drive complies with the USB 1.1 standard. 3.5" high density diskettes can be used (1.44 MB).

Operation of the USB diskette drive with SIMATIC Panel PCs:

- Windows XP: possible without separate driver
- The driver is included in the scope of supply of the operating system

SIMATIC PC USB FlashDrive

- Mobile memory medium for SIMATIC PC/PG
- High-speed data transfer (USB 2.0) and high memory capacity
- Ultra-compact and rugged

Industrial USB Hub 4

- Industry-standard USB 2.0 Hub, Front IP65
- Installation in control cabinet door or on DIN rail
- Inspection window and LEDs for each of the four interfaces

Further information can be found under *"Expansion components"*.

Note:

Complete turnkey embedded systems with preinstalled WinCC flexible and WinAC RTX will be available soon. For more information please contact your local Siemens partner.

SIMATIC Panel PC 477B embedded

■ **Ordering data**   Order No.   Order No.

3

Configuration (all versions ex-stock)

SIMATIC Panel PC 477B embedded	**6ES7 676-■BA00-0■■0**
Processor: Celeron M 1.0 GHz	
Hauptspeicher 1 GB	
DDR2 SDRAM	
Power supply 24 V DC	
PROFIBUS DP interface	

Front panels:

• 12" TFT Touch	**1**
• 12" TFT Key	**2**
• 15" TFT Touch	**3**
• 15" TFT Key	**4**
• 19" TFT Touch (available soon) [1]	**6**

Mass data storage:

• CompactFlash 1 GB	**B**
• CompactFlash 2 GB	**C**
• With operating system, preinstalled Windows XP embedded	**A**

1) Start of delivery expected in August 2007

Attention:

The scope of supply of the Panel PC 477B mainly comprises the Panel PC and a software pack, i.e. CompactFlash card with pre-installed and configured software as well as all the necessary license keys. After the CompactFlash card has been inserted in the (internal) slot provided, the unit is ready for switching on.

Note:

Complete turnkey embedded systems with preinstalled WinCC flexible and WinAC RTX will be available soon. For more information please contact your local Siemens partner.

Accessories

Cover foil for Panel PCs 477/577/677/877		
For protecting the touch screen against dirt/scratches		
• for 12" Touch		**6AV7 671-2BA00-0AA0**
• for 15" Touch		**6AV7 671-4BA00-0AA0**
• for 19" Touch		**6AV7 672-1CE00-0AA0**
Labeling foil for Panel PCs 477/577/677/877		**6AV7 672-0DA00-0AA0**
For labeling softkeys and function keys, blank, supplied in sets of 10		

Expansion components

SIMATIC PC/PG DiagMonitor V3.1	B	**6ES7 648-6CA03-1YX0**
Software tool for monitoring SIMATIC PCs, incl. manual, on CD-ROM (German/English)		
SIMATIC PC/PG Image & Partition Creator		**6ES7 648-6AA04-0YX0**
Software tool for data backup and hard-disk partitioning for SIMATIC PCs, incl. manual, on CD-ROM (Ger/En/Fr/Sp/It)		
3.5" USB disk drive	A	**6FC5 235-0AA05-1AA2**
With 1 m connecting cable		
Compact Flash Card		
• 256 MB	A	**6ES7 648-2BF01-0XC0**
• 512 MB	A	**6ES7 648-2BF01-0XD0**
• 1 GB	A	**6ES7 648-2BF01-0XE0**
• 2 GB	A	**6ES7 648-2BF01-0XF0**
SIMATIC USB Flash Drive	A	**6ES7 648-0DC30-0AA0**
1 GB, USB 2.0, metal enclosure, boot capability		
Expansion kit PC/104	A	**6AG4 070-0BA00-0XA0**
For integration of PC/104 modules (Package contains 6 expansion frames)		
Industrial USB Hub 4	A	**6AV6 671-3AH00-0AX0**
4 x USB 2.0, IP65 for control cabinet door or DIN rail		

A) Subject to export regulations: AL: N and ECCN: EAR99H
B) Subject to export regulations: AL: N and ECCN: EAR99S

■ **More information**

Additional information is available in the Internet under

http://www.siemens.com/panel-pc

Note

Do you need a specific modification or expansion to the products described here? Then refer to "Customer-specific products". Information is available here about additional, generally available sector products as well as the possibilities for customer-specific modification and adaptation.
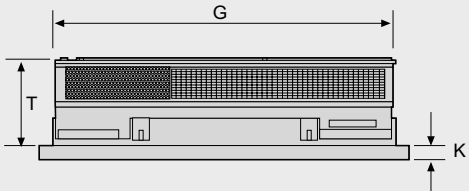
Industrial PC
SIMATIC Panel PC

SIMATIC Panel PC 477B embedded
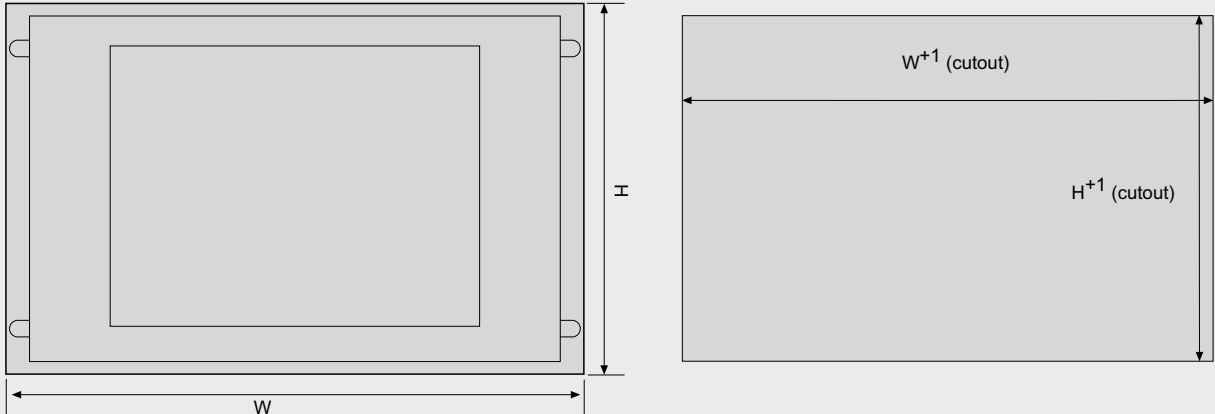
■ **Dimension drawings**

Dimensions in mm

Operator panels PC 477B	G	K	T
Touch panels			
12"	289	3	75
15"	289	3	75
19"	307	11	98
Key panels			
12"	289	3	75
15"	324	3	75

All dimensions without screw protrusions

G_ST80_EN_00283
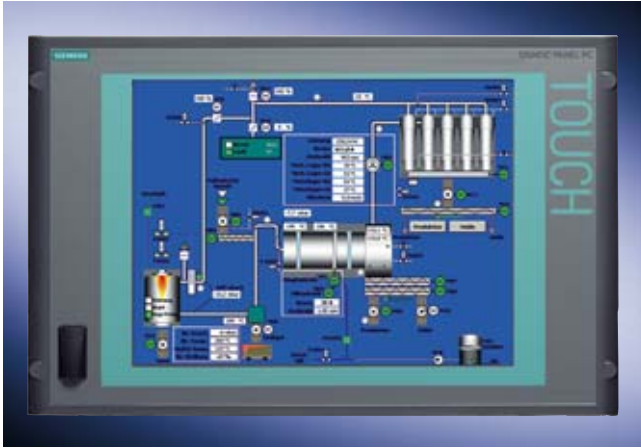
Operator control unit and complete unit

Dimensions in mm

Front dimensions

Touch panels	W	H
12"	400	310
15"	483	310
19"	483	400

Key panels	W	H
12"	483	310
15"	483	355

Installation cutouts

Touch panels	W^{+1}	H^{+1}
12"	368	290
15"	450	290
19"	450	380

Key panels	W^{+1}	H^{+1}
12"	450	290
15"	450	321*

* In addition: two 25 x 5 mm recesses on the top side
for keyboard slide-in label channels

G_ST80_EN_00290

Installation cutout

SIMATIC Panel PC 577

Overview

- Industry-standard PC platform for demanding operator control and monitoring tasks
- Maximum performance thanks to high processor performance at an attractive entry-level price
- Front panel versions:
  - 12", 15" and 19" TFT Touch
  - 12" and 15" TFT Key

Benefits

- Suitable for industrial environments subject to vibration and shock loads
- Investment protection thanks to guaranteed availability of spare parts
- USB port for quick and easy connection of required components
- Integrated Ethernet interface
- Minimization of downtimes thanks to increased system availability:
  - Data backup solutions (preventive data backup)
  - Integral component of Totally Integrated Automation (TIA): increases productivity, minimizes the engineering outlay, reduces the lifecycle costs

Application

The SIMATIC Panel PC 577 is used in production and process automation and can be installed into control cabinets and control panels.

The SIMATIC Panel PC 577 is a platform for PC-based Automation:

- PC-based visualization locally at the machine with SIMATIC WinCC flexible
- Complex solutions with SIMATIC WinCC process visualization
- PC-based Control with SIMATIC WinAC Software PLC or with SIMATIC WinAC Slot PLC

Siemens offers a complete modular system of automation components that complement one another perfectly.

The SIMATIC Panel PCs can be ordered in combination with WinCC flexible or WinCC as SIMATIC HMI packages at a special price (see SIMATIC HMI complete systems).

Design

The Panel PC 577 comprises a computer unit and an operator unit.

Components of the computer unit:

- Metal housing, resistant to vibration and shock, with high electromagnetic compatibility
- Processor:
  - Intel Celeron 2.0 GHz
- Memory:
  - 256 MB DDR 400
- Hard disk: ≥ 40 GB;
- Interfaces:
  - 1 x GBit Ethernet on board
  - 4 x USB port (USB 2.0), 1 x USB port on the front (USB 2.0)
  - 1 x serial V.24 (9-pin)
  - 1 x parallel
- Free slots for expansions:
  - 3 x PCI (slots with card retainer + 1 slot specially prepared for WinAC Slot module)
- Power supply: 110 V/230 V AC (autorange) 50/60 Hz

Optional additional components:

- Intel Pentium 4 2.4 GHz processor
- 512 MB DDR 400, 1 GB DDR 400, expandable to 3 GB
- Diskette drive, optional via USB, can be ordered as accessory
- DVD-ROM or DVD±RW±R drives optional
- Operating systems Windows 2000 MUI or Windows XP Professional MUI

Industrial PC
SIMATIC Panel PC

SIMATIC Panel PC 577

■ **Design** (continued)

Components of the operator control unit:

The front panels are available in the following designs:

12" Touch
- 12.1" TFT color display, 800 x 600 pixels (SVGA)
- Resistive analog touch screen
- USB 2.0 port on front

15" Touch
- 15.1" TFT color display, 1024 x 768 pixels (XGA)
- Resistive analog touch screen
- USB 2.0 port on front

19" Touch
- 19.1" TFT color display, 1280 x 1024 pixels (SXGA)
- Resistive analog touch screen
- USB 2.0 port on front

12" Key
- 12.1" TFT color display, 800 x 600 pixels (SVGA)
- Membrane keyboard with international PC character set and 36 additional function keys and an integrated mouse
- USB 2.0 port on front

15" Key
- 15.1" TFT color display, 1024 x 768 pixels (XGA)
- Membrane keyboard with international PC character set and 36 additional function keys and an integrated mouse
- USB 2.0 port on front

Expansion components

SIMATIC PC/PG Image & Partition Creator
- Software tool for preventive data backup of hard disk contents
- Fast, bit-exact restoration of system and data partitions; application software and special installations are also backed up.
- Software tool for adaptation of hard disk partitioning

3.5" disk drive, USB

The USB diskette drive is provided for fast exchange of user data, e.g., recipes, or of files. The drive must not be used as a cyclic archiving drive. The front-panel installation and degree of protection IP54 permit data exchange from the front without opening the control cabinet door.

The device is connected via the USB interface of the Panel PC. The power is also supplied over the USB interface. The scope of delivery includes a 1 m long USB cable. The diskette drive complies with the USB 1.1 standard. 3.5" high density diskettes can be used (1.44 MB).

Use of the USB diskette drive with SIMATIC Panel PCs:
- Windows XP: Possible without separate driver
- Windows 2000: The required driver is included in the scope of supply of the operating system

Industrial USB Hub 4
- Industry-standard USB 2.0 Hub, Front IP65
- Installation in cabinet door or on DIN rail
- Inspection window and LEDs for each of the four interfaces

Note:
Further information can be found under *"Expansion components"*

■ Ordering data

Order No.   Order No.

Configuration

SIMATIC Panel PC 577	6AV7 82■ - 0A■■0 - ■A■0

Front panels:

• 12" TFT Touch	**0**
• 12" TFT Key	**1**
• 15" TFT Touch	**2**
• 15" TFT Key	**3**
• 19" TFT Touch	**4**

Processor:

• Celeron 2.0 GHz	**A**
• Pentium 4 2.4 GHz	**B**

Main memory:

• 256 MB DDR 400	**0**
• 512 MB DDR 400	**1**
• 1 GB DDR 400	**2**

Optical drives:

• without [1]	**0**
• DVD-ROM	**1**
• DVD±RW±R (DVD burner)	**2**

Operating system:

• without operating system	**A**
• Windows 2000 Professional SP4 Multilanguage (German, English, French, Spanish, Italian, simplified Chinese, tradition. Chinese, Korean, Japanese)	**B**
• Windows XP Professional SP2 Multilanguage (German, English, French, Spanish, Italian, simplified Chinese, tradition. Chinese, Korean, Japanese)	**C**

Delivery versions (ex stock)

		Order No.
12" TFT Touch Celeron 2.0 GHz 256 MB RAM DVD-ROM drive Windows XP Prof. SP2 MUI	D	**6AV7 820-0AA00-1AC0**
12" TFT Key Celeron 2.0 GHz 256 MB RAM DVD-ROM drive Windows XP Prof. SP2 MUI	D	**6AV7 821-0AA00-1AC0**
15" TFT Touch Pentium 4 2.4 GHz 512 MB RAM DVD-ROM drive Windows XP Prof. SP2 MUI	D	**6AV7 822-0AB10-1AC0**
15" TFT Key Pentium 4 2.4 GHz 512 MB RAM DVD-ROM drive Windows XP Prof. SP2 MUI	D	**6AV7 823-0AB10-1AC0**
19" TFT Touch Pentium 4 2.4 GHz 512 MB RAM DVD-ROM drive Windows XP Prof. SP2 MUI	D	**6AV7 824-0AB10-1AC0**

Accessories

	Order No.
Cover foil for Panel PCs 477/577/677/877 For protecting the touch screen against dirt/scratches	
• for 12" Touch	**6AV7 671-2BA00-0AA0**
• for 15" Touch	**6AV7 671-4BA00-0AA0**
• for 19" Touch	**6AV7 672-1CE00-0AA0**
Labeling foil for Panel PCs 477/577/677/877 For labeling softkeys and function keys, blank, supplied in sets of 10	**6AV7 672-0DA00-0AA0**

Memory expansion

		Order No.
Set with two memory blocks for Dual Channel Mode		
• 512 MB DDR SDRAM (2 x 256 MB)	A	**6ES7 648-2AD30-0FB0**
• 1.0 GB DDR SDRAM (2 x 512 MB)		**6ES7 648-2AD40-0FB0**
• 2.0 GB DDR SDRAM (2 x 1,0 GB)		**6ES7 648-2AD50-0FB0**
Non-heating apparatus cable for SIMATIC Box and Panel PC SIMATIC PC power cable, 230 V AC, angled, 3 m, for:		
• Germany		**6ES7 900-1AA00-0XA0**
• United Kingdom		**6ES7 900-1BA00-0XA0**
• Switzerland		**6ES7 900-1CA00-0XA0**
• USA		**6ES7 900-1DA00-0XA0**
• Italy		**6ES7 900-1EA00-0XA0**
• China		**6ES7 900-1FA00-0XA0**
Mounting accessories for 19" Panel PC 577, 677, 877 for screw mounting of 19" Touch front at the front		**6AV7 672-8KE00-0AA0**

1) Not recommended for applications with WinCC / WinCC flexible

A) Subject to export regulations: AL: N and ECCN: EAR99H
D) Subject to export regulations: AL: N and ECCN: 5D992B1

Industrial PC
SIMATIC Panel PC

SIMATIC Panel PC 577

■ Ordering data

	Order No.
Expansion components	
SIMATIC PC/PG Image & Partition Creator	**6ES7 648-6AA04-0YX0**
Software tool for data backup and hard-disk partitioning for SIMATIC PCs, incl. manual, on CD-ROM (Ger/En/Fr/Sp/It)	
3.5" USB disk drive A	**6FC5 235-0AA05-1AA2**
With 1 m connecting cable	
Industrial USB Hub 4 A	**6AV7 671-3AH00-0AX0**
4 x USB 2.0, IP65 for control cabinet door or DIN rail	

	Order No.
Communication components	
CP 1613-A2 A	**6GK1 161-3AA01**
PCI card (32-bit) for connection of a programming device or PC to Industrial Ethernet	
CP 1616	**6GK1 161-6AA00**
PCI card (32-bit) for connection PROFINET IO with 4-PORT-REAL-TIME-SWITCH (RJ45) using Development Kit	
CP 5611-A2 A	**6GK1 561-1AA01**
PCI card (32-bit) for connection of a programming device or PC to PROFIBUS	
CP 5613-A2	**6GK1 561-3AA01**
PCI card (32-bit) for connection of a PC to PROFIBUS	

A) Subject to export regulations: AL: N and ECCN: EAR99H

■ Dimension drawings

Dimensions in mm

Front dimensions	W	H
Touch		
12"	400	310
15"	483	311
19 "	483	400
Key		
12"	483	310
15"	483	355
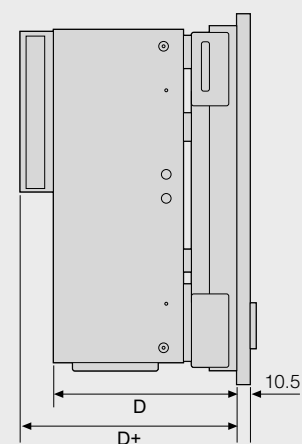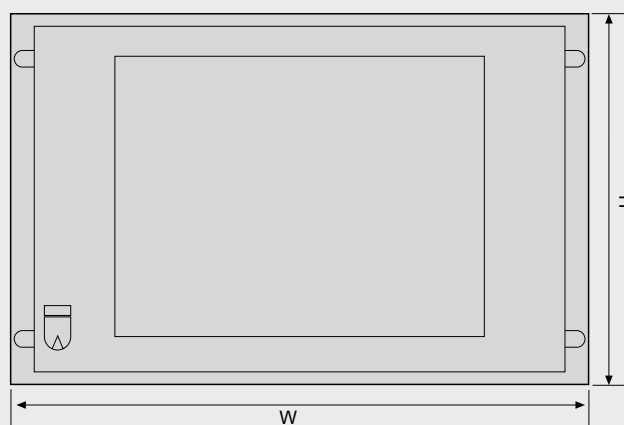
Installation cutouts	W^{+1}	H^{+1}	D	D+
Touch				
12"	368	290	152	179
15"	450	290	155	182
19"	449	380	182	210
Key				
12"	450	290	137	164
15"	450	321	162	189

G_ST80_XX_000178

SIMATIC Panel PC 677 (incl. INOX)

3

Overview

- PC platform with high degree of industrial compatibility for demanding tasks in the area of PC-based automation
- Rugged construction:
The PC can withstand the harshest mechanical stress and maintains reliable operation
- Compact design
- High degree of investment protection
- Fast integration capability
- Front panel versions:
  - 12", 15" and 19" TFT Touch
  - 12" and 15" TFT Key
  - 15" TFT Touch, stainless steel/INOX
- Operator control unit can be located at a distance of up to 30 m from the computer unit (optional)

Benefits

- High industrial capability thanks to extremely rugged design, even resistant against strong vibration and impact loads
- High investment security thanks to assured availability of spare parts (for a period of 5 years following the end of active marketing)
- Optimum continuity of components for long-term machine concepts without the need for repeated engineering outlay
- Time and cost savings thanks to service-friendly equipment design:
  - Operator control unit and computer unit can be simply hinged open for fast replacement of components or for future expansion
  - Front and rear USB 2.0 interfaces for quick and easy connection of additional hardware components
- High degree of industrial functionality thanks to integrated PROFIBUS DP/MPI and Ethernet interfaces
- Operational reliability:
The optional direct key module can be used to run the process independently of the operating system and without delay directly via PROFIBUS DP.
- 2 x ≥ 60 GB SATA hard disk system (RAID1 controller function is integrated into the chip set and can be connected to implement a mirror disk system over BIOS)
- Minimization of downtimes through increased system availability
  - Efficient self-diagnosis (SIMATIC PC DiagMonitor)
  - Solutions for preventive data backup
- Integral component of Totally Integrated Automation (TIA): increased productivity, minimized engineering outlay, reduced life cycle costs
- Additional installation possibilities by separating the computer unit and operator control unit using the Remote Kit (up to 30 m, available optionally as an accessory)

Application

The SIMATIC Panel PC 677 is conceived for use direct on site at the machine. Due to the lower mounting depth of only 105/130 mm, it can also be used where mounting space is at a premium.

The PC is used in both production automation and in process automation and is installed in control cabinets and desks, 19" cabinets/racks and swivel arms (gantries).

With the 15" Touch INOX front, it is permissible to use the Panel PC 677 in the food and beverages industry.

A SIMATIC Panel PC is the ideal platform for PC-based Automation:

- PC-based visualization locally at the machine with SIMATIC WinCC flexible
- Complex solutions with SIMATIC WinCC process visualization
- PC-based Control with SIMATIC WinAC Software PLC or with SIMATIC WinAC Slot PLC

Siemens offers a complete modular system of automation components that complement one another perfectly.

The SIMATIC Panel PCs can be ordered in combination with WinCC flexible or WinCC as SIMATIC HMI packages at a special price (see SIMATIC HMI complete systems).

Industrial PC
SIMATIC Panel PC

SIMATIC Panel PC 677 (incl. INOX)

Design

The Panel PC 677 comprises a computer unit and an operator control unit.

Components of the computer unit:

- Rugged metal housing, resistant to vibrations and shocks, with high electromagnetic compatibility.
- Processor:
  - Mobile Intel 915 GM Express Chipset
  - Intel Celeron M 370/1.5 GHz or
  - Intel Pentium M 730/1.6 GHz or
  - Intel Pentium M 760/2.0 GHz
- Main memory basic configuration: 256 MB
- 3.5" SATA hard disk: ≥ 40 GB; the special vibration-absorbing hard disk holder ensures reliable operation even in case of extremely high mechanical loading
- Graphics on-board
- Interfaces:
  - 2 x 10/100 Ethernet on-board
  - PROFIBUS DP/MPI on-board, electrically isolated
  - 4 x USB 2.0 connection
  - 1 x serial V.24 (9-pin)
- Free slots for expansion:
  - 2 x PCI (slots with card retainer)
  - 1 x slot for Compact Flash Card
- Power supply: 110 V/230 V AC (autorange), 50/60 Hz or 24 V DC

Optional additional components:

- Main memory expansion to 512 MB, 1 GB or 2 GB
- SATA hard disk ≥ 80 GB
- Double hard disk module 2 x ≥ 60 GB SATA
- DVD-ROM drive
- DVD±RW± R combination drive
- Direct control key module

Side view of the Panel PC 677

Components of the operator control unit:

The operator control units are available in the following versions:

12" Key

- 12.1" TFT color display, 800 x 600 pixels (SVGA)
- Membrane keyboard with international PC character set and 36 additional function keys with LED and an integrated mouse

12" Touch

- 12.1" TFT color display, 800 x 600 pixels (SVGA)
- Resistive analog touch screen

15" Key

- 15.1" TFT color display, 1024 x 768 pixels (XGA)
- Membrane keyboard with international PC character set and 36 additional function keys with LED and an integrated mouse

15" Touch

- 15.1" TFT color display, 1024 x 768 pixels (XGA)
- Resistive analog touch screen

15" Touch stainless steel / INOX

- 15.1" TFT color display, 1024 x 768 pixels (XGA)
- Resistive analog touch screen
- Stainless steel front, designed for use in the food & beverages industry
- Developed based on DIN EN 1672-2
- Polished surface (stainless steel 1.4301, hairline grinding, grain 240)
- IP66 at the front
- Without USB front interface
- Splash protection for the display
- Optimized frame profile, so that liquids can run off
- Minimal number of grooves and joints
- Decorative film tested against chemicals according to DIN 42115, Part 2
- Mounted only using tensioned frame, gasket material suitable for food (EDPM, according to FDA 21 CFR 177.2006)

19" Touch

- 19,1" TFT color display, 1280 x 1024 pixels (SXGA)
- Resistive analog touch screen

The operator control units feature a USB 2.0 port on the front for connecting external peripheral devices, such as a mouse or keyboard. They fulfill the requirements of IP65 degree of protection and NEMA 4. All operator control units are also available without a USB port on the front.

The computer unit is connected via a connecting cable attached at the rear of the operator control unit.

■ **Design** (continued)

Expansion components

SIMATIC Panel PC Remote Kit

- Separation of computer unit and operator control unit
- At a maximum distance of up to 30 m
- Pure hardware solution, no need to install additional software
- Maintaining the full Panel PC front functionality

SIMATIC PC DiagMonitor

- PC diagnostics/alarm software for the early detection and diagnosis of PC problems
- Comprehensive monitoring of temperature, fans, hard disks (SMART), watchdog
- Operating hours counter for preventive maintenance
- Integrated log functions, comprehensive text messages, online help (English/German)
- Network-wide monitoring via SNMP and OPC interface possible

SIMATIC PC/PG Image & Partition Creator

- Software tool for preventive data backup of hard disk contents
- Fast, bit-exact restoration of system and data partitions; application software and special installations are also backed up.
- Software tool for adaptation of hard disk partitioning

3.5" disk drive, USB

The USB disk drive is provided for the high-speed transfer of user data, such as recipes, or files. The drive must not be used as a cyclic archiving drive. The front-panel installation and degree of protection IP54 permit data exchange from the front without opening the control cabinet door.

The device is connected via the USB interface of the Panel PC. The power is also supplied over the USB interface. The scope of delivery includes a 1 m long USB cable. The diskette drive complies with the USB 1.1 standard. 3.5" high density diskettes can be used (1.44 MB).

SIMATIC PC USB FlashDrive

- Mobile memory medium for SIMATIC PC/PG
- Fast data transfer (USB 2.0) and high memory capacity
- Ultra-compact and rugged

Industrial USB Hub 4

- USB peripherals can be connected and operated via the USB Hub 4 without opening the control cabinet door
- Industry-standard USB 2.0 Hub, Front IP65
- Mounting in control cabinet door or on DIN rail
- Inspection window and LEDs for each of the four interfaces

Note:
Further information can be found under *"Expansion components"*

Industrial PC
SIMATIC Panel PC

SIMATIC Panel PC 677 (incl. INOX)

3

■ **Ordering data**   Order No.   Order No.

Configuration (contract-based production and delivery)   *Delivery versions* (ex stock)

SIMATIC Panel PC 677	**6AV7 80■ - ■■■■■ - ■A■0**

Front panels:
- 12" TFT Touch — **0**
- 12" TFT Key — **1**
- 15" TFT Touch — **2**
- 15" TFT Key — **3**
- 19" TFT Touch — **4**

Front options:
- With front USB port — **0**
- Without front USB port — **1**
- INOX front, without front USB port, with 15" TFT Touch only — **2**

Power supply:
- 24 V DC — **A**
- 110/230 V AC, power cable for Europe — **B**

Processor:
- Intel Celeron M 370 / 1.5 GHz, 400 MHz FSB, 1 MB SLC — **A**
- Intel Pentium M 730 / 1.6 GHz, 533 MHz FSB, 2 MB SLC — **B**
- Intel Pentium M 760 / 2.0 GHz, 533 MHz FSB, 2 MB SLC — **C**

Main memory:
- 256 MB DDR2 — **0**
- 512 MB DDR2 — **1**
- 1 GB DDR2 — **2**
- 2 GB DDR2 — **3**

Mass data storage:
- 40 GB SATA hard disk — **0**
- 80 GB SATA hard disk — **1**
- Dual hard disk module RAID1; 2 x 60 GB SATA RAID [2] — **2**

Optical drives:
- without — **0**
- DVD-ROM — **1**
- DVD±RW±R combined drive — **2**

Operating system:
- without — **A**
- Windows 2000 Professional Multilanguage [1] — **B**
- Windows XP Professional Multilanguage [1] — **C**

1) Multilanguage means: Eng./Ger./Fr./Ital./Sp./trad Chin./ simpl. Chin./Korean/Japanese
2) RAID is not activated upon delivery.

12" TFT Touch   G   **6AV7 800-0BB10-1AA0**
110/230 V AC power supply
Intel Pentium M 730, 1.6 GHz
512 MB RAM
40 GB hard disk
DVD-ROM drive
without operating system

12" TFT Key   G   **6AV7 801-0BB10-1AA0**
110/230 V AC power supply
Intel Pentium M 730, 1.6 GHz
512 MB RAM
40 GB hard disk
DVD-ROM drive
without operating system

15" TFT Touch   G   **6AV7 802-0BB10-1AA0**
110/230 V AC power supply
Intel Pentium M 730, 1.6 GHz
512 MB RAM
40 GB hard disk
DVD-ROM drive
without operating system

15" TFT Key   G   **6AV7 803-0BB10-1AA0**
110/230 V AC power supply
Intel Pentium M 730, 1.6 GHz
512 MB RAM
≥ 40 GB hard disk
DVD-ROM drive
without operating system

19" TFT Touch   G   **6AV7 804-0BB10-1AA0**
110/230 V AC power supply
Intel Pentium M 730, 1.6 GHz
512 MB RAM
≥ 40 GB hard disk
DVD-ROM drive
without operating system

12" TFT Key   D   **6AV7 801-0AA00-1AC0**
24 V DC power supply
Intel Celeron M 370, 1.5 GHz
256 MB RAM
≥ 40 GB hard disk
DVD-ROM drive
Windows XP Professional

D) Subject to export regulations: AL: N and ECCN: 5D992B1
G) Subject to export regulations: AL: N and ECCN: 4A994

■ **Ordering data**	Order No.				Order No.

Accessories

Cover foil for Panel PC 477/577/677/877	
For protecting the touch screen against dirt/scratches (10 per package)	
• for 12" Touch	**6AV7 671-2BA00-0AA0**
• for 15" Touch	**6AV7 671-4BA00-0AA0**
• for 19" Touch	**6AV7 672-1CE00-0AA0**
Labeling foil for Panel PC 477/577/677/877	**6AV7 672-0DA00-0AA0**
For labeling softkeys and function keys, blank, supplied in sets of 10	
Memory expansion	
• 256 MB DDR2 533 SODIMM A	**6ES7 648-2AG20-0GA0**
• 512 MB DDR2 533 SODIMM A	**6ES7 648-2AG30-0GA0**
• 1 GB DDR2 533 SODIMM A	**6ES7 648-2AG40-0GA0**
Direct control key module for Panel PC 677/877 A	**6AV7 671-7DA00-0AA0**
Option pack for direct control key module	**6ES7 648-0AA00-0XA0**
Transfer module for interface connection to 16 I/Os	
Non-heating apparatus cable for SIMATIC Box and Panel PC	
SIMATIC PC power cable, 230 V AC, angled, 3 m, for:	
• Germany	**6ES7 900-1AA00-0XA0**
• United Kingdom	**6ES7 900-1BA00-0XA0**
• Switzerland	**6ES7 900-1CA00-0XA0**
• USA	**6ES7 900-1DA00-0XA0**
• Italy	**6ES7 900-1EA00-0XA0**
• China	**6ES7 900-1FA00-0XA0**
Mounting accessories for 19" Panel PC 577, 677, 877	**6AV7 672-8KE00-0AA0**
for screw mounting of 19" Touch front at the front	

Expansion components

SIMATIC PC/PG DiagMonitor V3.1	B	**6ES7 648-6CA03-1YX0**
Software tool for monitoring SIMATIC PCs, incl. manual, on CD-ROM (German/English)		
SIMATIC PC/PG Image & Partition Creator		**6ES7 648-6AA04-0YX0**
Software tool for data backup and hard-disk partitioning for SIMATIC PCs, incl. manual, on CD-ROM (Ger/En/Fr/Sp/It)		
3.5" USB disk drive	A	**6FC5 235-0AA05-1AA2**
With 1 m connecting cable		
SIMATIC USB Flash Drive	A	**6ES7 648-0DC30-0AA0**
1 GB, USB 2.0, metal enclosure, boot capability		
SIMATIC Panel PC Remote Kit		
for the separate configuration of control unit and PC:		
• 24 V DC, 5 m	A	**6AV7 671-1EA00-5AA1**
• 24 V DC, 10 m	A	**6AV7 671-1EA01-0AA1**
• 24 V DC, 20 m	A	**6AV7 671-1EA02-0AA1**
• 24 V DC, 30 m	A	**6AV7 671-1EA03-0AA1**
• 110/220 V AC, 5 m	A	**6AV7 671-1EA10-5AA1**
• 110/220 V AC, 10 m	A	**6AV7 671-1EA11-0AA1**
• 110/220 V AC, 20 m	A	**6AV7 671-1EA12-0AA1**
• 110/220 V AC, 30 m	A	**6AV7 671-1EA13-0AA1**

Uninterruptible power supplies

SITOP power, 15 A DC UPS module with RS 232 interface	**6EP1 931-2EC41**
with charger unit for 24 V lead battery, input 24 V/16 A DC, output 24 V/15 A DC	
SITOP power, battery module 24 V/3.2 Ah	**6EP1 935-6MD11**
for DC UPS module 15 A	
Industrial USB Hub 4 A	**6AV6 671-3AH00-0AX0**
4 x USB 2.0 interface, for cabinet door or DIN rail installation	

Communication components

PCI interface card	A	**6ES7 648-2CA00-0AA0**
with COM1, COM2 and LPT interfaces		

A) Subject to export regulations: AL: N and ECCN: EAR99H
B) Subject to export regulations: AL: N and ECCN: EAR99S

3

Industrial PC
SIMATIC Panel PC

SIMATIC Panel PC 677 (incl. INOX)

■ **Dimension drawings**

Dimensions in mm

K

G   H

J

M

L
N
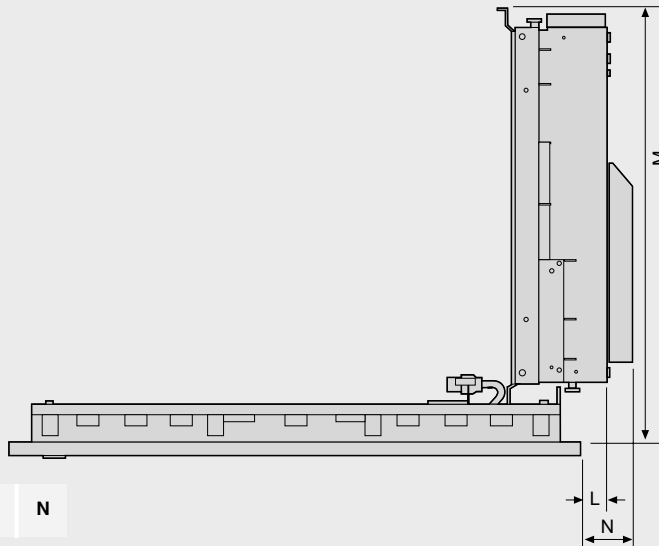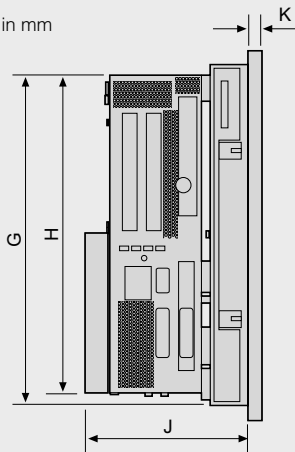
Operator panels PC 677	G	H	J	K	L	M	N
Touch panels							
12"	289	271	141	11	53	369	71
15"	289	271	138	11	24	367	42
19"	378	271	147	11	18	376	36
Key panels							
12"	289	271	122	11	42	351	59
15"	324	271	141	11	31	370	48

All dimensions without screw protrusions

G_ST80_EN_00208

Operator control unit and complete unit

Dimensions in mm

W^{+1} (cutout)

H^{+1} (cutout)

H

W

Front dimensions

Touch panels	W	H
12"	400	310
15"	483	310
19"	483	400

Key panels	w	H
12"	483	310
15"	483	355

Installation cutouts

Touch panels	W^{+1}	H^{+1}
12"	368	290
15"	450	290
19"	450	380

Key panels	W^{+1}	H^{+1}
12"	450	290
15"	450	321*

* In addition: two 25 x 5 mm recesses on the top side
for keyboard slide-in label channels

G_ST80_EN_00239

Installation cutout

Overview

PC platform with high industrial compatibility for demanding tasks in the field of PC-based automation (start of delivery is expected in May 2007).

Rugged construction:
The PC is resistant to the harshest mechanical stress and is reliable in operation.

- Compact design
- High degree of investment protection
- Fast integration capability
- Front panel versions:
  - 12", 15", 17" and 19" TFT Touch
  - 12" and 15" TFT Key

The operating unit and computing unit can be placed 30 m apart (optional).

Benefits

- Excellent industrial compatibility due to rugged construction, even when subjected to extreme vibration and shock
- High level of investment security thanks to assured spare parts availability of the components (for 5 years following the end of active marketing)
- Excellent continuity of components for machine concepts with a long service life without any new engineering costs
- Savings in time and costs due to service-friendly equipment construction:
  - The operating unit and computing unit can be simply hinged apart for the rapid replacement of components or for future expansions
  - Front and rear USB 2.0 interfaces for quick and easy connection of additional hardware components
- High degree of industrial functionality thanks to integrated PROFIBUS DP/MPI and two-Gigabit Ethernet interfaces
- Operational reliability
- Using the optional direct control key module, the process can be operated without delay over PROFIBUS DP independently of the operating system
- 2 x ≥ 80 GB SATA hard disk system (configured as a single disk system or RAID1)
- Reduction in standstill times thanks to high system availability
- Efficient self-diagnostics (SIMATIC PC DiagMonitor)
  - Solutions for preventive data security
- Integral part of Totally Integrated Automation (TIA):
  - Enhanced productivity, reduction of engineering costs, reduction of lifecycle costs
  - Additional mounting possibilities available due to separation of the computing unit and operating unit by means of the Remote Kit (up to 30 m, optionally available as accessories)

Application

The SIMATIC Panel PC 677B is designed for use directly at the machine. Due to the minimal mounting depth of only 105/130 mm, it can also be used in confined spaces.

The PC can be used in production automation as well as in process automation and can be mounted in control cabinets, control desks, 19" cabinets/racks and in gantries.

The Dual Core CPUs with Intel Core2Duo technology support simultaneous high performance control and visualization.

With PCIe (4x), the new PCI express (PCIe) cards (1x and 4x) are also supported.

The integrated NV RAM is supported by WinAC RTX.

A SIMATIC Panel PC is the ideal platform for r PC-based Automation:

- PC-based visualization on site at the machine with SIMATIC WinCC flexible
- Complex solutions with SIMATIC WinCC process visualization
- PC-based Control with SIMATIC WinAC Software PLC or with SIMATIC WinAC Slot PLC

Siemens offers the complete set of building blocks of automation components that are designed to interact perfectly.

The SIMATIC Panel PCs can be ordered in combination with WinCC flexible or WinCC as SIMATIC HMI packages at a lower price (see SIMATIC HMI complete systems).

Industrial PC
SIMATIC Panel PC

SIMATIC Panel PC 677B

■ **Design**

The Panel PC 677B comprises a computing unit and operator control unit.

Components of the computer unit:

- Rugged metal housing, resistant to vibrations and shocks, with high electromagnetic compatibility.
- Processor:
  - Mobile Intel 945G Chipset
  - Intel Celeron M 440 / 1.86 GHz or
  - Intel Core 2 Duo T5500 / Dual Core, 1.66 GHz or
  - Intel Core 2 Duo T7400 / Dual Core, 2.16 GHz
- Main memory basic configuration: 512 MB
- 3.5" SATA hard disk: ≥ 80 GB; the special vibration-absorbing hard disk ensures reliable operation even under extreme mechanical stress
- Graphics on board
- Interfaces:
  - 2 x 10/100/1000 Ethernet
  - 4 x USB 2.0 port
  - 1 x serial V.24 (9-pin)
- PROFIBUS DP/MPI on board, floating
- Free slots for expansion:
  - 2 x PCI (slots with card retainer)
  - 1 x Slot for Compact Flash Card
- Power supply: 110V/230 V AC (autorange), 50/60 Hz or 24 V DC

Optional additional components:

- Main memory expansion to 1, 2, 3 or 4 GB
- Retentive memory, 512 kB NV-RAM for Win AC RTX without UPS
- SATA hard disk ≥ 160 GB
- Dual hard disk module 2 x ≥ 80 GB SATA as single disk configuration or RAID1
- Internal CF card slot (empty, instead of hard disk and optical drive; only with Windows XP embedded operating system)
- DVD±RW±R combined drive
- 1x PCIe 4x / 1x PCI instead of 2x PCI slots (with card retainers)
- Direct control key module

Components of the operator control unit:

The operator control units are available in the following versions:

12" Key

- 12.1" TFT color display, 800 x 600 pixels (SVGA)
- Membrane keyboard with international PC character set and 36 additional function keys with LED and an integrated mouse

12" Touch

- 12.1" TFT color display, 800 x 600 pixels (SVGA)
- Resistive analog touch screen

15" Key

- 15.1" TFT color display, 1024 x 768 pixels (XGA)
- Membrane keyboard with international PC character set and 36 additional function keys with LED and an integrated mouse

15" Touch

- 15.1" TFT color display, 1024 x 768 pixels (XGA)
- Resistive analog touch screen

17" Touch

- 17.1" TFT color display, 1280 x 1024 pixels (SXGA)
- Resistive analog touch screen
- Installation compatible with 19" Touch

19" Touch

- 19.1" TFT color display, 1280 x 1024 pixels (SXGA)
- Resistive analog touch screen

The operator control units feature a USB 2.0 port on the front for connecting external peripheral devices, such as a mouse or keyboard. They fulfill the requirements of IP65 degree of protection and NEMA 4. All operator control units are also available without a USB port on the front.

The computer unit is connected via a connecting cable attached at the rear of the operator control unit.

Design (continued)

Expansion components

SIMATIC Panel PC Remote Kit

- Separation of computer unit and operator control unit
- At a maximum distance of up to 30 m
- Pure hardware solution, no need to install additional software
- Maintaining the full Panel PC front functionality

SIMATIC PC DiagMonitor

- PC diagnostics/alarm software for the early detection and diagnosis of PC problems
- Comprehensive monitoring of temperature, fan, hard disks (SMART), watchdog
- Operating hours counter for preventive maintenance
- Integrated log functions, comprehensive text messages, online help (English/German)
- Network-wide monitoring via SNMP and OPC interface possible
- Integrated Web server for monitoring over the network using a Web browser

SIMATIC PC/PG Image & Partition Creator

- Software tool for preventive data back-up of the contents of the hard disks
- High-speed, restoring of system and data partitions with bit accuracy; application software and special installations are also backed up
- Software tool for adaptation of hard disk partitioning

3.5" disk drive, USB

The USB disk drive is provided for the high-speed transfer of user data, such as recipes, or files. The drive must not be used as a cyclic archiving drive. The front-panel installation and degree of protection IP54 permit data exchange from the front without opening the control cabinet door.

The device is connected via the USB interface of the Panel PC. The power is also supplied over the USB interface. A USB cable of 1 m length is included in the scope of supply. The diskette drive complies with the USB 1.1 standard. 3.5" high density diskettes can be used (1.44 MB).

SIMATIC PC USB-FlashDrive

- Mobile memory medium for SIMATIC PC/PG
- Fast data transfer (USB 2.0) and high memory capacity
- Ultra-compact and rugged

Industrial USB Hub 4

- USB I/O can be connected and operated without opening the control cabinet door using the Industrial Hub 4.
- Industry-standard USB 2.0 Hub, Front IP65
- Mounting in control cabinet door or on DIN rail
- Inspection window and LEDs for each of the four interfaces

Note:
Further information can be found under *"Expansion components"*

Industrial PC
SIMATIC Panel PC

SIMATIC Panel PC 677B

Ordering data   Order No.

Configuration (contract-based production and delivery)

SIMATIC Panel PC 677B	6AV7 87■ - ■■■■■ - ■A■0
Front panels:	
• 12" TFT Touch	**0**
• 12" TFT Key	**1**
• 15" TFT Touch	**2**
• 15" TFT Key	**3**
• 17" TFT Touch	**4**
• 19" TFT Touch	**5**
Front options:	
• With front USB port	**0**
• Without front USB port	**1**
Power supply:	
• 24 V DC	**A**
• 110/230 V AC, power cable for Europe	**B**
• 110/230 V AC	**C**
Processor:	
• Intel Celeron M 440 / 1.86 GHz, 533 MHz FSB, 1 MB SLC, slots (free): 2 x PCI	**A**
• Intel Celeron M 440 / 1.86 GHz, 533 MHz FSB, 1 MB SLC, slots (free): 1x PCIe 4x and 1 x PCI	**B**
• Intel Core2Duo T5500 / Dual Core, 1.66 GHz, 677 MHz FSB, 2 MB SLC, slots (free): 2 x PCI	**C**
• Intel Core2Duo T5500 / Dual Core, 1.66 GHz, 677 MHz FSB, 2 MB SLC, slots (free): 1 x PCIe 4x and 1 x PCI	**D**
• Intel Core2Duo T7400 / Dual Core, 2.16 GHz, 677 MHz FSB, 4 MB SLC, slots (free): 2 x PCI	**E**
• Intel Core2Duo T7400 / Dual Core, 2.16 GHz, 677 MHz FSB, 4 MB SLC, slots (free): 1 x PCIe 4x and 1 x PCI	**F**

1) Multilanguage means: Eng./Ger./Fr./Ital./Sp./trad Chin./ simpl. Chin./Korean/Japanese
2) Without internal second CF Card Slot
3) Windows 2000 does not support Dual Core CPUs. Only one core is activated under Windows 2000.
4) Only without RAID 1 option.

Order No.

Configuration (continued)

SIMATIC Panel PC 677B	6AV7 87■ - ■■■■■ - ■■■0
Main memory:	
• 512 MB DDR2	**1**
• 1 GB DDR2	**2**
• 2 GB DDR2	**3**
• 3 GB DDR2	**4**
• 4 GB DDR2	**5**
Mass data storage:	
• 80 GB SATA hard disk	**0**
• 160 GB SATA hard disk	**1**
• Dual hard disk module RAID1; 2 x 80 GB SATA RAID1	**2**
• Dual hard disk module 2 x 80 GB SATA	**3**
• second CF Card Slot (only in combination with Windows XP embedded), internal, empty, only without optical drive	**4 0**
Optical drives:	
• without	**0**
• DVD±RW±R combined drive	**1**
Communication interfaces:	
• PROFIBUS/MPI, 2 x Gbit Ethernet, 512 KB NV-RAM	**A**
Operating system:	
• without [2]	**A**
• Windows 2000 Professional Multilanguage [1] [2] [3]	**B**
• Windows XP Professional Multilanguage [1] [2]	**C**
• Windows XP embedded (English) [4] on 2 GB CF card	**F**

Ordering data	Order No.		Order No.

Delivery versions (ex stock)

Accessories

12" TFT Touch — 6AV7 870-0BC20-1AC0

110/230 V AC power supply
Core 2 Duo T5500,
1.66 GHz, 2 x PCI
1 GB RAM, 80 GB HDD,
DVD±R±RW burner
Windows XP Prof. MUI (SP2)
(Ger/Fr/It/Sp/CHN tradit./CHN
simplified/Korean/Japanese)

Cover foil for Panel PC 477/577/677/877

For protecting the touch screen against dirt/scratches (10 per package)

- for 12" Touch — 6AV7 671-2BA00-0AA0
- for 15" Touch — 6AV7 671-4BA00-0AA0
- for 17" Touch — 6AV7 672-1CF00-0AA0
- for 19" Touch — 6AV7 672-1CE00-0AA0

12" TFT Key — 6AV7 871-0BC20-1AC0

110/230 V AC power supply
Core 2 Duo T5500,
1.66 GHz, 2 x PCI
1 GB RAM, 80 GB HDD,
DVD±R±RW burner
Windows XP Prof. MUI (SP2)
(Ger/Fr/It/Sp/CHN tradit./CHN
simplified/Korean/Japanese)

Labeling foil for Panel PC 477/577/677/877 — 6AV7 672-0DA00-0AA0

For labeling softkeys and function keys, blank, supplied in sets of 10

Memory expansion

- 512 MB DDR2 533 SODIMM   A — 6ES7 648-2AG30-0GA0
- 1 GB DDR2 533 SODIMM   A — 6ES7 648-2AG40-0GA0
- 2 GB DDR2 533 SODIMM — 6ES7 648-2AG50-0HA0

15" TFT Touch — 6AV7 872-0BC20-1AC0

110/230 V AC power supply
Core 2 Duo T5500,
1.66 GHz, 2 x PCI
1 GB RAM, 80 GB HDD,
DVD±R±RW burner
Windows XP Prof. MUI (SP2)
(Ger/Fr/It/Sp/CHN tradit./CHN
simplified/Korean/Japanese)

Direct control key module for Panel PC 677/877   A — 6AV7 671-7DA00-0AA0

Option pack for direct control key module — 6ES7 648-0AA00-0XA0

Transfer module for interface connection to 16 I/Os

15" TFT Key — 6AV7 873-0BC20-1AC0

110/230 V AC power supply
Core 2 Duo T5500,
1.66 GHz, 2 x PCI
1 GB RAM, 80 GB HDD,
DVD±R±RW burner
Windows XP Prof. MUI (SP2)
(Ger/Fr/It/Sp/CHN tradit./CHN
simplified/Korean/Japanese)

Non-heating apparatus cable for SIMATIC Box and Panel PC

SIMATIC PC power cable, 230 V AC, angled, 3 m, for:

- Germany — 6ES7 900-1AA00-0XA0
- United Kingdom — 6ES7 900-1BA00-0XA0
- Switzerland — 6ES7 900-1CA00-0XA0
- USA — 6ES7 900-1DA00-0XA0
- Italy — 6ES7 900-1EA00-0XA0
- China — 6ES7 900-1EA00-0XA0

17" TFT Touch — 6AV7 874-0BC20-1AC0

110/230 V AC power supply
Core 2 Duo T5500,
1.66 GHz, 2 x PCI
1 GB RAM, 80 GB HDD,
DVD±R±RW burner
Windows XP Prof. MUI (SP2)
(Ger/Fr/It/Sp/CHN tradit./CHN
simplified/Korean/Japanese)

Mounting accessories for 17"/19" Panel PC 577, 677, 877 — 6AV7 672-8KE00-0AA0

for screw mounting of the 17" and 19" Touch front at the front

19" TFT Touch — 6AV7 875-0BC20-1AC0

110/230 V AC power supply
Core 2 Duo T5500,
1.66 GHz, 2 x PCI
1 GB RAM, 80 GB HDD,
DVD±R±RW Brenner
Windows XP Prof. MUI (SP2)
(Ger/Fr/It/Sp/CHN tradit./CHN
simplified/Korean/Japanese)

A) Subject to export regulations: AL: N and ECCN: EAR99H

3

Industrial PC
SIMATIC Panel PC

SIMATIC Panel PC 677B

3

■ Ordering data   Order No.   Order No.

Expansion components

SIMATIC PC/PG DiagMonitor V3.1 _B	**6ES7 648-6CA03-1YX0**	
Software tool for monitoring SIMATIC PCs, incl. manual, on CD-ROM (German/English)		
SIMATIC PC/PG Image & Partition Creator	**6ES7 648-6AA04-0YX0**	
Software tool for data backup and hard-disk partitioning for SIMATIC PCs, incl. manual, on CD-ROM (Ger/En/Fr/Sp/It)		
3.5" USB disk drive _A	**6FC5 235-0AA05-1AA2**	
With 1 m connecting cable		
SIMATIC USB Flash Drive _A	**6ES7 648-0DC30-0AA0**	
1 GB, USB 2.0, metal enclosure, boot capability		
SIMATIC Panel PC Remote Kit		
for the separate configuration of control unit and PC		
• 24 V DC, 5 m _A	**6AV7 671-1EA00-5AA1**	
• 24 V DC, 10 m _A	**6AV7 671-1EA01-0AA1**	
• 24 V DC, 20 m _A	**6AV7 671-1EA02-0AA1**	
• 24 V DC, 30 m _A	**6AV7 671-1EA03-0AA1**	
• 110/220 V AC, 5 m _A	**6AV7 671-1EA10-5AA1**	
• 110/220 V AC, 10 m _A	**6AV7 671-1EA11-0AA1**	
• 110/220 V AC, 20 m _A	**6AV7 671-1EA12-0AA1**	
• 110/220 V AC, 30 m _A	**6AV7 671-1EA13-0AA1**	

A) Subject to export regulations: AL: N and ECCN: EAR99H
B) Subject to export regulations: AL: N and ECCN: EAR99S

Uninterruptible power supplies

SITOP power, 15 A DC UPS module with RS 232 interface	**6EP1 931-2EC41**
with charger unit for 24 V lead battery, input 24 V/16 A DC, output 24 V/15 A DC	
SITOP power, battery module 24 V/3.2 Ah	**6EP1 935-6MD11**
for DC UPS module 15 A	
Industrial USB Hub 4 _A	**6AV6 671-3AH00-0AX0**
4 x USB 2.0 interface, for cabinet door or DIN rail installation	

Communication components

PCI interface card _A	**6ES7 648-2CA00-0AA0**
with COM1, COM2 and LPT interfaces	

3

◼ Dimension drawings

Dimensions in mm

Operator panels PC 677B	G	H	J	K	L	M	N
Touch panels							
12"	289	271	141	11	53	369	71
15"	289	271	138	11	24	367	42
17"	378	271	147	11	18	376	36
19"	378	271	147	11	18	376	36
Key panels							
12"	289	271	122	11	42	351	59
15"	324	271	141	11	31	370	48

All dimensions without screw protrusions

G_ST80_EN_00288

Operator control unit and complete unit

Dimensions in mm

W+1 (cutout)

H+1 (cutout)

10,5

Front dimensions	W	H
Touch panels		
12"	400	310
15"	483	310
17"	483	400
19"	483	400

Installation cutout	W+1	H+1	D
Touch panels			
12"	368	290	51
15"	450	290	55
17"	450	380	57
19"	450	380	57

G_ST80_EN_00289

Installation cutout

Industrial PC
SIMATIC Panel PC

SIMATIC Panel PC 877

Overview
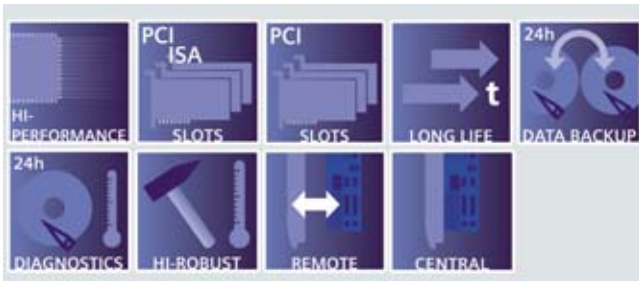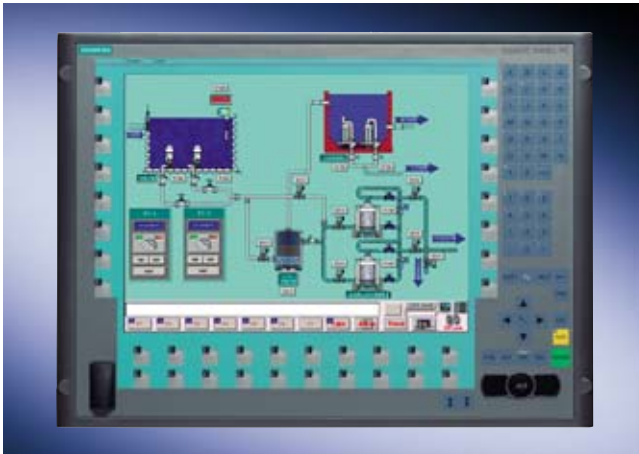
- PC platform with high degree of industrial compatibility for demanding tasks in the area of PC-based automation
- Rugged construction:
  The PC can withstand the harshest mechanical stress and maintains reliable operation
- Flexible expansion capability
- High degree of investment protection
- Fast integration capability
- Front panel versions:
  - 15" and 19" TFT Touch
  - 12" and 15" TFT Key
- Operator control unit can be located at a distance of up to 30 m from the computer unit (optional with Remote Kit)

Benefits

- High industrial capability thanks to extremely rugged design, even resistant against strong vibration and impact loads
- High degree of investment protection due to guaranteed spare parts availability of components (for 5 years following the end of active marketing)
- Optimum continuity of components for long-term machine concepts without the need for repeated engineering outlay
- Time and cost savings thanks to service-friendly equipment design:
  - Operator control unit and computer unit can be simply hinged open for fast replacement of components or for future expansion
  - Front and rear USB 2.0 interfaces for quick and easy connection of additional hardware components
- High industrial capability thanks to integrated PROFIBUS DP/ MPI and Ethernet interfaces
- Operational reliability:
  The optional direct key module can be used to run the process independently of the operating system and without delay directly via PROFIBUS DP
- 2 x 60 GB SATA RAID1 hard disk system
- Minimization of downtimes through increased system availability
  - Efficient self-diagnosis (SIMATIC PC DiagMonitor)
  - Data backup solutions (preventive data backup)
- Integral component of Totally Integrated Automation (TIA): increased productivity, minimized engineering outlay, reduced life cycle costs
- Additional installation possibilities by separating the computer unit and operator control unit using the Remote Kit (up to 30 m, available optionally as an accessory)

Application

The SIMATIC Panel PC 877 is designed for use on site at the machine. The PC is used both in production automation and in process automation, built into control cabinets and control desks, 19" cabinets/racks and in gantries.

A SIMATIC Panel PC is the ideal platform for PC-based automation:

- PC-based visualization on site at the machine with SIMATIC WinCC flexible
- Complex solutions with SIMATIC WinCC process visualization
- PC-based Control with SIMATIC WinAC Software PLC or with SIMATIC WinAC Slot PLC

Siemens offers the complete set of building blocks of harmoniously designed automation components.

The SIMATIC Panel PCs can be ordered in combination with WinCC flexible or WinCC as SIMATIC HMI Packages at an advantageous price (see SIMATIC HMI complete systems).

Design

The Panel PC 877 comprises a computer unit and an operator control unit.

Components of the computer unit:

- Rugged metal casing, resistant to vibrations and shocks, with high electromagnetic compatibility.
- Processor:
  - Intel Celeron 2.0 GHz or
  - Intel Pentium 4 2.8 GHz or
  - Intel Pentium 4 Mobile 2.2 GHz
- Main memory, standard configuration: 256 MB
- EIDE hard disk: ≥ 40 GB;
  the special vibration-absorbing hard disk holder ensures reliable operation even in case of extremely high mechanical loading
- Diskette drive: 1.44 MB, 3,5"
- Graphics on-board
- Interfaces:
  - 10/100 Ethernet on board
  - PROFIBUS DP/MPI on board, electrically isolated
  - 2 x USB 2.0 connection
  - 2 x serial V.24 (9 and 25-pin)
- Free slots for expansion:
  - 2 x PCI, 2 x PCI/ISA shared, 1 x ISA (all slots with card retainers)
- Power supply: 110V/230 V AC (autorange) 50/60 Hz or 24 V DC

Optional additional components:

- Main memory expansion to 512 MB, 1 GB or 2 GB
- EIDE hard disk ≥ 80 GB
- DVD-ROM drive
- CD-RW/DVD combined drive
- Direct control key module
- Double hard disk (2 x ≥ 40 GB)
- RAID system (PCI slot card) with 2 x ≥ 60 GB 2.5" hard disks

Components of the operator control unit:

The operator control units are available in the following versions:

12" Key

- 12.1" TFT color display, 800 x 600 pixels (SVGA)
- Membrane keyboard with international PC character set and 36 additional function keys with LED and an integrated mouse

15" Key

- 15.1" TFT color display, 1024 x 768 pixels (XGA)
- Membrane keyboard with international PC character set and 36 additional function keys with LED and an integrated mouse

15" Touch

- 15.1" TFT color display, 1024 x 768 pixels (XGA)
- Resistive analog touch screen

19" Touch

- 19.1" TFT color display, 1280 x 1024 pixels (SXGA)
- Resistive analog touch screen

The operator control units feature a USB 2.0 port on the front for connecting external peripheral devices, such as a mouse or keyboard. They fulfill the requirements of IP65 degree of protection and NEMA 4.

The computer unit is connected via a connecting cable attached at the rear of the operator control unit.

Side view Panel PC 877

Expansion components

SIMATIC Panel PC Remote Kit

- Separation of computer unit and operator control unit
- At a maximum distance of up to 30 m
- Pure hardware solution, no need to install additional software
- Maintaining the full Panel PC front functionality

SIMATIC PC/PG Image & Partition Creator

- Software tool for preventive data backup of hard disk contents
- Fast, bit-exact restoration of system and data partitions; application software and special installations are also backed up
- Software tool for adaptation of hard disk partitioning

SIMATIC PC DiagMonitor

- PC diagnostics/signaling software for early detection and diagnostics of PC problems
- Comprehensive monitoring of temperature, fans, hard disks (SMART), watchdog
- Operating hours counter for preventive maintenance
- Integral recording function, comprehensive text messages, online help (German/English)
- Network-wide monitoring via SNMP and OPC interface possible

3.5" disk drive, USB

The USB disk drive is provided for fast exchange of user data, e.g. recipes, or of files. The drive must not be used as a cyclic archiving drive. The front-panel installation and degree of protection IP54 permit data exchange from the front without opening the control cabinet door.

The device is connected via the USB interface of the Panel PC. The power is also supplied over the USB interface. The scope of delivery includes a 1 m long USB cable. The disk drive unit complies with the USB 1.1 standard. 3.5" high density diskettes can be used (1.44 MB).

Use of the USB diskette drive with SIMATIC Panel PCs:

- Windows XP: possible without separate driver
- Windows 2000: the required driver is included in the scope of supply of the operating system

Industrial PC
SIMATIC Panel PC

SIMATIC Panel PC 877

■ **Application** (continued)

SIMATIC PC USB FlashDrive

- Mobile memory medium for SIMATIC PC/PG
- Fast data transfer (USB 2.0) and high memory capacity
- Ultra-compact and rugged

Industrial USB Hub 4

- USB peripherals can be connected and operated via the USB Hub 4 without opening the cabinet door
- Industry-standard USB 2.0 Hub, front IP65
- Installation in cabinet door or on DIN rail
- Inspection window and LEDs for each of the four interfaces

Note:
Further information can be found under

■ **Ordering data** Order No. Order No.

Configuration (contract-based production and delivery)

SIMATIC Panel PC 877 6AV7 81■ - ■■■■■ - ■A■0

Front panels:
- 12" TFT Key **1**
- 15" TFT Touch **2**
- 15" TFT Key **3**
- 19" TFT Touch **4**

Front options:
- With front USB port **0**
- Without front USB port **1**

Power supply:
- 24 V DC **A**
- 110/230 V AC, power cable for Europe **B**

Processor:
- Intel Celeron 2.0 GHz, 400 MHz FSB, 128 KB SLC **A**
- Intel Pentium 4 2.8 GHz, 533 MHz FSB, 512 KB SLC **B**
- Intel Pentium 4 Mobile 2.2 GHz, 400 MHz FSB, 512 KB SLC **C**

Main memory:
- 256 MB DDR **0**
- 512 MB DDR **1**
- 1 GB DDR **2**
- 2 GB DDR **3**

Mass data storage:
- ≥ 40 GB EIDE hard disk **0**
- ≥ 80 GB EIDE hard disk **1**
- Dual hard disk module 2 x ≥ 40 GB EIDE (2.5") **2**
- RAID1, 2 x ≥ 60 GB SATA (2.5"), (1 PCI less) **3**

Optical drives:
- without **0**
- DVD-ROM **1**
- DVD±RW± R combined drive **2**

Operating system:
- without **A**
- Windows 2000 Professional Multilanguage **B**
- Windows XP Professional Multilanguage **C**

Delivery versions (ex stock)

12" TFT Key (Standard) D **6AV7 811-0BB11-1AC0**
110/230 V AC power supply
Intel Pentium 4 2.8 GHz
512 MB RAM
≥ 80 GB EIDE hard disk
DVD-ROM drive
Windows XP Professional Multi-Language [2]

15" TFT Touch D **6AV7 812-0BB11-1AC0**
110/230 V AC power supply
Intel Pentium 4 2.8 GHz
512 MB DDR
≥ 80 GB EIDE hard disk
DVD-ROM drive
Windows XP Professional Multilanguage [2]

15" TFT Key D **6AV7 813-0BB11-1AC0**
110/230 V AC power supply
Intel Pentium 4 2.8 GHz
512 MB RAM
≥ 80 GB EIDE hard disk
DVD-ROM drive
Windows XP Professional Multilanguage [2]

15" TFT Touch D **6AV7 812-0BB11-2AC0**
110/230 V AC power supply
Intel Pentium 4 2.8 GHz
512 MB DDR
≥ 80 GB EIDE hard disk
CD-RW/DVD combined drive; Windows XP Professional Multilanguage [1]

1) Multilanguage means: Eng./Ger./Fr./Ital./Sp./trad Chin./ simpl. Chin./Korean/Japanese
D) Subject to export regulations: AL: N and ECCN: 5D992B1

3

Ordering data

		Order No.			Order No.

Accessories

Cover foil for Panel PC 477/577/677/877

For protecting the touch screen against dirt/scratches (10 per package)

• for 15" Touch		**6AV7 671-4BA00-0AA0**
• for 19" Touch		**6AV7 672-1CE00-0AA0**

Labeling foil for Panel PC 477/577/677/877 — **6AV7 672-0DA00-0AA0**

For labeling softkeys and function keys, blank, supplied in sets of 10

Memory expansion

• 256 MB DDR	A	**6ES7 648-2AD20-0EA0**
• 512 MB DDR	A	**6ES7 648-2AD30-0EA0**
• 1 GB DDR	A	**6ES7 648-2AD40-0EA0**

Direct control key module for Panel PC 677/877 — A — **6AV7 671-7DA00-0AA0**

Option pack for direct control key module — **6ES7 648-0AA00-0XA0**

Transfer module for interface connection to 16 I/Os

Non-heating apparatus cable for SIMATIC Box and Panel PC

SIMATIC PC power cable, 230 V AC, angled, 3 m, for:

• Germany	**6ES7 900-1AA00-0XA0**
• United Kingdom	**6ES7 900-1BA00-0XA0**
• Switzerland	**6ES7 900-1CA00-0XA0**
• USA	**6ES7 900-1DA00-0XA0**
• Italy	**6ES7 900-1EA00-0XA0**
• China	**6ES7 900-1FA00-0XA0**

Mounting accessories for 19" Panel PC 577, 677, 877 — **6AV7 672-8KE00-0AA0**

for screw mounting of 19" Touch front at the front

A) Subject to export regulations: AL: N and ECCN: EAR99H
B) Subject to export regulations: AL: N and ECCN: EAR99S

Expansion components

SIMATIC PC/PG DiagMonitor V3.1 — B — **6ES7 648-6CA03-1YX0**

Software tool for monitoring SIMATIC PCs, incl. manual, on CD-ROM (German/English)

SIMATIC PC/PG Image & Partition Creator — A — **6ES7 648-6AA04-0YX0**

Software tool for data backup and hard-disk partitioning for SIMATIC PCs, incl. manual, on CD-ROM (Ger/En/Fr/Sp/It)

3.5" USB disk drive — A — **6FC5 235-0AA05-1AA2**

With 1 m connecting cable

SIMATIC USB Flash Drive — A — **6ES7 648-0DC30-0AA0**

1 GB, USB 2.0, metal enclosure, boot capability

SIMATIC Panel PC Remote Kit

for the separate configuration of control unit and PC:

• 24 V DC, 5 m	A	**6AV7 671-1EA00-5AA1**
• 24 V DC, 10 m	A	**6AV7 671-1EA01-0AA1**
• 24 V DC, 20 m	A	**6AV7 671-1EA02-0AA1**
• 24 V DC, 30 m	A	**6AV7 671-1EA03-0AA1**
• 110/220 V AC, 5 m	A	**6AV7 671-1EA10-5AA1**
• 110/220 V AC, 10 m	A	**6AV7 671-1EA11-0AA1**
• 110/220 V AC, 20 m	A	**6AV7 671-1EA12-0AA1**
• 110/220 V AC, 30 m	A	**6AV7 671-1EA13-0AA1**

Uninterruptible power supplies

SITOP power, 15 A DC UPS module with RS 232 interface — **6EP1 931-2EC41**

with charger unit for 24 V lead battery, input 24 V/16 A DC, output 24 V/15 A DC

SITOP power, battery module 24 V/3.2 Ah — **6EP1 935-6MD11**

for DC UPS module 15 A

Industrial USB Hub 4 — A — **6AV6 671-3AH00-0AX0**

4 x USB 2.0 interface, for cabinet door or DIN rail installation

Communication components

CP 1613-A2 — A — **6GK1 161-3AA01**

PCI card (32-bit) for connection of a PG/PC to Industrial Ethernet

CP 5613-A2 — **6GK1 561-3AA01**

PCI card (32-bit) for connection of a PC to PROFIBUS

More information

Additional information is available in the Internet under:

http://www.siemens.com/panel-pc

Note

Do you need a specific modification or expansion to the products described here? Then refer to "Customer-specific products". Information is available here about additional, generally available sector products as well as the possibilities for customer-specific modification and adaptation.

Industrial PC
SIMATIC Panel PC

SIMATIC Panel PC 877

Dimension drawings

Dimensions in mm

Operator panels PC 877	G	H	J	K	L	M	N
Touch panels							
15"	289	285	226	11	146	477	163
19"	378	285	234	11	140	486	157
Key panels							
12"	289	285	209	11	146	461	163
15"	324	285	328	11	147	480	164
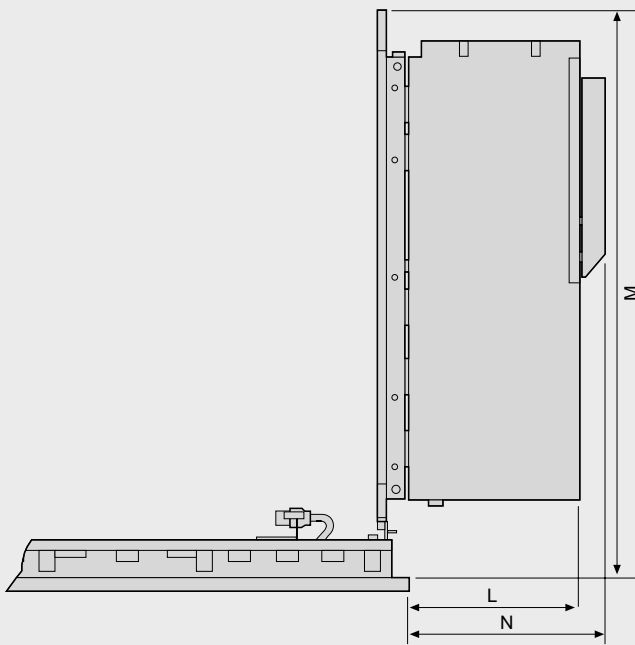
All dimensions without screw protrusions

G_ST80_EN_00206

Operator control unit and complete unit

Dimensions in mm
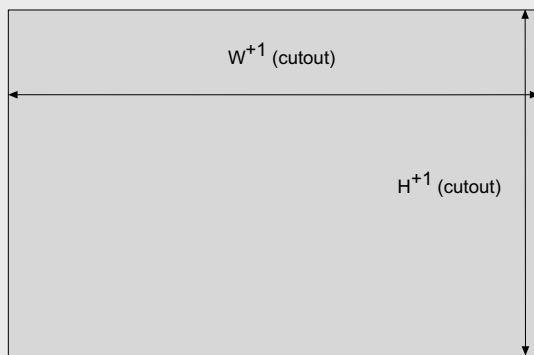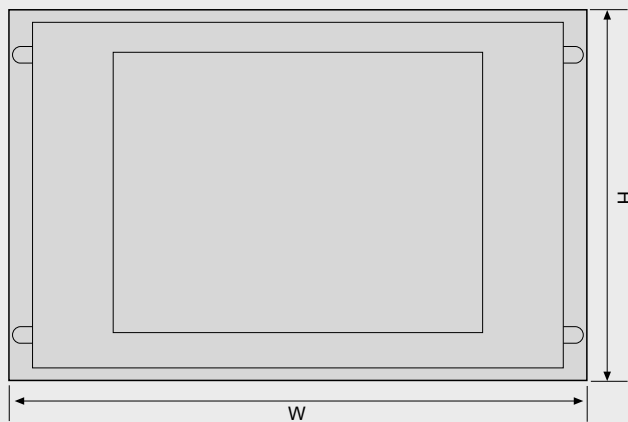
W^{+1} (cutout)

H^{+1} (cutout)

Front dimensions

Touch panels	W	H
15"	483	310
19"	483	400

Key panels	W	H
12"	483	310
15"	483	355

Installation cutouts

Touch panels	W^{+1}	H^{+1}
15"	450	290
19"	450	380

Key panels	W^{+1}	H^{+1}
12"	450	290
15"	450	321*

* In addition: two 25 x 5 mm recesses on the top side
for keyboard slide-in label channels

G_ST80_EN_00240

Installation cutout

RMOS3 V3.40 real-time operating system

Overview

RMOS3 is the real-time and multitasking-capable operating system from Siemens for implementing your automation solution with the programming languages C and C++. In mechanical engineering or in the manufacture of machine tools RMOS3 is used in test beds, packaging or printing machines where high response times in conjunction with open- and closed-loop control tasks are required.

RMOS3 has been optimized for use on PC platforms in embedded systems and fulfills industrial requirements with respect to:

- real-time and multitasking capability
- determinism
- ruggedness
- scalability/memory requirements
- operation with or without an operator
- modern development tools
- quality assurance
- guarantee
- service & support

The new RMOS3 V3.40 real-time operating system is characterized by greater security thanks to memory protection, shorter interrupt response times and faster hard disk access. For the industrial PC families SIMATIC PC and SICOMP IMC, automation solutions based on C/C++ with demands for hard real time, deterministic response and high performance can now be created more easily, conveniently and with greater stability.

Benefits

Reliable execution of the programs ensures high availability of the system

- Memory protection for programs in FLAT memory module (GNU) through MMU (Memory Management Unit) for even greater reliability of execution for the user applications generated from RMOS3-GNU V2.0 using the development tools.
- Privilege level mechanisms for protection of the operating system code, operating system data and the operating system stacks from unauthorized access from user programs ensure reliable execution of the operating system
- Protected code areas for all applications implemented with paging mechanisms prevent unintentional, mutual overwriting of the program code, make program errors easier to find and reduce the time spent troubleshooting
- Stack overflow/underflow monitoring detects encroachment beyond the valid stack area for the application. Invalid memory accesses are prevented.
- Null-pointer detection prevents the use of uninitialized pointer variables
- Compatibility with existing programs (CAD-UL, GNU) thanks to starting in kernel mode

Greater industrial compatibility thanks to high-speed data access to a rugged system

- Upgraded hard disk driver for UDMA mode for even faster saving of large quantities of data
- Resistant to viruses, due to the closed system
- Support for APIC interrupt controllers with up to 24 high-performance interrupts for optimized utilization of the interrupt resources and improved real-time properties of the overall system
- Support for additional interrupt controllers on the SMP16 bus for fast response to external events through interrupt-driven I/O modules, e.g. A/D converters, serial interfaces
- Support for interrupt sharing on the PCI bus for implementation of PCI/CPCI modules

Quick and easy start-up enhances user friendliness and serviceability

- Expanded configurable nucleus for minimized start-up times on SIMATIC PC and SICOMP IMC
  - Configuration over RMOS.INI is 100% compatible to RMOS3 V3.30
  - Scandisk functionality for testing the integrity of the mass storage on booting
  - Configurable APIC support with the possibility of cascading additional interrupt controllers
  - Configurable UDMA support
- 100% downwardly compatible operating system versions
- Expanded program interface with 64-bit data types support additional I/O functions
- Function for determining the time stamp to an accuracy of nanoseconds
- Revised integral RMOS3 debugger and resource reporter for enhanced evaluation of equipment units

Industrial PC
RMOS3 real-time operating system

RMOS3 V3.40 real-time operating system

■ **Application**

Industrial automation with typical applications such as
- measurement and control technology,
- acquiring and processing data, signals or analog variables,
- positioning of axes inclusive calculation of setpoint and actual values,
- communicating with higher or lower level systems over widely distributed field buses (TCP/IP, PROFIBUS DP, CAN),

requires that a process can respond to an event within a defined time, i.e. that the response to such an event can be accurately predicted and reproduced regardless of the current system load.

■ **Design**

RMOS3 impresses customers with its industrial compatibility as an embedded operating system for maximum response times in closed-loop and open-loop control tasks and is the basis for high-performance customer solutions with the SIMATIC PC and SICOMP IMC. System availability and industrial compatibility have been further improved thanks to new features of Version V3.40 such as memory protection for applications in the memory model FLAT (GNU), APIC support for high-performance interrupt mode and UDMA support for faster access to mass storage. In combination with the widely used GNU development tools and the Eclipse development environment, the development of C/C++ based automation solutions is even more efficient.

The **configurable nucleus** that has been available since RMOS3 V3.30 is already preconfigured and can be installed immediately and adapted to the hardware and software requirements of your target system. The configurable nucleus supports PCs from the SICOMP IMC and SIMATIC PC product range and is optimally tuned to the additional functions and hardware features.

With optional products and board support packages (BSP) you can integrate additional functions and drivers into your application.

The additional RMOS3-GNU software package is available for development and for testing applications for RMOS3. The new development platform is based on the GNU tool chain well-known and widely used in UNIX/Linux environments and contains all expansions necessary for developing RMOS3 applications. With the Eclipse development interface and the integrated graphical cross debugger creating applications for RMOS3 is now even easier than before.

3

RMOS3 V3.40 real-time operating system

■ **Ordering data**	Order No.

		Order No.
RMOS3 V3.40 EL Single license for RMOS3 development environment incl. a RMOS3 runtime license	D	**6AR1 405-0EA00-1AA3**
RMOS3 V3.40 EL Update Update V3.30 to V3.40. Single license for RMOS3 development environment incl. a RMOS3 runtime license	D	**6AR1 405-0EA50-1AA3**
RMOS3 V3.40 RT Runtime license RMOS3 V3.40	D	**6AR1 403-0CA3**
RMOS3-GNU V2.0 EL Single license for the GNU development tools incl. compiler, linker, debugger and Eclipse IDE, special RMOS3 libraries for creating applications, project examples and documentation	B	**6AR1 405-0BA00-1BA0**
RMOS3-TCP/IP V2.1 EL Single license for TCP/IP communication • Application development with socket interface • Programming interface for FTP	B	**6AR1 403-0AN00-1AA1**
RMOS3-TCP/IP V2.1 EL Update Update from V2.0 to V2.1. Single license for TCP/IP communication • Application development with socket interface • Programming interface for FTP	B	**6AR1 403-0AN50-1AA1**
RMOS3-TCP/IP V2.x RT Runtime license for RMOS3-TCP/IP V2.0 and higher (necessary for user programs with socket interface)	D	**6AR1 403-1AN3**

		Order No.
BSP-Microbox PC V1.0 EL for RMOS3 Board Support Package with the necessary interface drivers for operation of the SIMATIC Microbox PC 420 with RMOS3 V3.30 and higher	A	**6AR1 403-0BC00-1AA0**
BSP-Microbox PC V1.0 RT for RMOS3 Runtime license for use with RMOS3 V3.30 and higher	A	**6AR1 403-0BC3**
BSP-Box PC 627 V1.0 EL for RMOS3 Board Support Package with the necessary interface drivers for operation of the SIMATIC Box PC 627 with RMOS3 V3.30 and higher	B	**6AR1 403-0BE00-1AA0**
BSP-Box PC 627 V1.0 RT for RMOS3 Runtime license for use with RMOS3 V3.30 and higher	B	**6AR1 403-0BE3**
BSP-Rack/Box PC 840 V1.0 EL for RMOS3 Board Support Package with the necessary interface drivers for operation of the SIMATIC Rack PC 840 V2 and Box PC 840 V2 with RMOS3 V3.30 and higher	B	**6AR1 403-0BF00-1AA0**
BSP-Rack/Box PC 840 V1.0 RT for RMOS3 Runtime license for use with RMOS3 V3.30 and higher	B	**6AR1 403-0BF3**
BSP-CPU086 V1.0 EL for RMOS3 Board Support Package with the necessary interface drivers for operation of the SMP16-CPU086 with RMOS3 V3.30 and higher	A	**6AR1 403-0BD00-1AA0**
BSP-CPU086 V1.0 RT for RMOS3 Runtime license for use with RMOS3 V3.30 and higher	A	**6AR1 403-0BD3**

A) Subject to export regulations: AL: N and ECCN: EAR99H
B) Subject to export regulations: AL: N and ECCN: EAR99S
D) Subject to export regulations: AL: N and ECCN: 5D992B1

3

Industrial PC
RMOS3 real-time operating system

RMOS3-GRAPHX V1.0

Overview

RMOS3-GRAPHX V1.0 provides you with a comprehensive graphics package which enables you to enlarge your C/C++ based automation solution under SICOMP RMOS3 with a user-friendly graphics interface for operator control and monitoring.

Use of the Qt-based graphics library of the Norwegian company Trolltech ASA (www.trolltech.com) allows window-based interfaces with a "look and feel" and input facilities comparable to Windows. Real-time characteristics are maintained within the multi-tasking RMOS3 operating system environment.

For the creation of your real-time applications on released SIMATIC PC and SICOMP IMC hardware, convenient development tools in connection with the well-known development tools GNU, Eclipse and the Qt Designer of Trolltech ASA are at your disposal.

Benefits

- Reduction of hardware costs thanks to visualization and controlling on a single PC
- Reduction of engineering costs through a wide range of prefabricated control and display elements and existing Qt-based graphics interfaces that can be re-used.
- No training costs for operating staff necessary; same "look and feel" as under Windows

Application

RMOS3 stands for industrial capability when being used as embedded operating system and enables extremely high response times with open-loop and closed-loop control tasks.

The RMOS3-GRAPHX V1.0 graphics package is used for the design of graphics interfaces for RMOS3. It eliminates the need for a second PC for visualization since both operator inputs and control tasks can be carried out on the automation computer.

Design

RMOS3-GRAPHX contains all the necessary libraries and development programs (Qt tool for Cygwin) to implement customer-specific, window-oriented graphical user interfaces with the development environment RMOS3-GNU and the Qt Designer of Trolltech ASA. Since numerous prefabricated control and display elements are available, as generally known under Windows, the development time can be reduced to a minimum.

First of all RMOS3-GRAPHX will be released for the SIMATIC Box PC 627 and for the SICOMP SMP16-CPU086.

For the creation of the graphics interface the "Qt Designer" from Trolltech is required. This is an integral part of the "Qt Desktop Light Edition" product for Windows and can directly be obtained from Trolltech ASA (*www.trolltech.com*).

Ordering data — Order No.

		Order No.
RMOS3-GRAPHX V1.0 EL Master license for graphics library for creation of window-oriented interfaces of RMOS3 Version 3.30 and higher	D	**6AR1 403-0BG00-1AA0**
Qt Desktop Light Edition, Single Platform Windows development kit Qt Desktop Light Edition V4.1.4 for Windows, with Qt Designer		obtainable from Trolltech ASA *www.trolltech.com*
RMOS3 V3.40 EL Single license for RMOS3 development environment incl. a RMOS3 runtime license	D	**6AR1 405-0EA00-1AA3**

D) Subject to export regulations: AL: N and ECCN: 5D992B1

Customized SIMATIC Rack PC and Box PC

3

■ Overview

Our SIMATIC PC customization centers transfer the well proven SIMATIC PC into individual products and systems – tailor-made to your specific requirements. We offer individual design, software installations and specific tests or certifications as well es delivery just in time. You gain **time** for your own projects, increase your **rentability** and your **competitiveness**.

Customized SIMATIC PC – tailor-made to your requirements

■ Benefits

You save time, because ...

- You can use our extensive customer know-how and our many years of experience with industrial PCs.
- You don't have to build up industrial computer know-how and can therefore concentrate fully on your own core areas of expertise.

You increase your return on investment because ...

- You can limit investment of your capital and resources to your core areas of expertise.
- You achieve reliable, on-time material disposition and logistical planning through our logistical services.
- You have the highest possible investment security thanks to top quality, long-term availability and continuity with the SIMATIC PC.
- You save unnecessary costs thanks to tailored solutions.
- You profit from worldwide service and support concepts with SIMATIC PC.

You increase your competitive advantage because ...

- You use industrial PCs that meet the highest quality standards, offer optimum performance and enhance your productivity by reducing standstill times.
- You obtain customized SIMATIC PCs that perfectly link into the "Totally Integrated Automation" (TIA) system.
- You stand out not only thanks to exceptional technology, but also due to the individual design of your machine, e.g. with a logo printed on the front casing of the industrial PC.

■ Function

Customized hardware – Individual in design and configuration

Customized design

- **Inscription or printed logo**, e.g. on the front cover of the housing, matches your corporate design requirements
- **Custom color design of housing**, individual housing components, e.g. housing front and front cover – for perfect optical integration of the PC in the operating environment

Customer-specific configuration

- **Optimization of the computer configuration** – corresponding to the requirements of your application, e.g. with or without Profibus interfaces or optical drives
- **Optimal selection of the required components** – with regard to performance capability, long-term availability and compatibility, e.g. processor, fan, working memory, etc.
- **Installation of the hardware you specified** – e.g. third-party hardware, such as drives and PC cards or customized, supplied hardware

Customized software – operating systems, driver, image

Generation of operating systems

- e.g. for Windows XP embedded,
- and the RMOS3 real-time operating system from Siemens
- for the customer-specific LINUX storage [1]

Integration and installation of driver software and image storage

- e.g. for additional, plug-in cards, controllers and memory media
- for complete, turn-key systems

[1] Suitable for certain LINUX versions in accordance with the specifications of the Siemens producer explanation "Suitable for LINUX", see http://www.siemens.com/simatic-pc/suited-for-linux

Industrial PC
Customized SIMATIC PC

Customized SIMATIC Rack PC and Box PC

■ **Function** (continued)

Customized service & support

Pre-sales and after-sales support

- Requirements analysis, concept creation, solution generation
- Competent project support from the offer through to delivery and beyond
- Individually tailored repair agreements
- Worldwide Siemens service network with 190 branches and 33 repair centers
- 24 hour product support over the SIMATIC Hotline

System test of hardware and software, e.g.

- **EMC chamber** – Test for electromagnetic compatibility
- **Thermal simulation** – Thermal simulation heat imaging camera to detect heat pockets
- **Heat test** – Testing of all components in a 36-hour heat test at 40 degrees Celsius in a heated cabinet
- **Stress test** – Test for high vibration/shock loading, specially for CPU, graphics, memory, modules, etc.

Product Equipment Data (PED)

- **Online tool PED** (www.siemens.com/ped) – For easy, systematic identification and management of device components. It shows you the most important components of your equipment (delivery status) easily and quickly and supports you worldwide, in the event of a servicing requirement, with the procurement of suitable replacement parts.

"Tempesting" (SITEMP)

- **TEMPEST** (**Temporary emanation and spurious transmission**) – For protecting compromising data from listening-in attacks by means of electromagnetic radiation
- Series measurements and certification of special PC hardware according to the standards of the German Institute for Safety in Information Technology (BSI) for radiation safety
- e.g. PC for processing highly sensitive research and development data

Certification and approval of hardware and software – e.g. UL and CE industry certification

- **On-site service** – e.g. for plant failure, on-site repairs, product upgrades

Customized logistics

Availability tailored to your requirements

- **Configuration and design freeze** – Individual availability agreements for unchanged hardware and software versions of the products (image compatibility)
- **Replacement parts in centralized or decentralized spare parts storage** – For individually agreed periods or, where applicable, precautionary buying and storage of components
- **License authorization** – For discontinued software, e.g. for Microsoft operating systems such as Windows NT, MS DOS

Tailor made right down to the detail

- **Change notices** – Individual agreements for customer information management, e.g. product discontinuation, version updates, phase-out announcements
- **Individual labeling** – On the industrial PC and/or product packaging, e.g. customized item/device/inventory numbers, warehouse barcodes or packing and safety instructions
- **Supply of accessories** – e.g. adapter cables, keyboards or accompanying documents and manuals

Individual logistics solutions

- **Kanban delivery** – We supply according to the requirements of the organization units in the production process of our customers who organize their production process control in accordance with the Kanban principle. This shortens the throughput time and reduces inventories.
- **Just in Time** – We reduce the inventories and throughput times of our customers by supplying the hardware manufactured customer specifically at exactly the time when they need them in the production process or in the logistics chain
- **Reusable packaging** – Better than recycling
  The packaging is collected from our customers after the specially manufactured hardware has been unpacked and reused for transporting the next delivery. Packaging material is saved to the advantage of our customers and the environment.

■ **More information**

Further information is available on the Internet at

http://www.siemens.com/customized-pc

or under the e-mail address

ipc-cc@fthw.siemens.com

■ **Overview**
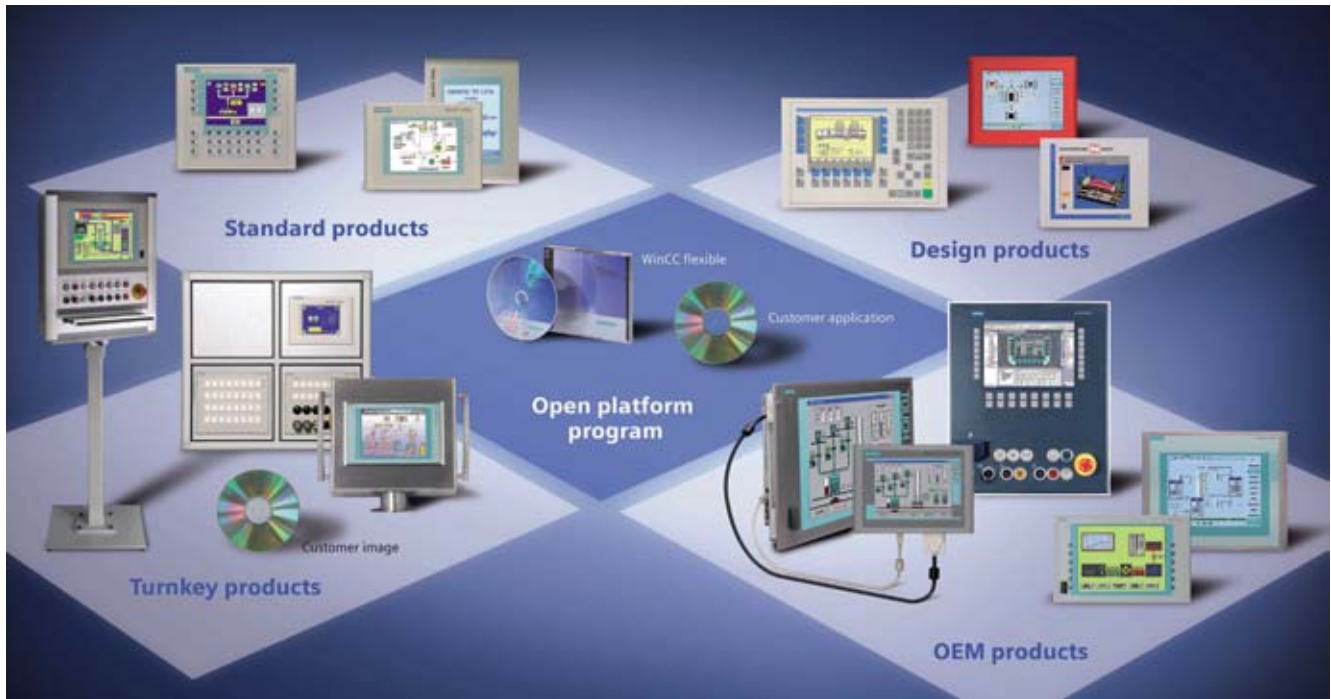
The term SIMATIC Customized means that we implement a wide range of customer requirements on the basis of SIMATIC Panel PCs (among others) - such as a customized design and front layout, OEM modifications or mechanical enclosure systems, and turnkey products.

Based on the SIMATIC HMI standard products, the customized Panel PCs can be used to implement individual requirements or the special demands of a sector.

Design products

In the HMI Design Center, the special design requirements or the corporate design of a customer are implemented in cooperation with an industrial designer. Many customers are already using the competent consulting service to obtain creative Panel PC designs:

- Change in logo (incorporation of customer logo instead of Siemens logo)
- Different keyboard colors, ergonomic key labels and key symbols
- Different housing color

OEM products

In addition to producing a new design, the OEM modular system can be used to configure customized Panel PCs with standard and special PC components.

Modifications can be carried out with respect to:

- Housing dimensions and mechanical design, e.g. mechanical front panel system or resistance to honing oil
- Display technology, sizes and resolutions
- Changes in keyboard layout, number of keys, key size/design and arrangement
- Downloading of HMI- and customer-specific application software
- Other options on request

Panel PCs are also available as customized embedded Panel PCs based on the Panel PC 677 and PC 477 with Windows XP embedded:

- Protection against SW manipulation and operating system ma-loperations
- Increased data security through CompactFlash and omission of hard disk

Turnkey products

Turnkey products with Panel PCs are ready for connection, and can be immediately used by customers (ready-to-run). Turnkey products include the installation of standard and customized Panel PCs in a housing for specified environmental conditions, the complete cabling, and downloading of all SW packages including customized SW applications.

Options for your SIMATIC Panel PC operator stations:

- Complete solutions for Panel PC with all required cards
  - In operator station housings for specified environmental conditions (temperature range, degree of protection, EMC, shock and vibration, certification, ...)
- Panel PC with preinstalled SIMATIC software and customer software, ready-to-run for startup on site
- Proven OEM Panel PCs in operator stations for selected applications in the sectors
  - **Automotive industry**
    Compact automation workstations for operation and monitoring as well as for the SIMATIC PLCs
  - **Food and beverages industry**
    Stainless steel housing for INOX Panel PC with high degree of protection
  - **Series machine construction**
    Flat Panel PC operator stations for compact and distributed design

Industrial PC
Customized SIMATIC PC

Customized Automation for SIMATIC Panel PC

3

■ Overview (continued)

HMI software for Panel PC

Comprehensive software packages are available for SIMATIC Panel PCs:

- HMI software packages for operator control and monitoring – WinCC flexible and WinCC with options
- WinAC for integration of S7 PLC into the PC
- Supplement WinCC flexible with your customized functions using the open platform program (OPP).
- Remote Operate Software, the industry-compatible remote operation of any SW applications using SIMATIC Panel PCs

■ Benefits

Close cooperation with the customer

We will provide consulting as your business partner in order to define an appropriate and economical solution which will make you stand out from your competitors. Customized products are specified on the basis of the existing modular range of standard components together with existing customized or industry-specific components.

Wide scope of application know-how – we are acquainted with the requirements placed on specialized products in the focus industries:

- Automotive industry
- Machine construction, general
- Food, beverages and tobacco industries
- Pharmaceutical industry
- Medical engineering

To safeguard investments, we consider the complete product life cycle during intensive customer consulting, starting with a favorable quotation for the customized product, covering the delivery logistics, servicing and repairs, up to product phase-out.

A product agreement is reached with important definitions:

- Technology and scope of delivery
- Project schedule with start of delivery
- Delivery period with sales quantity planning
- Supply logistics
- Service and repairs, spare parts, or spare part sets
- Product revision and software updates
- Product phase-out, with final stock requirements if required

Customized Panel PCs are developed according to defined, systematic processes and with the same quality as standard products; always with intensive customer consulting.

All customized products can be provided as turnkey products.

- With one Order No. for all components
- Worldwide – with support and service
- "Ready-to-run" for fast startup on site

■ Customized product examples for sectors

SIMATIC Panel PCs for the food, beverages and tobacco industries

Our Panel PCs are designed with touchscreen and stainless steel front for operation and monitoring on food processing machines. They feature simple cleaning and disinfection, resistance, shatter protection of the display, and a high degree of protection.

HMI operator stations for the automotive industry

These are used wherever installation of Panel PCs is not directly possible on the machine or in the control cabinet. The turnkey systems for use on a mounting bracket or stand have IP65 protection against dust and water, and the internal heat balance is optimized for fault-free operation of production plants.

Touch and key functionality with resistance to honing oil for machine construction

Properties which are particularly useful in the automotive and metal processing industries optimize the operating philosophy in conjunction with the special resistance to honing oil and spatter. The ergonomic touchpen supports simple and clean operation.

Keys at the side on the display for controlling movements

The function keys can be assigned to the graphics on the display. The entered movements are then visible on the display, and are passed on directly to the controller.

Flat Panel Monitors 6" and 10" for PCs

Flat Panel Monitors are designed as remote display and control units for PCs. They are ideal for operation and monitoring at machine level if PC functionalities are required but only little space is available for installation of a display. Flat Panel Monitors are also available with 15" display and touch operation for hygiene applications, e.g. enclosed in stainless steel housings for the pharmaceutical industry.

Contact person:

Please contact your local Siemens SIMATIC HMI representative.

Further information on customized HMI products can be found on the Internet at: *www.siemens.com/hmi-oem*

Overview

The SIMATIC PC offers the user a wide range of types of construction and systems, which perfectly match the industrial applications and fulfill the high requirements concerning the ruggedness.

This includes:

- high temperature operating range up to 55 °C
- high vibratory/shock load
- rugged housing design
- special degrees of protection up to IP65, NEMA 4
- high electromagnetic compatibility (EMC)
- UL and CE mark for industrial application
- integrated industrial power supplies (NAMUR)
- service-friendly device mounting for fast change of defective components

Increased system availability – you can count on it!

We offer you a graded concept for an effective early detection of potential failures and for minimizing actual downtimes. It consists of especially hardware and software expansion options developed for SIMATIC PC, with which you can individually increase the system availability according to your safety requirements. Its use is economical, as you gain more safety with components such as the DiagMonitor for permanent self-diagnostics or with a second hard disk for additional data back-up.These system availability options contribute to a considerable minimization of the plant's total costs (TCO) and is therefore economical and effective!

Benefits

Permanent high system availability by avoiding potential failures

Uninterruptible power supplies (UPS)

Our rugged industrial PC power supplies are designed for voltage drops of up to 20 ms (NAMUR). For longer power failures we offer you uninterruptible power supplies (UPS), which maintain the supply longer, e.g. to allow the system to be shut down in a controlled manner.

Flash disk as a safe mass storage medium

The system availability is further increased by using Compact Flash Drives instead of hard disks. This rugged mass storage media is approved for higher values of vibrations, shocks or temperature and offers an availability ten times higher than with hard disks. Flash disks therefore offer a safe protection for your operating system and your application.

RAID1 mirror disk system

The RAID1 configuration automatically saves all data at the same time on two hard disks. This is comfortable and offers you highest data safety.

Diagnostics and message functions with the SIMATIC PC DiagMonitor

The monitoring and message software SIMATIC PC DiagMonitor detects possible hard- and software errors at an early stage. Operating data of SIMATIC PC, such as temperature and fan speed, can be recorded over definable periods of time, complemented by integrated protocol functions as well as text messages and can be evaluated clearly in graphics. Extensive system conditons like watchdog, operating temperature, fan speed or hard disk conditions are automatically mailed via Ethernet, e-mail or SMS (phone) on demand. You can integrate and process this data in automation applications via OPC. The integrated time synchronization allows an operation of the industrial PCs without CMOS battery. This additionally drops maintenance costs.

Permanent high system availability by minimizing downtimes

Second hard disk – makes your system run

The use of hard disks is often essential for memory intense applications. By using a second hard disk the user enjoys the following advantages:

- easy and fast data back-up
- a fast reload of the last stored image shortens the downtime.
- by booting the back-up disk the system can immediately be driven on after a hard disk error.

Preventive data back-up

You can easily minimize downtimes and reduce your ongoing costs by preventive data back-up.
The **SIMATIC PC/PG ImageCreator** can save complete hard disk contents of a PC and can restore them bit by bit in case of data loss.The **A&D-Data-Management-Software (ADDM)** executes automatic back-ups in highly-complex networked systems. With this software you can create complete versions, archive and reload your machine data at any time.
The **SIMATIC PC/PG Partition Creator** serves for comfortable hard disk portioning with changes or initiation and for creating bootable emergency diskettes.

You can also work on duplicate and archive BIOS data effectively thanks to our **SIMATIC PC BIOS Manager**.
Proven PC configuration can easily be transferred to other PCs. The advantages of the BIOS-Manager are:

- working on, duplication and restoration on site of BIOS data (CMOS data)
- no more time consuming reinstalling
- easy transfer of proven software sizes to other PCs
- fast complete change of device in the service case

Industrial PC
Expansion components

Introduction

Integration

Individually upgradable system availability by means of optional expansion components

Enhanced system availability

Avoiding potential failures	Minimizing downtimes
UPS	Partition Creator / Image Creator
Flash Disk	Second hard disk / BIOS-Manager
RAID1 / DiagMonitor	A&D-Data-Management

Rugged design with high industrial functionality

G_KT01_EN_00302

Product	SIMATIC PC DiagMonitor	SIMATIC PC BIOS Manager	SIMATIC PC/PG Image Creator	SIMATIC PC/PG Image & Partition Creator	Second hard disk	RAID1 mirror disk	SIMATIC PC Compact Flash	ADDM Data Management
SIMATIC PC								
SIMATIC Rack PC IL 43	● 1)	●	● 1)	●	● 1)	● 1) 2)	—	●
SIMATIC Rack PC 847B	● 1)	●	● 1)	●	● 1)	● 1) 2)	—	●
SIMATIC Microbox PC 420/427B	●	●	—	●	—	—	● 1) 3)	●
SIMATIC Box PC 627/627B	● 1)	●	● 1)	●	● 1)	● 1) 2)	●	●
SIMATIC Box PC 840 V2	● 1)	●	● 1)	●	● 1)	● 1) 4)	● 1) 3)	●
SIMATIC Panel PC 477/477B embedded	●	●	—	●	—	—	● 5)	—
SIMATIC Panel PC 577	—	—	—	●	—	—	—	●
SIMATIC Panel PC 677/677B	●	●	—	●	● 1)	● 1) 2)	●	●
SIMATIC Panel PC 877	●	●	—	●	● 1)	● 1) 4)	—	●

1) can be ordered via configurator
2) RAID controller on board
3) instead of hard disk
4) RAID via PCI-Board Controller
5) with CompactFlash only

■ Overview
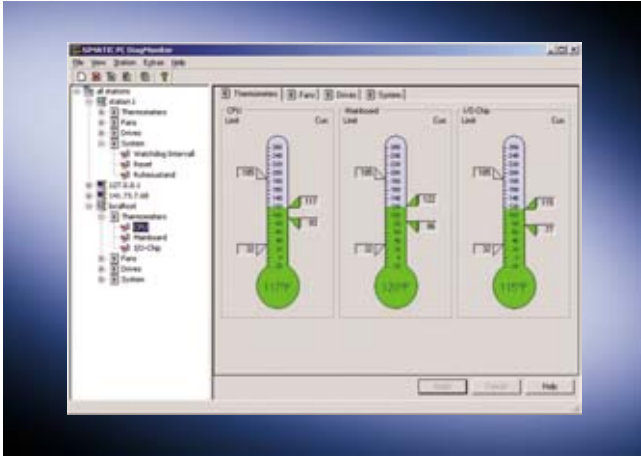
The SIMATIC PC DiagMonitor software for monitoring and remote signaling detects possible hardware and software faults at an early stage. It monitors, signals and visualizes the operating statuses of the SIMATIC PC, both locally and remotely.

It is used with SIMATIC Microbox PC 420/427B, Box PC 627/627B, Rack PC IL 43/840/847B, Panel PC 677/677B/877 and can be ordered directly via PC configurator or as an individual product.

■ Benefits

Investment security thanks to increased system availability

- Diagnostics and signaling functions for PC temperature, fan, hard disks (SMART), watchdog
- Operating hours counter for preventive maintenance
- Integral log function, comprehensive text messages, online help English/German
- Worldwide diagnosis over the Internet thanks to integrated web server function

Reduced costs thanks to reduced downtimes

- Fast information thanks to communication via e-mail and SMS
- Fast response thanks to communication in the application through OPC (client) and SNMP

■ Function

The SIMATIC PC DiagMonitor monitors, signals and communicates with an external server, acts in the event of an alarm and logs the system states of the SIMATIC PCs.

- It monitors:
  - the processor and internal device temperatures
  - the fans
  - the system status by means of "watchdog"
  - the function of the hard disk or RAID 1
- It signals:
  - the number of operating hours for activating maintenance periods
  - every alarm and logs in lists
  - overshoot/undershoot of permissible operating temperature
  - program interruption following a watchdog timeout
  - hard disk problems through evaluation of the S.M.A.R.T. diagnostic byte
- It communicates:
  - locally with an OPC client
  - locally via DLL or SNMP with a central server
  - remotely over LAN, e-mail, text messages
  - with diagnostic LEDs on the device
  - worldwide over the Internet through a web server
- It acts in the event of an alarm:
  - by starting customer applications
  - by executing a "Reset"
  - by simple linking/activation of PC tools
- It logs:
  - all messages and commands in a log file automatically
  - the measuring data (temperature, fan) over the operating period
- It visualizes:
  - the recorded measuring data (with trend analysis)
- It synchronizes:
  - system time over LAN (e.g. maintenance-free operation without CMOS battery)

System requirements::

Executable under Windows 2000/XP Professional

■ Ordering data

		Order No.
SIMATIC PC DiagMonitor V3.1	B	**6ES7 648-6CA03-1YX0**
Software tool for monitoring the SIMATIC PC, incl. manual on CD-ROM (English, German), single license		

B) Subject to export regulations: AL: N and ECCN: EAR99S

Industrial PC
Expansion components

SIMATIC PC BIOS Manager

■ Overview

The SIMATIC PC BIOS Manager is a software tool that is used to process CMOS and DMI data from the BIOS configuration of a SIMATIC PC.

The tool is obtained by downloading it from the Internet using the Automation Value Card from Customer Support

http://www.siemens.com/simatic/bios-manager

■ Benefits

Reduced costs due to quick, simple CMOS processing
- CMOS data duplicated by means of a read out, saved in a file, data written to the CMOS
- CMOS data saved for documentation and restore purposes
- DMI data read out and saved as a text file (e.g., PC serial number)

■ Application

Wherever the SIMATIC PC is put to industrial use, it is expanded by both modules and software and the BIOS settings (CMOS data) modified accordingly. In this environment, the SIMATIC PC BIOS Manager is used as:

- Production tool
  - For quick configuration of identical CMOS data
  - Reading CMOS data from the BIOS
  - Saving CMOS data in a file tagged with a user text
  - Writing the saved CMOS data into BIOS
- Service/quality tool
  - Quick, simple storage of PC system data for QM purposes
  - CMOS data transferred to an end user
  - Uncomplicated CMOS restoration on site

■ Function

The SIMATIC PC BIOS Manager offers the following functions:
- reading CMOS data from the BIOS
- saving CMOS data in a file tagged with a user text
- writing the saved CMOS data into BIOS
- scanning BIOS DMI data
- saving BIOS DMI data in a text file (basic format for printer output)
- switching language (German/English)
- help function

System requirements:

The SIMATIC PC BIOS Manager executes with all SIMATIC PCs in combination with MSDOS 6.x or FreeDOS.

DOS (FreeDOS), which is necessary for creating a bootable diskette, is included in the download.

■ Ordering data · Order No.

SIMATIC PC BIOS Manager	as Download from Customer Support
Software tool for processing special BIOS data (CMOS, DMI data) for SIMATIC PCs	*http://www.siemens.com/ simatic/bios-manager*

**SIMATIC PC/PG Image Creator,
Image & Partition Creator**

Overview
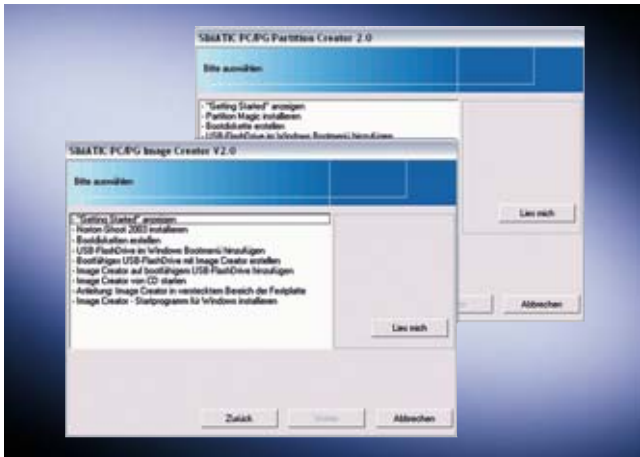
SIMATIC PC/PG Image Creator is the software tool for quick and easy back-up and restoring of the content of hard disks (images of individual partitions or complete hard disks).
This software can be ordered through the Configurator for the SIMATIC PCs.

The single product **SIMATIC PC/PG Image & Partition Creator** comprises in addition to the SIMATIC PC/PG Image Creator the software tool SIMATIC PC/PG Partition Creator, which allows subsequent hard disk partitioning without the loss of data.

Both products are designed for easy handling:

• Direct starting by booting the CD. No installation required

• Menu-guided creation of a bootable USB FlashDrive as alternative start medium from which Image Creator and/or Partition Creator can then be started.

• OS-independent use thanks to start by own boot medium

• Minimum hardware requirements

Benefits

SIMATIC PC/PG Image Creator

Data security at low cost

Hard disk contents can be saved quickly accurate to a bit and securely.

Reduced costs thanks to reduced downtimes

A significantly shorter time is required to restore a hard disk installation than is required for a new installation.

• Following replacement of a hard disk, the unit is ready for operation in just a few minutes

• Software failure due to application errors, operator errors or computer viruses is rectified in a matter of minutes

• No time-consuming reinstallation in the event of a fault

• The most recently backed up hard disk contents are restored quickly, reliably and accurate to a single bit

New functions in V2.0:

• Storage "at the press of a button" or time-controlled

• Image Creator in own boot area on the hard disk

• Boot menu can be set up for very simple starting of Image Creator by the USB FlashDrive

SIMATIC PC/PG Partition Creator

Hard disk partitions can be modified without the need for reinstallation

• The SIMATIC PC/PG Partition Creator tool that is a part of SIMATIC PC/PG Image & Partition Creator allows the hard disk partitions to be matched to your requirements without the need for reinstallation. It is still possible to execute the existing installation.
Partition Creator cannot be used on systems with Windows Server operating systems!

Ordering data

		Order No.
SIMATIC PC/PG Image Creator V1.2 Software tool for preventive data backup for SIMATIC PCs, incl. manual on CD-ROM (German, English, French, Spanish, Italian)	A	Can be ordered via the SIMATIC PC configurator
SIMATIC PC/PG Image & Partition Creator V 2.0 Software tools for data backup and hard disk partitioning for SIMATIC PCs/programming devices, incl. manual on CD-ROM (German, English, French, Spanish, Italian)		**6ES7 648-6AA04-0YX0**

A) Subject to export regulations: AL: N and ECCN: EAR99H

Industrial PC
Expansion components

3

ADDM – Data Management

■ Overview

With the SIMATIC ADDM, you are completely in control of the SIMATIC and SINUMERIK controllers – around the clock and throughout every program version. This tool is indispensable in a modern production area and ensures convenient backup, comparison and management of control data.

■ Benefits

- Absolute clarity in data management
  With ADDM, everything executes on a uniform user interface – all types and formats of CNC, PLC and configuration data right through to system software. The tool offers you unambiguous access authorizations and intuitive handing. The directory structure is always in line with the physical production layout, even complex systems can be understood at a glance.

- Secure and flexible management of distributed control concepts
  ADDM can be flexibly used for every client/server and online storage system as well as for stand-alone machines. This means: Central data storage with maximum fault tolerance and availability as well as efficient archiving of all machine data. Thus: Fast feedback of the required version, if required. Checked, controlled and documented archiving when several persons are working in parallel.

- Minimize downtimes
  You can rely on ADDM every time. Even when control components have to be replaced, for example. ADDM makes all the data available again immediately. With one click, without time-consuming reparameterization and configuration, whether for individual programs or complete hard disk partitions, you will have the right data in the right place

■ Function

Controllers under complete control – across all program versions

Backup can be done manually, with time control, or fully automatically. The data are available at all times and can be used for fast disaster recovery in the event of a fault.

System-active checking

If, for example, data changes become obvious in an online-offline comparison, automatic backup can take place and/or the change can be notified by e-mail.

Hot version backups

The required version can then be called up immediately from up to 99 backups (regardless of archive versions)

Total transparency and overview

The practice-oriented structure is ideal for highly-complex control systems but also for non-networked individual machines – with uniform operator interface for all data types and formats. Checked, controlled and documented archiving when several persons are working in parallel.

Totally Integrated Automation (TIA)

ADDM achieves integrated management of your data in the production plant in a unique way!

Optimal availability

Reliable backup of all system and configuring data, including documentation and circuit diagrams, can be carried out manually or automatically with time control – for made-to-measure distributed control concepts.

Simple handling

No programming knowledge required – so no need for special training courses. With the use of communication modules, data can also be exchanged conveniently with controllers via the MPI/PROFIBUS interface using TCP/IP.

Consistent archiving

The machine data are fully versioned and archived and can be copied back at any time. This also includes the documentation.

Operator-free data backup using the ADDM Agent

Thus data backup of SINUMERIK controllers can be implemented manually or time-controlled, without installation of an operator interface. The functions backup, load and compare can be performed remotely using the ADDM Client.

■ Examples of components that are supported:

S5	90U, 95U, 100U through AS511; 115U, 130W, 130WB, 135U, 155U through AS511 or SINEC H1
S7	S7-300, S7-400, WIN AC, WIN AC RTX
C7	C7-623, C7-626, C7-633, C7-634, C7-635 OP Mono, C7-635 TP B Mono
NCU	SINUMERIK 840D powerline/ 840Di/810D powerline PLC data through S7-CPU
MCU	MCU 172A, PLC data through S7-CPU
PCIN	PHG, OP 030, MMC 100, MMC 100.2
HMI DOS	DOS package for OP 031

CPs	CP 342-5, CP 343-1, CP 443-1, CP 443-5
OPs	OP7, OP15, OP17, OP27, OP37, OP 170B, OP 120, OP 270
MPs	MP 270, MP 370
TDs/TPs	TD17, TP27, TP37, TP 170A, TP 170B, TP 270, TP 170 Micro, TP 170 Color
Seriell	V.24 interface (RS 232 C)
Antriebe	SIMODRIVE 611 universal HR/universal E HR/digital through NCU, SIMODRIVE POSMO A/CD/CA/SI
Pfad	Directory/File
HD	Complete hard disks or hard disk partitions

▇ Integration
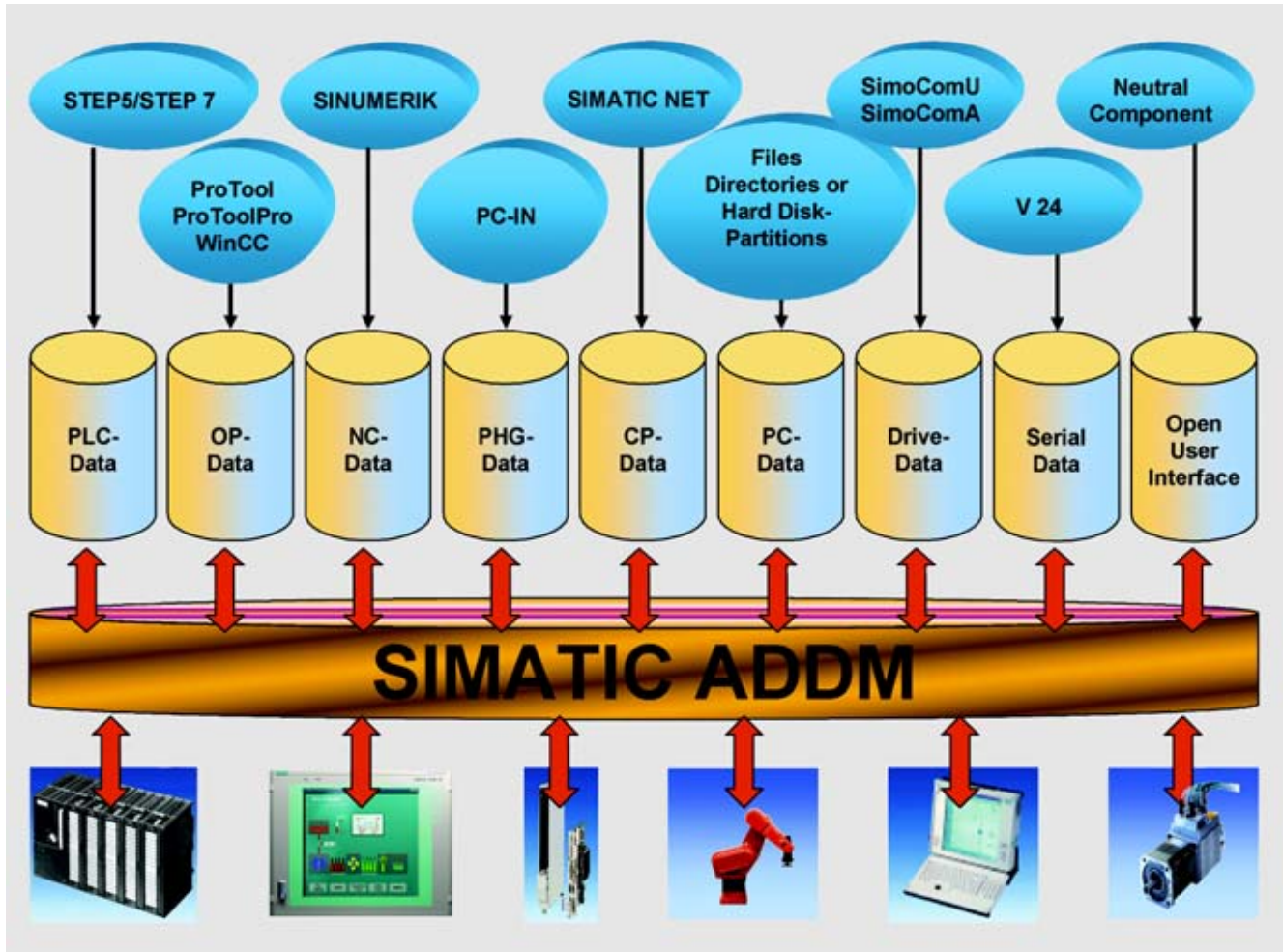
▇ **Ordering data**		Order No.

ADDM software package
Languages: German, English

ADDM Single User
- Single License with CD-ROM Current software release — J — **6BQ3 030-1AA30-3AB0**
- Trial License with CD-ROM Current software release — B — **6BQ3 030-1AA70-3AB0**

ADDM Client
- Single License without data carrier — J — **6BQ3 030-1AA20-1AB0**
- Single License with CD-ROM Current software release — J — **6BQ3 030-1AA10-0AB0**
- Software Update Service — **6BQ3 030-1AB10-8AB0**

ADDM Server
- Single License with CD-ROM Current software release — J — **6BQ3 030-1AA00-3AB0**
- Software Update Service — J — **6BQ3 030-1AB00-8AB0**

ADDM Agent
- Single License with CD-ROM Current software release — J — **6BQ3 030-3AA00-0AA0**
- Software Update Service — **6BQ3 030-3AA10-0AA0**

B) Subject to export regulations: AL: N and ECCN: EAR99S
J) Subject to export regulations: AL: N and ECCN: 5D992B2

▇ More information
Additional information is available in the Internet under
http://www.siemens.com/addm

Industrial PC
Expansion components

SIMATIC PC CompactFlash

■ Overview
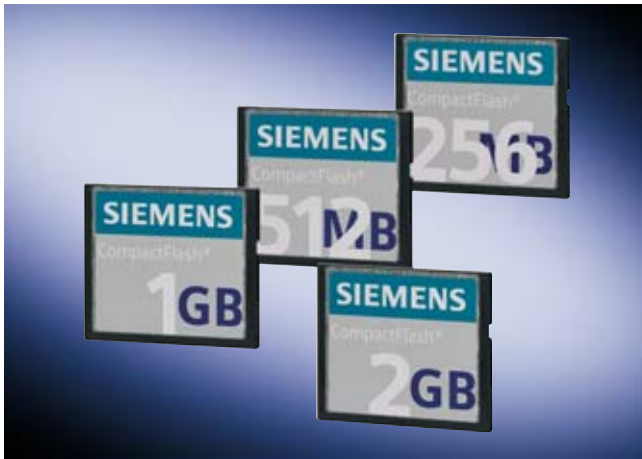
Rugged systems are required when using PCs in industrial environments to ensure minimal production standstill times. SIMATIC PCs are specially designed for this purpose.
One possibility for enhancing the industrial compatibility and system availability of the SIMATIC PC is to use SIMATIC PC CompactFlash instead of hard disk drives. These are system-tested using the respective SIMATIC PC.

SIMATIC PC CompactFlash can be ordered as a hardware option through SIMATIC PC Configurator or as an accessory.

■ Benefits

Reduced costs through high industrial functionality
- High system availability, because no mechanical parts subject to wear are used
- High degree of industrial compatibility, because highly resistant to vibration and shock and high temperatures
- Reduction of costs to a minimum at the customer's thanks to qualification and system test using SIMATIC PC

■ Ordering data   Order No.

SIMATIC PC CompactFlash		
• 256 MB	A	**6ES7 648-2BF01-0XC0**
• 512 MB	A	**6ES7 648-2BF01-0XD0**
• 1 GB	A	**6ES7 648-2BF01-0XE0**
• 2 GB	A	**6ES7 648-2BF01-0XF0**

A) Subject to export regulations: AL: N and ECCN: EAR99H

Overview

By combining a DC uninterruptible-power-supply module with at least one 24 V battery module and SITOP power supply, longer power failures can be bridged completely with no interruption.

This combination is used, for example, in machine-tool manufacture, the textile industry, all types of production lines and filling systems, and in conjunction with 24 V industrial PCs. This prevents the negative effects which often result from power cuts.

For "NON-STOP" use in the event of power failures, Siemens offers the following uninterruptible power supplies

• DC UPS 6 A
• DC UPS 15 A
• DC UPS 40 A

and the following battery modules:

• 1.2 Ah
• 3.2 Ah
• 7 Ah
• 12 Ah
• 2.5 Ah (high-temperature accumulator)

Line	Main switch	SITOP power 5 A up	DC UPS module	Load

AC or 3 AC

24 V

24 V

Indicates line-based or floating operation (floating changeover contact)

Indicates buffer available or low battery alarm/warning

Connection to PC via serial or USB interface

Auxiliary contact

24 V battery module
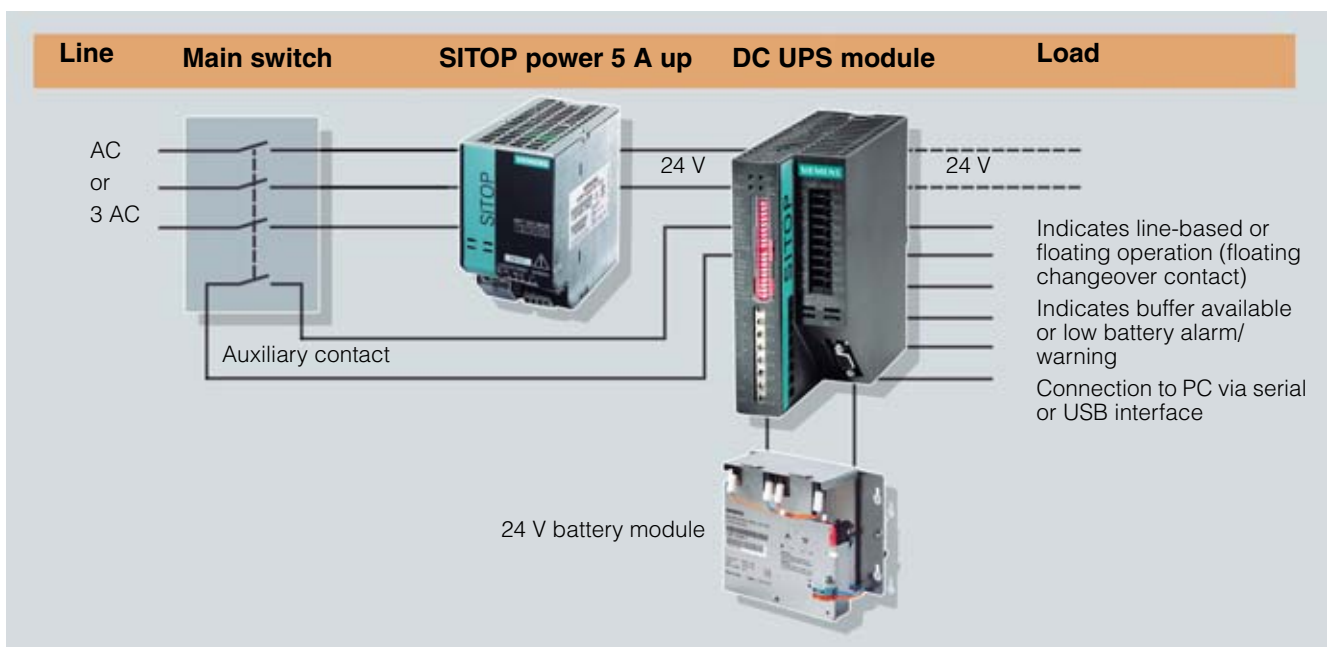
Ordering data — Order No.

Example of power supplies:

	Order No.
SITOP modular 5 A Input 120/230 – 500 V AC Output 24 V DC / 5 A	**6EP1 333-3BA00**
SITOP modular 10 A Input 120/230 – 500 V AC Output 24 V DC / 10 A	**6EP1 334-3BA00**
SITOP Smart 5 A Input 120/230 V AC Output 24 V DC / 5 A	**6EP1 333-2BA01**
SITOP Smart 10 A Input 120/230 V AC Output 24 V DC / 10 A	**6EP1 334-2BA01**

Further suitable power supplies can be found in catalog KT 10.1 and in the Interactive Catalog under "SITOP power".

Industrial PC
DC UPS uninterruptible power supplies

Introduction

■ **SITOP overview**

Selection table for battery modules and mains buffering times

Load current	Battery module 1.2 Ah (6EP1935-6MC01)	Battery module 3.2 Ah (6EP1935-6MD11)	Battery module 7Ah (6EP1935-6ME21)	Battery module 12 Ah (6EP1935-6MF01)	Battery module 2.5 Ah (6EP1935-6MD31)
1 A	30 min	2.5 h	6 h	11 h	2 h
2 A	11 min	45 min	2.5 h	5 h	45 min
3 A	4 min	25 min	1.5 h	3 h	30 min
4 A	2 min	20 min	45 min	2 h	20 min
6 A	1 min	10 min	30 min	1 h	13 min
8 A	-	4 min	20 min	40 min	9 min
10 A	-	1.5 min	15 min	30 min	7 min
12 A	-	1 min	10 min	25 min	5.5 min
14 A	-	50 s	8 min	20 min	4.5 min
16 A	-	40 s	6 min	15 min	4 min
20 A	-	-	2 min	11 min	-

Important notes on selecting the battery capacity:

• On determining the mains buffering times the duration of discharge was based on a non-aged and fully charged battery module with an accumulator temperature of not less than +25 °C up to a dip in the battery voltage to 21 V;

• As a result of aging of the accumulators, the available accumulator capacity is reduced throughout the life of the battery to approx. 50% of the original capacity;

• To achieve the longest possible service life of the accumulators, the battery modules should be stored for only very short periods, always fully charged and in the temperature range 0 to +20 °C;

• In the case of the DC UPS module 40 A, at least 2 battery modules with a minimum of 7 Ah must be switched in parallel. It is importnat to ensure here that the accumulators are of the same capacity and age.

3

■ Overview
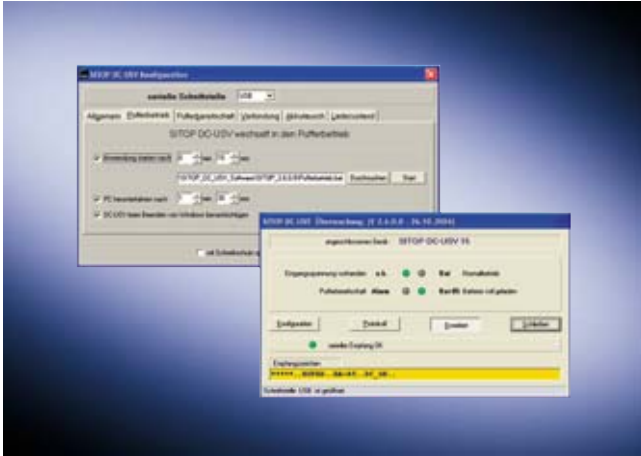
Monitoring and configuration windows of the SITOP UPS software

DC UPS software

The DC UPS modules are optionally available with a USB port (6 A, 15 A and 40 A) or a serial port (only 6 A and 15 A). All relevant messages about the status of the DC UPS can be transferred to a PC (e.g., SIMATIC PC) via this interface.

SITOP DC UPS software provides the user with a software tool that is extremely easy to operate and can be used to further process the signals sent from the DC-UPS module on the PC. In monitoring mode, the status of the DC-UPS module is visualized on the PC. Safe shutdown in the event of a power failure and automatic PC restart are supported. It is also possible to freely define responses to the different operating states of the DC-UPS module, permitting extremely flexible integration into a wide variety of applications.

The software executes under the WinNT 4.0, Win2000 and WinXP operating systems. It is available as freeware on the SITOP Internet site for free downloading.

Additional information is available in the Internet under:

www.siemens.com/sitop

■ Overview

DC UPS module 6A

DC UPS modules 6A/15A/40A

- Compact design, 50 mm wide (6 A/15 A) or 102 mm wide (40 A)
- Simple DIN rail mounting (6 A/15 A)
- Absolutely interruption-free buffering of mains failures through immediately electronic connection of the batteries as soon as the DC UPS input voltage drops below the value set using DIP switches
- High safety and availability through monitoring of operational readiness, battery supply line, battery aging (message "Battery replacement necessary") and battery charge (message "Battery charge >85%")
- Support of automatic restart of industrial PCs through selectable switch-off response
- Optionally with serial (6 A/15 A only) or USB interface

■ Ordering data	Order No.
DC UPS module 6 A	**6EP1 931-2DC21**
• with serial interface	**6EP1 931-2DC31**
• with USB interface	**6EP1 931-2DC42**
DC UPS module 15 A	**6EP1 931-2EC21**
• with serial interface	**6EP1 931-2EC31**
• with USB interface	**6EP1 931-2EC42**
DC UPS module 40 A	**6EP1 931-2FC21**
• with USB interface	**6EP1 931-2FC42**

Industrial PC
DC UPS uninterruptible power supplies

SITOP battery modules

■ **Overview**

Battery module 1.2 Ah

- Battery module for DC UPS module 6 A
- Contains two maintenance-free, sealed lead-acid batteries from the same batch fitted in a holder and connected in series
- Completely prewired with battery fuse holder and terminals
- Low self-discharge rate of approx. 3 % per month (at +20 °C)
- Recommended charging current: max. 0.3 A
- Recommended end-of-charge voltage at 25 °C battery temperature: 27.0 V DC
- Dimensions (W x H x D): approx. 96 mm x 106 mm x approx. 108 mm
- Weight: approx. 2 kg
- Snap-mounting on 35 mm standard rails (DIN EN 50022-35x15/7.5) or keyhole mounting for hooking onto M4 screws

Battery module 2.5 Ah

- High-temperature battery for DC UPS module 6 A and 15 A
- Contains two maintenance-free, sealed chemical lead-acid batteries from the same batch fitted in a holder and connected in series
- Completely prewired with battery fuse holder and terminals
- Low self-discharge rate of approx. 3 % per month (at +20 °C)
- Recommended charging current: max. 5 A
- Recommended end-of-charge voltage at 25 °C battery temperature: 27.7 V DC
- Dimensions (W x H x D): approx. 265 mm x 151 mm x 91 mm
- Weight: approx. 3.8 kg
- Snap-mounting on 35 mm standard rails (DIN EN 50022-35x15/7.5) or keyhole mounting for hooking onto M4 screws

Battery module 3.2 Ah

- Battery module for DC UPS module 6 A and 15 A
- Contains two maintenance-free, sealed lead-acid batteries from the same batch fitted in a holder and connected in series
- Includes battery fuse holder and terminals
- Low self-discharge rate of approx. 3 % per month (at +20 °C)
- Recommended charging current: max. 0.8 A
- Recommended end-of-charge voltage at 25 °C battery temperature: 27.0 V DC
- Dimensions (W x H x D): 190 mm x 151 mm x approx. 82 mm
- Weight: approx. 3.2 kg
- Snap-mounting on 35 mm standard rails (DIN EN 50022-35x15/7.5) or keyhole mounting for hooking onto M4 screws

Battery module 7 Ah

- Battery for DC UPS module 6 A, 15 A and 40 A
- Contains two maintenance-free, sealed lead-acid batteries from the same batch fitted in a holder and connected in series
- Completely prewired with battery fuse holder and terminals
- Accessory pack with FK2 spare fuses 15 A and 20 A
- Low self-discharge rate of approx. 3 % per month (at +20 °C)
- Recommended charging current: max. 1.75 A
- Recommended end-of-charge voltage at 25 °C battery temperature: 27.0 V DC
- Dimensions (W x H x D): 186 mm x 168 mm x 121 mm
- Weight: approx. 6.0 kg
- Keyhole mounting for hooking onto M4 screws

Battery module 12 Ah

- Battery for DC UPS module 6 A, 15 A and 40 A
- Contains two maintenance-free, sealed lead-acid batteries from the same batch fitted in a holder and connected in series
- Completely prewired with battery fuse holder and terminals
- Accessory pack with FK2 spare fuses 15 A and 20 A
- Low self-discharge rate of approx. 3 % per month (at +20 °C)
- Recommended charging current: max. 3 A
- Recommended end-of-charge voltage at 25 °C battery temperature: 27.0 V DC
- Dimensions (W x H x D): 253 mm x 118 mm x 121 mm
- Weight: approx. 9 kg
- Keyhole mounting for hooking onto M4 screws

■ **Ordering data**

	Order No.
SITOP power, Battery module 24 V/1.2 Ah for DC UPS module 6 A A	**6EP1 935-6MC01**
SITOP power, Battery module 24 V/2.5 Ah for DC UPS module 15 A A	**6EP1 935-6MD31**
SITOP power, Battery module 24 V/3.2 Ah for DC UPS module 15 A	**6EP1 935-6MD11**
SITOP power, Battery module 24 V/7 Ah for DC UPS modules 15 A and 40 A	**6EP1 935-6ME21**
SITOP power, Battery module 24 V/12 Ah for DC UPS modules 15 A and 40 A	**6EP1 935-6MF01**

A) Subject to export regulations: AL: N and ECCN: EAR99H

3

■ Overview

MASTERGUARD UPS

- The MASTERGUARD A-19 and E$_I$-19 series offer effective online protection against all types of network interferences
- True online functional principle, i.e. complete decoupling of load from the irregularities of the power supply
- 19" compact modules
- Simple operation as well as functional display of mode and load status

MASTERGUARD UPS series A-19/E$_I$-19

- Permanent dual converter technology corrects any irregularities on the network and provides absolute protection against interruptions
- Easy to configure for 19" cabinets thanks to battery expansions and universal sliding inserts
- If space is at a premium, the A-19 series can be supplied with a mounting height of just 2 HU or the EI-19 series with only 3 HU, load-regulated fans and functional display
- A serial interface or USB interface can be selected for communication and the UPS network interface can also be implemented using the SNMP expansion card for the communication slot

■ Ordering data   Order No.

Standard configuration

UPS MASTERGUARD A-19 series		
• A700-19 Output: 700 VA Integrated battery: 6 min.	E	6SU5 081-4BB00
• A1000-19 Output: 1000 VA Integrated battery: 7 min.		6SU5 082-4BB00
• A2000-19 Output: 2000 VA		6SU5 083-4BA00
• A3000-19 Output: 3000 VA		6SU5 084-4BA00
MASTERGUARD battery pack A-19 series		
• BPA 1000-19 for UPS A1000-19 (max. 2 BP)		6SU5 090-4BB01
• BPA 3000-19 for UPS A2000-19 (max. 5 BP) and UPS A3000-19 (max. 5 BP)		6SU5 090-4BB02

E) Subject to export regulations: AL: N and ECCN: EAR99

Order No.

Standard configuration

UPS MASTERGUARD E$_I$-19 series		
• E$_I$-19 Output: 6000 VA		6SU5 085-4BA00
MASTERGUARD battery pack E$_I$-19 series		
• BP E$_I$-19		6SU5 090-4BB10

Accessories

Sliding insert 330-580 mm		6SU5 091-0GU35
Sliding insert 575-855 mm		6SU5 091-0GU36
ManageUPS SNMP adapter card	E	6SU5 933-4AL21
MopUPS shutdown software		
• for Intel operating systems (Windows, Linux, Solaris for Intel)	E	6SU5 912-0AA00
• for Risc operating systems (Solaris SPARC, HPUX, AIX)	E	6SU5 912-0AB00

■ More information

Additional information on MASTERGUARD UPS is available in the Internet under

http://www.masterguard.com

or via:

MASTERGUARD GmbH
Mrs. Yvonne Stucky
Phone: +49 9131 6300 238
Fax: +49 9131 6300 280
E-Mail: yvonne.stucky@masterguard.de

Industrial PC
Expansion components

PC IO modules

■ Overview

The PC IO I/O expansion extends rugged use of the SIMATIC Microbox PC 420/427B at machine level.

The I/O expansion supports and extends use of the SIMATIC Microbox PC 420/427B maintaining:

- Extremely compact dimensions
  (262 mm wide, 134 mm high, depth from 47 mm)
- High system availability
  (rugged and maintenance-free, since without rotating parts, for example)
- Maximum flexibility

The PC IO I/O expansion comprises:

- Base module with encoder/counter functionality, PCI104 interface to the HOST system and communication interfaces to the I/O modules
- Digital and analog I/O modules that are managed by the base module
- Mechanical installation components

■ Benefits

Reduction in standstill times thanks to high system availability

- Monitoring and diagnostic functions (watchdog, heartbeat, short-circuit monitoring, temperature monitoring, broken cable)
- Maintenance-free operation because a fan is not necessary
- Service-friendly hardware configuration (easy expansion, direct plug-in system for easy installation)
- High interference immunity (isolated digital I/Os)

Cost reductions through high investment security

- High product continuity through long-term secure functionality in hardware and software
- Modules developed and manufactured by Siemens
- Guaranteed spare-parts availability of the components (5 years)

Reduced costs through high industrial functionality

- High degree of industrial compatibility thanks to rugged construction (solid metal expansion rack, Base 400 permanently screwed to I/O modules) even under extreme vibration and shock loading, at high temperatures and with high electromagnetic interference
- High degree of flexibility in the selection and expansion of components (inputs and outputs are scalable in terms of type and number)
- Compact, resource-saving construction (four I/O modules or up to 160 24 V IOs can be operated on one PCI load)
- Support is available for different operating systems, such as RMOS3, Windows XP Professional, Windows XP embedded
- High performance for fast signal processing in real-time applications

Cost minimization through time savings

- Fully assembled, turn-key systems
- Program examples for support with creating applications
- Quick assembly due to integrated terminals with direct plug-in connection system

Module	Description
PC IO Base 400 (Base module)	• PCI104 interface to host • 4 encoder inputs, can also be used as counters if required • 4 digital inputs • Management of encoder inputs and associated counters and up to four I/O modules over separate communication interfaces • Power supply distribution for 4 encoders
PC IO MOD Digital 010 (Digital I/O module 0)	• 24 binary 24 V inputs • 16 binary 24 V outputs
PC IO MOD Analog 020 (Analog I/O module 0)	• 8 analog inputs, 12-bit, 0 to 5 V, 0 to 10 V ±5 V, ±10 V • 8 analog outputs, 16-bit, ±10 V • 4 Pt100 connections, 2-wire
PC IO KIT 040 (encoder expansion rack)	For expanding a SIMATIC Microbox PC 420/427B. Connection unit for: • 4 encoder inputs • 4 digital inputs • Encoder voltage supply
PC IO KIT 030 (I/O expansion rack)	For expanding a SIMATIC Microbox PC 420/427B. Expansion rack to hold • max. 2 I/O modules in the Microbox PC 42x system

■ Ordering data
Order No.

	Order No.
PC IO Base 400 A PCI104 module for connecting up to 4 PC IO MOD xxx 010/020, with 4 encoder interfaces and 4 DI incl. fixing accessories (base module with fixing accessories)	**6ES7 648-2CE20-0AA0**
PC IO MOD Digital 010 Digital I/O module with 24 DI and 16 DO, incl. connecting cable to PC IO Base 400 and mating connector	**6ES7 648-2CE40-0BA0**
PC IO MOD Analog 020 A Analog IO module with 8 AI, 8 AO and 4 PT100, incl. connecting cable to PC IO Base 400, mating connector and shield clamp	**6ES7 648-2CE40-0CA0**
PC IO KIT 030 IO module expansion rack for Microbox PC 420/427B for installing up to 2 I/O modules, including fixing accessories and a cover plate	**6ES7 648-1AA20-0XF0**
PC IO KIT 040 Encoder expansion rack for Microbox PC 420/427B for contacting the encoder interfaces and DIs of the PC IO Base 400, incl. fixing accessories	**6ES7 648-1AA20-0XE0**

A) Subject to export regulations: AL: N and ECCN: EAR99H

SIMATIC PC USB FlashDrive

Overview
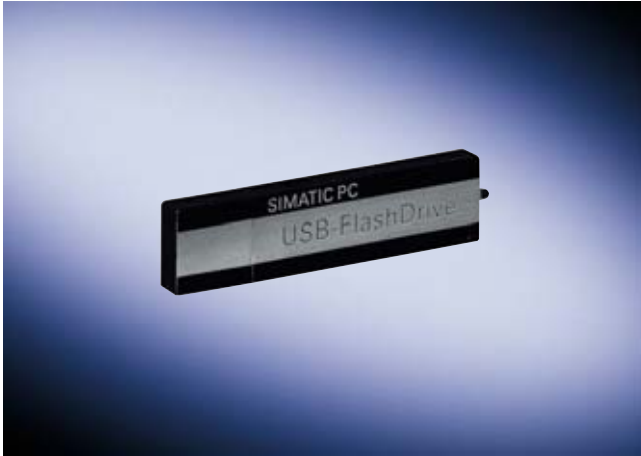
The SIMATIC PC USB FlashDrive is the ideal mobile storage medium for SIMATIC PCs/PGs and SINUMERIK components. Thanks to the rugged and ultra-compact construction in a metal enclosure, fast data transfer (USB 2.0) and the high memory capacity of 1 GB, the USB FlashDrive is ideally suited for use in industrial applications. It replaces diskettes and CD-ROMs as data memory. It is supplied ready to boot and prepared for special tasks (e.g. as a start medium for SIMATIC PC BIOS Manager, SIMATIC PC Image Creator).

The following functions have been integrated:

- Formatted for boot capability incl. preinstalled operating system (FreeDOS) for use as a boot medium, e.g., for SIMATIC PC Image Creator

- High performance for faster data transfer - USB 2.0 (high-speed)

- High memory capacity of 1 GB

- Read to use – "Plug & Play", with Windows XP/Windows 2000 driver installation is not necessary

- Data protection with write-protection switch

- Status LED for data transfer and operating state

- SIMATIC PC BIOS-Manager, a software tool for the management of BIOS (CMOS) data for SIMATIC PCs is included in the scope of supply.

Recommended operating systems::

- Windows 2000/XP

Benefits

Ultra-compact and rugged

- Two USB Flash drives can be plugged into the SIMATIC PC one above the other

- Especially suitable for use in industrial environments thanks to the metal enclosure

High investment protection

- System tested with SIMATIC PC/PG (hardware and software)

- Can be used to transfer Automation License Keys (requirement: Automation License Manager, V2.x and higher)

Ordering data | Order No.

	Order No.
SIMATIC PC USB FlashDrive A	
1 GB, USB 2.0, metal enclosure, boot capability, for SIMATIC PC: Rack PC, Box PC and Panel PC (477embedded/577/677/877) and for SIMATIC PG and SINUMERIK components	
• 1 ... 9 units	**6ES7 648-0DC30-0AA0**
• 10 units and above	**6ES7 648-0DC30-0AA0**
• 100 units and above	**6ES7 648-0DC30-0AA0**
• 1000 units and above	**6ES7 648-0DC30-0AA0**

Attention:

For orders of more than 100, delivery time may be extended.

A) Subject to export regulations: AL: N and ECCN: EAR99H

Industrial PC
Expansion components

Industrial USB Hub 4

Overview
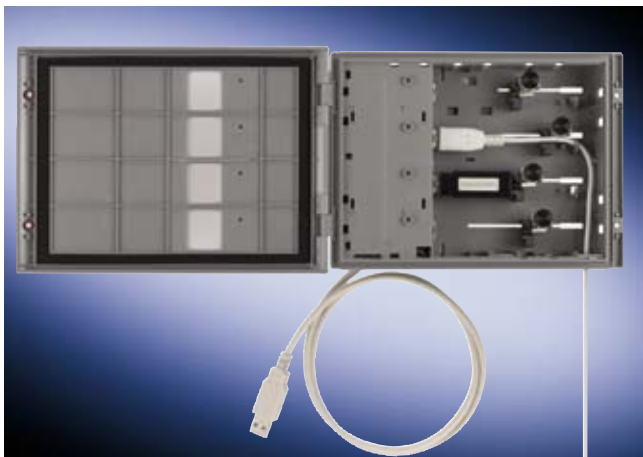
Industrial USB Hub 4, open

- The Industrial USB Hub 4 is essentially used as a USB hub for the connection of peripherals to Multi Panels and Panel PCs with an integral USB interface
- USB peripherals can be connected to the panel and operated via the USB Hub 4 without opening the cabinet door
- The Industrial USB Hub 4 differs from commercially available USB hubs mainly in its suitability for use in rugged industrial environments (IP65).

Design

The use of Industrial USB Hub 4
- permits the simultaneous connection of as many as four peripheral devices such as USB stick, mouse, keyboard, printer or barcode reader to the panel .
- increases the availability of the system to be operated. The cabinet door no longer has to be opened in order to connect to the peripherals. The unit can be operated from the Panel PC and the Multi Panel without interruption.

In addition, the Industrial USB Hub4 has the following features:
- Inspection window for each interface
- Vibration-proof restraint of connected USB cables and USB sticks
- One LED per interface for checking the data traffic
- Sufficient interior space for easy insertion and removal of connections
- Facility for attachment to a DIN rail

Integration

The Industrial USB Hub 4 is suitable for connection to:
- MP 277
- SIMATIC Panel PC

Ordering data

		Order No.
Industrial USB Hub 4	A	**6AV6 671-3AH00-0AX0**

A) Subject to export regulations: AL: N and ECCN: EAR99H

More information

Note for SIMATIC Panel PCs

The Industrial USB Hub 4 is approved for the Windows 2000/XP operating systems. The appropriate drivers are supplied with the operating system software.

3

Overview

The original SIMATIC PC keyboard is the ideal input medium for your SIMATIC PC. The SIMATIC PC keyboard with USB connection is available in German and international layout.

- Dimensions (L x W x H): 470 x 195 x 44 mm
- Weight approx. 1620 g
- Connecting cable: 1.75 m long, USB connector
- Approvals:
  - UL 1950
  - CSA C22.2 No. 950
  - FCC Part 15, subpart B, class B
  - VDE-GS (EN 60950/ZHI/618)
  - CE
  - C-TICK mark (Australia)

Benefits

High investment security minimizes outlay

- system-tested with SIMATIC PC/PG

Ordering data

	Order No
SIMATIC PC keyboard German/international, USB connection	**6ES7 648-0CB00-0YA0**

Overview

Even with the mouse we offer you more than the standard: The optical "wheel" mouse for operation on USB or PS/2 interface. When using the mouse with a SIMATIC PC/PG, the overall system observes the CE industry's EMC limit values.

- Interfaces: USB und PS/2 (über Adapter)
- Operating systems:
 Microsoft Windows XP, 2000, ME, 98, Windows NT4
- Connecting cable: 1,83 m lang, USB-Stecker
- Approvals:
  - FCC Declaration of Conformity (USA)
  - UL and cUL Notice of Approval (USA and Canada)
  - ICES-003 report on file (Canada)
  - TÜV-GS Certificate (Germany)
  - CE Declaration of Conformity
  - Safety and EMC (EU)
  - GOST Certificate (Russia)
  - VCCI Certificate (Japan)
  - ACA/MED Declaration of Conformity (Australia and New Zealand)
  - BSMI Certificate (Taiwan)
  - MIC Certificate (Korea)
  - NOM Certificates (Mexico)
  - CB Scheme Certificate (International)
  - WHQL (International) ID: 866988

Benefits

- Minimizing outlay through secure and reliable operation with SIMATIC PC/PG
- Meets CE Industry requirements when operated with the SIMATIC PCs

Ordering data

		Order No.
SIMATIC PC mouse Optical "Wheel" mouse, USB interface, incl. PS/2 adapter	A	**6ES7 790-0AA01-0XA0**

A) Subject to export regulations: AL: N and ECCN: EAR99H

Industrial PC
SICOMP Industrial Microcomputer

Introduction

■ Overview

PC-based automation is the successful combination of typical open PC architecture and optimum integration into the world of automation.

The SICOMP industrial microcomputer represents the PC system platform for automation tasks if there are the following requirements:

- Modularity with compactness
- Industry-compliant installation in 19" systems and ruggedness
- Fast central process interfaces in addition to field connection
- Typical applications include:
  - Data and computing intensive tasks in automation
  - Time-critical closed-loop control and open-loop control tasks
  - The need for several technological functions in one system
- Key technical data
  - Compact PCI and SMP16 bus systems
  - Modules in the European standard size 3U, slot conforming to ES902C
  - Working temperature range 0 to 55 °C

Central processing unit

The heart of the system is the powerful SMP16-CPU076 or SMP16-CPU086.

These high-end CPUs are especially designed for the high performance requirements in PC-based automation and meet the stringent specifications of today's and tomorrow's data and computationintensive industrial applications. Even tough real-time requirements using RMOS3 (Siemens real-time operating system) as well as operator control and process visualization under Windows are no problem for the CPU modules.

Mechanical design

The design is based on the 19" format (rack according to ES902).

All modules are inserted into the system rack from the front, which facilitates the easy replacement of modules even without opening the housing. All external interfaces are accessible from the front.

Cooling is by means of a fan subassembly that allows an operating temperature range of 0 to 55 °C. Fanless systems are available on request.

Industrial PC
SICOMP Industrial Microcomputer

SMP16-CPU076 CPU

3

Overview

The SMP16 CPU076 module is an SMP16 CPCI CPU of the high-end performance range. It can be used with generally available PC operating systems such as MS-DOS, RMOS3 or WIN XP. The hardware is PC compatible and has been expanded with additional safety functions. The ECOOLine variants can thereby be operated without fans.

Design

The module is constructed from a PC chip set with a high degree of integration and features the following functional units:

- Intel Celeron/Pentium® III currently with up to 933 MHz clock frequency
- Integrated coprocessor
- Intel 815E chip set
- Super I/O module PC 87 366
- 1 MB Flash EPROM:
- 512 KB for BIOS (including extensions)
- 512 KB for user-specific purposes
- Up to 128 MB SDRAM PC133 onboard
- Up to 512 MB SDRAM memory modules can be plugged in
- Elite BIOS V6.0 by Award/Phoenix (modified and adapted)
- VGA controller integrated in the chip set, VGA-type interface, optional DVI
- PC-compatible interrupt system, expandable on the SMP16 bus
- Additional interrupt controller for 5 additional interrupts on the SMP16 bus (alternative use of the DRQ connection pins)
- 3 additional timers for real-time applications each with one interrupt of the additional interrupt controller
- PC-compatible DMA control, counter/timer, real-time clock and CMOS-RAM
- Combined mini DIN keyboard/mouse interface
- 2 RS232 interfaces, 16550-compatible, (115 Kbit/s max)
- 1 parallel interface with Sub-D connection (bi-directional), optionally via CPU07x-ZUB-LPT
- 2 USB interfaces
- 1 RJ45 Ethernet interface (10/100 acc. to IEEE 802.3)
- FD connection for 2 FD drives (via plug connector or rear panel I/O bus of the CPCI bus)
- EIDE-AT connection for 2 HD drives (via plug connector or rear panel I/O bus of the CPCI bus)
- Watchdog circuit
- Voltage and temperature monitoring
- 10 status LEDs
- SMP16 bus interface
- Compact PCI bus interface

Ordering data

Order No.

SMP16-CPU076
1 MB flash EPROM, of which 512 KB for BIOS and 512 KB for user data, 10 status LEDs, VGA, LAN 10/100, 2 USB, SDRAM expansion and LPT optional

- CPU076 Basic ECOOLine, min. Celeron 400 MHz and 128 MB SDRAM
  - 2 slots   G   **6AR1 001-7AM34-0AA0**

- CPU076 Professional ECOOLine, min. Celeron 650 MHz and 128 MB SDRAM
  - 2 slots   A   **6AR1 001-7AN34-0AA0**

- CPU076 Superior ECOOLine, min. Pentium III 933 MHz and 128 MB SDRAM
  - 2 slots   G   **6AR1 001-7AP34-0AA0**

- Additional variants   on request

Additional components   G   **6AR1 508-0AA26-0AA0**
CPU07x-ZUB-LPT
for CPU076 with LPT adaptation, 2.5" HD slot RESET key and battery plug

A) Subject to export regulations: AL: N and ECCN: EAR99H
G) Subject to export regulations: AL: N and ECCN: 4A994

Industrial PC
SICOMP Industrial Microcomputer

SMP16-CPU086 CPU

Overview

The SMP16-CPU086 module is an SMP16-CPCI central processing unit in the high-end performance range. It can be operated with standard PC operating systems such as MS-DOS, RMOS3 or WIN XP. The hardware is PC-compatible and has been expanded with additional safety functions.

By using the same processor family and chip set which is used for Centrino computers, an optimal balance between computing power and heat loss is achieved.

Design

The module uses a large-scale integrated PC chip set and comprises the following functional units:

- Intel Pentium® M – currently up to **1.6 GHz** clock frequency
- Integrated coprocessor
- Intel 855 GME chip set
- Super I/O module PC 87366
- 1 MB flash EPROM:
  - 576 KB for BIOS (including extensions)
  - 448 KB freely available to user
- Up to 256 MB DDR SDRAM PC266 onboard
- Additive up to 1 GB of DDR SDRAM memory modules can be plugged
- Elite BIOS V6.0 by Award/Phoenix (modified and adapted)
- VGA controller integrated into chip set, analog VGA interface, or DVI-I
- PC-compatible interrupt system, expandable on SMP16 bus
- Additional interrupt controller for 5 additional interrupts on SMP16 bus (alternative use of the DRQ connection pins)
- 3 additional timers for real-time applications (each with one interrupt of additional interrupt controller)
- PC-compatible DMA control, counter/timer, real-time clock and CMOS RAM
- Combined mini DIN keyboard/mouse interface
- 1 or 2 RS232 interfaces, 16550-compatible, (up to 115 Kbit/s)
- 1 parallel interface with sub D connector (bi-directional), optionally via CPU07x-ZUB-LPT
- 3 USB interfaces at front, 3 USB interfaces via RPIO
- 1 RJ45 Ethernet interface (10/100 acc. to IEEE 802.3)
- 1 additive RJ45 Ethernet interface (10/100/1000 acc. to IEEE 802.3), depends of product variant

Design (continued)

- Connection for 1 FD (via pin connector)
- EIDE AT connection for 2 HDs (via pin connector or rear panel I/O bus of CPCI bus)
- Watchdog circuit
- Voltage and temperature monitoring
- 6 status LEDs (partially available)
- SMP16 bus interface
- Compact PCI bus interface

Ordering data — Order No.

SMP16-CPU086
1 MB Flash-EPROM, 6 status LEDs, LAN 10/100, 3 USB 2.0, DDR SDRAM expansion and LPT optional

- SMP16-CPU086 (1.6/256/VGA) min. Pentium 4 1.6 GHz, 256 MB DDR SDRAM, VGA
  - 2 slots — E — **6AR1 001-8AE02-0AA0**
- SMP16-CPU086 (1.6/256/DVI/GLAN) min. Pentium 4 1.6 GHz, 256 MB DDR SDRAM, DVI-I, GLAN
  - 2 slots — E — **6AR1 001-8AF02-0AA0**
- Additional variants — on request

Additional components

CPU07x-ZUB-LPT — **6AR1 508-0AA26-0AA0**
for CPU076/CPU086 with LPT adaptation, 2.5" HD slot, RESET key and battery plug

RMOS3
Real-time operating system
Board Support Package with the interface drivers required for operating the SMP16-CPU086 module with RMOS3 V3.30 and higher

- BSP-CPU086 V1.0 EL — A — **6AR1 403-0BD00-1AA0**
- BSP-CPU086 V1.0 RT — A — **6AR1 403-0BD3**

A) Subject to export regulations: AL: N and ECCN: EAR99H
E) Subject to export regulations: AL: N and ECCN: EAR99

Overview

There are numerous expansion modules for the industrial micro-computer, permitting expansion up to a powerful complete system with up to 21 standard slots, e. g.

- Memory
  - Mass storage module including hard disk and floppy disk drive
  - PCMCIA interface
- Communication
  - PROFIBUS interface (also equidistant mode)
  - CAN bus interface
  - Serial RS 232/TTY or RS 485 interfaces
  - SIMOLINK
- Central inputs/outputs
  - 24 V digital inputs and outputs, isolated
  - Analog inputs and outputs
  - Counter, positioning, position control
  - Intelligent I/O modules and PMC modules

Ordering data

	Order No.
Mass storage	
• SMP16-MEM040 A PCMCIA interface according to PCMCIA standard, PC-CARD 95 BIOS expansion	**6AR1 301-0DD10-0AA0**
• CPCI-MEM371 A AT mass storage plug-in with 6.0 ... 30.0 GB hard disk 1.44 MB diskette	**6AR1 341-0CA30-0AA0**
Interface expansion cards	
• SMP16-COM201 PROFIBUS DP interface up to 12 Mbit/s	**6AR1 303-0ED00-0AA0**
• CPCI-COM202 A DP master with equidistant PROFIBUS	**6AR1 343-0ED00-0AA0**
• SMP16-COM291 A SICOMP Ethernet interface, 10 Mbit/s	**6AR1 303-0AA01-0AA0**
• CPCI-COM168 A Full-CAN, 2 channels	**6AR1 343-0FK00-0AA0**
Serial interface module	
• SMP16-COM224 E with 4 channels, V.24 or TTY	**6AR1 303-0BA00-0AA0**
• CPCI-COM222 A with 2 (opt. 4) channels RS 232, (TTY or RS485 on request)	**6AR1 343-0BA00-0AA0**
Ethernet interface 10 or 100 Mbit/s	
• CPCI-COM294 A with 2 channels, 2 x RJ45 socket at front	**6AR1 343-0AA00-0AA0**
• KSP-COM294 with 2 channels and 6-way switch, 8 x RJ45 socket at front	
- 2 slots A	**6AR1 343-0AA10-0AA0**
• CPCI-COM295 with 8-way switch, 8 x RJ45 socket at front	
- 2 slots A	**6AR1 343-0AA20-0AA0**

	Order No.
Central I/O modules	
• Digital input/output modules, 24 V, electrically isolated	
- SMP16-EA217 A with 32 inputs	**6AR1 302-0AE00-0AA0**
- SMP16-EA216 A with 32 inputs	**6AR1 302-0AD00-0AA0**
- CPCI-EA221 A with 16 inputs and 16 outputs, 2 counters	**6AR1 342-0AF00-0AA0**
• Analog input/output modules	
- SMP16-EA236 A with 16 inputs	**6AR1 302-0AB00-0AA0**
- SMP16-EA241 A with 4 outputs, 16 bit resolution, 10 V bipolar and unipolar or 0/0.004 ... 0.02 A	**6AR1 302-0AA00-0AA0**
SMP16-SFT304 A Controller module with interrupt and counter/timer control	**6AR1 304-0CA00-0AA0**
SMP16-SFT251 Counter module with two 32-bit incremental/pulse counters	**6AR1 304-0EA00-0AA0**
SMP16-SFT260 A Positioning module, max. 4 channels, SSI or incremental encoder can be connected	**6AR1 304-0AA01-0AA0**
CPCI-SFT364 A Intelligent stepper motor controller, 2 channels	**6AR1 344-0AA00-0AA0**
SMP16-SFT372 A Intelligent position controller for servo systems, incremental and SSI encoders, fast PID controller, 1 axis	**6AR1 304-0AA00-0AA0**
SMP16-SFT375 A SIMOLINK interface	**6AR1 303-0HH00-0AA0**

A) Subject to export regulation: AL: N and ECCN: EAR99H
E) Subject to export regulations: AL: N and ECCN: EAR99

Industrial PC
SICOMP Industrial Microcomputer

Design technology

Overview

A rack is available to accommodate the CPU module and further modules from the industrial microcomputer range.

Design

- 19" (ES902) mounting frame (ES 902) with 21 standard slots and fan subassembly with various bus backplanes for the compact PCI bus and SMP16 bus,

- Power supply holder with facility for replacement of all plug-in modules from the front without opening the housing

- SMP16-SYS500 subracks
  Subracks for individually locking SMP16 boards with integrated fan module.

- AC/DC power supply module SMP SV532/533
  Power supply (+ 5 V/20 A, + 12 V/5 A, – 12 V/0.5 A), can be mounted with other modules in a single-tier subrack.

- CPCI SYS005 bus backplane
  The CPCI SYS005 bus backplane serves to connect IPCI modules, suitable for mounting in a subrack of the ES 902 C-type.

- SMP bus back plate SMP16 SYS403
  Bus back plates for connecting 3 to 21 modules, suitable for mounting in a subrack of the ES 902 C-type.
  The bus back plate implements an enclosed electrical screen on the back of the subrack, as the subrack and the system ground are connected high frequency-wise. The logic circuit for auto-configuration is integrated in the bus back plate.

Ordering data

Order No.

Design (selection of components)

SMP16-SYS500 Single-row 19" subrack for individual interlocking with fan subassembly	**6AR1 502-0AA04-0AA0**
CPCI-SV532/533 Power supply module for CPU 076 and CPCI systems	
• **CPCI-SV532** Input: 115/230 V AC (99...138 V and 187...264 V AC) Output: +5,1 V/20 A; +3.3 V/14 A; +12 V/2 A; -12 V/1 A	**6AR1 306-0LC00-0AA0**
• **CPCI-SV533** Input: 24 V DC (8.5 ... 36 V DC) Output: +5.1 V/14 A; +3.3 V/14 A; +12 V/2 A; -12 V/1 A	**6AR1 306-0LE00-0AA0**
CPCI-ZUB532 Accessory kit, essential	**6AR1 355-0CD00-0AA0**
CPCI-SYS005 CPCI backplane with 1 system slot and 4 distributed I/O slots	**6AR1 355-0AA05-0AA0**
SMP16-SYS403 SMP16 backplane with:	

SMP16-SYS403		
• 3 slots		**6AR1 305-0AB03-0AA0**
• 5 slots		**6AR1 305-0AB05-0AA0**
• 7 slots		**6AR1 305-0AB07-0AA0**
• 9 slots	A	**6AR1 305-0AB08-0AA0**
• 10 slots	A	**6AR1 305-0AB10-0AA0**
• 12 slots	A	**6AR1 305-0AB12-0AA0**
• 14 slots	A	**6AR1 305-0AB14-0AA0**
• 16 slots	A	**6AR1 305-0AB16-0AA0**
• 18 slots	A	**6AR1 305-0AB18-0AA0**
• 21 slots	A	**6AR1 305-0AB21-0AA0**

Note:
For systems designed or modified to specific customer requirements, please contact your Siemens partner. Further information can be found in catalog KT 51 and in the Interactive Catalog under "Automation systems/ SICOMP Industrial Microcomputers".
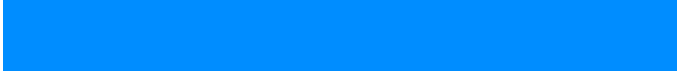
A) Subject to export regulations: AL: N and ECCN: EAR99H

3

■ **Dimension drawings**

Dimensions in mm

482.6 (19")

5.08

20.32

11

37.4

132

57.15

7

426.72 (84 TE)

465.1
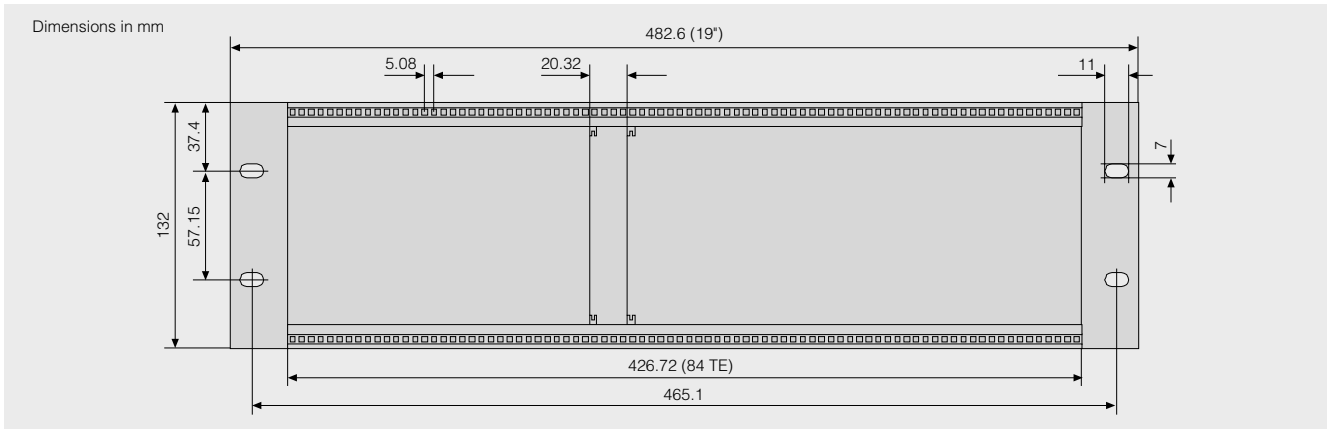
Industrial PC

Logic Control

4

Logic Control
SIMATIC PC-based Control

■ Overview

Siemens has developed a broad palette of perfectly interacting hardware and software components for PC-based Automation.

The hub: **SIMATIC PC-based Control** with SIMATIC WinAC, the open, flexible and reliable controller for your PC-based automation solution.

On the PC, all the tasks involved in automation, such as open-loop and closed-loop control, operator control and visualization and motion control can be implemented on the same platform. Whenever PC applications have to be implemented in addition to the classical PLC applications, PC-based Automation is the first choice.

SIMATIC PC-based Control

- Adds PC-based controllers to the SIMATIC S7 controller family
- Especially suitable where a variety of tasks such as data processing, communication, visualization, technology and control have to be integrated in one PC.

Versions
- **SIMATIC WinAC Software PLCs**
  for tasks requiring a high level of flexibility and integration capability.
- **SIMATIC WinAC Slot PLCs**
  for tasks where high operational reliability and availability are a priority.
- **SIMATIC WinAC ODK**
  allows PC solutions for technological tasks to be integrated flexibly and powerfully into the controller.

Properties
- Runs on standard PCs under Windows 2000 or Windows XP Professional.
- Code-compatible with SIMATIC S7: programmed with SIMATIC industrial software, programs can also be used for SIMATIC S7.
- Uses standard interfaces for integration into the office environment.
- Open interfaces for the integration of solution-specific technological hardware and software.

■ Application

SIMATIC WinAC is optimized for the following tasks:
- Compactness:
  for reasons of space and performance, data processing, communication, visualization, technology and control have to be integrated in one PC.
- Openness:
  close integration into data processing is required, together with high performance.
- Technology:
  specific technological tasks must be implemented in close cooperation with the control functions.
- Flexibility:
  the task requires the integration of specific hardware or software modules.

SIMATIC WinAC is equipped for this with open and powerful interfaces. SIMATIC WinAC is therefore the ideal platform for tailor-made automation solutions.

More information can be found in the Internet under

http://www.siemens.com/pcbased

Logic Control
SIMATIC PC-based Control

SIMATIC WinAC Software PLC

■ Overview

- SIMATIC WINAC RTX:
  optimized for applications that demand a high level of flexibility and integration.
- The software solution for tasks that demand hard deterministics and high performance.
- With real-time expansion for guaranteeing deterministic behavior for the control component.

■ Application

SIMATIC WinAC RTX is particularly suited to tasks requiring a high level of flexibility and effective integration in the overall solution. This also includes the close connection with data processing or logistic systems, as well as the link to technological tasks such as motion or vision systems.

SIMATIC WinAC RTX offers hard real-time and high performance. The optimized runtime system supports the processing of extensive and demanding PC applications in parallel with the control task.

The new WinAC RTX 2005 version is significantly faster than the previous version. Existing programs execute with a processor load reduced by up to 85%. This means that either cheaper PC platforms can be selected for the same tasks or additional tasks can be processed using the same PC.

WinAC RTX 2005 is therefore optimized for operation on embedded PC platforms such as the Microbox PC 420.

The Microbox PC 420, with its diskless, fan-free construction, offers a significantly enhanced ruggedness for automation tasks. Support for the integrated PROFIBUS interfaces of the SIMATIC PCs as well as enhanced performance results in an excellent price/performance ratio for PC-based automation.

WinAC ODK is used to expand PLC functionality by adding application-specific C/C++ applications. This allows:

- Incorporation of complex high-level language algorithms into the control program
- Access to the Windows API or Windows system resources.
- Access to external hardware and software components.

■ Technical specifications

	SIMATIC WinAC RTX 2005
Memory	
• RAM	
- integrated	PC work memory can be used (non paged memory)
• Load memory	
- integrated RAM, max.	PC work memory can be used (non paged memory)
CPU/ blocks	
DB	
• Number, max.	Limited only by available PC work memory
• Size, max.	64 KB
FB	
• Number, max.	Limited only by available PC work memory
• Size, max.	64 KB
FC	
• Number, max.	Limited only by available PC work memory
• Size, max.	64 KB
OB	
• Size, max.	64 KB
Nesting depth	
• per priority class	24
• additional within an error OB	24
CPU/ processing times	
Reference platform	Pentium IV, 2.4 GHz
Times/counters and their remanence	
S7 counter	
• Number	512
• Remanence	
- adjustable	Yes
- lower limit	0
- upper limit	511
- preset	8
• Counting range	
- adjustable	Yes
- lower limit	0
- upper limit	999
IEC counter	
• present	Yes
• type	SFB
S7 times	
• Number	512
• Remanence	
- lower limit	0
- upper limit	511
- preset	0
• Time range	
- lower limit	10 ms
- upper limit	9,990 s
IEC timer	
• present	Yes
• type	SFB

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Logic Control
SIMATIC PC-based Control

SIMATIC WinAC Software PLC

◼ **Technical specifications** (continued)

	SIMATIC WinAC RTX 2005
Data areas and their remanence	
Remanence without UPS and PS Extension Board	none
Remanence with UPS	all data
Flag	
• Number, max.	16 KB
• of which remanent	MB 0 - MB 16383
• Remanence preset	MB 0 - MB 15
• Number of clock memories	8
Adress area	
I/O address area	
• Inputs	16 KB
• Outputs	16 KB
• of which, distributed	
- DP interface, inputs	16 KB
- DP interface, outputs	16 KB
Process image	
• Inputs, adjustable	8 KB
• Outputs, adjustable	8 KB
• Inputs, preset	512 Byte
• Outputs, preset	512 Byte
Subprocess images	
• Number of subprocess images	max. 15
Digital channels	
• Outputs	128,000
Analog channels	
• Inputs	8,000
• Outputs	8,000
Hardware configuration	
Submodule	
• Number of submodules, max	4
• of which PROFIBUS, max.	4; CP 5611, CP 5611 A2, integrated PB interface of the SIMATIC PC, CP 5613, CP 5613-A2
Number of operable FMs and CPs (recommended)	
• FM	FM distributed: FM 350-1/350-2, FM 351, FM 352, FM 353, FM 354, FM 355, FM 355-2
• CP, point-to-point	CP 340, CP 341 distributed
• CP, LAN	using PC-CP
Time	
Clock	
• Hardware clock (real-time clock)	Yes
• buffered and synchronizable	Yes
Clock synchronization	
• supports	Yes
• to PC-CP, Slave	Yes
S7 message functions	
SCAN procedure	No
Process diagnostic messages	Yes; Alarm_S
Alarm 8 blocks	Yes
Instrumentation & control messages	No

	SIMATIC WinAC RTX 2005
Test commissioning functions	
Status/Control	
• Status/Control variable	Yes
Forcing	
• Forcing	No
Status block	Yes
Single step	Yes
Diagnostic buffer	
• present	Yes
• number of entries, max.	3,200
• preset	120
Communication functions	
PG/OP communication	Yes
Global data communication	
• supported	No
S7 basic communication	
• supported	No
S7 communication	
• as server	Yes
• as client	Yes
Number of connections	
• overall	64
• reserved for PG communication	1
• reserved for OP communication	1
1st interface	
Type of interface	CP 5611, CP 5611-A2, integrated PB interface of SIMATIC PC
Number of simult. operable CPs	max. 1
Physics	RS 485 / PROFIBUS
isolated	Yes
Functionality	
• MPI	No
• DP master	Yes
• DP slave	No
DP master	
• Number of connections, max.	8
• Services	
- PG/OP communication	Yes
- Routing	Yes
- Global data communication	No
- S7 basic communication	No
- S7 communication	Yes
- SYNC/FREEZE	Yes
- Activation/deactivation of DP slaves	Yes
- direct data exchange (cross traffic)	Yes
- DPV0	Yes
- DPV1	Yes
• Transmission speed, max.	12 Mbit/s
• Number of DP slaves, max.	64

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Technical specifications (continued)

	SIMATIC WinAC RTX 2005
• Address area	
- Inputs, max.	16 KB
- Outputs, max.	16 KB
• Useful data per DP slave	
- Inputs, max.	244 Byte
- Outputs, max.	244 Byte
2nd interface	
Type of interface	CP 5613, CP 5613-A2
Number of simult. operable CPs, max.	4
Physics	RS 485 / PROFIBUS
isolated	Yes
Functionality	
• MPI	No
• DP master	Yes
• DP slave	No
• PROFINET CBA	No
• PROFINET CBA-SRT	No
• PROFINET IO Controller	No
DP master	
• Number of connections, max.	50
• Services	
- PG/OP communication	Yes
- Routing	Yes
- Global data communication	No
- S7 basic communication	No
- S7 communication	Yes
- equidistance support	Yes
- SYNC/FREEZE	Yes
- Activation/deactivation of DP slaves	Yes
- direct data exchange (cross traffic)	Yes
- DPV0	Yes
- DPV1	Yes
• Transmission speed, max.	12 Mbit/s
• Number of DP slaves, max.	125
• Adress area	
- Inputs, max.	16 KB
- Outputs, max.	16 KB
• Useful data per DP slave	
- Inputs, max.	244 Byte
- Outputs, max.	244 Byte

	SIMATIC WinAC RTX 2005
Isochronous mode	
Isochronous mode	Yes
Number of DP masters with isochronous mode	2
Useful data per isochronoous slave, max.	128 Byte
Equidistance	Yes
Shortest clock pulse	2.2 ms; 2.2 ms without partial process image; 2.2 ms with partial process image
CPU/ programming	
Programming language	
• STEP 7	Yes; V5.3, SP2 and higher, Engineering Tools (optional)
• LAD	Yes
• FUP	Yes
• AWL	Yes
• SCL	Yes
• CFC	Yes
• GRAPH	Yes
• HiGraph®	Yes
Software libraries	
• Easy Motion Control	Yes
Nesting levels	8
User program protection/password protection	No
Open Development interfaces	
• CCX (Custom Code Extension)	Yes; with WinAC ODK V4.1
• SMX (Shared Memory Extension)	Yes; with WinAC ODK V4.1
- Inputs	4 KB
- Outputs	4 KB
• CMI (Controller Management Interface)	Yes; with WinAC ODK V4.1
Hardware requirements	
required hardware	PC with color monitor, keyboard, mouse or pointing device for Windows
Required memory on hard disk, min.	100 MB
Processor	Intel Pentium 400 MHz
• Multi-processor system	Yes; Dual Pentium
• Hyperthreading	Yes
Operating systems	
Operating system	
• Windows NT 4.0	No
• Windows 2000	Yes; Professional, >=SP3
• Windows XP	Yes; Professional, SP1 and SP2

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SIMATIC WinAC Software PLC

Ordering data		Order No.			Order No.
SIMATIC WinAC RTX 2005	B	**6ES7 671-0RC05-0YA0**	**Communications processor CP 5611 A2**	A	**6GK1 561-1AA01**
Software-based PC-based control system for applications requiring a strictly deterministic response; CD-ROM with electronic documentation in English, French and German; Single license, for Windows 2000/XP			PCI card (32-bit) for PCI card (32-bit) for connection of a programming device or a PC to PROFIBUS		
SIMATIC WinAC RTX 2005 Upgrade	B	**6ES7 671-0RC05-0YE0**	**Communications processor CP 5613 A2**		**6GK1 561-3AA01**
For upgrading Basis/RTX V3.x, V4.0, V4.1 to 2005; Single License, for Windows 2000/XP			PCI card (32-bit; 3.3 V/5 V) for connection to PROFIBUS incl. DP-Base software with NCM PC; DP-RAM interface for DP master, incl. PG and FDL protocol; single license for 1 installation, runtime software, software and electronic manual on CD-ROM, Class A, for 32-bit Windows 2000 Professional/Server, Windows XP Professional, German/English		

A) Subject to export regulations: AL: N and ECCN: EAR99H
B) Subject to export regulations: AL: N and ECCN: EAR99S

Note:
For ready-to-use embedded systems with preinstalled WinCC flexible and WinAC RTX please refer to chapter 2 "Embedded Automation".

4

Overview

- WinAC Slot 412/416:
  Slot PLCs for PC-based applications requiring deterministic features, availability and high operational safety.
- Independent operation of PC from an external 24 V supply and backup battery

Products
- WinAC Slot 412:
  - PC-based controller as PCI board based on CPU 412-2 PCI
  - PROFIBUS DP and PROFIBUS DP/MPI interface onboard
- WinAC Slot 416:
  - PC-based controller as PCI board based on CPU 416-2 PCI
  - PROFIBUS DP and PROFIBUS DP/MPI interface onboard

Application

SIMATIC WinAC Slot 412/416 are particularly suitable for applications requiring an increased degree of fail-safety and ruggedness for the control components, where additional PC tasks for optimization, recipe management, archiving or also technological tasks such as measured-value or image processing have to be solved.

The optional WinAC Open Development Kit (ODK) enables effective integration of the WinAC Slot with further automation tasks in the same PC:

- Very fast and effective data transfer between WinAC Slot and application-specific PC software
- Integration of operating functions of the WinAC Slot PLCs into the customer application

Technical specifications

	SIMATIC WinAC Slot 412 V4.0	SIMATIC WinAC Slot 416 V4.0
Supply voltage		
Rated value		
• 24 V DC	Yes; Safety extra low voltage SELV	Yes; Safety extra low voltage SELV
• permissible range, lower limit (DC)	20.4 V	20.4 V
• permissible range, upper limit (DC)	28.8 V	28.8 V
• permissible range (ripple included), lower limit (DC)	18.5 V	18.5 V
• permissible range (ripple included), upper limit (DC)	30.2 V	30.2 V
Voltage and currents		
Power consumption		
• with external supply, max.	19 W	19 W
• with supply from the PC, max.	10 W	10 W
Current consumption		
from external supply (24 V DC), max.	1 A	1 A
from PCI interface (5 V DC), max.	0.8 A	0.8 A
from PCI interface (12 V DC), max.	0.4 A	0.4 A
Power loss, max.	11 W	11 W
Backup battery		
• Voltage	3.6 V; Lithium	3.6 V
• Buffer current, typ.	500 µA	900 µA
• Buffer current, max.	1,300 µA	1,950 µA
• Backup time, min.	1,110 h	740 h
• Backup time, typ.	2,900 h	1,610 h
• Memory		
- integrated	384 KB	
- integrated (for program)	192 KB	1.6 MB
- integrated (for data)	192 KB	1.6 MB
• Load memory		
- expandable FEPROM	Yes; Memory card (FLASH)	Yes
- expandable FEPROM, max.	64 MB	64 MB
- integrated RAM, max.	256 KB	356 KB
- expandable RAM	Yes; Memory card (FLASH)	Yes
- expandable RAM, max.	64 MB	64 MB
CPU/ blocks		
DB		
• Number, max.	511	4,095
• Size, max.	64 KB	64 KB
FB		
• Number, max.	256	2,048
• Size, max.	64 KB	64 KB

Logic Control
SIMATIC PC-based Control

SIMATIC WinAC Slot PLC

■ Technical specifications (continued)

	SIMATIC WinAC Slot 412 V4.0	SIMATIC WinAC Slot 416 V4.0
FC		
• Number, max.	256	2.048
• Size, max.	64 KB	64 KB
OB		
• Size, max.	64 KB	64 KB
Nesting depth		
• per priority class	24	24
• additional within an error OB	1	2
CPU/processing times		
for bit operations, min.	0.1 μs	0.04 μs
for fixed point arithmetic, min.	0.1 μs	0.04 μs
for floating point arithmetic, min.	0.3 μs	0.12 μs
Times/counters and their remanence		
S7 counter		
• Number	2,048	2,048
• Remanence		
- adjustable	Yes	Yes
- lower limit	0	0
- upper limit	2,047	2,047
- preset	Z 0 to Z 7	Z 0 to Z 7
• Counting range		
- adjustable	Yes	Yes
- upper limit	999	999
IEC counter		
• present	Yes	Yes
• type	SFB	SFB
S7 times		
• Number	2,048	2,048
• Remanence		
- lower limit	0	0
- upper limit	2,047	2,047
- preset	No timers retentive	No timers retentive
• Time range		
- lower limit	10 ms	10 ms
- upper limit	9,990 s	9,990 s
IEC timer		
• present	Yes	Yes
• type	SFB	SFB
Data areas and their remanence		
Remanence without UPS and PS Extension Board	None	None
Remanence with UPS	None	None
Remanence with PS extension board and battery	Total working and load memory	Total working and load memory (with backup battery)
Flags		
• Number, max.	4 KB	16 KB
• of which remanent	MB 0 to MB 4095	MB 0 to MB 16383
• Remanence preset	MB 0 to MB 15	MB 0 to MB 15
• Number of clock memories	8	8

	SIMATIC WinAC Slot 412 V4.0	SIMATIC WinAC Slot 416 V4.0
Address area		
I/O address area		
• Inputs	4 KB	16 KB
• Outputs	4 KB	16 KB
• of which, distributed		
- MPI/DP interface, inputs	2 KB	2 KB
- MPI/DP interface, outputs	2 KB	2 KB
- DP interface, inputs	4 KB; (for each line that is operated in isochronous mode, i.e. to which an OB61 to 62 has been assigned, the distributed IO address areas are halved)	8 KB
- DP interface, outputs	4 KB; (for each line that is operated in isochronous mode, i.e. to which an OB61 to 62 has been assigned, the distributed IO address areas are halved)	8 KB
Process image		
• Inputs, adjustable	4 KB	16 KB
• Outputs, adjustable	4 KB	16 KB
• Inputs, preset	128 Byte	512 Byte
• Outputs, preset	128 Byte	512 Byte
Subprocess images		
• Number of subprocess images	15	15
Hardware configuration		
Number of DP masters		
• overall	2	2
• integrated	2	2
Number of operable FMs and CPs (recommended)		
• FM	FM distributed: FM 350-1, FM 350-2, FM 351, FM 352, FM 353, FM 354, FM 355, FM 355-2	FM distributed: FM 350-1/ 350-2, FM 351, FM 352, FM 353, FM 354, FM 355, FM 355-2
• CP, point-to-point	CP 340, CP 341 distributed	CP 340, CP 341 distributed
• CP, LAN	using PC-CP	using PC-CP

■ **Technical specifications** (continued)

	SIMATIC WinAC Slot 412 V4.0	SIMATIC WinAC Slot 416 V4.0
Time		
Clock		
• Hardware clock (real-time clock)	Yes	Yes
• buffered and synchronizable	Yes	Yes
Operating hours counter		
• Number	8	8
Clock synchronization		
• supported	Yes	Yes
• to PC-CP, slave	Yes	Yes
• to MPI, master	Yes	Yes
• to MPI, slave	Yes	Yes
S7 message functions		
Number of login stations for message functions, max.	8	12
SCAN procedure	Yes	Yes
Process diagnostic messages	Yes; (Alarm_S)	Yes
Alarm 8-blocks	Yes	Yes
Instrumentation & control messages	Yes	Yes
Test commissioning functions		
Status/Control		
• Status/Control variable	Yes	Yes
Forcing		
• Forcing	Yes	Yes
Status block	Yes	Yes
Single step	Yes	Yes
Diagnostic buffer		
• present	Yes	Yes
• number of entries, max.	400	3,200
• preset	120	120
Communication functions		
PG/OP communication	Yes	Yes
Global data communication		
• supported	Yes	Yes
S7 basic communication		
• supported	Yes	Yes
S7 communication		
• as server	Yes	Yes
• as client	Yes	Yes
Number of connections		
• overall	16	64
• reserved for PG communication	1	1
• reserved for OP communication	1	1
1st interface		
Type of interface	RS 485 / PROFIBUS	RS 485 / PROFIBUS
Physics	RS 485	RS 485
isolated	Yes	Yes

	SIMATIC WinAC Slot 412 V4.0	SIMATIC WinAC Slot 416 V4.0
Functionality		
• MPI	Yes	Yes
• DP master	Yes	Yes
• DP slave	Yes	Yes
MPI		
• Number of connections	16	44
• Services		
- PG/OP communication	Yes	Yes
- Routing	Yes	Yes
- Global data communication	Yes	Yes
- S7 basic communication	Yes	Yes
- S7 communication	Yes	Yes
• Transmission speed, max.	12 Mbit/s	12 Mbit/s
DP master		
• Number of connections, max.	16	32
• Services		
- PG/OP communication	Yes	Yes
- Routing	Yes	Yes
- Global data communication	No	No
- S7 basic communication	Yes	Yes
- S7 communication	Yes	Yes
- Equidistance support	Yes	Yes
- SYNC/FREEZE	Yes	Yes
- Activation/deactivation of DP slaves	Yes	Yes
- direct data exchange (cross traffic)	Yes	Yes
- DPV0	Yes	Yes
- DPV1	Yes	Yes
• Transmission speed, max.	12 Mbit/s	12 Mbit/s
• Number of DP slaves, max.	32	32
• Address area		
- Inputs, max.	2 KB	2 KB
- Outputs, max.	2 KB	2 KB
• Useful data per DP slave		
- Inputs, max.	244 Byte	244 Byte
- Outputs, max.	244 Byte	244 Byte
DP slave		
• Services		
- PG/OP communication	Yes	Yes
- Routing	Yes	Yes
- Status/control	Yes	Yes
- Programming	Yes	Yes
• Transmission speed, max.	12 Mbit/s	12 Mbit/s
• Transfer memory		
- Inputs	244 Byte	244 Byte
- Outputs	244 Byte	244 Byte
• Address area, max.	32	32
• Useful data per address area, max.	32 Byte	32 Byte
• Useful data per address area, of which consistent, max.	32 Byte	32 Byte

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Logic Control
SIMATIC PC-based Control

SIMATIC WinAC Slot PLC

■ **Technical specifications** (continued)

	SIMATIC WinAC Slot 412 V4.0	SIMATIC WinAC Slot 416 V4.0
2nd interface		
Type of interface	RS 485 / PROFIBUS	RS 485 / PROFIBUS
Physics	RS 485	RS 485
isolated	Yes	Yes
Functionality		
• MPI	No	No
• DP master	Yes	Yes
• DP slave	Yes	Yes
DP master		
• Number of connections, max.	16	32; if a diagnostic repeater is used on the line, the number of connection resources on the line is reduced by 1
• Services		
- PG/OP communication	Yes	Yes
- Routing	Yes	Yes
- Global data communication	No	No
- S7 basic communication	Yes	Yes
- S7 communication	Yes	Yes
- equidistance support	Yes	Yes
- SYNC/FREEZE	Yes	Yes
- Activation/deactivation of DP slaves	Yes	Yes
- direct data exchange (cross traffic)	Yes	Yes
- DPV0	Yes	Yes
- DPV1	Yes	Yes
• Transmission speed, max.	12 Mbit/s	12 Mbit/s
• Adress area		
- Inputs, max.	4 KB	8 KB
- Outputs, max.	4 KB	8 KB
• Useful data per DP slave		
- Inputs, max.	244 Byte	244 Byte
- Outputs, max.	244 Byte	244 Byte
DP slave		
• Services		
- PG/OP communication	Yes	Yes
- Routing	Yes	Yes
- Status/control	Yes	Yes
- Programming	Yes	Yes
• Transmission speed, max.	12 Mbit/s	12 Mbit/s
• Transfer memory		
- Inputs	244 Byte	244 Byte
- Outputs	244 Byte	244 Byte
• Address area, max.	32	32
• Useful data per address area, max.	32 Byte	32 Byte
• Useful data per address area, of which consistent, max.	32 Byte	32 Byte

	SIMATIC WinAC Slot 412 V4.0	SIMATIC WinAC Slot 416 V4.0
Isochronous mode		
Isochronous mode	Yes	Yes
Number of DP masters with isochronous mode	2	2
Useful data per isochronoous slave, max.	244 Byte	244 Byte
Equidistance	Yes	Yes
CPU/ programming		
Programming language		
• STEP 7	Yes; V5.3, SP2 and higher	Yes; V5.3, SP2 and higher
• LAD	Yes	Yes
• FUP	Yes	Yes
• AWL	Yes	Yes
• SCL	Yes	Yes
• CFC	Yes	Yes
• GRAPH	Yes	Yes
• HiGraph®	Yes	Yes
Software libraries		
• Easy Motion Control	Yes	Yes
User program protection/password protection	Yes	Yes
Open Development interfaces		
• CCX (Custom Code Extension)	No	No
• SMX (Shared Memory Extension)	Yes; with WinAC ODK V4.1	Yes
- Inputs	4 KB	4 KB
- Outputs	4 KB	4 KB
• CMI (Controller Management Interface)	Yes; with WinAC ODK V4.1	Yes
Hardware requirements		
required hardware	PC with color monitor, keyboard, mouse or pointing device for Windows	PC with color monitor, keyboard, mouse or pointing device for Windows
Required memory on hard disk, min.	60 MB	60 MB
Processor	256 MB	128 MB
• Multi-processor system	Yes	Yes
• Hyperthreading	Yes	Yes
Operating systems		
Operating system		
• Windows NT 4.0	No	No
• Windows 2000	Yes; Professional, SP3 and higher	Yes; SP3 and higher
• Windows XP	Yes; Professional, SP1 and SP2	Yes; SP1 and SP2
Dimensions		
Width	98 mm	98 mm
Height	288 mm	288 mm
required slots	1; PCI, PCI format: 3/4	1; PCI, PCI format: 3/4

■ **Ordering data**

	Order No.		Order No.
SIMATIC WinAC Slot 412 V4.0	**6ES7 673-2CC40-0YA0**	*Additional components*	
PC-based control system with Slot-PLC CPU 412-2 PCI, 384 KB RAM; with electronic documentation (German, English, French) and software on CD-ROM; single license, for Windows 2000/ XP Professional		**Backup battery** for WinAC Slot 412/416	**6ES7 971-2BA00-0AA0**
		RAM memory card Long design	
		• 64 KB	**6ES7 952-0AF00-0AA0**
		• 256 KB	**6ES7 952-1AH00-0AA0**
		• 1 MB	**6ES7 952-1AK00-0AA0**
SIMATIC WinAC Slot 416 V4.0	**6ES7 673-6CC40-0YA0**	• 2 MB	**6ES7 952-1AL00-0AA0**
PC-based control system with Slot-PLC CPU 416-2 PCI, 3.2 MB RAM; with electronic documentation (German, English, French) and software on CD-ROM; single license, executes with Windows 2000/XP Professional		**FEPROM memory card** Long design, 5 V Flash EPROM	
		• 64 KB	**6ES7 952-0KF00-0AA0**
		• 256 KB	**6ES7 952-0KH00-0AA0**
		• 1 MB	**6ES7 952-1KK00-0AA0**
		• 2 MB	**6ES7 952-1KL00-0AA0**
		• 4 MB	**6ES7 952-1KM00-0AA0**
		• 8 MB	**6ES7 952-1KP00-0AA0**
		• 16 MB	**6ES7 952-1KS00-0AA0**
		• 32 MB	**6ES7 952-1KT00-0AA0**
		• 64 MB	**6ES7 952-1KY00-0AA0**

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Logic Control
SIMATIC PC-based Control

SIMATIC WinAC ODK

Overview

- SIMATIC WinAC Software PLCs and SIMATIC WinAC Slot PLCs support powerful interfaces which allow the control task to be closely integrated with PC-based applications.
- WinAC ODK allows users to develop new applications or to integrate existing applications into the control task.
- New with WinAC ODK V4.1:
  WinAC ODK V4.1 also allows the development of applications for WinAC Slot and replaces WinAC Slot T-Kit.

Application

WinAC ODK can be used to meet the following requirements:

- Integration of specific technology into the control task, e.g. measured data acquisition or analysis, vision systems or PC-based motion solutions.
- Access to typical PC resources such as file system, interfaces etc.

Typical examples of uses for WinAC ODK include:

- Connection of specific fieldbus systems to the controller
- Direct, powerful connection of the control program to a production database
- Integration of robotics systems
- Implementation of specific communication protocols

Technical specifications

	6ES7 806-1CC02-0BA0
CPU/ programming	
Open Development interfaces	
• CCX (Custom Code Extension)	Yes; C/C++, Unmanaged Code
• SMX (Shared Memory Extension)	Yes; C/C++, Unmanaged Code
• CMI (Controller Management Interface)	Yes; C/C++, C#, VB
Hardware requirements	
required hardware	PC with color monitor, keyboard, mouse or pointing device for Windows
Required memory on hard disk, min.	10 MB
Main memory, min.	256 MB
Processor	Intel Pentium 800 MHz
Software requirements	
required software	MS Visual Developers Studio, V6.0 >= SP 3; MS Visual Developers Studio .net 2003; VenturCom SDK V6.0 (only for real time applications with WinAC RTX)
Operating systems	
Operating system	
• Windows NT 4.0	No
• Windows 2000	Yes; Professional, SP 3 or higher
• Windows XP	Yes; Professional, SP 1
Software	
Configuration software	
• Description	WinAC product support for: WinAC Basis V4.1; WinAC RTX V4.1; WinAC Slot V3.4

Ordering data — Order No.

SIMATIC WinAC ODK V4.1

for using C/C++ code in WinAC PLCs, runs under Windows NT 2000/XP; CD-ROM with electronic documentation in English

Single License — B — **6ES7 806-1CC02-0BA0**

B) Subject to export regulations: AL: N and ECCN: EAR99S

SIMATIC Industrial Software

■ **Application**

The SIMATIC industrial software is a system of seamlessly integrated software tools for SIMATIC programmable controllers. It provides convenient functions for all phases of an automation project:

- Planning, configuring and parameterization of hardware and communication
- Creation of the user program
- Documentation
- Testing and startup
- Service
- Process control
- Archiving

The integration of all software packages into a single user interface makes efficient and task-oriented work possible.

■ **Design**

SIMATIC industrial software is modular-designed. The individual tools can be used individually depending on the particular application.

Four software classes are available:

- Standard tools:
  Basis for programming the SIMATIC hardware
- Engineering tools:
  High-level programming languages and technology-oriented software
- Runtime software:
  Ready-to-use runtime software for the production process
- Human Machine Interfaces (HMI):
  Software specifically designed for operator control and monitoring

Standard tools

Standard tools form the programming base for SIMATIC S7/M7/C7 programmable controllers. They are always required for programming.

Engineering tools

Engineering tools are task-oriented tools which can be used in addition to standard tools. They allow the user to focus on the actual project task and to work according to his or her preferences.

Engineering tools perceptibly reduce engineering costs and substantially increase convenience. Engineering tools include:

- High-level languages for the programmer
- Graphics languages for the technical experts
- Supplementary software for diagnosis, simulation, remote maintenance, plant documentation, etc.

Runtime software

Runtime software includes preprogrammed solutions, which are called by the user program. Runtime software is directly incorporated in the automation solution.

There are two versions of runtime software:

- Hardware-bundled:
  Software assigned to a specific hardware, such as function blocks for function modules
- Hardware-unbundled:
  Software with general hardware requirements, such as PRODAVE

Runtime software includes, for example:

- Control for SIMATIC S7, such as standard, modular and fuzzy control
- Tools for integrating automation systems into Windows applications

Human Machine Interface

Human Machine Interface software is specially designed for operator control and process monitoring with SIMATIC. Various software packages can be used depending on the automation system being employed.

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Logic Control
SIMATIC Industrial Software

STEP 7

■ **Overview**
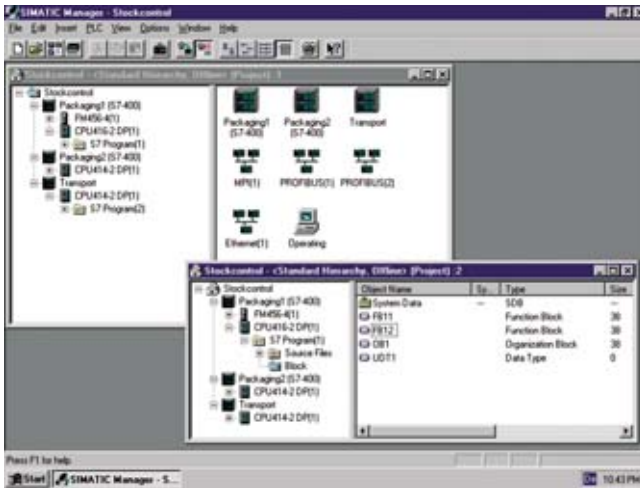
- STEP 7 basic software:
  The standard tool for the SIMATIC S7, SIMATIC C7 and
  SIMATIC WinAC automation systems.
- Makes use of the full performance capabilities of the systems
- User-friendly functions for all phases of an automation project:
  - Configuring and parameterizing the hardware
  - Definition of communication
  - Programming
  - Testing, commissioning and service
  - Documentation, archiving
  - Operating, diagnostics functions

Components for connecting a PC to MPI and PROFIBUS

The components described below are used to connect pro-
gramming devices and PCs (incl. notebooks) to PROFIBUS and
to the multipoint SIMATIC S7 MPI interface in conjunction with
STEP 7.

PC adapter USB

- To connect a PC to the SIMATIC S7 programmable controller
  via the USB port.
- Connectable to USB 1.1 and 2.0 ports.
- Applicable for SIMATIC S7-200, S7-300, S7-400 and C7.
- Supports routing.
- Automatic transmission rates and profile search.
- Noticeably improved performance (up to three times faster
  than the PC adapter via RS 232).
- Including subsequently updatable firmware (e.g. for function
  expansions or troubleshooting).
- Applicable in Windows 2000, Windows XP Home and
  Windows XP Professional.
- Scope of delivery:
  - PC adapter USB
  - CD "SIMATIC Software PC Adapter USB" including software
    and documentation
  - USB cable, 5 m
  - MPI cable, 0.3 m

CP 5512

- For PGs/PCs/Notebooks with PCMCIA slot
- PCMCIA card type II (Cardbus 32 bit)
- Incl. adapter with 9-pin sub-D socket for connection
  to PROFIBUS
- CP 5611 or CP 5611-MPI
- For PGs/PCs with PCI slot
- Short PCI card (32 bit)
- CP 5611-MPI with MPI cable

Components for connecting the PC to Industrial Ethernet

The PC modules described below are used to connect program-
ming devices and AT-compatible PCs/notebooks to Industrial
Ethernet in conjunction with STEP 7 and SOFTNET-PG (as of
V6.0).

CP 1512

- For programming devices/ PCs/notebooks with PCMCIA slot
- PCMCIA slot Type II (32 bit cardbus); 10/100 Mbit/s
- Incl. adapter with RJ45 socket for connection to Industrial
  Ethernet

CP 1612

- For programming devices/PCs with PCI slot
- Short PCI card (32 bit); 10/100 Mbit/s
- Incl. RJ45 socket for connection to Industrial Ethernet

Please refer to the respective product catalog for technical infor-
mation regarding product versions and supported operating
systems.

■ **Ordering data**   Order No.   Order No.

STEP 7 Version 5.4	
Target system: SIMATIC S7-300/-400, SIMATIC C7, SIMATIC WinAC *Requirements:* Windows 2000 Prof./XP Prof. *Delivery package:* German, English, French, Spanish, Italian; incl. 3.5" authorization disk, without documentation	
• Floating License on CD	**6ES7 810-4CC08-0YA5**
• Rental License for 50 hours	**6ES7 810-4CC08-0YA6**
• Software Update Service on CD	6ES7 810-4BC01-0YX2
• Upgrade Floating License 3.x/4.x/5.x to V5.4; on CD	**6ES7 810-4CC08-0YE5**
• Powerpack STEP 7 Lite V2.0 to STEP 7 V5.4; Floating License on CD	**6ES7 810-4CC08-0YC5**
• Trial License STEP 7 V5.4; on CD, 14 days trial	**6ES7 810-4CC08-0YA7**
STEP 7 Version 5.3 Japanese	
Target system: SIMATIC S7-300/-400, SIMATIC C7, SIMATIC WinAC *Requirements:* Windows XP Professional Japanese *Delivery package:* English, Japanese; with 3.5" authorization diskette, without documentation	
• Floating License Japanese on CD	**6ES7 810-4CC07-0JA5**
• Rental License for 50 hours	**6ES7 810-4CC07-0JA6**
• Upgrade Floating License japanese 3.x/4.x/5.x to V5.3; on CD	**6ES7 810-4CC07-0JE5**
STEP 7 Version 5.3 Chinese	
Target system: SIMATIC S7-300/-400, SIMATIC C7, SIMATIC WinAC *Requirements:* Windows XP Professional Chinese *Delivery package:* English, Chinese; with 3.5" authorization diskette, without documentation	
• Floating License chinese on CD	**6ES7 810-4CC07-0KA5**
• Rental License for 50 hours	**6ES7 810-4CC07-0KA6**
• Upgrade Floating License chinese 3.x/4.x/5.x to V5.3; on CD	**6ES7 810-4CC07-0KE5**
Documentation package STEP 7 basic information	
Comprising Getting Started, hardware configuration manual, programming manual, migration manual	
• German	**6ES7 810-4CA08-8AW0**
• English	**6ES7 810-4CA08-8BW0**
• French	**6ES7 810-4CA08-8CW0**
• Spanish	**6ES7 810-4CA08-8DW0**
• Italian	**6ES7 810-4CA08-8EW0**

STEP 7 reference manuals		
Consisting of STL, LAD and FBD manuals as well as a reference manual for standard and system functions for SIMATIC S7-300/-400		
• German		**6ES7 810-4CA08-8AW1**
• English		**6ES7 810-4CA08-8BW1**
• French		**6ES7 810-4CA08-8CW1**
• Spanish		**6ES7 810-4CA08-8DW1**
• Italian		**6ES7 810-4CA08-8EW1**
SIMATIC Manual Collection	D	**6ES7 998-8XC01-8YE0**
Electronic manuals on CD-ROM, five languages: S7-200/300/400, C7, LOGO!, SIMATIC DP, PC, PG, STEP 7, engineering software, runtime software, PCS 7, SIMATIC HMI, SIMATIC NET		
SIMATIC Manual Collection update service for 1 year	D	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" CD and the three subsequent updates		
EPROM programming device, USB prommer		**6ES7 792-0AA00-0XA0**
For programming SIMATIC memory cards and EPROM modules		
MPI cable		**6ES7 901-0BF00-0AA0**
For linking SIMATIC S7 and CP through MPI (5 m)		
Components for connecting a PC to MPI and PROFIBUS		
For PCs with a free PCI slot:		
• CP 5611	A	**6GK1 561-1AA01**
• CP 5611 MPI with MPI cable (5 m)	A	**6GK1 561-1AM01**
For PCs with a free PCMCIA slot:		
• CP 5512 For Windows XP Professional		**6GK1 551-2AA00**
For PCs without a free PCI slot:		
• PC adapter USB for connecting a PC to S7-300/-400/C7 using USB interface; with USB cable (5 m)		**6ES7 972-0CB20-0XA0**
Components for connecting a PC to Industrial Ethernet		
For PCs with a free PCI slot:		
• CP 1612	A	**6GK1 161-2AA00**
For PCs with a free PCMCIA slot:		
• SOFTNET PG Edition 2005		**6GK1 704-1PW63-3AA0**

A) Subject to export regulations: AL: N and ECCN: EAR99H
D) Subject to export regulations: AL: N and ECCN: 5D992B1

Logic Control
SIMATIC Industrial Software

STEP 7 Professional

■ **Overview**

STEP 7 Professional supports all IEC languages.

In addition to the languages recognized by STEP 7:
- LAD,
- FBD and
- IL

The following are also available:
- "Sequential Function Chart"
- "Structured Text"

An offline simulation of programs created with these languages is included. STEP 7 Professional thus replaces the combination of the individual packages STEP 7, S7-GRAPH, S7-SCL and S7-PLCSIM.

A POWERPACK is offered to customers who use STEP 7 already and wish to change. A valid STEP 7 license is required for purchasing the POWERPACK. A separate update service is available for STEP 7 Professional.

■ **Ordering data**

	Order No.
STEP 7 Professional Edition 2006	
Target system: SIMATIC S7-300/-400, SIMATIC C7, SIMATIC WinAC *Requirements:* Windows 2000 Prof./XP Prof. *Delivery package:* German, English, French, Spanish, Italian; incl. 3.5" authorization disk, without documentation	
• Floating License	6ES7 810-5CC10-0YA5
• Rental License for 50 hours	6ES7 810-5CC10-0YA6
• Software Update Service	6ES7 810-5CC04-0YE2
• Upgrade Floating License to Edition 2006	6ES7 810-5CC10-0YE5
• Powerpack Floating License for upgrading from STEP 7 to STEP 7 Professional	6ES7 810-5CC10-0YC5
• Trial License STEP 7 Professional Edition 2006; on CD, 14 days trial	6ES7 810-5CC10-0YA7
Documentation package STEP 7 basic information	
Comprising Getting Started, hardware configuration manual, programming manual, migration manual	
• German	6ES7 810-4CA08-8AW0
• English	6ES7 810-4CA08-8BW0
• French	6ES7 810-4CA08-8CW0
• Spanish	6ES7 810-4CA08-8DW0
• Italian	6ES7 810-4CA08-8EW0
STEP 7 reference manuals	
Consisting of STL, LAD and FBD manuals as well as a reference manual for standard and system functions for SIMATIC S7-300/-400	
• German	6ES7 810-4CA08-8AW1
• English	6ES7 810-4CA08-8BW1
• French	6ES7 810-4CA08-8CW1
• Spanish	6ES7 810-4CA08-8DW1
• Italian	6ES7 810-4CA08-8EW1

	Order No.
SIMATIC Manual Collection D	6ES7 998-8XC01-8YE0
Electronic manuals on CD-ROM, five languages: S7-200/300/400, C7, LOGO!, SIMATIC DP, PC, PG, STEP 7, engineering software, runtime software, PCS 7, SIMATIC HMI, SIMATIC NET	
SIMATIC Manual Collection update service for 1 year D	6ES7 998-8XC01-8YE2
Current "Manual Collection" CD and the three subsequent updates	
EPROM programming device, USB prommer	6ES7 792-0AA00-0XA0
For programming SIMATIC memory cards and EPROM modules	
MPI cable	6ES7 901-0BF00-0AA0
For linking SIMATIC S7 and CP through MPI (5 m)	
Components for connecting a PC to MPI and PROFIBUS	
For PCs with a free PCI slot:	
• CP 5611 A	6GK1 561-1AA01
• CP 5611 MPI with MPI cable (5 m) A	6GK1 561-1AM01
For PCs with a free PCMCIA slot:	
• CP 5512 For Windows XP Professional	6GK1 551-2AA00
For PCs without a free PCI slot:	
• PC adapter USB for connecting a PC to S7-300/-400/C7 using USB interface; with USB cable (5 m)	6ES7 972-0CB20-0XA0
Components for connecting a PC to Industrial Ethernet	
For PCs with a free PCI slot:	
• CP 1612 A	6GK1 161-2AA00
For PCs with a free PCMCIA slot:	
• SOFTNET PG Edition 2005	6GK1 704-1PW63-3AA0

A) Subject to export regulations: AL: N and ECCN: EAR99H
D) Subject to export regulations: AL: N and ECCN: 5D992B1

Overview

- PASCAL-type high-level language
- Optimized for programming programmable controllers
- With PLCopen Base Level certificate
- For use in SIMATIC S7-300 (recommended for CPU 314 and CPU 312C or higher), S7-400, C7 and WinAC

Ordering data   Order No.

SIMATIC S7-SCL, Version 5.3

Task:
High-level programming lang.
Target system:
SIMATIC S7-300 (ab CPU 314),
SIMATIC S7-400, SIMATIC C7,
SIMATIC WinAC
Prerequisite:
STEP 7 V5.3 or higher
Delivery type:
on CD; German, English, French,
Spanish, Italian;
incl. authorization disk,
with electronic documentation

• Floating License	**6ES7 811-1CC05-0YA5**
• Software Update Service	**6ES7 811-1CA01-0YX2**
• Upgrade Floating License to V5.3	**6ES7 811-1CC05-0YE5**

SIMATIC Manual Collection	D	**6ES7 998-8XC01-8YE0**

Electronic manuals on CD-ROM,
five languages: S7-200/300/400,
C7, LOGO!, SIMATIC DP, PC, PG,
STEP 7, engineering software,
runtime software, PCS 7,
SIMATIC HMI, SIMATIC NET

SIMATIC Manual Collection update service for 1 year	D	**6ES7 998-8XC01-8YE2**

Current "Manual Collection" CD
and the three subsequent
updates

D) Subject to export regulations: AL: N and ECCN: 5D992B1

4

Logic Control
SIMATIC Industrial Software

S7-GRAPH

Overview
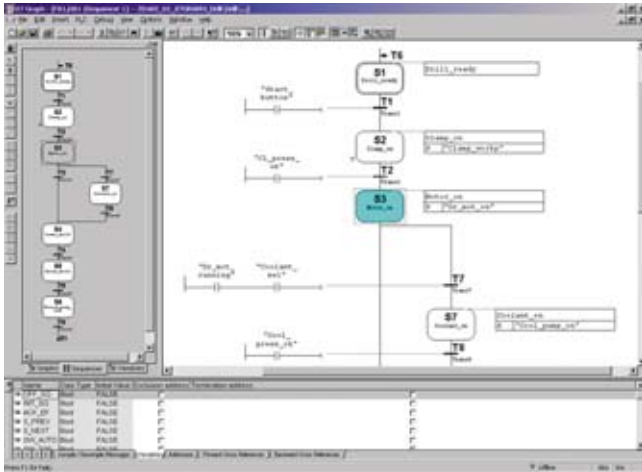
- For configuring and programming sequential processes using sequencers
- Standardized representation to DIN EN 1131-3
- Clearly comprehensible program thanks to structuring of the process into separate steps
- With extensive diagnostics functions, integrated into the SIMATIC diagnostics concept
- With PLCopen Base Level certificate
- For use in SIMATIC S7-300 (recommended for CPU 315 and CPU 312C or higher), S7-400, C7 and WinAC

Ordering data — Order No.

SIMATIC S7-GRAPH, Version 5.3

Task:
Configuration and programming of execution sequences
Target system:
SIMATIC S7-300,
SIMATIC S7-400, SIMATIC C7,
SIMATIC WinAC
Prerequisite:
STEP 7 ab V5.3
Delivery type:
on CD; German, English, French, Spanish, Italian;
incl. authorization disk,
with electronic documentation

	Order No.
• Floating License	**6ES7811-0CC06-0YA5**
• Software Update Service	**6ES7 811-0CA01-0YX2**
• Upgrade Floating License to V5.3	**6ES7811-0CC06-0YE5**

SIMATIC Manual Collection	D	**6ES7 998-8XC01-8YE0**

Electronic manuals on CD-ROM, five languages: S7-200/300/400, C7, LOGO!, SIMATIC DP, PC, PG, STEP 7, engineering software, runtime software, PCS 7, SIMATIC HMI, SIMATIC NET

SIMATIC Manual Collection update service for 1 year	D	**6ES7 998-8XC01-8YE2**

Current "Manual Collection" CD and the three subsequent updates

D) Subject to export regulations: AL: N and ECCN: 5D992B1

Overview
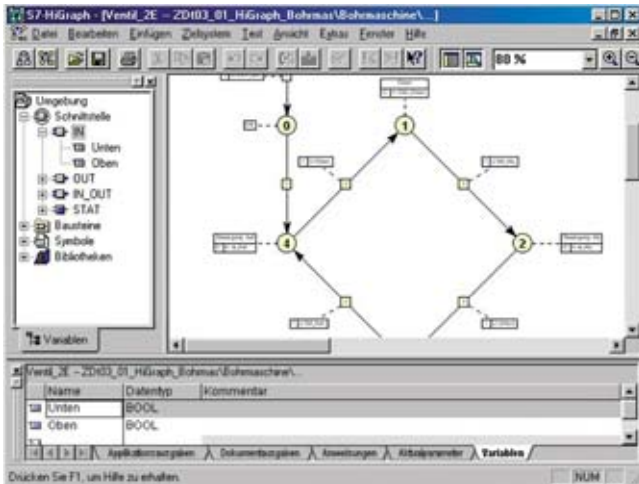
- For graphic description of asynchronous processes using state graphs
- Also particularly suitable for machine constructors (technologists), commissioning engineers and service engineers
- Extremely flexible using freely-positionable graphic elements
- With integrated monitoring and signaling functions
- Can be used in SIMATIC S7-300, S7-400, C7 and WinAC

Ordering data   Order No.

SIMATIC S7-HiGraph, Version 5.3	
Task: Programming of status graphs	
Target system: SIMATIC S7-300, SIMATIC S7-400, SIMATIC C7, SIMATIC WinAC	
Prerequisite: STEP 7 V5.3 or higher	
Delivery type: on CD; German, English, French, Spanish, Italian; incl. authorization disk, with electronic documentation	
• Floating License	**6ES7 811-3CC05-0YA5**
• Software Update Service	**6ES7 811-3BA01-0YX2**
• Upgrade Floating License to V5.3	**6ES7 811-3CC05-0YE5**
SIMATIC Manual Collection D	**6ES7 998-8XC01-8YE0**
Electronic manuals on CD-ROM, five languages: S7-200/300/400, C7, LOGO!, SIMATIC DP, PC, PG, STEP 7, engineering software, runtime software, PCS 7, SIMATIC HMI, SIMATIC NET	
SIMATIC Manual Collection update service for 1 year D	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" CD and the three subsequent updates	

D) Subject to export regulations: AL: N and ECCN: 5D992B1

4

Logic Control
SIMATIC Industrial Software

CFC

■ Overview
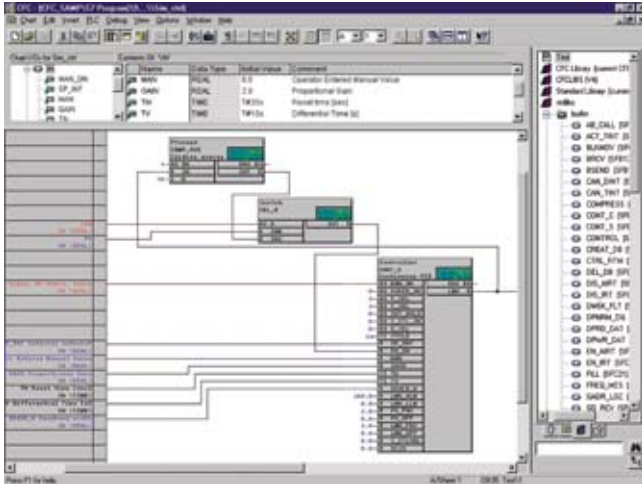
- For creating automation programs by drawing a function chart
- With extensive libraries of prefabricated function blocks to which function blocks created by the user can be added
- Reduced costs and fewer mistakes by simply interconnecting ready-to-use function blocks
- Optimized integration in the world of automation, for example, through guaranteed compatibility with all STEP 7 tools
- Can be used for SIMATIC S7-300 (recommended for CPU 316 or CPU 314C or higher), SIMATIC S7-400, SIMATIC WinAC and D7-SYS

■ Ordering data   Order No.

SIMATIC S7 CFC, Version 6.1

Task:
Graphic configuring and programming of automation applications in the form of technology-oriented diagrams
Target system:
SIMATIC S7-300/-400, SIMATIC WinAC, D7-SYS
Prerequisite:
STEP 7 V5.3, or higher
addit. S7-SCL V5.1 SP3 or higher
Delivery type:
Engineering software and electronic documentation on CD-ROM, License Key Disk, Emergency Key Disk, Certificate of License, Terms and Conditions

• Floating License	**6ES7 658-1EX16-2YA5**
• Upgrade License to Floating License V6.1	**6ES7 658-1EX16-2YE5**
• Software Update Service	**6ES7 658-1EX00-2YL8**
SIMATIC Manual Collection ^D	**6ES7 998-8XC01-8YE0**
Electronic manuals on CD-ROM, five languages: S7-200/300/400, C7, LOGO!, SIMATIC DP, PC, PG, STEP 7, engineering software, runtime software, PCS 7, SIMATIC HMI, SIMATIC NET	
SIMATIC Manual Collection update service for 1 year ^D	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" CD and the three subsequent updates	

D) Subject to export regulations: AL: N and ECCN: 5D992B1

Overview
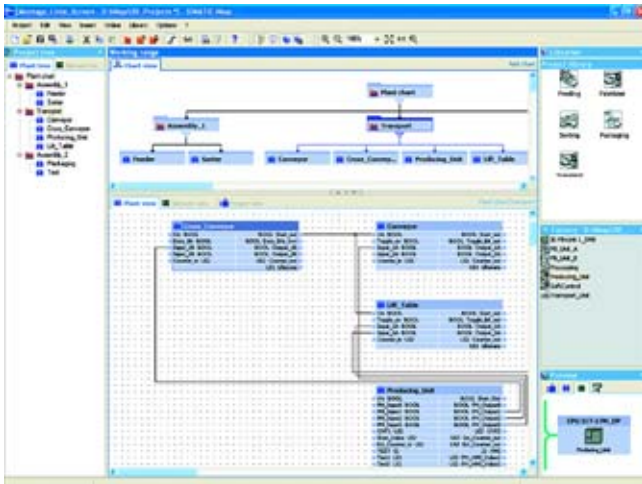
- Component-based software tool for configuring the communication in distributed automation solutions
- For easy graphical configuration of the communication between subsystems and machine-to-machine communication in the production line
- Based on the PROFINET standard
- Open for PROFINET devices from various manufacturers on Industrial Ethernet
- Runs under Windows 2000, Windows XP Professional and Windows 2003 Server

Ordering data   Order No.

SIMATIC iMap V3.0

Target system:
CPU 31x-2 PN/DP,
CPU 319-3 PN/DP,
SIMATIC WinAC PN,
SIMATIC NET IE/PB Link,
SIMATIC NET CP 343-1,
SIMATIC NET CP 343-1 Advanced,
SIMATIC NET CP 443-1 Advanced,
distributed I/O devices with own
CPU, PROFInet CBA OPC Server,
devices on the Industrial Ethernet
based on the PROFINET CBA
standard, SIMATIC OP's,
SIMATIC ProTool/Pro
Prerequisite:
Windows 2000 Prof. SP 4 and
higher or Windows XP Prof SP 1
and higher, or Windows 2003
Server SP 1 and higher; on PG or
PC with Pentium processor,
min. 1 GHz; STEP 7 V5.3 SP 3
and higher, PN OPC Server V6.3
and higher
Delivery type:
German, English,
with electronic documentation

• Single License	D	**6ES7 820-0CC04-0YA5**
• Software Update Service	D	**6ES7 820-0CC01-0YX2**
• Upgrade to V3.0, Single License	D	**6ES7 820-0CC04-0YE5**

D) Subject to export regulations: AL: N and ECCN: 5D992B1

4

Logic Control
Programming devices

Field PG M

■ Overview

- The mobile, industry-compatible programming device with the powerful Intel Pentium M processor
- It is ideal for start-up, servicing and maintaining automation systems
- Industrial notebook with wireless technology, large display, slow battery discharge, high-speed RAM and integrated data backup concept
- With all the usual interfaces for industrial applications

Note:

The hardware components of the SIMATIC programming devices are subject to a continuous development cycle. Information about current products can be obtained from:

- Your Siemens contact partner or
- The A&D Mall (*http://www.siemens.com/automation/mall*)

■ Ordering data   Order No.

Programming device Field PG M

		Order No.	
Field PG standard: 1.6 GHz Pentium M processor (730), DVD ROM/CD-RW combined drive, 15" XGA-Display (1024x768), 60 GB S-ATA hard disk, 1 x 1 GB DDR2 RAM	D	**6ES7 712-0AA0■ - 0■■4**	
Field PG Premium: 2 GHz Pentium M processor (760), Dual Layer Multi Standard DVD-RW, 15" SXGA+ Display (1400x1050), 80 GB S-ATA hard disk, 1x1 GB DDR2 RAM	D	**6ES7 712-1BB1■ - 0■■4**	

Power cable (required):

• for Germany, France, the Netherlands, Spain, Belgium, Austria, Sweden, Finland	0
• for Great Britain	1
• for Switzerland	2
• for the U.S.A., Japan	3
• for Italy	4
• for Germany, France, the Netherlands, Spain, Belgium, Austria, Sweden, Finland; Keyboard with country-specific labeling for France, Belgium and Switzerland	5
• for Switzerland; keyboard with country-specific labeling for France, Belgium and Switzerland	6

Operating system:

• Windows XP MUI Ger.,En.,Fr., Sp.,It.	A
• Windows 2000 English MUI (Fr., Sp., It., Ger. stored on HD as image)	B
• Windows 2000 German (Fr., Sp., It.; En stored on HD as image)	C

SIMATIC Software Licenses:

• Trial license for STEP 7 Prof., WinCC flexible Advanced	A
• Upgrade License STEP 7, STEP 5, WinCC flexible Advanced (requires license for STEP 7/ STEP 5 (V3.0 or higher))	B
• Upgrade License STEP 7 Professional, STEP 5, WinCC flexible Advanced (requires license for STEP 7 Professional / STEP 5 (1/2000 or higher))	C
• License STEP 7, STEP 7-Micro/WIN, WinCC flexible Advanced	D
• License STEP 7, STEP 5, STEP 7-Micro/WIN, WinCC flexible Advanced; incl. EPROM adapter and S5-CC cable	E
• License STEP 7 Professional, STEP 7-Micro/WIN, WinCC flexible Advanced	F
• License STEP 7 Prof., STEP 5, STEP 7-Micro/WIN, WinCC flexible Advanced; incl. EPROM adapter and S5-CC cable	G

D) Subject to export regulations: AL: N and ECCN: 5D992B1

Ordering data

		Order No.
Memory expansion		
512 MB DDR2-RAM 533	A	**6ES7 648-2AG30-0GA0**
1 GB DDR2-RAM 533	A	**6ES7 648-2AG40-0GA0**
USB mouse (PS/2-compatible)	A	**6ES7 790-0AA01-0XA0**
AC/DC power supply unit		**6ES7 798-0GA00-0XA0**
Power cable		
• for Germany, France, the Netherlands, Spain, Belgium, Austria, Sweden, Finland		**6ES7 900-5AA00-0XA0**
• for Great Britain		**6ES7 900-5BA00-0XA0**
• for Switzerland		**6ES7 900-5CA00-0XA0**
• for the U.S.A., Japan		**6ES7 900-5DA00-0XA0**
• for Italy		**6ES7 900-5EA00-0XA0**
Spare battery (lithium ion, 6.6 Ah) [1]		**6ES7 798-0AA05-0XA0**
MPI cable or connecting a PG and SIMATIC S7 using MPI; 5 m		**6ES7 901-0BF00-0AA0**
EPROM programming adapter for SIMATIC S5 EPROM programming using the Field PG		**6ES7 798-0CA00-0XA0**
Hard disk kit Swappable hard disk 80 GB S-ATA; with protective pocket and Torx screwdriver	A	**6ES7 791-2BA00-0AA0**
Rucksack for Field PG		**6ES7 798-0DA00-0XA0**

1) The capacity of the battery decreases for technological reasons with each charging/discharging operation and also as the result of being stored at excessively high or low temperatures. The running time per charge decreases therefore in the course of time. In normal use the battery can be charged and discharged over a period of six months from when the field PG is purchased.
Capacity loss is not covered by the warranty. For the battery's operation we grant a warranty of six months. We recommend replacing the battery with an original Siemens battery at the end of these six months if there is a significant drop in performance.

A) Subject to export regulations: AL: N and ECCN: EAR99H

4

Logic Control

4

Logic Control

Motion Control

5

Motion Control

Easy Motion Control

Overview
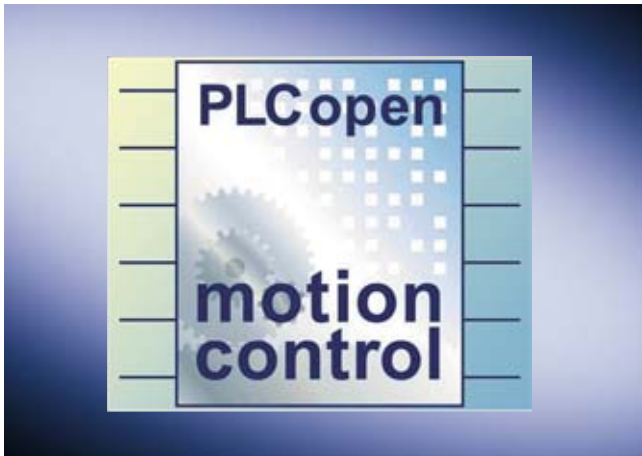
- Low-price package for simple positioning control and simple gearbox synchronism
- For use with any variable-speed standard drive, e.g. frequency converters, servo drive
- For incremental and absolute sensors

New features in version 2.0:
- Reduction of FB execution time
- New FB names acc. to PLCopen 1.0
- Gearbox synchronism (MC_GearIn)
- Driver for CPU 314C (FW Version 2.0 of the CPU and higher)
- PROFIBUS DP driver for MM4

Application

Easy Motion Control is a low-cost package for simple positioning control and for simple gearbox synchronism for up to three axes. It is suitable for use with any variable-speed standard drive, e.g., frequency converter, servo drive.

Incremental and absolute value encoders are supported.

Fields of application include:
- Single operating axes
- Positioning/setup axes
- Palletizers
- Feed devices
- Material transport

In the following sectors:
- Warehousing
- Woodworking and metal processing
- Packaging
- Paper processing
- Food industry etc

Function

Easy Motion Control offers the following basic functions for positioning:

- Absolute traverse:
  The axis travels to the specified position. With rotary axes, the destination can be approached in the positive or negative direction, or via the shortest path.
- Relative traverse:
  The axis travels the defined distance in the positive or negative direction.
- Homing, set reference point:
  Synchronizes the dimension system with the mechanical system.
- Gearbox synchronism:
  The axis moves with respect to another axis with gearbox synchronism.
- Jog:
  The axis moves as long as the control bit for one direction is present.
- Stop:
  Cancels traversing and brings the axis to standstill.
- Simulation:
  A program can be tested even if no real axes are present and no actual values are read in.
- Override:
  A factor between 0 and 100% can be applied to the speed of movement at any time. Acceleration and deceleration are not affected by this factor.
- Substitute traverse:
  Each traverse block can substitute another one. The current movement is transferred to the new movement with the defined acceleration or deceleration.

Further function blocks must be incorporated into the user program in addition, such as the position controller or input/output drivers.

The Easy Motion Control blocks are called in a time-controlled level, e.g., a cyclic interrupt. The function blocks of Easy Motion Control have been developed according to the technical specifications of PLCopen, version 1.0.

5

■ **Technical spedifications**

Memory requirements

Work memory required in byte

Block	Work memory required per block	Addit. required work memory per instance
MC_Init	1086	–
MC_MoveAbsolute	3924	112
MC_MoveRelative	2982	110
MC_MoveJog	3110	110
MC_Home	2886	104
MC_StopMotion	1114	70
MC_Control	1756	58
MC_Simulation	410	64
MC_GearIn	3476	128
Input driver	1416 ... 2654	76 ... 128
Output driver	384 ... 1242	52 ... 68
Axis data block	–	294

Execution time

Typical block execution times in µs

Block	CPU416-2DP 6ES7416-2XK02-AB0	CPU314C 6ES7314-6CF00-0AB0	CPU315-2DP 6ES7315-2AF03-0AB0	WinLCRTX3.1 to AMD, 1333 MHz
MC_Init	53	967	2203	21
MC_MoveAbsolute [1]	67	908	2138	18
MC_MoveRelative [1]	67	911	2143	18
MC_MoveJog [1]	48	605	1387	15
MC_Home [1]	49	592	1332	15
MC_StopMotion [1]	23	309	696	8
MC_Control	27	343	819	11
MC_Simulation	23	259	584	6
MC_GearIn	66	931	2130	21
Input driver	50	662	1323	44
Output driver	20	223	413	31

[1] The traverse blocks indicated require more runtime at the start of a traverse. Refer to the manual for more information.

■ **Ordering data**   Order No**.**

Easy Motion Control V2.0

Function:
Position-controlled positioning
with variable-speed standard
drives
Requirements:
Windows 95/98/NT 4.0/2000
Prof./XP Prof.;
Type of delivery:
with documentation (Ger, Engl),

• Single License	**6ES7 864-0AC01-0YX0**
• Single License, without software and documentation	**6ES7 864-0AF01-0YX0**

5

Motion Control

The SIMOTION system

Overview

The system approach

G_PM10_EN_00125
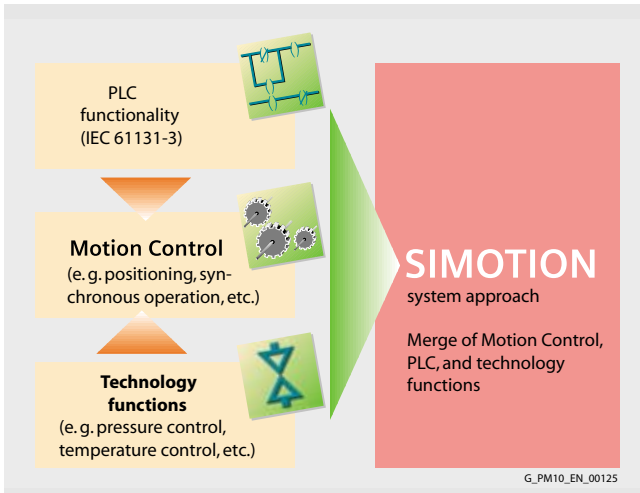
SIMOTION is available for all machines carrying out motion control tasks – from simple machines to the high-performance variety. The focus is on a simple and flexible solution to a huge variety of motion control tasks. In order to achieve this in the best way possible, a new system approach has been introduced:

Motion control has been combined with two other open-loop control functions found in most machines, namely, PLC and technology functions.

This approach enables the motion control of axes and machine control within the same system. The same applies to technology functions, such as pressure control of a hydraulic axis. A seamless switch can be made from position-controlled positioning mode to pressure control.

Combining the three open-loop control functions of motion control, PLC and technology functions has the following benefits:

- Reduced engineering overhead and increased machine performance
- Time-critical interfaces between the individual components are no longer required
- Simple, uniform and transparent programming and diagnostics of the entire machine

The SIMOTION system comprises three components:

Engineering system

Motion control, PLC and technology tasks can all be performed within an integrated system. The engineering system provides all the tools required for these tasks: From programming and parameterization, through testing and commissioning, to diagnostics.

Runtime software modules

These modules provide the various motion control and technology functions. The entire system functionality can be adapted to the machine as required by selecting the appropriate modules.

Hardware platforms

The hardware platforms form the basis of the SIMOTION Motion Control system. The application created by the engineering system and the associated runtime software modules can be used on various hardware platforms.

This means that you can always select the platform which is most suited to your machine, whether as a controller, an industrial PC or an intelligent module directly in the drive.

G_PM10_EN_00126
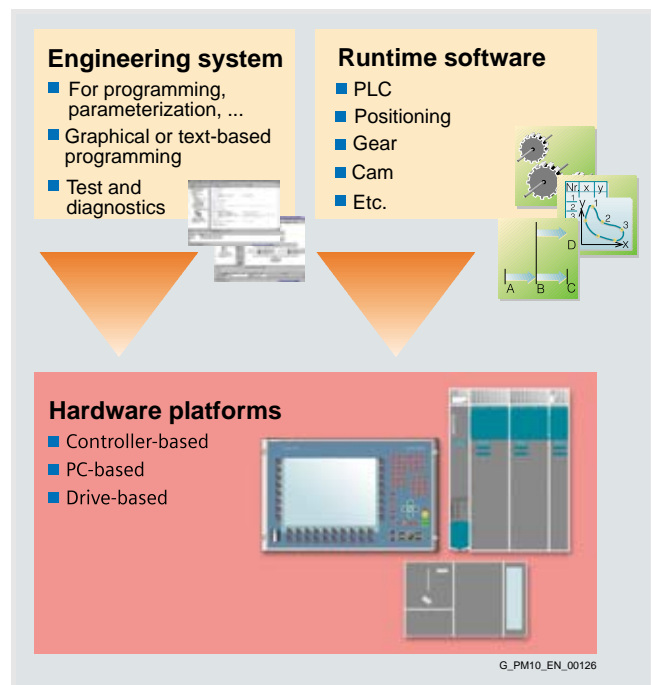
The fast path to the automation solution

With these system components and our concept of ready-to-apply standard applications and ready-to-run machine solutions in the form of SIMOTION Easy Set you can reduce your engineering costs, shorten your project times and thus get quicker to your complete automation solution.

■ **Overview**

Focus is on user friendliness

As the performance capability of a system grows, so do the requirements for user friendliness. Only in this way can simple operation of the system be ensured for users. For this reason, SIMOTION places particular emphasis on the user friendliness of the SCOUT engineering system, as follows:

• Engineering for Motion Control, PLC and technology, as well as drive configuration and commissioning are integrated in one system.

• Virtually all tasks are performed graphically, including configuring, programming, testing and commissioning.

• Intelligent operator prompting, a context-sensitive help function and an automatic consistency check all make life easier for users, particularly if they are only just beginning to work with Motion Control programming.

• All SCOUT engineering system tools are integrated and have a uniform look and feel.

In this way, the SCOUT engineering system assists you every step of the way, making engineering as a whole simple and efficient.

SCOUT can be used in SIMATIC STEP 7, either with integrated data management and configuration, or as a stand-alone engineering tool.

Programming for everyone

When programming SIMOTION you can choose between: Graphic programming using the MCC (Motion Control Chart), LAD (Ladder Diagram)/FBD (Function Block Diagram), or the ST (Structured Text) high-level language – the SCOUT engineering system understands all of these.

In addition to Motion Control commands (e. g. referencing of axis), commands for I/O access, logic and calculations, subroutine calls and controlling of the program flow are also available.

Complex motion relationships can also be programmed easily using cam editors.

Graphic programming

S_PM10_EN_00016
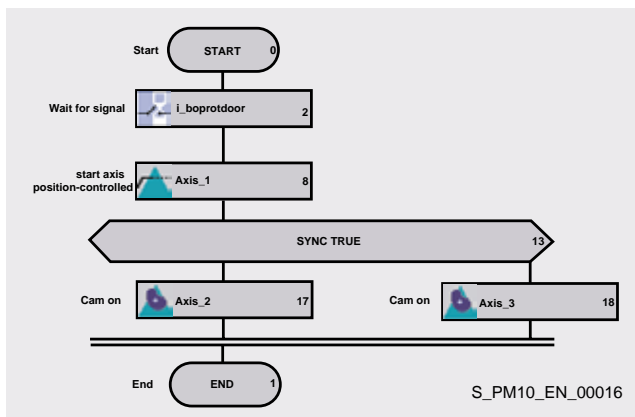
Motion Control Chart enables machine procedures to be programmed graphically as flowcharts. Since commands can be selected and parameterized easily, even beginners are able to achieve their objectives quickly.

PLC programming languages

S_PM10_EN_00017
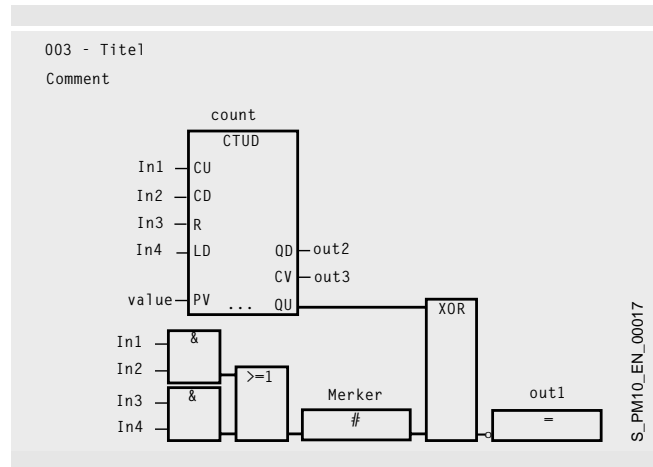
Are you familiar with the proven LAD (Ladder Diagram) and FBD (Function Block Diagram) programming languages?
Then SCOUT will allow you to use this knowledge. As well as the PLC functions defined in accordance with IEC 61131-3, additional system commands and functions are available to you, e. g. for Motion Control in accordance with PLCopen.

High-level language

```
 3   INTERFACE
 4       VAR_GLOBAL
 5           _mcc_product1 : DINT; //only Debugmode
 6       END_VAR
 7       VAR_GLOBAL RETAIN
 8       END_VAR
 9       VAR_GLOBAL CONSTANT
10       END_VAR
11   FUNCTION_BLOCK product1;
12   END_INTERFACE
13
14   IMPLEMENTATION
15       EXPRESSION _mcc_product1_condition1;
16           _mcc_product1_condition := (Transport_ein);
17       END_EXPRESSION
18       VAR
19           _mcc_count : INT; //Counter
20           _mccret_DINT : DINT;
21           _mccret_DWORD : DWORD;
22           _mccret_STRUCT : StructRetEncoderValue;
23       END_VAR
```

The Structured Text high-level language allows you to create applications which can be particularly well structured. You are supported in this by powerful editing and debugging functions.

5

Motion Control
SIMOTION SCOUT engineering system

The engineering system

■ **Overview** (continued)

Centralized management with integrated tools

All data for a particular machine can be managed within one project, including configuration data, programs, movement profiles, and drive data.

The appropriate tools, e. g. for entering a cam or commissioning a drive, are then called from the centralized project management.

Configuring axes

SIMOTION provides intelligent axis objects for simple handling of axes. You can create and configure such an object for each axis. The following details are specified:

- Name of the axis
- Associated drive
- Encoder parameterization
- Technology of the axis (e. g. speed-controlled, positioning or synchronized axis)
- Other data relating to the mechanical system of the axis (position control, limitations, etc.)

Using these axis objects has the following benefits:

Regardless of which drive type and connection or which measuring system is used by an axis: All axes are referred to in the same way by the application program i. e. with the axis name, commands and setpoints and return values such as status and actual values.
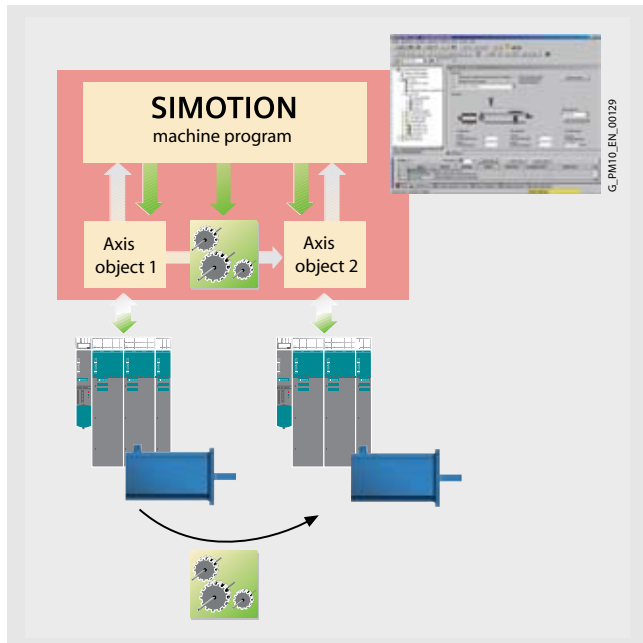
Test and diagnostics

SCOUT provides a wide range of functions which support testing, commissioning and error diagnostics of SIMOTION applications, such as program status, control variables, trace and axis control panel.

Trace

SIMOTION contains a very powerful trace function which can trace system variables, such as actual values and setpoints, as well as integrated PLC user data.

The variables to be recorded, the start condition and the duration of the trace are defined using SCOUT and this configuration is then loaded into the SIMOTION device. The values are recorded with accurate times and stored in a trace buffer. On completion of the trace, the content of the trace buffer can be read by SCOUT and displayed graphically. The traced curves can be stored or exported to Microsoft Excel as a table and evaluated further there.

As well as recording, the trace function also offers, e. g.:
- Bode diagram
- FFT analysis
- Function generator
- Mathematical functions

Axis control panel

The axis control panel integrated in SCOUT provides user-friendly support during commissioning, testing and optimization of the machine, due to the option of traversing the axes without the user program.
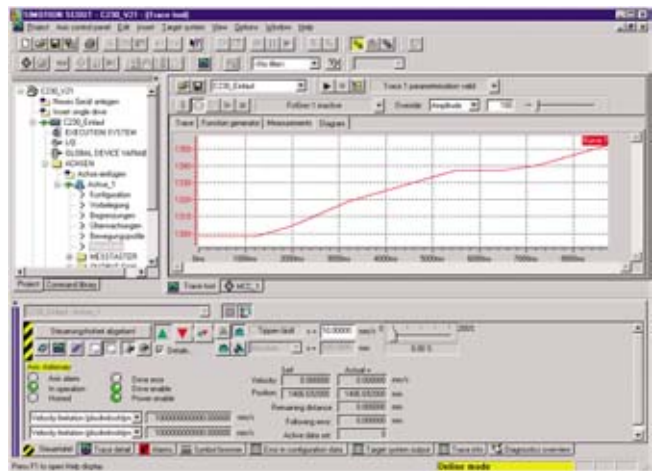
■ Overview

While the SIMOTION Motion Control system provides a wide variety of preprogrammed functions, you can also assign parameters and program it for customized use. High performance tools, which provide optimum support and ease of use for the necessary engineering steps, are required for this.

The SCOUT engineering system is the basis for uniform automation in mechanical engineering with SIMOTION and is integrated into the SIMATIC environment in accordance with TIA.

SCOUT provides

• an integrated, function-oriented view of your automation task, combined with

• a high level of user friendliness

The possible SIMOTION applications range from a simple, parameterizable, speed-controlled single axis through to complex, mechatronically-coupled and programmable multi-axis machines. Therefore, SCOUT provides views adapted to the task and can be expanded with additional tools (e.g. tool for the graphic creation of cams).
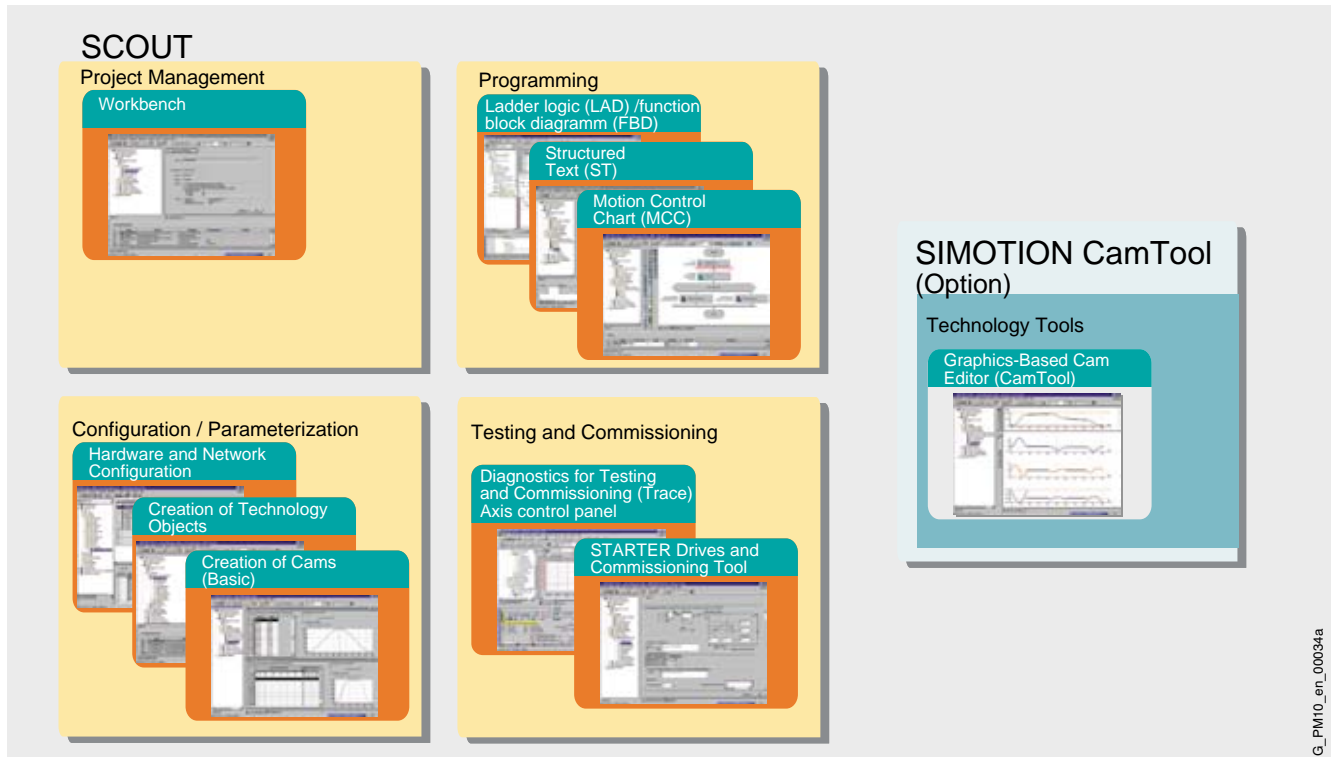
SCOUT is the engineering system for SIMOTION integrated in STEP 7 and provides all the required tools for

• Configuration
• Parameterization
• Programming
• Testing
• Diagnostics

Tasks such as

• the creation of the hardware and network configuration and the

• creation, configuration and parameterization of technological objects, such as
  - axes,
  - measuring inputs,
  - cams, cam tracks,
  - cam plates, etc.

are graphically supported with operator prompting.

The following are available for programming a SIMOTION application

• ST (Structured Text to IEC 61131) textual high-level language
• LAD (Ladder Diagram) and FBD (Function Block Diagram)
• MCC (Motion Control Chart), which is a graphical flow diagram language, optimized to provide the simplest operation possible

The integrated test and diagnostics functions are useful when commissioning and servicing.

STARTER drive/commissioning tool

The aim of STARTER is the simple and rapid commissioning, optimization and diagnostics of all new-generation Siemens drives with only one tool. The STARTER drive/commissioning tool supports the following drives:

• SINAMICS
• MICROMASTER 420/430/440
• MICROMASTER 411/COMBIMASTER 411
• COMBIMASTER

Motion Control
SIMOTION SCOUT engineering system

General information

■ **Overview** (continued)

CamTool cam editor option package

Simple editors are already integrated in the basic SCOUT package for the creation of cams.

The CamTool option package expands SCOUT with a powerful tool for the graphical creation and optimization of cams.

CamTool is fully integrated into the SCOUT user interface.

System requirements

Software

- SCOUT
  - Windows 2000SP4 or
  - Windows XP Professional SP2
  - STEP 7 V5.3 SP3 or V5.4 (not required for SCOUT stand-alone)
  - Optional:
    DriveES Basic V5.4 required, if SIMODRIVE 611 universal or MASTERDRIVES MC are to be integrated in the project data management.
- CamTool
  - Requirements as for SCOUT
  - SCOUT must be installed

Hardware

Minimum system requirements PG/PC for SCOUT

- Hardware requirements for
  - Windows 2000 Pentium II 400 MHz/512 MB and higher
  - Windows XP Professional Pentium III 500 MHz/512 MB and higher
- Main memory configuration 512 MB for:
  - PG/PC
  - SIMOTION P350-3
- Min. screen resolution: 600 x 800 pixels
- Free hard-disk storage: 1.6 GB, 2.3 GB for SCOUT stand-alone

PC card adapter

Special hardware requirements

SIMOTION Kernel updates for SIMOTION C and SIMOTION D are supplied on CD and can then be copied from the PG/PC to the SIMOTION Micro Memory Card (C2xx) or SIMOTION Compact Flash Card (D4x5). An adapter is needed to write to the SIMOTION MMC (Micro Memory Card) or the SIMOTION CF (Compact Flash Card).

We recommend the following products for the SIMOTION Micro Memory Card:

- For Windows XP and Windows 2000 operating systems:
  - Floppy disk adapter
    Manufacturer: JVC
    Product designation: SD/MultiMediaCardCU-VFSD50U
- Suitable for Windows 2000/XP operating system only:
  - USB adapter
    Manufacturer: Simple Technologies
    Product designation: UMSD-100

Note:

If you choose to use a different USB adapter, you must ensure that it supports both the SD Card and the SIMOTION Micro Memory Card by Infineon Technologies AG.

Adapters can usually be found in PC shops and at electronics shops.

We do not recommend any special product for the CF (Compact Flash Card), since electronics dealers offer a large range.

■ **Ordering data** Order No.

	Order No.
SIMOTION SCOUT V4.0 (German/English/Italian/French), Single license including STARTER, Runtime software and documentation with data carrier for SIMOTION SCOUT	**6AU1 810-0BA40-0XA0**
SIMOTION SCOUT V4.0 Upgrade (German/English/Italian/French), Single license including STARTER, Runtime software and documentation with data carrier for SIMOTION SCOUT	**6AU1 810-0BA40-0XE0**
SIMOTION SCOUT Stand-alone V4.0 (German/English/Italian/French), Single license including STARTER, Runtime software and documentation with data carrier for SIMOTION SCOUT	**6AU1 810-0CA40-0XA0**
SIMOTION SCOUT Stand-alone V4.0 Upgrade (German/English/Italian/French), Single license including STARTER, Runtime software and documentation with data carrier for SIMOTION SCOUT	**6AU1 810-0CA40-0XE0**
SIMOTION SCOUT software maintenance service Current software version required	**6AU1 810-0BA00-0XL0**
SIMOTION CamTool V2.1 SP1 (German/English), Single license, with data carrier	**6AU1 810-0FA21-0XA0**
SIMOTION CamTool V2.1 SP1 Upgrade (German/English), Single license, with data carrier	**6AU1 810-0FA21-0XE0**
SIMOTION CamTool V2.1 SP1 Upgrade to Servicepack 1 with data carrier	**6AU1 810-0FA21-1XU0**

■ **More information**

A number of additional software products can be used in conjunction with SIMOTION SCOUT. It must be ensured that the corresponding versions of these software products are compatible. Please consult the compatibility list „Software Products for Use with SIMOTION".

Additional information is available in the Internet under:

http://support.automation.siemens.com/WW/view/com/18857317

■ Overview

Multi-layer software architecture

With SIMOTION, motion tasks in many different machines are performed easily and uniformly.

To facilitate this, a very special, multi-layer architecture was chosen as the Runtime system. All SIMOTION devices provide you with a basic functionality, such as PLC functionality with a command set in accordance with IEC 61131-3 and a Motion Control basic functionality (speed-controlled axes, output cam, etc.). You can expand this basic functionality using technology packages and function libraries.

Scalable functionality

The technology packages, function libraries and multi-layer architecture of the Runtime system account for the scalable functionality of SIMOTION:

Scalable

- Thanks to various functionality levels
- Thanks to software modules and technology packages with extensive functionality

Flexible

- Thanks to the integrated programmable PLC in accordance with IEC 61131-3
- Thanks to the instantiable technology packages with extensive command sets
- Thanks to the option to run servo, vector, stepper, and hydraulic drives
- Thanks to the ability to combine the various technology packages and Function Libraries

Expandable

- Thanks to the Function Library standard functions

Technology packages

Each of these packages provides complete functionality for the technology in question. For example, the technology package Motion Control provides all functions from precise positioning movements to sophisticated cam operation.

Cyclic exchange of setpoints and actual values with the drive, the position controller, calculation of the movement profiles, removal or overriding of motions, reference functions, encoder changeover, axis release, status information, etc. are included in this package.
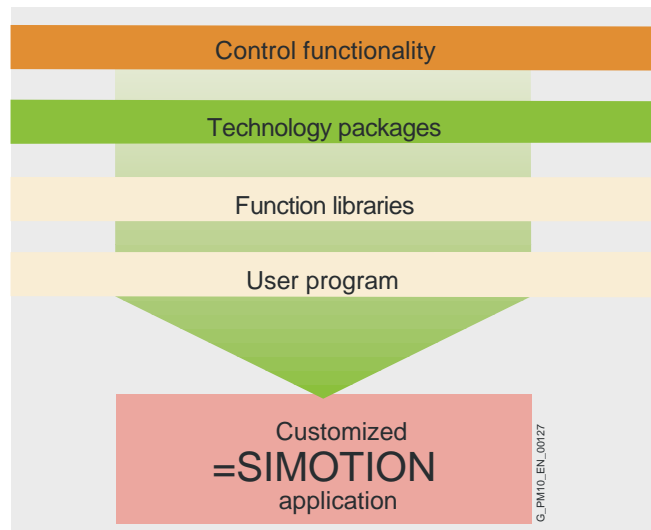
In addition to the Motion Control technology package (including positioning, synchronous operation, cam), packages for other technologies, e. g. temperature control, are also available.
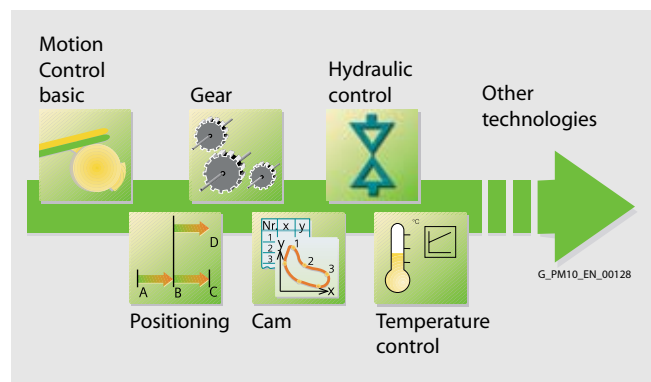
Function libraries

The libraries contain standard functions for frequently performed tasks

- implementing special I/O modules (e.g. counter modules, communication modules, AS-Interface, ...)
- expanding system functionality (e.g. controllers)
- controlling axes in accordance with PLCopen

In addition to the standard functions supplied, users can also create their own functions and store them in a library.

Motion Control
Runtime system

■ **Overview**

SIMOTION Kernel – Basic functionality

The basic functionalities of the SIMOTION devices are combined within the SIMOTION Kernel.

The SIMOTION Kernel provides high-performance functions for:
- PLC functionality (to IEC 61131-3)
- Program control
- Timers
- I/O operation and
- Communication

It also provides a powerful Runtime system with
- Cyclic
- Sequential
- Time-driven and
- Event-driven tasks

The scope of the language conforms to the IEC 61131-3 standard and contains all PLC commands required for I/O management and process and machine control. LAD (Ladder Diagram), FBD (Function Block Diagram), ST (Structured Text), and MCC (Motion Control Chart) are used for programming.

The SIMOTION Kernel basic functionality can be expanded by loading SIMOTION technology packages.

SIMOTION technology packages

Technology packages combine software functions which are required for automation in mechanical engineering in various sectors. Technology packages are loaded into the controller during configuration and expand the basic functionality by additional system functions.

SIMOTION Motion Control technology packages

The SIMOTION Motion Control technology package contains the following technology functions:
- Motion Control Basic
- Positioning – Position
- Synchronous operation/electronic gear – GEAR
- Cam – CAM
- Supplementary technology functions

The technology package functions are accessed via additional language commands and system variables, as well as via function blocks in accordance with PLCopen. Programming of motional sequences is therefore simple and integrated.

SIMOTION temperature control technology package – TControl

The SIMOTION technology package for temperature control provides temperature channels with extensive functions.

These functions are also accessed via additional language commands and system variables.

SIMOTION Function Library

The SIMOTION Function Library contains standard functions for integrating special I/O modules, standard functions for controlling axes in accordance with PLCopen and programming examples.

Up to Version V3.2, SP1, the function library was supplied on a separate CD in the SCOUT package. In Version V4.0, the standard functions are available with expanded scope in the SCOUT command library and are therefore particularly easy to integrate into the user program. The programming examples are included from V4.0 upwards in the „Utilities & Applications" CD. This CD is supplied free of charge in the SCOUT package.
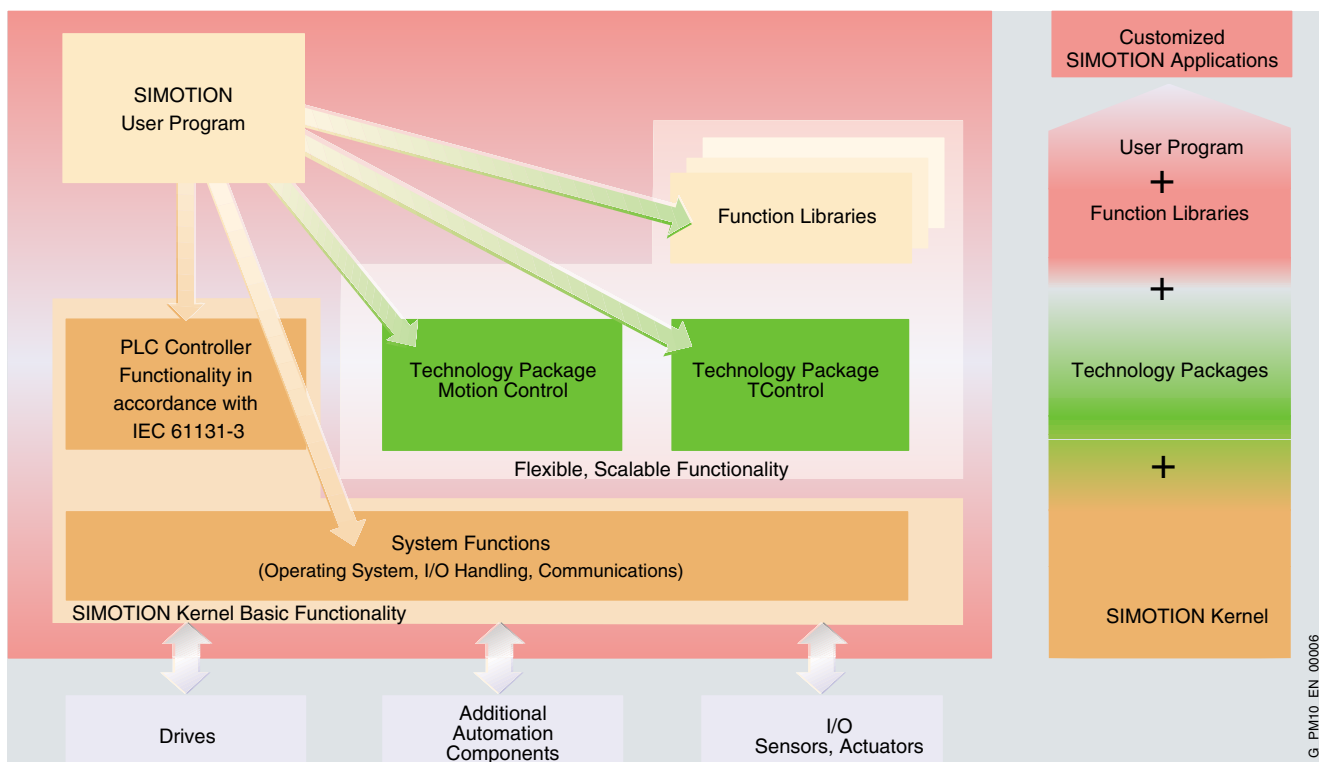
SIMOTION software structure

■ Overview (continued)

SIMOTION isochronous mode

In the SIMOTION system, all the components (one or more control units, drives, isochrone I/Os) are synchronized to the basic cycle of the machine, the PROFIBUSDP/PROFINET cycle. The application is also synchronized with this cycle through synchronous application tasks. Isochrone mode therefore permeates the whole machine application (also in the case of distributed systems) which provides considerable advantages:

- Short response times from terminal to terminal and terminal to axis
- High machine cycle times
- Programming of synchronous closed-loop control tasks
- High product quality thanks to a deterministic and reproducible machine response

SIMOTION user program

The SIMOTION technology package functions are accessed in the same way as the SIMOTION Kernel functions, via language commands from the user program.

Programming can be performed either textually, using ST (Structured Text), or graphically.

The graphical programming languages LAD (Ladder Diagram), FBD (Function Block Diagram) and MCC (Motion Control Chart) make programming particularly user-friendly.

Combining the PLC with Motion Control and technology simplifies the optimization of motional sequences (no PLC/Motion interaction), reduces engineering costs and increases both product quality and machine productivity (machine cycle and output) by eliminating interfaces and dead times.

Direct access to the drive bus allows:

- increased uniformity and integration depth as far as the drive (access to control/status words and drive data, flexible torque limits, additive torque setpoint)
- synchronization with drives and modular open-loop controls
- highly-dynamic applications thanks to DSC (DynamicServoControl) with position-control cycles of 125 µs

SIMOTION supports additional modular machine approaches with its

- modular software development with libraries and reusable modules,
- division into individual machine modules, which are linked via distributed synchronous operation, for example, and
- activation/deactivation of DP slaves (I/O components) and technology objects (drives, axes, external encoders, and cams),

thus reducing engineering and commissioning costs.

SIMOTION communication functions

Communication via PROFIBUS

The communication functions are available via PROFIBUS on all platforms:

- Communication with programming devices (programming device functions)
- Communication with ProTool/Pro and WinCC flexible
- Communication with PCs on which SIMATIC NET OPC is installed.
  SIMATIC NET SOFTNET S7 software is required on the PC side.

Communication using Ethernet / PROFINET

The communication functions below are available via Ethernet on all platforms:

- Communication with programming devices (programming device functions)
- Communication via UDP and TCP/IP with SIMOTION devices, SIMATIC communication boards (CP) and non-Siemens devices
- Communication with ProTool/Pro and WinCC flexible
- Communication with PCs on which SIMATIC NET OPC is installed.
  SIMATIC NET SOFTNET S7 software is required on the PC side.

SIMOTION IT

SIMOTION IT enables additional communication functions via Ethernet:

- Diagnostics functions via SIMOTION IT DIAG
- Communication via SIMOTION IT OPC XML-DA

Runtime software licensing

The functions below are provided by the basic functionality. The rights of use for these software components are included when the basic unit is purchased:

- SIMOTION Kernel runtime software
  SIMOTION Kernel is already installed on the device.
- Motion Control Basic technology functions
  Use of technology functions for speed-controlled axes, single output cams and cam tracks, sensor probes, and external encoders.
- Supplementary technology functions
  Use of supplementary technology functions, such as summators, formula objects and fixed gears.
- Communication functions
  This covers SIMATIC S7 communication functions on the SIMOTION side (programming device/OP communication to programming devices, for engineering and communication to OPs and PCs with SIMATIC HMI, e.g., ProTool/Pro, WinCC flexible or SIMATIC NET OPC), as well as UDP and TCP/IP communication.

Motion Control
Runtime system

General information

■ **Overview** (continued)

Other functions can be licensed using the following software options:

Motion Control technology functions
Other technology functions in the Motion Control technology package are licensed axis-specifically:

- POS (use of the POS technology function for a created positioning axis)
- GEAR (use of the GEAR technology function for a created synchronized axis)
- CAM (use of the CAM technology function for a created cam axis)

You license these technology functions for each axis, using a separate order number for each. Licensing only applies to real axes, virtual axes are not subject to license. The GEAR technology function contains the POS technology function, while the CAM technology function contains the POS and GEAR technology functions.
The MultiAxis package makes licensing very easy. It contains the license for unlimited use of the CAM technology function on one CPU. In addition to the platform-independent MultiAxis Package, variably priced packages for C230-2, C240, P350-3 or D425, D435 and D445 are offered.

TControl technology function
The TControl technology package is licensed channel-specifically, in packages of 8 temperature channels.

SIMOTION IT DIAG option
The IT DIAG option is licensed for each SIMOTION device.

SIMOTION IT OPC XML-DA option
The OPC-XML option is licensed for each SIMOTION device.

Licensing notes

Runtime licenses are not version-specific.

The functionally scalable software options and axis-specific licensing result in a simple pricing structure, allowing you to only pay for what you really need.

When configuring using SIMOTION SCOUT, the required software options (licenses) are displayed. Licenses do not have to be acquired until the machine is delivered.

The required software options are assigned to hardware (memory cards or PC) by generating a license key online.

Pre-installed licenses

Another option is to order SIMOTION memory cards (MMC and CF) and SIMOTION P350-3 with pre-installed licenses. When hardware is ordered (MMC, CF or P350-3), the number of licenses must also be specified:

- Pxx – POS license and number (e.g., P02 = 2x POS license)
- Gxx – GEAR license and number (e.g., G03 = 3x GEAR license)
- Cxx – CAM license and number (e.g., C01 = 1x CAM license)
- Txx – TControl license and number (e.g., T03 = 3x TControl license)
- X00 – OPC XML license
- D00 – IT DIAG license
- M00 – MultiAxis package license (platform independent)
- M24 – MultiAxis package license for C230-2 and C240
- M35 – MultiAxis package license for P350-3
- M42 – MultiAxis package license for D425
- M43 – MultiAxis package license for D435 (incl. D425)
- M44 – MultiAxis package license for D445 (incl. D435 and D425)
- Vxy – Software version for SIMOTION P350-3, XP variant (e.g., V40 = Version 4.0)
- W0x – Service Pack number for SIMOTION P350-3, XP variant (e.g. W02 = Service Pack 2)
- K00 – OPC server license, on SIMOTION P350-3, XP variant

Ordering example

Compact Flash 512 MB for SIMOTION D with 3 POS licenses, 2 CAM licenses and 1 TControl license

- Order No.: 6AU1400-2NA00-0AA0-Z P03 C02 T01

Compact Flash card 512MB for SIMOTION D425 with MultiAxis package for D425

- Order No.: 6AU1400-2NA00-0AA0-Z M42

Ordering configurator on the Internet

An electronic ordering configurator is available on the Internet for simple ordering of SIMOTION hardware with corresponding licenses. Customers with Mall access can order directly through the ordering configurator.

■ Ordering data	Order No.
Technology functions **Licenses for runtime software** **(not version-specific)**	
• POS - Position, license for using the positioning technology functions for 1 axis	**6AU1 820-1AA20-0AB0**
• GEAR, license for using the synchronous-operation technology functions for 1 axis	**6AU1 820-1AB20-0AB0**
• CAM, license for using the cam technology functions for 1 axis	**6AU1 820-1AC20-0AB0**
• MultiAxes Package, platform-independant License for unrestricted use of the CAM technology function on a CPU (C230-2, P350-3 or D4X5)	**6AU1 820-0AA20-0AB0**
• MultiAxes Package for C230-2 License for unrestricted use of the CAM technology function on a CPU C230-2	**6AU1 820-0AA24-0AB0**
• MultiAxes Package for P350-3 License for unrestricted use of the CAM technology function on a CPU P350-3	**6AU1 820-0AA35-0AB0**
• MultiAxes Package for D425 License for unrestricted use of the CAM technology function on a CPU D425	**6AU1 820-0AA42-0AB0**
• MultiAxes Package for D435 License for unrestricted use of the CAM technology function on a CPU D435 or D425	**6AU1 820-0AA43-0AB0**
• MultiAxes Package for D445 License for unrestricted use of the CAM technology function on a CPU D445, D435 or D425	**6AU1 820-0AA44-0AB0**
• TControl, license for using the TControl technology functions for 8 temperature channels on a CPU	**6AU1 820-2AA20-0AB0**
Communication functions **Licenses for Runtime software** **(not version-specific)**	
SIMOTION IT DIAG License for standard diagnostics pages	**6AU1 820-8BA20-0AB0**
SIMOTION IT OPC XML-DA Option license for OPC XML-DA server	**6AU1 820-8BB20-0AB0**

■ **More information**

Further information on the functionality of SIMOTION platforms can be found under „Function Overview".

5

Hardware platforms

■ Overview

Automation systems are primarily identified by the following characteristics:

- System-specific characteristics, e.g., functionality and engineering
- Hardware-dependent characteristics, e.g., performance, design and expandability

However, mechanical engineering demands vary greatly, depending on the version of the machine in question.

Every hardware platform has its benefits when used in certain applications. The various platforms can also be combined very easily, which is a particular advantage in modular machines and plants. This is because the individual hardware platforms always contain the same system characteristics, i.e., functionality and engineering are always identical, irrespective of the platform used.

PROFIBUS or PROFINET can be used to create the link to the drives and the I/Os remotely.

SIMOTION D – compact and integrated in the drive

With SIMOTION D, the SIMOTION functionality is integrated directly in the closed-loop control module of the new SINAMICS S120 multi-axis drive system. Therefore, the complete system (consisting of the open-loop control and the drive) is extremely compact and responds very quickly.

SIMOTION D is available in three performance variants (D425, D435 and D445), ensuring maximum scalability and flexibility. The field of application ranges from single axes to high-performance multi-axis machines.

SIMOTION D is supplied with two integrated PROFIBUS interfaces with PROFIdrive and two integrated Industrial Ethernet interfaces. Connection to PROFINET is carried out via the optional Communication Board.

SIMOTION C – modularity and flexibility

SIMOTION C is an S7 300-design controller. It is supplied with four integrated interfaces for analog or stepper drives and several integrated digital inputs and outputs.

The SIMOTION C can also be expanded using I/O modules from the SIMATIC S7 300 range. At other interfaces, the controller has access to two PROFIBUS interfaces with PROFIdrive and an Industrial Ethernet interface, thus offering great flexibility in communication.

SIMOTION P – open for other tasks

SIMOTION P350 is a PC-based motion control system.
The operating system is Windows XP Professional, with a real-time expansion for SIMOTION. This enables PC applications to be carried out alongside SIMOTION machine applications at any time. For example, the SIMOTION engineering system, an operator control application, a process data evaluation, a standard PC application, etc.

Several panel variants in various screen sizes are available for operating the industrial PC. These panels can either be operated using a keyboard and mouse, or a touch screen. Two PROFIBUS interfaces with PROFIdrive or PROFINET with optional Communication Board are used to link the drives and the I/Os.

■ **Overview**

SIMOTION P350-3 is a PC-based motion control system. The use of an industrial PC platform facilitates the running of the SIMOTION machine application (comprising controller, motion control and HMI functions) alongside standard PC applications on one and the same platform. This is particularly useful in the case of applications that involve complex PC-based data management and analysis systems.

The operating system is Windows XP Professional, with a real-time expansion for SIMOTION.

To facilitate the connection of distributed components, SIMOTION P350-3 is available in both PROFINET and PROFIBUS versions.

■ **Design**

Interfaces

Display and diagnostics

With SIMOTION P, the display and diagnostics functions for the operating states are performed by a software monitor, which takes the form of an on-screen application window. This software monitor can be operated using your keyboard or mouse.

Integrated interfaces

- 1 x COM 1 (V.24), VGA (via DVI adapter)
- 4 x USB 2.0
- 1 x MPI/PROFIBUS DP interface
  (integrated, not isochronous, optically isolated)
- 2 x Industrial Ethernet 10/100 Mbps (integrated)

Expansion slots

- 1 x PCI slot 265 mm
  PROFINET version: occupied
  by MCI-PN communication board
  PROFIBUS version:
  occupied by IsoPROFIBUS board
- 1 x PCI/ISA slot 170 mm (free) e.g., for the purpose of retrofitting an additional communication board.

Communication

PROFINET version

The MCI PN communication board that has been integrated in the PROFINET version enables the SIMOTION P350-3 to be connected to a PROFINET IO network. From a PROFINET perspective, the SIMOTION P350-3 thus assumes the role of a PROFINET IO controller.

To enable it to communicate with other PROFINET controllers, the SIMOTION P350-3 can be configured as both a controller and a device at the same time (iDevice).

PROFIBUS version

The PROFIBUS version features an integrated IsoPROFIBUS board, which offers two PROFIBUS DP interfaces for establishing PROFIdrive connections.

The free PCI slot can be used for the purpose of retrofitting an optional MCI-PN communication board. This means that the PROFIBUS version can support both PROFIBUS and PROFINET on the same PC.

Compatible panel fronts

SIMOTION P350-3 can be connected to the following panel fronts:

- 12" with membrane-type keys
- 12" for touch screen operation
- 15" with membrane-type keys
- 15" for touch screen operation

The DVI/VGA interface can be used to connect an external monitor.

Expansion using distributed I/Os

PROFINET version

- Distributed I/Os (SIMATIC ET 200S/M/pro)
- Distributed drives (e.g., SINAMICS S120 Motor Modules with CU320 Control Unit and CBE20 Communication Board plus SINAMICS S120 Power Modules and CU310 PN Control Unit)
- Engineering systems (PG/PC) or
- HMI devices (e.g., MP, TP, OP)

PROFIBUS version

- Certified PROFIBUS standard slaves (DP-V0, DP-V1, DP-V2)
- Distributed I/Os (SIMATIC ET 200S/M/eco/pro)
- Distributed drives (e.g., SINAMICS S120 Motor Modules with CU320 Control Unit plus SINAMICS S120 Power Modules and CU310 DP Control Unit)
- Engineering systems (PG/PC) or
- HMI devices (e.g., MP, TP, OP)

PC technology

- Processor: Intel® Pentium® M 2 GHz
- Microsoft Windows XP Professional operating system, English
- 512 MB SDRAM, upgradable to 1 GB
- Hard disk with shock damping, approx. 40 GB
- DVD-ROM drive (optional)
- Data backup/restore using the Symantec Ghost data backup software (preinstalled)

5

Motion Control
SIMOTION P – PC-based

SIMOTION P350-3

■ **Integration**
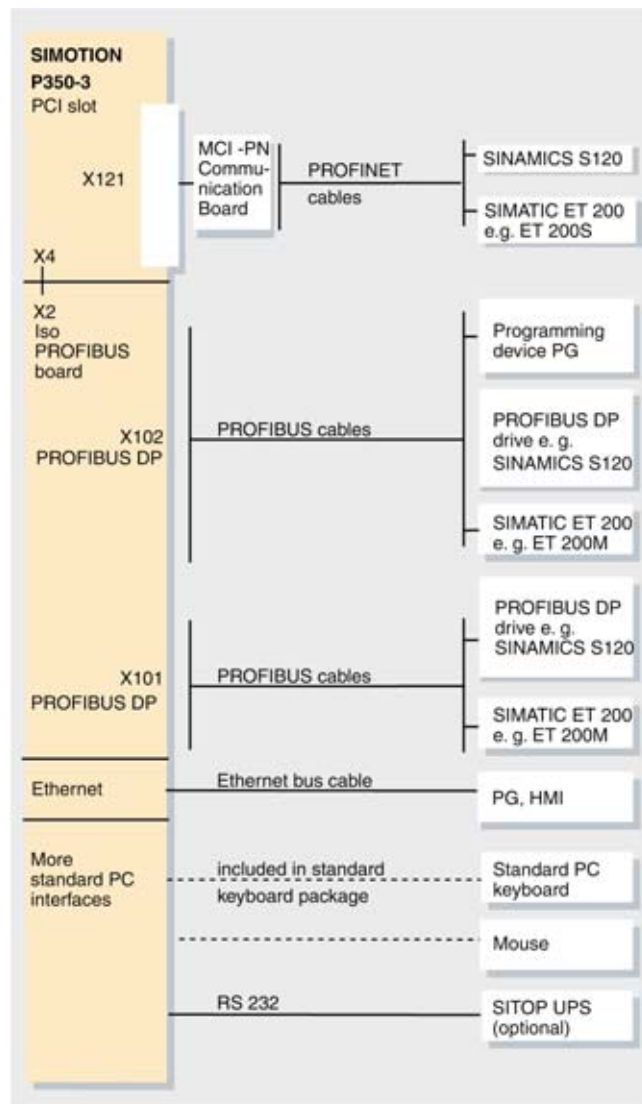
Connection overview SIMOTION P350-3

■ **Technical specifications**

SIMOTION P350-3

Input voltage	24 V DC
Power consumption, max.	190 W
Mains buffering	max. 20 ms
Degree of protection acc. to DIN EN 60529 (IEC 60529)	IP20
Temperature change, max.	10°K/h
Limits for rel. air humidity acc. to DIN IEC 68-2-3, DIN IEC 68-2-30, DIN IEC 68-2-56	
• Storage and transportation	5%...95% at +25 °C
• Operation	5%...80% at +25 °C
Humdity classification acc. to DIN EN 60721-3-3	Kl. 3K5 No condensation and icing, Low air temperature 0 °C
Permissible ambient temperature	
• Storage and transportation	-20 °C...+60 °C
• Operation	+5 °C...+45 °C
Weight, approx.	6 kg
Dimensions (W x H x D)	297 mm x 267 mm x 85 mm (without DVD drive) 297 mm x 267 mm x 106 mm (with DVD drive)

■ **Ordering data**　　　　　　　　　Order No.

SIMOTION P350-3, PROFIBUS option with Intel Pentium M, 2.0 GHz, Windows XP Professional 4.0, English, 512 MB SDRAM, 24 V DC, with IsoPROFIBUS Board	
• without DVD drive　　　　　J	**6AU1 350-3AK41-1BE2**
• with DVD drive　　　　　　J	**6AU1 350-3AK43-1BE2**
SIMOTION P350-3, PROFINET option with Intel Pentium M, 2.0 GHz, Windows XP Professional 4.0, English, 512 MB SDRAM, 24 V DC, with MCI-PN Board	
• without DVD drive　　　　　J	**6AU1 350-3AK41-2BE2**
• with DVD drive　　　　　　J	**6AU1 350-3AK43-2BE2**
Memory expansion	
• 128 MB DDR2 533 SODIMM　A	**6ES7 648-2AG10-0GA0**
• 256 MB DDR2 533 SODIMM　A	**6ES7 648-2AG20-0GA0**
• 512 MB DDR2 533 SODIMM　A	**6ES7 648-2AG30-0GA0**
Replacement parts Battery for motherboard	**6FC5 247-0AA18-0AA0**
Runtime and engineering software	please refer to "SIMOTION Software" Software Option to be ordered via Z option

A) Subject to export regulations: AL: N and ECCN: EAR99H
J) Subject to export regulations: AL: N and ECCN: 5D992B2

■ **More information**

Further information on

- *SIMOTION P and SIMOTION Software can be found in the interactive catalog under "Automation Systems/Motion Control System SIMOTION".*

5

■ Overview

Four different panels with TFT color display are available for the SIMOTION P350-3:

- 12" with membrane keyboard; resolution: 800 x 600 pixels
- 12" for touch screen operation, resolution: 800 x 600 pixels
- 15" with membrane keyboard, resolution: 1024 x 768 pixels
- 15" for touch screen operation, resolution: 1024 x 768 pixels

■ Design

The panel fronts are suitable for installation in consoles, control cabinets and support arm systems.

The SIMOTION P350-3 is mounted directly behind the panel front as standard. Four knurled-head screws are used to form a mechanical interlock between the SIMOTION P350-3 and the panel front. No special tool is needed for this.

It is also possible to distribute the SIMOTION panel fronts at distances of up to 100 m. The components required for this can be found under Thin Client Unit (TCU).

■ Technical specifications

Panels

Degree of protection acc. to DIN EN 60529 (IEC 60529) front	IP65
Limits for rel. air humidity acc. to DIN IEC 68-2-3, DIN IEC 68-2-30, DIN IEC 68-2-56	
• Storage and transportation	5%...95% at +25 °C
• Operation	5%...80% at +25 °C
Condensation	not permissible
Permissible ambient temperature	
• Storage and transportation	-20 °C...+60 °C
• Operation	+5 °C...+45 °C
Weight	
• Panel front 12", membrane keyb.	6 kg
• Panel front 12", touch screen op.	6 kg
• Panel front 15", membrane keyb.	6 kg
• Panel front 15", touch screen op.	6 kg
Dimensions (W x H x D)	
• Panel front 12", membrane keyb.	483 mm x 310 mm x 100 mm
• Panel front 12", touch screen op.	400 mm x 310 mm x 125 mm
• Panel front 15", membrane keyb.	483 mm x 355 mm x 130 mm
• Panel front 15", touch screen op.	483 mm x 310 mm x 130 mm

■ Ordering data

	Order No.
The panel fronts below can only be used in conjunction with SIMOTION P350-3.	
SIMOTION P012T 12" Touch panel front	**6AU1 300-0CA00-0AA0**
SIMOTION P012K 12" Keys panel front	**6AU1 300-0DA00-0AA0**
SIMOTION P015T 15" Touch panel front	**6AU1 300-0EA00-0AA0**
SIMOTION P015K 15" Keys panel front	**6AU1 300-0FA00-0AA0**
Accessories	
Caps, 10 units for USB terminal	**6FC5 248-0AF05-0AA0**
Key labeling strips For labeling soft keys and function keys, blank, 3 per set (plastic) for	
• 12" Keys	**6AV7 671-3CA00-0AA0**
• 15" Keys	**6AV7 671-5CA00-0AA0**

5

Motion Control
SIMOTION P – PC-based

Panel fronts

■ Overview

The Thin Client Unit (TCU) for distributed installation permits physical separation of operator panel fronts and SIMOTION P350-3. For this purpose, the operator interface is copied to one/several operator panel fronts with one TCU each.

■ Function

- Signal transmission between P350-3 and operator panel front via Industrial Ethernet
- Easy installation and service-friendly layout thanks to the component structure
- Functionality of the P350-3 as in centralized configuration (e.g. number of PCI slots). The same operating screen is shown synchronously on all operator panel fronts and can be used from all panel fronts. Operation on a Thin Client has the same authorization rights as operation on an operator panel front connected directly to the P350-3. The operator panel in passive mode shows a darkened screen.
- The distance to the operator panel fronts is determined by the maximum distance between two network nodes/access points (100 m/328 ft).

■ Integration

The SINUMERIK TCU can be used for:

- SIMOTION P350-3, operator panel fronts P012T, P012K, P015T, P015K

Mounting bracket required:
P350-3   6FC5248-0AF20-1AA0
TCU: 6FC5248-0AF20-2AA0

[1] Not requ. for operator panel fronts with integral TCU.
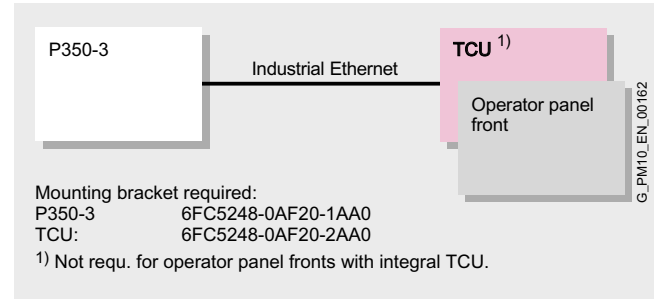
Connection overview for TCU without central OP on P350-3

■ Technical specifications

Product name	Thin Client Unit (TCU)
Input voltage	24 V DC
Power consumption, max.	28.8 W
Degree of protection to DIN EN 60529 (IEC 60529)	IP00
Humidity rating in accordance with DIN EN 60721-3-3	Class 3K5 condensation and icing excluded. Low air temperature 0 °C (+32 °F).
Relative humidity	
• Storage	5 ... 95% at +25 °C (+77 °F)
• Transportation	5 ... 95% at +25 °C (+77 °F)
• Operation	5 ... 80% at +25 °C (+77 °F)
Ambient temperature	
• Storage	-25 ... +55 °C (-13 ... +131 °F)
• Transportation	-25 ... +55 °C (-13 ... +131 °F)
• Operation	0 ... +55 °C (+32 ... +131 °F)
Weight, approx.	1.7 kg
Dimensions	
• Width	260 mm (10.2 in)
• Height	265 mm (10.4 in)
• Depth	40 mm (1.57 in)

■ Ordering data

	Order No.
Thin Client Unit (TCU)	**6AU1390-0BA00-0AA0**
Accessories	
Mounting bracket, bent for PCU with/without video link sender in control cabinet	**6FC5248-0AF20-0AA0**
Mounting bracket for PCU 50, SIMOTION P350-3 with/without video link sender in control cabinet	**6FC5248-0AF20-1AA0**
Mounting bracket for PCU, video receiver or TCU behind operator panel front	**6FC5248-0AF20-2AA0**
IE FC Standard Cable GP 2 x 2 (Type A) 4-core, shielded TP installation cable for connection to an IE FC outlet RJ45/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; Max. length 1000 m, minimum order quantity 20 m	**6XV1840-2AH10**
IE FC Trailing Cable GP 2 x 2 (Type C) 4-core, shielded TP installation cable for connection to an IE FC outlet RJ45/IE FC RJ45 plug 180/90 for use as trailing cable; PROFINET-compatible; without UL approval; sold by the meter; Max. length 1000 m, minimum order quantity 20 m	**6XV1840-3AH10**
IE FC RJ45 Plug 180 RJ cable connector for Industrial Ethernet with rugged metal housing and integrated insulation displacement contacts; with 180° cable outlet	**6GK1901-1BB10-2AA0**

5

Motion Control
SIMOTION P – PC-based

Communication Board MCI-PN

■ Overview

The MCI PN communication board for SIMOTION P350-3 enables connection to a PROFINET IO network. This means that in terms of PROFINET, SIMOTION P350-3 is a PROFINET IO controller that offers the following functions:

- PROFINET IO controller
- 100 Mbit/s full duplex
- Support of real time classes of PROFINET IO:
  - RT (real-time)
  - IRT (isochronous real-time)
- Integration of distributed I/O as PROFINET IO devices
- Connection of drives as PROFINET IO devices through PROFIdrive according to the V4 specification
- Support for standard Ethernet communication (TCP/IP), e.g. for interfacing SIMOTION SCOUT, HMI or standard TCP, or UDP communication to devices of any other type
- Integrated 4-port switch with four RJ45 sockets based on the PROFINET ASIC ERTEC400. The optimum topology (line, star, tree) can therefore be configured without additional external switches.

■ Integration

The MCI PN communication board is inserted in the spare PCI slot of the SIMOTION P350.

■ Technical specifications

Current consumption	900 mA at 5 V
Permissible ambient temperature	
• Storage and transportation	-20 °C...+60 °C
• Operation	+5 °C...+55 °C
Weight, approx.	110 g
Dimensions	107 mm x 167 mm

■ Ordering data

		Order No.
Communication Board MCI-PN	A	**6AU1 390-0BA00-0AA0**
Accessories		
Recommended PROFINET cables and connectors:		
IE FC RJ45 Plug 145 (1 pc.)		**6GK1 901-1BB30-0AA0**
IE FC RJ45 Plug 145 (10 pc.)		**6GK1 901-1BB30-0AB0**
IE FC RJ45 Plug 180 (1 pc.)		**6GK1 901-1BB10-2AA0**
IE FC RJ45 Plug 180 (10 pc.)		**6GK1 901-1BB10-2AB0**
IE FC Stripping Tool		**6GK1 901-1GA00**
IE FC TP Standard Cable GP 2x2		**6XV1 840-2AH10**
IE FC TP Flexible Cable GP 2x2		**6XV1 870-2B**
IE FC TP Trailing Cable GP 2x2		**6XV1 870-2D**
IE FC TP Trailing Cable 2x2		**6XV1 840-3AH10**
IE FC TP Marine Cable 2x2		**6XV1 840-4AH10**

A) Subject to export regulations: AL: N and ECCN: EAR99H

SIMOTION D – Drive-based

■ Overview

SIMOTION D is the compact, drive-based version of SIMOTION based on the SINAMICS family of drives. With SIMOTION D, the PLC and Motion Control functionalities of SIMOTION and the drive software of SINAMICS run on control hardware in the SINAMICS S120 design.

SIMOTION D is offered in various performance versions. Thereby, the highest scalability and flexibility are guaranteed. By means of the integrated PLC in accordance with IEC 61131-3, SIMOTION D can control beside of motion the whole machine.

HMI devices can be connected to the on board PROFIBUS or Ethernet interface for operating and monitoring. Via these interfaces, functions such as remote maintenance, diagnostics and teleservice are possible.

■ Benefits

- Cost-effective thanks to integrated Motion Control, technology and PLC functionality direct in the drive
- Directly employs the innovative SINAMICS S120 design
- Compact type of construction reduces control cabinet volumes
- Ideally suited to modular or distributed machine concepts
- User-friendly operation
- Versatile networking thanks to on-board PROFIBUS DP and Industrial Ethernet interfaces, as well as optional PROFINET IO via Communication Board CBE30
- Powerful thanks to a range of integrated functions
- Very simple engineering, from drive commissioning to open-loop control and Motion Control applications
- Easy to service thanks to CompactFlash, which can be easily replaced and contains all data (programs, data, drive parameters)
- Responds quickly as the interfaces between PLC and Motion Control are no longer required

■ Application

SIMOTION D can be used wherever

- the new SINAMICS drive family is used,
- Motion control and open-loop control functionality are executed direct in the drive (SINAMICS),
- a compact, space-saving design is required,
- high performance is required for motion control, as are fast I/Os,
- modular machine concepts with fast isochronous links are required.

SIMOTION D, together with the associated SINAMICS components, meets the highest standards in respect of suitability for industrial use, thanks to high electromagnetic compatibility and resistance against shock and vibration loads. SIMOTION D can be used as an intelligent drive on higher-level PC controls (e.g. WinAC).

Main application areas are:

- Packaging machinery
- Plastic and rubber processing machinery
- Presses, wire-drawing machinery
- Textile machinery
- Printing machinery
- Wood, glass, ceramic, and stone working machinery

Due to the increasing use of servo drives, such machinery requires integrated logic, motion control and technology functions.

5

Motion Control
SIMOTION D – Drive-based

SIMOTION D – Drive-based

■ **Design**
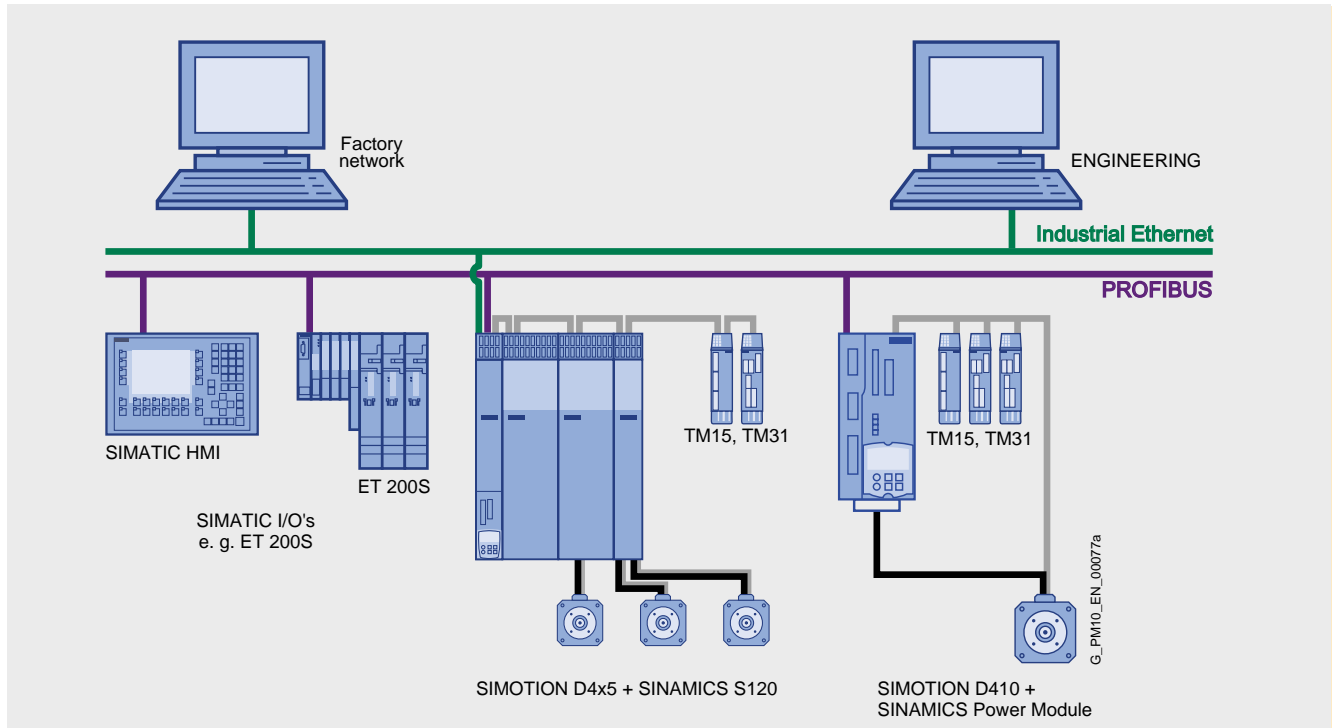
SIMOTION D topology

The following components comprise a SIMOTION D axis grouping:

- The SIMOTION D control unit, designed for open-loop and closed-loop control of a multi-axis drive group, contains drive control and the SIMOTION runtime system.
- SINAMICS S120 Line Module (infeed module)
- SINAMICS S120 Motor Modules (power modules)
- Other drive components, such as
  - Power supply,
  - Filter, Choke, etc.
- DRIVE-CLiQ provides the link between SIMOTION D and the SINAMICS S120 drive components.

The SIMATIC ET 200 distributed I/O and drive-related control-cabinet I/O (e.g., Terminal Modules TM15, TM31, etc.) can also be connected to SIMOTION D.

SIMOTION D components and interfaces:

- On-board digital inputs and outputs
- Option Slot submodule socket for operating a
  - interface for PROFINET IO
  - terminal expansion (additional I/Os)
- Integrated communications ports for linking:
  - SINAMICS S120 drive components
  - Distributed I/Os
  - HMI systems
  - Programming device/PC
  - Other motion control and automation systems
  - Other SINAMICS S120 drives with digital setpoint interfaces
- Various status/error displays

Design

There are various designs for SINAMICS S120, which vary according to performance class. The „book size" design is usually used in SIMOTION D applications.

SIMOTION D can be mounted in the control cabinet in one of three ways:

- Hooking it in to the Line Module on the left-hand side
- Screwing it on to the rear wall of the control cabinet directly, if it is required/desired that SIMOTION D is separate from the Line Module
- Using spacers (accessories) if it is not possible to mount SIMOTION D on to the side of the Line Module (e.g., if no Line Module is present), but the difference between the mounting depth of SIMOTION D and the Motor Modules still has to be compensated for.

Expansion using distributed I/Os

Distributed I/Os can be assembled with intelligent I/O system components:

- SIMATIC ET 200S
- SIMATIC ET 200M
- SIMATIC ET 200X
- SIMATIC ET 200pro
- SIMATIC ET 200eco

SIMOTION D – Drive-based

■ Function

The SIMOTION D basic functionality is supplied with the CF (Compact Flash Card) and is loaded when the voltage is switched on. The basic functionality contains the following software components:

- SINAMICS S120 drive control
  - Current/torque control
  - Speed control for up to 6 servo axes
  - Closed-loop control for controlled infeed (Active Line Module)
- SIMOTION runtime system
  - Programmable with several languages conforming to IEC 61131
  - Various runtime levels (cyclic, sequential, event-driven)
  - PLC and arithmetic functionality
  - Communications and management functions
  - Motion control functions (Motion Control Basic)
- Test and diagnostic interfaces

If required, this basic functionality can be supplemented by technology packages.

Technology packages (TP)

A special feature of SIMOTION is that the basic functionality can be expanded by loading technology packages, such as:

- Motion control with technology packages:
  - Positioning – POS
  - Synchronous operation/electronic gear – GEAR
  - Synchronous operation/electronic cam – CAM
- Temperature controller – TControl

Since the technology functions have modular licenses, you only pay for what you will really use.

Performance

- Hardware-supported floating-point arithmetic enables complex arithmetic functions to be used effectively.
- Very short instruction execution times open up completely new application possibilities in the mid-performance to high-performance range.

Configuring/parameterizing/programming

SIMOTION SCOUT is a powerful and user-friendly engineering tool. It is an integrated system for all engineering steps, from configuring and parameterization, through programming, to testing and diagnostics. Graphical operator prompting, using technological dialog boxes and wizards, as well as textual and graphical languages for programming, considerably reduce the familiarization and training periods.

Operator control and monitoring (HMI)

Communication utilities which support user-friendly data exchange with HMI devices are integrated in the basic functionality of the SIMOTION D.

Operator control and monitoring can be implemented using SIMATIC HMI devices, such as TPs (Touch Panels), OPs (Operator Panels) or MPs (Multi Panels).

These devices can be connected via PROFIBUS or Ethernet interfaces, and are configured using ProTool/Pro or WinCC flexible.

With the SIMATIC NET communications software, the open, standardized OPC interface is available for accessing SIMOTION from other Windows-based HMI systems.

Communication

Thanks to its integrated interfaces, SIMOTION D supports both process and data communication. The SCOUT engineering system is provided for user-friendly communication configuration and diagnostics.

■ More information

Additional information:

- *on PROFIBUS DP, Industrial Ethernet and PROFINET can be found in the Catalog IK PI or in the interactive Catalog under „Automation systemsSIMATIC NET communication systems"*
- *on ordering data for more SINAMICS drive components, such as Line Modules, Motor Modules, DRIVE-CLiQ cables etc. please refer to Catalog D 21.1 (SINAMICS S120) or the interactive Catalog under „Drives/AC Converters/..."*

5

Motion Control
SIMOTION D – Drive-based

SIMOTION D425/D435/D445

Overview

SIMOTION D is available in different performance versions. This ensures the highest degree of scalability and flexibility.
The individual versions SIMOTION D425 (BASIC Performance), SIMOTION D435 (STANDARD Performance) und SIMOTION D445 (HIGH Performance) differ in their PLC performance and motion control performance. In addition, the integral drive control can operate up to 6 SERVO axes in all SIMOTION D versions.

Additional drives can be operated by means of PROFIBUS or PROFINET and SINAMICS CU320 Control Units.

On the D445 and D435, these can be operated direct on the DRIVE-CLiQ with the CX32. Alternatively to the servo control, the speed control can be operated using a vector or U/f control.

Design

Interfaces
- Display, diagnostics
  - LED's for displaying of operating statuses and alarms
  - 3 measuring sockets
- Interfaces
  - 4 x DRIVE-CLiQ (6 x DRIVE-CLiQ with D445)
  - 2 x Industrial Ethernet
  - 2 x PROFIBUS DP
- On-board I/O
  - 8 digital inputs
  - 8 digital in/outputs
- Option Boards
  - Communication Board CBE30 for connection to PROFINET IO
  - Terminal Board TB30 for expansion by 4 digital inputs, 4 digital outputs, 2 analog inputs and 2 analog outputs
- other
  - Connecting terminals for the 24 V electronic power supply

Data storage/data backup

SIMOTION D425, D435 and D445 modules have 320 KB of non-volatile and battery-backed SRAM for retentive tag storage. This backup is stored for at least 5 days. There are two options for storing retentive data for a longer period:
- System commands for storing retentive data on the SIMOTION CF (compact flash card)
- Use of a battery module (combined battery/fan module already included in the scope of supply of a D445)

Runtime software, user data and user programs are saved retentively using a compact flash (CF) card.

Connectable I/O

PROFINET IO: (optionally using CBE30)
- SIMATIC ET 200S/pro distributed I/O
- Distributed drives with the SINAMICS CU320 control unit with CBE20 and SINAMICS S120 Power Modules with CU310PN

PROFIBUS DP:
- Certified PROFIBUS standard slaves (DP-V0, DP-V1, DP-V2)
- Distributed I/O systems SIMATIC ET 200S/M/X/eco/pro

DRIVE-CLiQ:
- Modules from the SINAMICS range
- DRIVE-CLiQ cables, which are required to connect line/motor modules to SIMOTION D, are supplied with the line/motor modules (standard length).

Integration
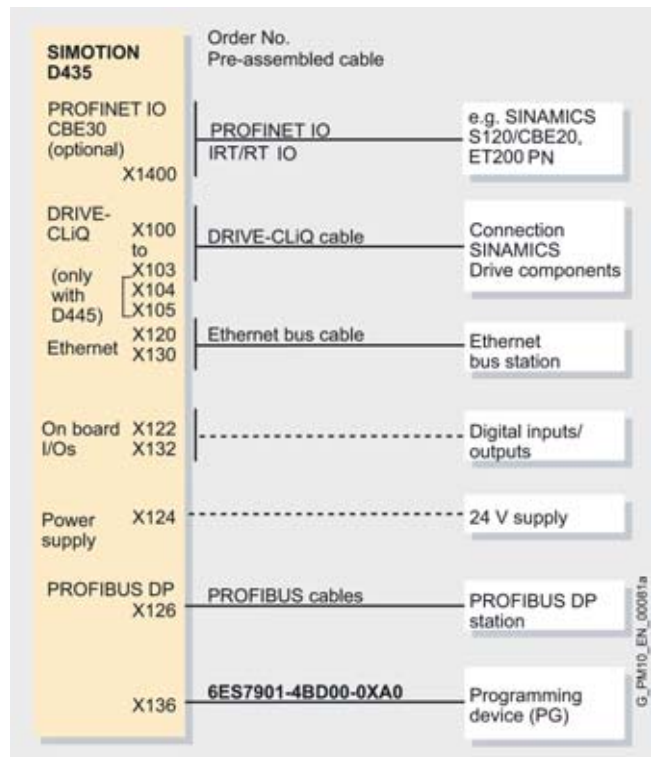
Connection overview SIMOTION D425/D435/D445

The maximum permissible cable lengths should be taken into account when planning the cable layout.

Functional faults can occur when using longer cables.

The permissible length of the PROFIBUS DP cables depends on the configuration.

■ Technical specifications

SIMOTION	D425 – Basic Performance	D435 – Standard Performance	D445 – High Performance
Number of axes max.	16	32	64
Integr. drive control (SERVO)	6	6	6
DRIVE-CLiQ interfaces	4	4	6
Ethernet interfaces	2	2	2
PROFIBUS interfaces	2	2	2
Battery/Fan module	optional	optional	1
Voltage supply • nominal value • permiss. range	 24 V DC 20.4 V...28.8 V	 24 V DC 20.4 V...28.8 V	 24 V DC 20.4 V...28.8 V
Current consumption, typ.	600 mA	600 mA	2 A
Making current, typ.	6.0 A	6.0 A	6.0 A
Power loss	15 W	15 W	50 W
Permiss. ambient temperature • Storage and transportation • Operation	 -40 °C...+70 °C 0 °C...+55 °C	 -40 °C...+70 °C 0 °C...+55 °C	 -40 °C...+70 °C 0 °C...+55 °C
Permiss. relative air humidity (without condensation)	5%...95%	5%...95%	5%...95%
Air pressure	700 hPa...1060 hPa	700 hPa...1060 hPa	700 hPa...1060 hPa
Degree of protection acc. to IEC 529	IP20	IP20	IP20
Dimensions (W x H x D)	50 mm x 380 mm x 230 mm	50 mm x 380 mm x 230 mm	50 mm x 380 mm x 270 mm
Weight • SIMOTION D • Compact Flash memory card	 2500 g 7 g	 2500 g 7 g	 3600 g 7 g
Digital inputs	8	8	8
Nominal value • Signal „1" • Signal „0"	24 V DC 15 V...30 V -3 V...+5 V	24 V DC 15 V...30 V -3 V...+5 V	24 V DC 15 V...30 V -3 V...+5 V
Galvanic isolation	Yes, in groups of 4	Yes, in groups of 4	Yes, in groups of 4
Typ. current consumption with signal level 1	10 mA at 24 V	10 mA at 24 V	10 mA at 24 V
Signal propagation delay	100 µs	100 µs	100 µs
Digital inputs/outputs (parameterizable)	8	8	8

When used as input
• Input voltage
  - Nominal value
  - Signal „1"
  - Signal „0"
• Galvanic isolation
• Typ. current consumption with signal level 1
• Signal propagation delay
	
	24 V DC
	15 V...30 V
	-3 V...+5 V
	No
	10 mA at 24 V
	
	100 µs (1 µs as probe)
		
		24 V DC
		15 V...30 V
		-3 V...+5 V
		No
		10 mA at 24 V
		
		100 µs (1 µs as probe)
			
			24 V DC
			15 V...30 V
			-3 V...+5 V
			No
			10 mA at 24 V
			
			100 µs (1 µs as probe)

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Motion Control
SIMOTION D – Drive-based

■ **Technical specifications** (continued)

When used as output			
• Rated load voltage	24 V DC	24 V DC	24 V DC
- permissible range	20.4 V...28.8 V	20.4 V...28.8 V	20.4 V...28.8 V
• Output voltage			
- signal „1", max.	15 V...30 V	15 V...30 V	15 V...30 V
• Galvanic isolation	No	No	No
• Current load, max.	500 mA per ouput	500 mA per ouput	500 mA per ouput
• Leakage current, max.	2 mA	2 mA	2 mA
• Output switching frequency			
- ohmic load	100 Hz	100 Hz	100 Hz
- inductive load	2 Hz	2 Hz	2 Hz
• Short-circuit protection	Yes	Yes	Yes
Backup real-time clock/SRAM			
• backup time, min.	5 days	5 days	5 days
• charging time, typ.	few minutes	few minutes	few minutes
Approbation acc. to cULus	http://www.ul.com File E164110	http://www.ul.com File E164110	http://www.ul.com File E164110

■ **Ordering data** — Order No.

SIMOTION D425	**6AU1 425-0AA00-0AA0**
SIMOTION D435	**6AU1 435-0AA00-0AA1**
SIMOTION D445	**6AU1 445-0AA00-0AA0**
CompactFlash Card (CF) 512 MB with SINAMICS drive software V2.4 and SIMOTION Kernel 4.0	**6AU1 400-2NA00-0AA0**
SIMOTION Multi Axes Bundle D425 comprising 1 piece of the following • SIMOTION D425 • CompactFlash Card 512 MB with Multi Axes Package license for D425 platform	**6AU1 425-0AA00-0CA0**
SIMOTION Multi Axes Bundle D435 comprising 1 piece of the following • SIMOTION D435 • CompactFlash Card 512 MB with Multi Axes Package license for D435 platform	**6AU1 435-0AA00-0CA1**
Spacers (only for D425/D435; preinstalled in D445) kit, 2 pieces (option)	**6SL3 064-1BB00-0AA0**
Adapter for programming of CompactFlash Card (CF)	see „SIMOTION Software/ Engineering software"
Battery (spare part)	**6FC5 247-0AA18-0AA0**
Battery and fan module • D425/D435 – optional • D445 – included in the scope of supply	**6FC5 348-0AA01-0AA0**
Accessories	
Battery	**6FC5 247-0AA18-0AA0**

■ **More information**

Further information

• on PROFIBUS DP, Industrial Ethernet and PROFINET can be found in the IK PI catalog or the interactive catalog under „Automation systems/SIMATIC NET communication systems"

• on ordering data for SINAMICS drive components: Line Modules, Motor Modules, DRIVE-CLiQ cable etc. please refer to Catalog D21.1 (SINAMICS S120) or the interactive catalog under „Drives/AC converters/...".

SIMOTION CX32

Overview

The CX32 controller extension is a SINAMICS S120-type component and permits the drive-side computing power for the SIMOTION D product range to be scaled. Each CX32 can control up to six additional servo axes.

The controller is connected to SIMOTION D over DRIVE-CliQ which ensures high-performance isochronous drive control without additional modules. The communication interfaces on the SIMOTION D remain available for other connections. With a width of 25 mm (0.98 in) the module requires very little space and is therefore perfectly suited for use in compact machines.

The data for the SIMOTION CX32 is stored exclusively on the SIMOTION D which means no action has be taken when the module is replaced. The SIMOTION CX32 can be operated on the SIMOTION D445 and D435.

Design

Automation solutions with many axes can be implemented with SIMOTION D and CX32. SIMOTION D can manage and control the motion of up to 64 axes and already has the drive controller for up to 6 servo axes plus the infeed integrated. Alternatively, vector axes or V/f axes can be used. The drive control for up to 6 additional servo axes can be implemented with SIMOTION CX32. Several SIMOTION CX32 can be used for an axis group.

DRIVE-CLiQ is used for connecting to SIMOTION D. Additional CU320s can be operated via PROFIBUS on a SIMOTION D425, D435 or D445.
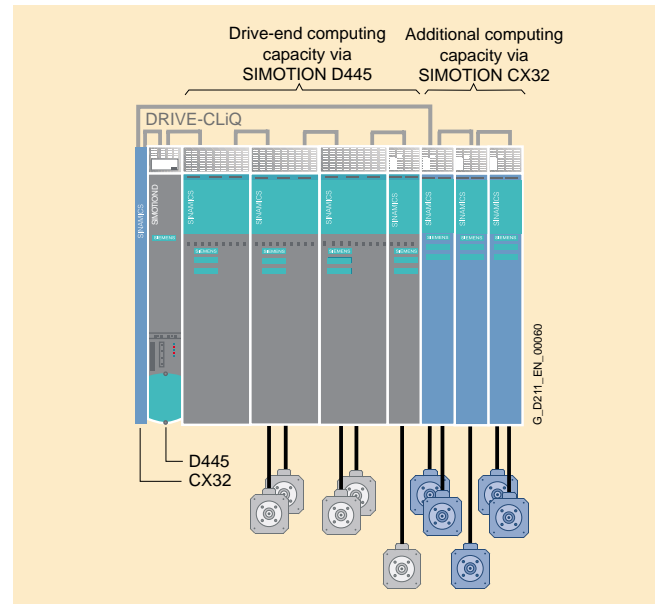
Example of an axis group for 10 axes

Motion Control
SIMOTION D – Drive-based

SIMOTION CX32

▊ Technical specifications

SIMOTION CX32

Voltage supply	
• Rated value	24 V DC
• Permissible range	20.4 V...28.8 V
Current consumption, typ.	800 mA
Inrush current, typ.	1.6 A
Permiss. ambient temperature	
• Storage and transportation	-40 °C...+70 °C
• Operation	0 °C...+55 °C
Permissible relative humidity (without condensation)	5%...95%
Atmospheric pressure	700 hPa...1060 hPa
Degree of protection acc. to IEC 529	IP20
Dimensions (W x H x D)	25 mm x 380 mm x 230 mm
Weight	1500 g
UL-approval	Yes
Digital inputs	4
Digital inputs/outputs	4 (programmable)

The CX32 comes with preinstalled spacer.

▊ Ordering data | Order No.

SIMOTION CX32 controller extension	**6SL3 040-0NA00-0AA0**

5

Overview

PROFINET is the innovative and open Industrial Ethernet standard (IEC 61158) for industrial automation.

With PROFINET, devices can be linked up from the field level through to the management level.

PROFINET enables system-wide communication, supports plant-wide engineering and uses the IT standards right down to the field level. IT communication, data communication and cyclic process communication are combined on the basis of Industrial Ethernet.

Existing fieldbus systems such as PROFIBUS can be easily integrated without any modification of existing devices.

Design

PROFINET device concept

The PROFINET device concept distinguishes between the controller and devices assigned to it. These are initialized and parameterized by the controllers on startup. Together with its devices, a controller forms a PROFINET IO system (cf. master-slave system on PROFIBUS).

On PROFINET, cyclic communication takes place between an IO controller and its IO devices via the process image, as with PROFIBUS. The process image is updated cyclically in real-time (RT, devices are typically distributed I/O devices) or isochronous real-time (IRT, devices are typically servo drives) depending on requirements and device characteristics. In addition, PROFINET permits communication between controllers and devices of different I/O systems.
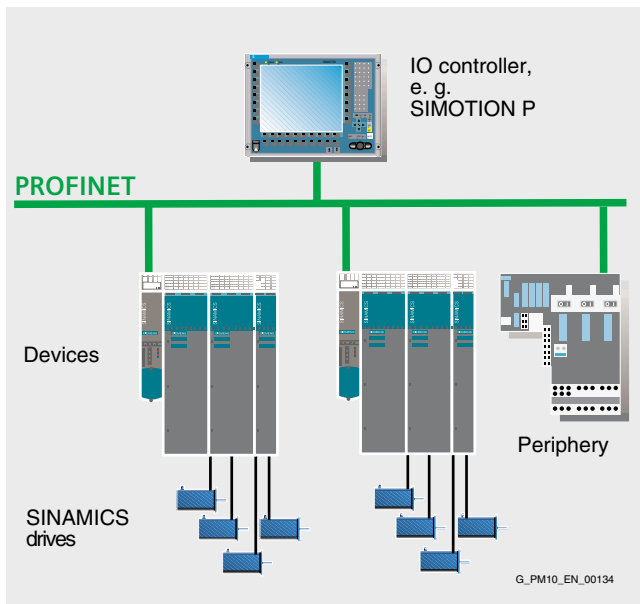
PROFINET IO with IRT for Motion Control

SIMOTION controls or synchronizes axes over PROFINET. This requires cyclic, isochronous data exchange with the drives. PROFINET IO with IRT fulfills this requirement. The communication cycle is subdivided into different, time-specific channels for this purpose. The first channel is used for isochronous real-time communication (IRT), followed by real-time communication (RT) and standard TCP/IP communication. Through configuring of the application, e.g. a synchronous operation of axes, the IRT message frames are determined implicitly and the suitable configuring data are generated.

With the help of a special algorithm, the optimal time arrangement of the individual message frames is calculated for every network section, taking account of the topology. This permits a switch to forward the IRT messages without delay from the input port to the specified output port and then to the target device.
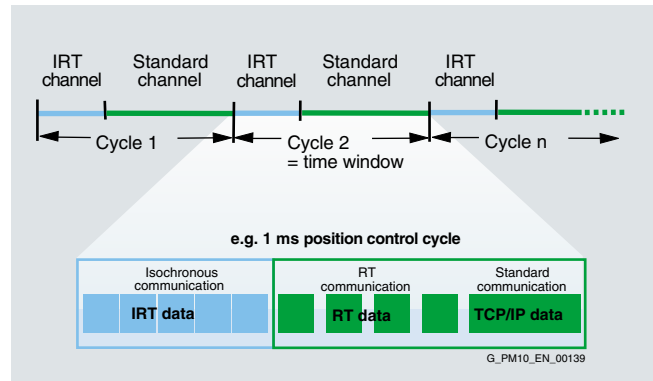
Transition from PROFIBUS to PROFINET

The functional interface between SIMOTION and the drives for PROFINET and PROFIBUS is defined by the PROFIdrive drive profile specified by PROFIBUS International (PI). It is not necessary to change an application program for the transfer between PROFIBUS and PROFINET.
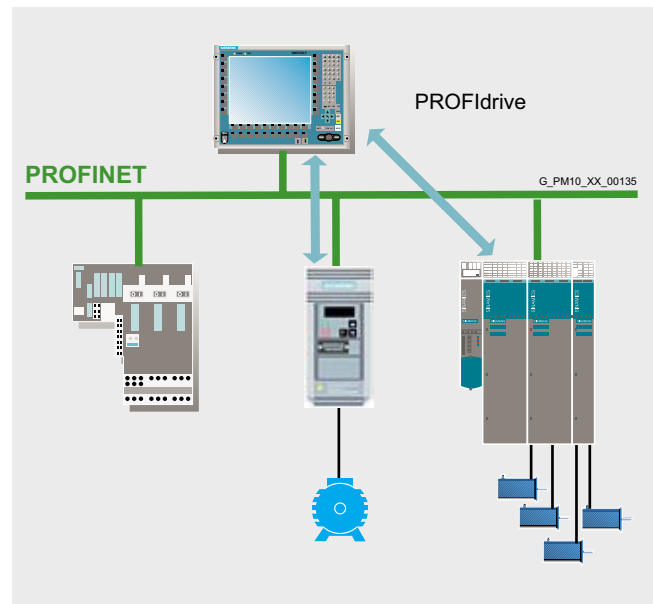
PROFINET with PROFIdrive

PROFINET with SIMOTION

■ Design (continued)

MOTION CONTROL concepts with PROFINET

With SIMOTION, PROFINET supports the implementation of different automation structures. Distributed drive-based Motion Control concepts (e. g. with SIMOTION D) or central architectures with a control (e. g. SIMOTION P) are supported in the same way as distributed automation solutions with modular automation components.
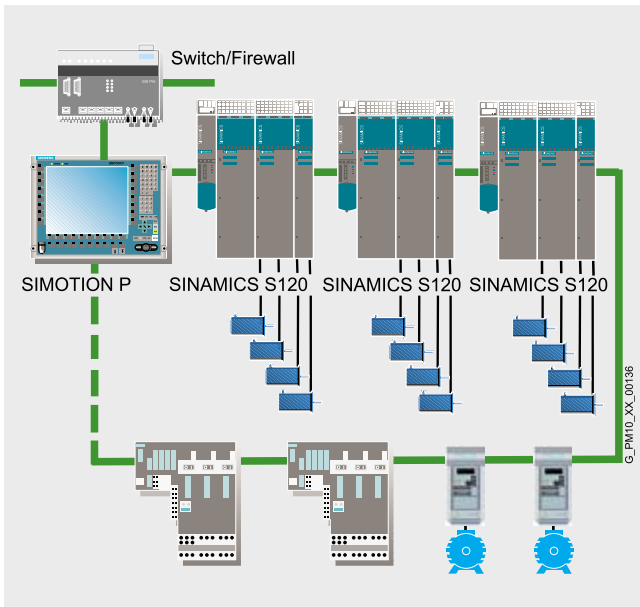
Central motion control architecture
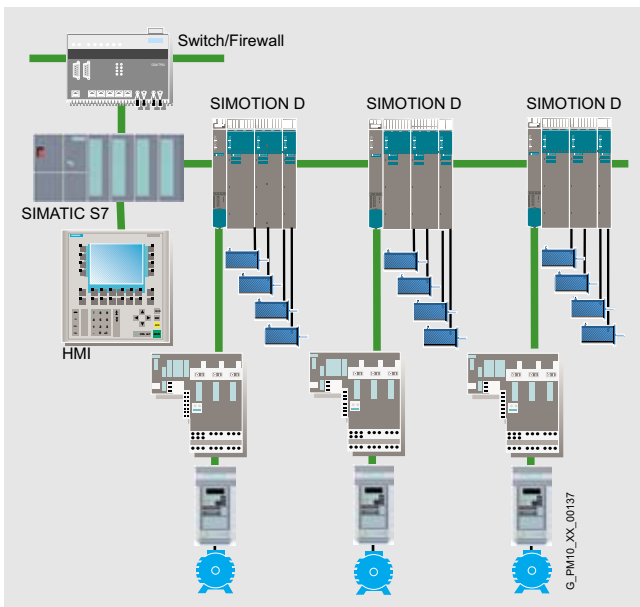
Distributed motion control architecture

The interface to PROFINET is implemented with an optional module for the SIMOTION P and SIMOTION D motion control systems as well as for the SINAMICS S120 drive system with the CU320 control unit. These modules have 4 Ethernet ports with integrated switch functionality. The real-time communication types PROFINET IO with RT and IRT as well as the standard protocols TCP/IP are supported.

■ Function

Real-time communication with PROFINET IO

PROFINET uses standard TCP/IP for parameter assignment, configuration and diagnostics. Real-time communication for the transmission of process data is performed on the same line. PROFINET has the following real-time features:

- Real-Time (RT)
  uses the option of prioritizing the communication stack of the stations. This permits high-performance data transmission with standard network components.
- Isochronous real-time (IRT)
  permits strict deterministic, cyclic data transmission with short response times and minimum jitter for high performance motion control applications. This feature is implemented with a special ASIC, the so-called ERTEC (Enhanced Real Time Ethernet Controller), in the corresponding interfaces (switch integrated into device) or network components (switch).

Distributed intelligence with PROFINET CBA

Machines and plants can be broken up into reusable, technological modules. These modules include the mechanical and electrical/electronic components and application programs of a plant section. In the first step, the modules are created, tested and enclosed and in the second step they are graphically wired up with the communication system of the system. This procedure permits efficient engineering and short startup times.

Automation with PROFINET

With these and other features PROFINET fulfills all automation requirements: Industry-compatible installation technology, real-time capability, deterministic responses, integration of distributed field devices, simple network administration and diagnosis, protection against unauthorized access, efficient vendor-independent engineering as well as isochronous motion control applications.

PROFINET relies on switch technology and has expanded this technology for real-time applications (IRT). This has the advantage that the network topology can be optimally utilized and adapted to the requirements of the machine. Collisions are prevented and an optimal data throughput is achieved.

Visualization

6

Visualization

Introduction

■ Overview

With the SIMATIC ProTool and SIMATIC WinCC product families, SIMATIC HMI offers visualization and configuration software for the complete scope of applications:

- SIMATIC ProTool
  covers **applications directly at the machine ranging** from PC-based HMI solutions for single-user systems based on ProTool/Pro through to the SIMATIC HMI operator panels. For the configuration of the ProTool/Pro runtime for PCs as well as SIMATIC HMI operator panels, the ProTool family offers the uniform and scalable configuration tools ProTool/Lite, ProTool and ProTool/Pro CS.

- SIMATIC WinCC
  is the **process visualization or SCADA system** (PC-based HMI system) for visualizing and controlling processes, production flows, machines and plants in all sectors – from the simple single-user system through to the distributed multi-user system with redundant servers and remote solutions with Web clients. WinCC is, at the same time, the information hub for company-wide vertical integration (process visualization and platform for IT and business integration).

SIMATIC WinCC flexible

is the consistent further development of the SIMATIC HMI software products. WinCC flexible offers an essential hub for applications close to the machine (until now this has been covered by the ProTool family) with respect to configuration efficiency and new automation concepts. For process-oriented plant and mechanical engineering as well as series production of machines, SIMATIC WinCC flexible 2005 also offers:

- Further productivity improvements (configuration efficiency) when creating HMI projects
- Implementation of innovative TCP/IP and web-based automation and HMI concepts
- Increase of the availability of the machines and systems through new service concepts
- Safe, flexible and world-wide access to process data
- New SIMATIC HMI devices
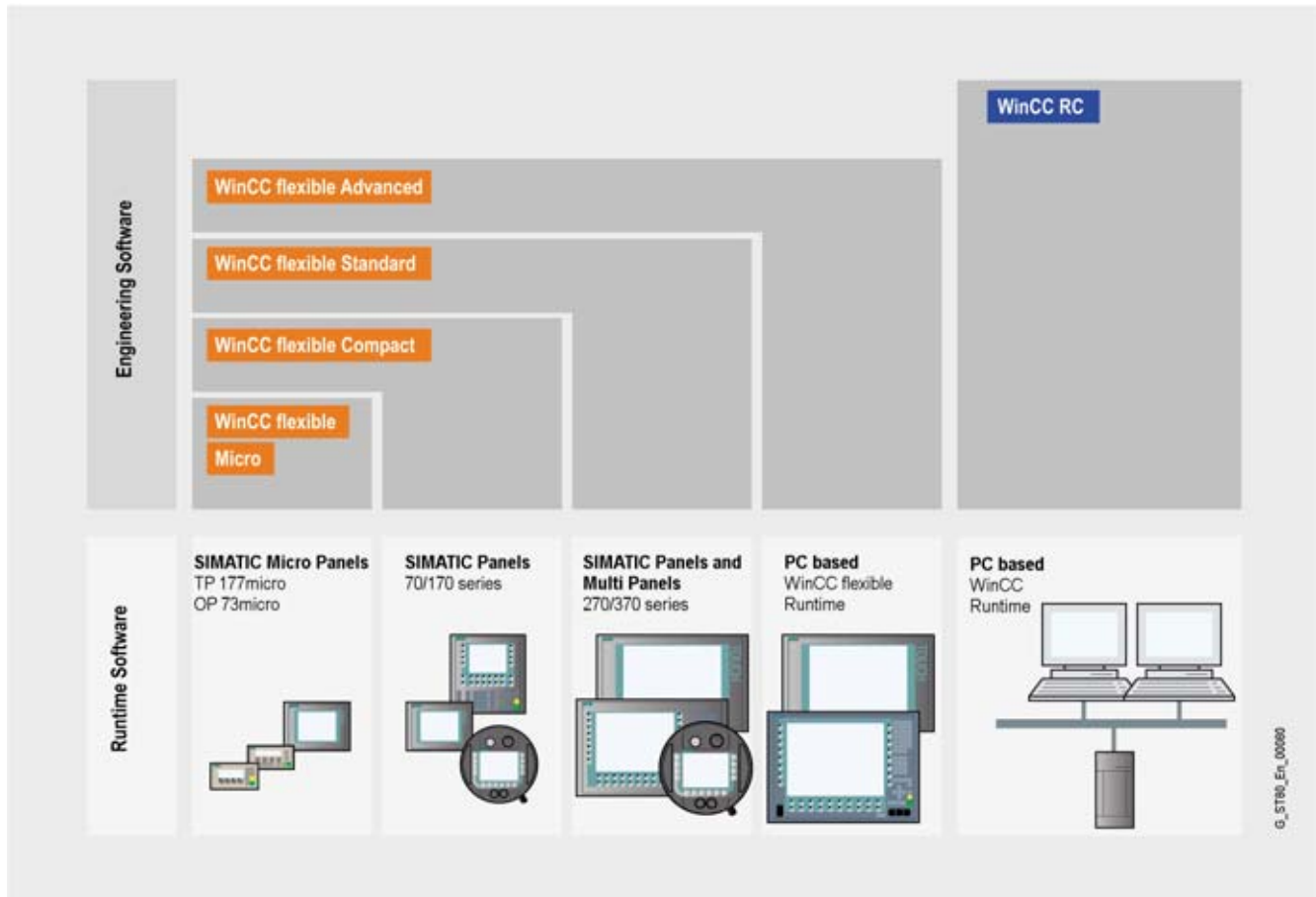
Changing from the ProTool family to WinCC flexible is possible by simply using the same or converting the old configuration data. The ProTool family, however, will be available alongside WinCC flexible for the foreseeable future.

SIMATIC WinCC will remain the process visualization system for plant monitoring with single or multiple station solutions and the platform for IT & Business integration under Windows 2000 and XP Professional.

The next step will be to use WinCC flexible also as the platform for integrating the SIMATIC WinCC visualization system. As is the case today for ProTool V6 projects, WinCC V6 projects will then also be compatible.

Overview (continued)

SIMATIC ProTool configuration software

- The integrated family of configuration systems (ProTool/Lite, ProTool, ProTool/Pro CS) for SIMATIC operator panels, the HMI part of the SIMATIC C7 as well as the PC-based visualization software ProTool/Pro RT:
  - SIMATIC Text Panels TD17, as well as Operator Panels OP3/OP7/OP17
  - SIMATIC Panels of the 170 series: TP 170A/B, OP 170B, Mobile Panel 170
  - SIMATIC Panels of the 270 series: TP/OP 27, TP/OP 270
  - SIMATIC Multi Panels: MP 270B 10", MP 370
  - HMI components of the SIMATIC C7 control systems: C7-621, 623, 624, 626, 633, 634, 635, 636 Key
  - SIMATIC ProTool/Pro RT
- Executable under Windows 98 SE/ME and Windows NT 4.0/2000/XP
- Integral component of Totally Integrated Automation (TIA): STEP 7, SIMOTION, Component based Automation (CBA)

SIMATIC ProTool/Pro RT visualization software

- PC-based HMI solution for single-user systems directly at the machine
- Executable under Windows 98 SE/ME and Windows NT4.0/2000/XP
- Complete system with functions for visualizing, signaling, logging, recipes and archiving
- Specific applications can be added with VB scripts and customized ActiveX controls

SIMATIC WinCC flexible ES engineering software

- Newly developed family of configuration systems with WinCC flexible Micro/Compact/Standard/Advanced for SIMATIC operator panels, the HMI part of SIMATIC C7 as well as for the PC-based visualization software WinCC flexible RT
  - SIMATIC Micro Panels
  - SIMATIC Mobile Panels
  - SIMATIC Panels of the 70/170/270 series, as well as C7-635 and C7-636
  - SIMATIC Multi Panels of the 270/370 series
  - SIMATIC WinCC flexible RT
- Executable under Windows 2000/XP Professional
- Expanded integration into Totally Integrated Automation (TIA): STEP 7, SIMOTION, Component Based Automation (CBA)
- Maximum configuration efficiency thanks to preconfigured objects, modular system, intelligent tools and mass data processing
- Optionally expandable with functions for version administration and logging changes (WinCC flexible /ChangeControl)

SIMATIC WinCC flexible RT visualization software

- Modular PC-based HMI solution for single-user systems directly at the machine (further development of ProTool/Pro RT)
- Executable under Windows 2000/XP Professional
- Basic package providing a cost-effective means of getting started in respect of visualization, signaling and logging. Can be expanded specifically with option packages
- Flexible expansion with VB scripts and customized ActiveX controls (Open Platform Program)
- Can be integrated into innovative automation solutions based on TCP/IP networks
- Expanded service concepts with remote operation, diagnostics and administration over the intranet and Internet as well as e-mail communication (using options)
- Can be expanded with WinCC flexible/Audit for recording operations in an audit trail

SIMATIC WinCC process visualization software

- PC-based operator control and monitoring system for visualizing and operating processes, production flows, machines and plants in all sectors - with the simple single-user station through to distributed multi-user systems with redundant servers and cross-location solutions with Web clients. WinCC is the information hub for company-wide vertical integration (process visualization and platform for IT & business integration).
- For universal use thanks to solutions for all sectors, e.g. conforming to FDA 21 CFR Part 11, and multiple languages for worldwide use
- All HMI functions on-board with industry-standard functions for signaling and acknowledging events, archiving of messages and measured values, logging of all process and configuration data, user administration and visualization (WinCC basic software).
- Configuring is easy and efficient using object libraries, modular systems, tools for mass data processing and online loading of changes
- Company-wide, flexible client/server structures with operator stations on the Web, distributed servers and data integrity thanks to redundancy
- Easy to integrate over standard interfaces such as OPC (OLE for Process Control), WinCC OLE-DB, VBA (Visual Basic for Applications), VB script, C-API (ODK)
- Integration platform in the company thanks to the Historian functionality integrated into WinCC based on the Microsoft SQL Server 2000, standard and programming interfaces and tools and clients for evaluation
- Modular expansion with options and add-ons as well as individual function expansions with VB Script, Visual Basic for Applications, C-API (ODK) and integration of ActiveX elements
- Integral component of Totally Integrated Automation (TIA): Increases productivity, minimizes engineering outlay, reduces lifecycle costs

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Visualization

■ **Overview** (continued)

	SIMATIC ProTool/Pro RT	SIMATIC WinCC flexible RT	SIMATIC WinCC
Area of application	HMI software designed primarily for use in in-process applications in (series) machine production	HMI software designed primarily for use in in-process applications in (series) machine production	Process visualization software for controlling and monitoring both simple and complex automation solutions
Configurations	Single-user system, usually based on a panel PC	Single-user system, usually based on a panel PC Support of simple distributed operating stations in TCP/IP networks Innovative service concepts featuring e-mail, remote control, monitoring and administration via intranet/Internett	Single- and multi-user system as well as distributed systems Internet capability using the WinCC/Web Navigator option Data integrity with redundant solutions Integrated Historian functionality Processing of high quantity frame-works
Strategies	Integrated solution system taking in both operator panels and PC-based operator stations running ProTool/Pro Runtime	Integrated solution system taking in both operator panels and PC-based operator stations running WinCC flexible Runtime	High-quality SCADA functionality and integration platform for ERP/MES solutions based on the integrated Historian functionality (IT & Business Integration)
Configuring	An integrated family of configura-tion tools for integrated solutions Fast configuration due to pre-configured objects	An integrated family of configura-tion tools for integrated solutions Fast configuration due to pre-configured objects and refe-renced image blocks Table-based editors for efficient mass data processing Intelligent tools to simplify the configuration of complex tasks, e.g., user guidance, automatic compilation	Flexibility thanks to individual dynamization options Object library and function block technology (incl. referencing) Efficient configuration of mass data thanks to configuration tool Simple configuration of control system applications, text library for signaling system Online loading of changes in active projects
Functional scope	HMI scope of available functions tailored to machine applications Standard functions can be expanded quickly and easily using VB scripts Jog mode is possible	HMI basic functionality can be expanded using option packages Standard functions can be expanded quickly and easily using VB scripts Jog mode is possible	High-performance and compre-hensive SCADA functionality Standard functions can be expan-ded quickly and easily using VB scripts and C scripts IIntegral component of the PCS 7 process control system
Openness/expansion capability	Custom made solutions based on ActiveX controls are possible	Custom made solutions based on ActiveX controls are possible (Open Platform Program) Access to runtime display objects using VB scripts	Can be expanded with open Windows interfaces for integration into a factory-/company-wide information system Standard SQL database with WinCC OLE DB Provider C-APIs (ODK), access to the COM object model of WinCC RT using VB script and WinCC CS using VBA OPC: Access to WinCC RT data using OPC DA, OPC HDA and OPC A&E (connectivity pack) Extensive range of options and add-ons

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■ **Overview**

- **PC-based HMI solution**
  for single-user systems directly at the machine
- SIMATIC ProTool/Pro comprises:
  - SIMATIC ProTool/Pro RT runtime software for PC-based systems
  - SIMATIC ProTool/Pro Configuration (CS) configuration software for configuring PC-based systems as well as for configuring SIMATIC Operator Panels
- Executable under Windows 98 SE/ME and Windows NT4.0/2000/XP Professional
- **Current version**:
  - SIMATIC ProTool/Pro Configuration V6.0 + SP3
  - SIMATIC ProTool/Pro Runtime V6.0 + SP3

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Visualization
SIMATIC ProTool/Pro visualization software

SIMATIC ProTool/Pro

Ordering data		Order No.
SIMATIC ProTool/Pro Configuration V6.0 + SP3 with ProAgent V6.0 + SP3 [2]	D	**6AV6 582-2BX06-0DX0**
Language versions: G/E/F/I/S on CD-ROM, containing:		
• ProTool/Pro Configuration (CS) V6.0 + SP3		
• Simulation software for Mobile Panel 170, TP 170A/B, OP 170B, TP 270, OP 270, MP 270, MP 270B 10", MP 370 and ProTool/Pro Runtime		
• Native Drivers		
• Electronic documentation (.pdf/.chm) in German, English, French, Spanish, Italian		
SIMATIC ProTool/Pro Runtime V6.0 + SP3 for PC systems with ProAgent V6.0 + SP3 [2]		
on CD-ROM with license (single license) for		
• 128 PowerTags (RT 128)	D	**6AV6 584-1AB06-0DX0**
• 256 PowerTags (RT 256)	D	**6AV6 584-1AC06-0DX0**
• 512 PowerTags (RT 512)	D	**6AV6 584-1AD06-0DX0**
• 2048 PowerTags (RT 2048)	D	**6AV6 584-1AF06-0DX0**
Upgrade		
• ProTool/Pro to ProTool/Pro V6.0 + SP3 [1]	D	**6AV6 582-2BX06-0DX4**
• ProTool/Pro RT to ProTool/Pro RT V6.0 + SP3	D	**6AV6 584-3AX06-0DX4**
Powerpacks		
SIMATIC ProTool/Pro RT PowerTags from		
• 128 to 256 PowerTags	D	**6AV6 570-1BC00-0AX0**
• 128 to 512 PowerTags	D	**6AV6 570-1BD00-0AX0**
• 128 to 2048 PowerTags	D	**6AV6 570-1BF00-0AX0**
• 256 to 512 PowerTags	D	**6AV6 570-1CD00-0AX0**
• 256 to 2048 PowerTags	D	**6AV6 570-1CF00-0AX0**
• 512 to 2048 PowerTags	D	**6AV6 570-1DF00-0AX0**
• SIMATIC ProTool/Lite to ProTool/Pro V6.0 + SP3	D	**6AV6 571-2AC06-0DX0**
• SIMATIC ProTool to ProTool/Pro V6.0 + SP3	D	**6AV6 571-2BC06-0DX0**

		Order No.
Versions for China/Taiwan/Korea/Japan		
SIMATIC ProTool/Pro Configuration V6.0 + SP2 ASIA	D	**6AV6 582-2BX06-0CV0**
Language/script variants: English/Chinese traditional and simplified/Korean/Japanese; comprising:		
• ProTool/Pro Configuration (CS) V6.0 + SP2 ASIA		
• Simulation software for Mobile Panel 170, TP 170A/B, OP 170B, TP 270, OP 270, MP 270, MP 270B 10", MP 370 and ProTool/Pro Runtime		
• Electronic documentation (.pdf/.chm) in: English, Chinese (traditional and simplified), Korean and Japanese		
SIMATIC ProTool/Pro Runtime V6.0 + SP2 ASIA for PC systems		
on CD-ROM with license (single license) for		
• 128 PowerTags (RT 128)	D	**6AV6 584-1AB06-0CV0**
• 256 PowerTags (RT 256)	D	**6AV6 584-1AC06-0CV0**
• 512 PowerTags (RT 512)	D	**6AV6 584-1AD06-0CV0**
• 2048 PowerTags (RT 2048)	D	**6AV6 584-1AF06-0CV0**
Communication via Industrial Ethernet		
CP 1613-A2	A	**6GK1 161-3AA01**
PCI card (32 bits) for connecting a PG/PC to Industrial Ethernet (communication software to be ordered separately)		
S7-1613 Edition 2005		**6GK1 716-1CB63-3AA0**
Software for S7/S5-compatible communication, with PG/OP communication, OPC Server and NCM PC; up to 120 connections, Single License for 1 installation, Runtime software, software and electronic manual on CD-ROM, License Key on disk, class A, for 32 bits Windows XP Professional, 2003 server, Windows 2000 Professional/Server; for CP 1613/CP 1613-A2 German/English		
CP 1612	A	**6GK1 161-2AA00**
PCI card (32 bits) for connecting a PG/PC to Industrial Ethernet (SOFTNET-S7 to be ordered separately)		
Softnet-S7 Edition 2005		**6GK1 704-1CW63-3AA0**
Software for S7 and S5-compat. communication, with OPC Server, PG/OP communication and NCM PC, up to 64 connections, Single License for 1 installation Runtime software, software and electronic manual on CD-ROM, License Key on disk, class A, for 32 bits Windows XP Professional, 2003 server, 2000 Professional/ Server; for CP 1512 and CP 1612 German/English		

1) Upgrade for Configuration Station (CS) as well as Runtime (RT) Station
2) The runtime licenses for ProAgent/PC must be purchased separately for each target system

A) Subject to export regulations: AL: N and ECCN: EAR99H
D) Subject to export regulations: AL: N and ECCN: 5D992B1

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■ **Ordering data**	Order No.		**Documentation** (to be ordered separately)	Order No.

Communication via Industrial Ethernet (continued)

Softnet-S7 Lean Edition 2005	**6GK1 704-1LW63-3AA0**
Software for S7 and S5-compat. communication, with OPC Server, PG/OP communication and NCM PC, up to 8 connections, Single License for 1 installation Runtime software, software and electronic manual on CD-ROM, License Key on disk, class A, for 32 bits Windows XP Professional, 2003 server, 2000 Professional/Server, for CP 1512 and CP 1612 German/English	

Communication via PROFIBUS

CP 5613-A2	**6GK1 561-3AA01**
PCI card (32 bits) for connecting a PC to PROFIBUS (communications software must be ordered separately)	

CP 5614-A2	**6GK1 561-4AA01**
PCI card (32 bits) for connecting a PC to PROFIBUS (communications software must be ordered separately))	

S7-5613 Edition 2005	**6GK1 713-5CB63-3AA0**
Software for S7 communication with PG and FDL protocol, OPC server and NCM PC; Single License for 1 installation, Runtime software, software and electronic manual on CD-ROM, License Key on disk, class A, for 32 bits Windows XP Professional; 2003 server, 2000 Professional/Server, for CP 5613, CP 5613-A2, CP 5613 FO, CP 5614, CP 5614-A2, CP 5614 FO German/English	

CP 5512	**6GK1 551-2AA00**
PCMCIA card (CARDBUS 32 bits) for connecting a PG/notebook computer to PROFIBUS or MPI (communication software included in ProTool/Pro)	

CP 5611-A2 A	**6GK1 561-1AA01**
PCI card (32 Bit) for connecting a PG/PC to PROFIBUS (communication software included in ProTool/Pro)	

CP 5611 MPI A	**6GK1 561-1AM01**
comprising: PCI card, CP 5611-A2 (32 bits) and MPI cable, 5 m	

PC/PPI adapter A	**6ES7 901-3CB30-0XA0**
RS 232, 9-pin; male with RS 232/PPI converter, max. 19.2 kBit/s	

PC/MPI adapter	**6ES7 972-0CA23-0XA0**
RS 232, 9-pin; male with RS 232/MPI converter, max. 19.2 kBit/s	

PC adapter USB	**6ES7 972-0CB20-0XA0**
for Windows 2000/XP	

A) Subject to export regulations: AL: N and ECCN: EAR99H
B) Subject to export regulations: AL: N and ECCN: EAR99S

Documentation (to be ordered separately)

ProTool/Pro Runtime user manual	
• German	**6AV6 594-1CA06-0AA0**
• English	**6AV6 594-1CA06-0AB0**
• French	**6AV6 594-1CA06-0AC0**
• Italian	**6AV6 594-1CA06-0AD0**
• Spanish	**6AV6 594-1CA06-0AE0**

ProTool user manual , configuring Windows-based systems	
• German	**6AV6 594-1MA06-1AA0**
• English	**6AV6 594-1MA06-1AB0**
• French	**6AV6 594-1MA06-1AC0**
• Italian	**6AV6 594-1MA06-1AD0**
• Spanish	**6AV6 594-1MA06-1AE0**

Communications manual for Windows-based systems	
• German	**6AV6 596-1MA06-0AA0**
• English	**6AV6 596-1MA06-0AB0**
• French	**6AV6 596-1MA06-0AC0**
• Italian	**6AV6 596-1MA06-0AD0**
• Spanish	**6AV6 596-1MA06-0AE0**

SIMATIC HMI Manual Collection B	**6AV6 691-1SA01-0AX0**
Electronic documentation, on DVD	
5 languages (English, French, German, Italian and Spanish); comprising: all available user manuals, product manuals and communication manuals for SIMATIC HMI	

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Visualization
SIMATIC WinCC flexible

SIMATIC WinCC flexible RT

■ **Overview**
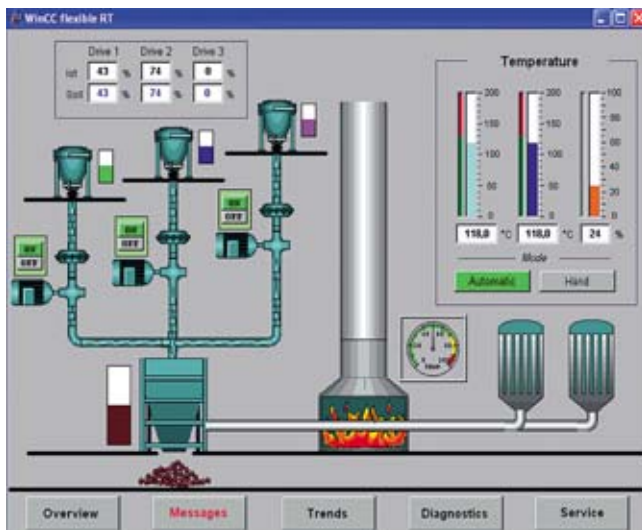
- **PC-based visualization software** for single-user systems directly at the machine
- Executable under Windows 2000/XP Professional
- **Current version:**
  - SIMATIC WinCC flexible 2005 SP1 Runtime with 128, 512 or 2048 PowerTags
- SIMATIC WinCC flexible Runtime is configured with SIMATIC WinCC flexible Advanced engineering software.

■ **Benefits**

- Optimum price/performance ratio thanks to individually scalable system functionality
- Functions for all visualization tasks:
- Operator functions, graphical and plot representations, signaling system, log system, archiving (option), recipe management (option), Audit Trail (option), process fault diagnostics (option)
- Flexible runtime functionality thanks to Visual Basic scripts
- Innovative service concepts with remote operation, diagnostics and administration via intranet and Internet as well as e-mail communication to increase availability (option)
- Support for simple distributed automation solutions based on TCP/IP networks at the machine level (option)

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Ordering data

	Order No.
WinCC flexible 2005 SP1 Advanced D	**6AV6 613-0AA01-1CA5**
Floating License, on CD-ROM incl. License Key, comprising:	
• Engineering software for configuration of WinCC flexible Runtime as well as Micro Panels and Panels of the 70/170/270/370 series, incl. C7-635/636	
• SW for engineering option WinCC flexible /ChangeControl [1]	
• Simulation software [5] WinCC flexible Runtime as well as Micro Panels and Panels of the 70/170/270/370 series, incl. C7-635/636	
• Native Drivers	
• Electronic documentation (.pdf) in German, English, French, Italian, Spanish	
WinCC flexible /ChangeControl D **for WinCC flexible 2005 Compact/Standard/Advanced** [4]	**6AV6 613-6AA01-1AB5**
Floating License, Option, License Key only	
SIMATIC WinCC flexible 2005 SP1 Runtime	
for PC systems; incl. SW for PC system options[1]; Single License, on CD-ROM incl. License Key, for:	
• 128 PowerTags (RT 128) D	**6AV6 613-1BA01-1CA0**
• 512 PowerTags (RT 512) D	**6AV6 613-1DA01-1CA0**
• 2048 PowerTags (RT 2048) D	**6AV6 613-1FA01-1CA0**

Powerpacks

	Order No.
SIMATIC WinCC flexible 2005 Runtime	
Single License, License Key only for PowerTags from	
• 128 to 512 PowerTags D	**6AV6 613-4BD01-1AD0**
• 128 to 2048 PowerTags D	**6AV6 613-4BF01-1AD0**
• 512 to 2048 PowerTags D	**6AV6 613-4DF01-1AD0**

Software Update Service

	Order No.
Software Update Service SIMATIC WinCC flexible [3]	
• WinCC flexible Advanced D	**6AV6 613-0AA00-0AL0**

Upgrades

	Order No.
SIMATIC ProTool to SIMATIC WinCC flexible 2005 SP1	
• ProTool/Pro to WinCC flexible 2005 SP1 Advanced D	**6AV6 613-3AA01-1CE5**
SIMATIC WinCC flexible 2004 to SIMATIC WinCC flexible 2005 SP1	
• WinCC flexible 2004 Advanced D to WinCC flexible 2005 SP1 Advanced, with ChangeControl option	**6AV6 613-3DD01-1CE0**

Versions for China/Taiwan/Korea/Japan

	Order No.
WinCC flexible 2005 SP1 ASIA D **Advanced**	**6AV6 613-0AA11-1CA5**
Floating License, on CD-ROM incl. License Key, comprising:	
• Engineering software for configuration of WinCC flexible Runtime as well as Micro Panels and Panels of the 70/170/270/370 series, incl. C7-635/636	
• SW for engineering option WinCC flexible /ChangeControl [1]	
• Simulation software [5] for WinCC flexible Runtime as well as Micro Panels and Panels of the 70/170/270/370 series, incl. C7-635/636	
• Native Drivers	
• Electronic documentation (.pdf) in English, simplified Chinese, traditional Chinese, Korean, Japanese	

Documentation (to be ordered separately)

	Order No.
WinCCflexible communication user manual	
• German	**6AV6 691-1CA01-0AA0**
• English	**6AV6 691-1CA01-0AB0**
WinCCflexible Compact/Standard/Advanced user manual	
• German	**6AV6 691-1AB01-0AA0**
• English	**6AV6 691-1AB01-0AB0**
• French	**6AV6 691-1AB01-0AC0**
• Italian	**6AV6 691-1AB01-0AD0**
• Spanish	**6AV6 691-1AB01-0AE0**
SIMATIC HMI B **Manual Collection**	**6AV6 691-1SA01-0AX0**
Electronic documentation, on DVD	
5 languages (English, French, German, Italian and Spanish); comprising: all available user manuals, product manuals and communication manuals for SIMATIC HMI	

1) The licenses for the WinCC flexible /ChangeControl must be purchased separately for each engineering station

2) The Runtime licenses for the WinCC flexible Runtime options must be purchased separately for each target system

3) For a period of 12 months and for a fixed price, the customer is automatically provided with all upgrades and service packs per installed WinCC flexible engineering ystem or option. The contract is automatically extended by a further year unless canceled up to 12 weeks prior to expiry.

4) Use of the ChangeControl option for integral operation with STEP 7 has not been released.

5) Nor for OP73micro, TP177micro, OP73, OP77A, TP177A.

B) Subject to export regulations: AL: N and ECCN: EAR99S

D) Subject to export regulations: AL: N and ECCN: 5D992B1

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Visualization
SIMATIC WinCC flexible

SIMATIC WinCC flexible RT options

■ **Overview**

G_ST80_XX_00085
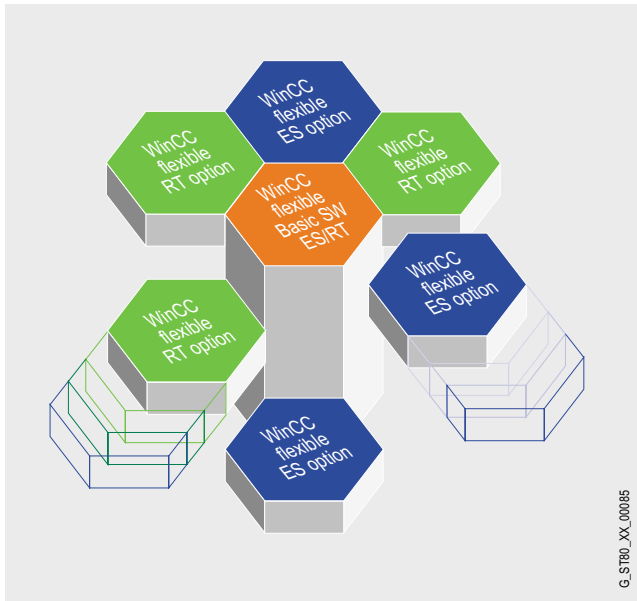
Options for SIMATIC WinCC flexible Runtime

SIMATIC WinCC flexible /Archives

• Archiving process values and messages

SIMATIC WinCC flexible /Recipes

• Management of data sets in recipes which contain associated machine or production data

WinCC flexible /Audit

• Recording of operator actions in an audit trail, and electronic signature

• The audit option combined with the ChangeControl option supports the user with plant validation.

SIMATIC WinCC flexible /OPC Server

• Incorporation of automation components from different vendors into one automation concept

• Communication for data exchange between HMI systems and/or higher-level control system

• Communication with applications (e.g. MES, ERP, or applications in the office sector) from different vendors

SIMATIC WinCC flexible /Sm@rtService

• Remote maintenance and servicing of machines/plants via the Internet/intranet

• Event-controlled sending of e-mails

• System diagnostics visualized on device-specific HTML sites

SIMATIC WinCC flexible /Sm@rtAccess

• Flexible solution for location-independent access to HMI systems and process data

• Communication between various SIMATIC HMI systems

SIMATIC WinCC flexible /ProAgent

• Precise and rapid process fault diagnostics in plants and machines for SIMATIC S7 and SIMATIC HMI

SIMATIC WinBDE

• With the SIMATIC WinBDE machine data management system, the operator panel becomes the central acquisition and control unit for machine data, permitting comprehensive analyses to be carried out directly at the machine.

• The result is transparency, quick countermeasures in the event of faults, an increase in machine runtimes and proof of the availability of production facilities and production units.

Options for SIMATIC WinCC flexible Engineering System

WinCC flexible /ChangeControl

• Versioning of configuration data and for tracking of modifications to configuration (e.g. as proof in regulated sectors)

• One license is necessary for each configuration station

Note:
Further information can be found in the Catalogs ST 80 or CA01.

■ Ordering data

	Order No.
WinCC flexible /Archives for WinCC flexible 2005 Runtime [1] D Single license, License Key only	**6AV6 618-7ED01-1AB0**
WinCC flexible /Archives + Recipes for WinCC flexible 2005 Runtime [1] D Single license per option, License Key only	**6AV6 618-7GD01-1AB0**
WinCC flexible /Recipes for WinCC flexible 2005 Runtime [1] D Single license, License Key only	**6AV6 618-7FD01-1AB0**
WinCC flexible /Audit for WinCC flexible RT 2005 D Single license, License Key only	**6AV6 618-7HD01-1AB0**
WinCC flexible /Sm@rtAccess for WinCC flexible 2005 Runtime [1] D Single license, License Key only	**6AV6 618-7AD01-1AB0**
WinCC flexible /Sm@rtService for WinCC flexible Runtime [1] D Single license, License Key only	**6AV6 618-7BD01-1AB0**
WinCC flexible /OPC-Server for WinCC flexible Runtime [1] D Single license, License Key only	**6AV6 618-7CD01-1AB0**
WinCC flexible /ProAgent Software option package for process diagnostics based on S7-PDIAG V5.1 or higher, S7-HighGraph V5.3 or higher; S7-GRAPH V5.2 or higher; Add-on functions for SIMATIC WinCC flexible; electronic documentation in German, English, French, Italian and Spanish	
• WinCC flexible /ProAgent for WinCC flexible Runtime [1] D runtime license (single license)	**6AV6 618-7DD01-1AB0**
WinCC flexible /ChangeControl for WinCC flexible 2005 Compact/Standard/Advanced [2] D Floating License, option, License Key only	**6AV6 613-6AA01-1AB5**

1) One license is necessary for each operator station.
   A license is not required for the engineering system for configuring the runtime option.
2) Use of the ChangeControl option for integral operation with STEP 7 has not been released.
B) Subject to export regulations: AL: N and ECCN: EAR99S
D) Subject to export regulations: AL: N and ECCN: 5D992B1

	Order No.
Documentation (to be ordered separately)	
SIMATIC HMI Manual Collection B Electronic documentation, on DVD 5 languages (English, French, German, Italian and Spanish); comprising: all available user manuals, product manuals and communication manuals for SIMATIC HMI	**6AV6 691-1SA01-0AX0**

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Visualization
SIMATIC WinCC

SIMATIC WinCC

■ Overview
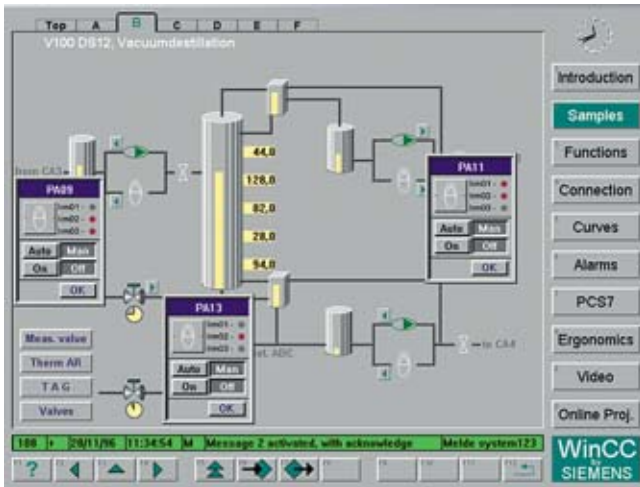
- PC-based operator control and monitoring system for visualizing and operating processes, production flows, machines and plants in all sectors – with the simple single-user station through to distributed multi-user systems with redundant servers and cross-location solutions with Web clients. WinCC is the information hub for corporation-wide vertical integration.

- The basic system configuration (WinCC basic software) includes industry-standard functions for signaling and acknowledging events, archiving of messages and measured values, logging of all process and configuration data, user administration and visualization.

- The WinCC basic software forms the core of a wide range of different applications. Based on the open programming interfaces, a wide range of WinCC options (from Siemens A&D) and WinCC add-ons have been developed (by Siemens-internal and external partners).

- Current versions:
  - **SIMATIC WinCC V6.2:**
    for Windows XP Professional/ Windows 2003 Server/ Windows 2003 Server R2 and Windows 2000 Professional
  - **SIMATIC WinCC V5.1 SP2:**
    for Windows NT 4.0 / 2000

■ Benefits

- For universal applications
  - Solutions for all sectors
  - Multilingual for worldwide use
  - Integration in all automation solutions

- All HMI functions on board
  - User administration
  - Operator control and monitoring
  - Reporting, acknowledging and archiving of results
  - Acquisition, sealing and archiving of measured values (incl. backup)
  - Logging and documentation of process data and configuration data

- Configurable easily and efficiently
  - Configuration wizards save time for more important work
  - In the picture thanks to cross-reference lists and screen properties display
  - Configuration of multilingual applications
  - Configuring tool for configuring bulk data

- System-wide scalability
  - Expandable from single-user to client-server configuration
  - Increased availability through redundant server
  - Process visualization over the Web with the WinCC WebNavigator

- Open standards for easy integration
  - Powerful real-time database MS SQL Server 2005
  - Open for application modules with ActiveX Controls
  - Visual Basic for Applications for individual expansions
  - OLE for Process Control for communication between products of different manufacturers

- Process visualization with Plant Intelligence
  - Integrated, high-performance Historian based on Microsoft SQL Server 2005
  - Integrated evaluation functions for online analysis (statistical process control)
  - Production optimization with the help of various options

- Expansion through options and add-ons
  - Options for scalable configurations
  - Options to increase availability
  - Options for IT & Business Integration
  - Options for SCADA expansions
  - Options for validation according to FDA 21 CFR Part 11

- Part of Totally Integrated Automation
  - Direct access to configuration of variables and alarms in the SIMATIC PLC
  - Integrated diagnostic functions for increasing productivity

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■ Ordering data

	Order No.		Order No.

SIMATIC WinCC system software V5.1 SP2

Runtime packages on CD-ROM
Language versions:
Ger/En/Fr/It/Sp; with license for

• 128 PowerTags (RT 128)	**6AV6 381-1BC05-1CX0**
• 256 PowerTags (RT 256)	**6AV6 381-1BD05-1CX0**
• 1024 PowerTags (RT 1024)	**6AV6 381-1BE05-1CX0**
• 64K PowerTags (RT Max)	**6AV6 381-1BF05-1CX0**

Complete packages on CD-ROM
Language versions:
Ger/En/Fr/It/Sp; with license for

• 128 PowerTags (RC 128)	**6AV6 381-1BM05-1CX0**
• 256 PowerTags (RC 256)	**6AV6 381-1BN05-1CX0**
• 1024 PowerTags (RC 1024)	**6AV6 381-1BP05-1CX0**
• 64 K PowerTags (RC Max)	**6AV6 381-1BQ05-1CX0**

SIMATIC WinCC system software V5.1 ASIA

Runtime packages on CD-ROM
Language/script versions:
English/Chinese traditional and simplified/Korean/Japanese;
with license for

• 128 PowerTags (RT 128)	**6AV6 381-1BC05-1AV0**
• 256 PowerTags (RT 256)	**6AV6 381-1BD05-1AV0**
• 1024 PowerTags (RT 1024)	**6AV6 381-1BE05-1AV0**
• 64 K PowerTags (RT Max)	**6AV6 381-1BF05-1AV0**

Complete packages on CD-ROM
Language/script versions:
English/Chinese traditional and simplified/Korean/Japanese;
with license for

• 128 PowerTags (RC 128)	**6AV6 381-1BM05-1AV0**
• 256 PowerTags (RC 256)	**6AV6 381-1BN05-1AV0**
• 1024 PowerTags (RC 1024)	**6AV6 381-1BP05-1AV0**
• 64 K PowerTags (RC Max)	**6AV6 381-1BQ05-1AV0**

SIMATIC WinCC V5.1 Powerpacks

For upgrading

Runtime packages

• 128 to 256 Power Tags	**6AV6 371-1BD05-0AX0**
• 128 to 1024 Power Tags	**6AV6 371-1BE05-0AX0**
• 128 to 64K Power Tags	**6AV6 371-1BF05-0AX0**
• 256 to 1024 Power Tags	**6AV6 371-1BG05-0AX0**
• 256 to 64K Power Tags	**6AV6 371-1BH05-0AX0**
• 1024 to 64K Power Tags	**6AV6 371-1BJ05-0AX0**

Complete packages

• 128 to 256 Power Tags	**6AV6 371-1BD15-0AX0**
• 128 to 1024 Power Tags	**6AV6 371-1BE15-0AX0**
• 128 to 64K Power Tags	**6AV6 371-1BF15-0AX0**
• 256 to 1024 Power Tags	**6AV6 371-1BG15-0AX0**
• 256 to 64K Power Tags	**6AV6 371-1BH15-0AX0**
• 1024 to 64K Power Tags	**6AV6 371-1BJ15-0AX0**

SIMATIC WinCC system software V6.2

Runtime packages on CD-ROM
Language versions:
Ger/En/Fr/It/Sp; with license for

• 128 PowerTags (RT 128)	**6AV6 381-1BC06-2AX0**
• 256 PowerTags (RT 256)	**6AV6 381-1BD06-2AX0**
• 1024 PowerTags (RT 1024)	**6AV6 381-1BE06-2AX0**
• 8 K PowerTags (RT 8192)	**6AV6 381-1BH06-2AX0**
• 64 K PowerTags (RT 65536)	**6AV6 381-1BF06-2AX0**

with 512 archive variables each

Complete packages on CD-ROM
Language versions:
Ger/En/Fr/It/Sp; with license for

• 128 PowerTags (RC 128)	**6AV6 381-1BM06-2AX0**
• 256 PowerTags (RC 256)	**6AV6 381-1BN06-2AX0**
• 1024 PowerTags (RC 1024)	**6AV6 381-1BP06-2AX0**
• 8 K PowerTags (RC 8192)	**6AV6 381-1BS06-2AX0**
• 64 K PowerTags (RC 65536)	**6AV6 381-1BQ06-2AX0**

with 512 archive variables each

SIMATIC WinCC V6.2 Powerpacks

For upgrading:

Runtime packages

• 128 to 256 PowerTags	**6AV6 371-1BD06-2AX0**
• 128 to 1024 PowerTags	**6AV6 371-1BE06-2AX0**
• 128 to 8192 PowerTags	**6AV6 371-1BK06-2AX0**
• 128 to 65536 PowerTags	**6AV6 371-1BF06-2AX0**
• 256 to 1024 PowerTags	**6AV6 371-1BG06-2AX0**
• 256 to 8192 PowerTags	**6AV6 371-1BL06-2AX0**
• 256 to 65536 PowerTags	**6AV6 371-1BH06-2AX0**
• 1024 to 8192 PowerTags	**6AV6 371-1BM06-2AX0**
• 1024 to 65536 PowerTags	**6AV6 371-1BJ06-2AX0**
• 8192 to 65536 PowerTags	**6AV6 371-1BN06-2AX0**

Complete packages

• 128 to 256 PowerTags	**6AV6 371-1BD16-2AX0**
• 128 to 1024 PowerTags	**6AV6 371-1BE16-2AX0**
• 128 to 8192 PowerTags	**6AV6 371-1BK16-2AX0**
• 128 to 65536 PowerTags	**6AV6 371-1BF16-2AX0**
• 256 to 1024 PowerTags	**6AV6 371-1BG16-2AX0**
• 256 to 8192 PowerTags	**6AV6 371-1BL16-2AX0**
• 256 to 65536 PowerTags	**6AV6 371-1BH16-2AX0**
• 1024 to 8192 PowerTags	**6AV6 371-1BM16-2AX0**
• 1024 to 65536 PowerTags	**6AV6 371-1BJ16-2AX0**
• 8192 to 65536 PowerTags	**6AV6 371-1BN16-2AX0**

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Visualization
SIMATIC WinCC

■ Ordering data

	Order No.
SIMATIC WinCC V6.2 Archives	
• 1500 archives	**6AV6 371-1DQ16-2AX0**
• 5000 archives	**6AV6 371-1DQ16-2BX0**
• 10000 archives	**6AV6 371-1DQ16-2CX0**
• 30000 archives	**6AV6 371-1DQ16-2EX0**
• 80000 archives	**6AV6 371-1DQ16-2GX0**
• 120000 archives	**6AV6 371-1DQ16-2JX0**
SIMATIC WinCC V6.2 Archive Powerpacks	
For upgrading the archiving	
• 1500 to 5000 archive variables	**6AV6 371-1DQ16-2AB0**
• 5000 to 10000 archive variables	**6AV6 371-1DQ16-2BC0**
• 10000 to 30000 archive variables	**6AV6 371-1DQ16-2CE0**
• 30000 to 80000 archive variables	**6AV6 371-1DQ16-2EG0**
• 80000 to 120000 archive variables	**6AV6 371-1DQ16-2GJ0**

SIMATIC WinCC system software V6.0 SP3 ASIA

Runtime packages on CD-ROM

Language/script versions:
English/Chinese traditional and simplified/Korean/Japanese;
with license for

• 128 PowerTags (RT 128)	**6AV6 381-1BC06-0DV0**
• 256 PowerTags (RT 256)	**6AV6 381-1BD06-0DV0**
• 1024 PowerTags (RT 1024)	**6AV6 381-1BE06-0DV0**
• 8 K PowerTags (RT 8K)	**6AV6 381-1BH06-0DV0**
• 64 K PowerTags (RT Max)	**6AV6 381-1BF06-0DV0**

with 512 archive variables each

Complete packages on CD-ROM

Language/script versions:
English/Chinese traditional and simplified/Korean/Japanese;
with license for

• 128 PowerTags (RC 128)	**6AV6 381-1BM06-0DV0**
• 256 PowerTags (RC 256)	**6AV6 381-1BN06-0DV0**
• 1024 PowerTags (RC 1024)	**6AV6 381-1BP06-0DV0**
• 8 K PowerTags (RC 8K)	**6AV6 381-1BS06-0DV0**
• 64 K PowerTags (RC Max)	**6AV6 381-1BQ06-0DV0**

with 512 archive variables each

Order No.

SIMATIC WinCC Upgrade / Comprehensive Support

WinCC V5 Upgrade [1]

For upgrading of RT and RC software packages and stations to the latest version

• V4.x to V5.1 SP2		**6AV6 381-1AA05-1CX4**
• V5.x to V5.1 SP2		**6AV6 381-1AA05-1CX3**
• V4.x /V5.x ASIA to V5.1 ASIA		**6AV6 381-1AA05-1AV3**

WinCC V6 Upgrade [1]

For upgrading the RT version

• V5.x to V6.2	B	**6AV6 381-1AA06-2AX4**
• V6.x to V6.2	B	**6AV6 381-1AA06-2AX3**
• V5.x ASIA to V6.0 SP3 ASIA		**6AV6 381-1AA06-0DV4**

For upgrading the RC version

• V5.x to V6.2	B	**6AV6 381-1AB06-2AX4**
• V6.x to V6.2	B	**6AV6 381-1AB06-2AX3**
• V5.x ASIA to V6.0 SP3 ASIA		**6AV6 381-1AB06-0DV4**

WinCC Comprehensive Support [2]

Contains current updates/upgrades for WinCC Basic software and options and the WinCC Knowledge Base CD:

• 1 licenses	**6AV6 381-1AA00-0AX5**
• 3 licenses	**6AV6 381-1AA00-0BX5**
• 10 licenses	**6AV6 381-1AA00-0CX5**

SIMATIC WinCC Dokumentation (to be ordered separately)

Basic Documentation SIMATIC WinCC V5 in slipcase

Comprising: WinCC manual and software protection description

• German	**6AV6 392-1XA05-0AA0**
• English	**6AV6 392-1XA05-0AB0**
• French	**6AV6 392-1XA05-0AC0**

Communication Manual SIMATIC WinCC V6

Communication manual for WinCC V6 process and OPC communication

• German	**6AV6 392-1CA06-0AA0**
• English	**6AV6 392-1CA06-0AB0**

Basic Documentation SIMATIC WinCC V6.0

Comprising: WinCC manual and software protection description

• German	**6AV6 392-1XA06-0AA0**
• English	**6AV6 392-1XA06-0AB0**
• French	**6AV6 392-1XA06-0AC0**
• Italian	**6AV6 392-1XA06-0AD0**
• Spanish	**6AV6 392-1XA06-0AE0**

1) In accordance with license stipulations, 1 Upgrade Package must be ordered for each WinCC station.

2) Comprehensive Support runs for one year.
The contract is automatically extended by a further year unless canceled 3 months prior to expiry. In accordance with license stipulations, 1 Comprehensive Support Package must be ordered for each WinCC station.

B) Subject to export regulations: AL: N and ECCN: EAR99S

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SIMATIC WinCC

Ordering data

	Order No.			Order No.

Communication via Industrial Ethernet

CP 1612   A

PCI card (32 bits) for connecting a PG/PC to Industrial Ethernet (SOFTNET-S7 must be ordered separately)

6GK1 161-2AA00

SOFTNET-S7 Edition 2006

Software for S7 and S5-compat. communication, incl. OPC server, PG/OP communication and NCM PC; up to 64 connections, single license for 1 installation, runtime software, software and electronic manual on CD-ROM, license key on diskette, Class A, for 32-bit Windows XP Professional, 2003 Server, 2000 Professional/Server; for CP 1512 and CP 1612 German/English

6GK1 704-1CW64-3AA0

SOFTNET-S7 Lean Edition 2006 ((included in the scope of supply ofWinCC V6.2)

Software for S7 and S5-compat. communication, incl. OPC server, PG/OP communication and NCM PC; up to 8 connections, single license for 1 installation, runtime software, software and electronic manual on CD-ROM, license key on diskette, Class A, for 32-bit Windows XP Professional, 2003 Server, 2000 Professional/Server; for CP 1512 and CP 1612 German/English

6GK1 704-1LW64-3AA0

CP 1613 A2   A

PCI card (32 bits) for connecting a PG/PC to Industrial Ethernet (communications software must be ordered separately)

6GK1 161-3AA01

S7-1613 Edition 2006

Software for S7 and S5 communication, incl. PG/OP communication, OPC server and NCM PC; up to 120 connections, single license for 1 installation, runtime software, software and electronic manual on CD-ROM, license key on diskette, Class A, for 32-bit Windows XP Professional, 2003 Server, Windows 2000 Professional/Server; for CP 1613/CP 1613 A2 German/English

6GK1 716-1CB64-3AA0

TF-1613 2006

Software for TF protocol, S5-compatible communication incl. OPC, PG/OP communication (S5/505 Layer 4 communication with TCP/IP), for Windows XP Professional/2003 Server/ 2000 Professional/Server

6GK1 716-1TB64-3AA0

Channel DLL SIMATIC S5 PMC Ethernet Layer 4

(only for WinCC V5.1)

Additional software packages required for S5-PMC

• PMC/LS-B message functions

• PMC/LS-B status, standard displays V4.3 and later

• Parameterization software PMC Pro V2.2 and later, Ger

• Parameterization software PMC Pro V2.2 and later, En

6AV6 371-1CD05-0PX0

Communication via PROFIBUS

CP 5611 A2   A

PCI card (32 bits) for connecting a PG/PC to PROFIBUS (communications software included in the WinCC basic package)

6GK1 561-1AA01

CP 5611 MPI   A

Comprising: CP 5611 A2 (32-bit) and MPI cable, 5 m

6GK1 561-1AM01

CP 5512

PCMCIA card (CARDBUS 32-bit) for connecting a PG/Notebook to PROFIBUS or MPI (communicat. software included in the WinCC basic package)

6GK1 551-2AA00

PC/MPI adapter

RS 232, 9-pin; male with RS 232/MPI converter, max. 19.2 kBit/s

6ES7 972-0CA23-0XA0

CP 5613 A2

PCI card (32 bits) for connecting a PC to PROFIBUS (communicat. software to be ordered separately)

6GK1 561-3AA01

S7-5613 Edition 2006

Software for S7 communication w. PG/OP protocol, OPC server, f. 32 bit Windows XP Professional, 2003 Server, 2000 Professional/ Server; English/German

6GK1 713-5CB64-3AA0

DP-5613 Edition 2006

Software for DP protocol incl. PG/OP communication, FDL, DP OPC Server, for 32-bit Windows XP Professional, 2003 Server, 2000 Professional/Server; German/English

6GK1 713-5DB64-3AA0

FMS-5613 Edition 2006

Software for FMS protocol incl. PG/OP communication, FDL, FMS-OPC Server, for 32-bit Windows XP Professional, 2003 Server, 2000 Professional/Server; German/English

6GK1 713-5FB64-3AA0

Channel DLL SIMATIC S5 PMC PROFIBUS

(only for WinCC V5.1)

Additional software packages required for S5-PMC

• PMC/LS-B message functions

• PMC/LS-B status, standard displays V4.3 and later

• Parameterization software PMC Pro V2.2 and later, Ger

• Parameterization software PMC Pro V2.2 and later, En

6AV6 371-1CD05-0NX0

A) Subject to export regulations: AL: N and ECCN: EAR99H

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Visualization
SIMATIC WinCC

WinCC options

■ **Overview**
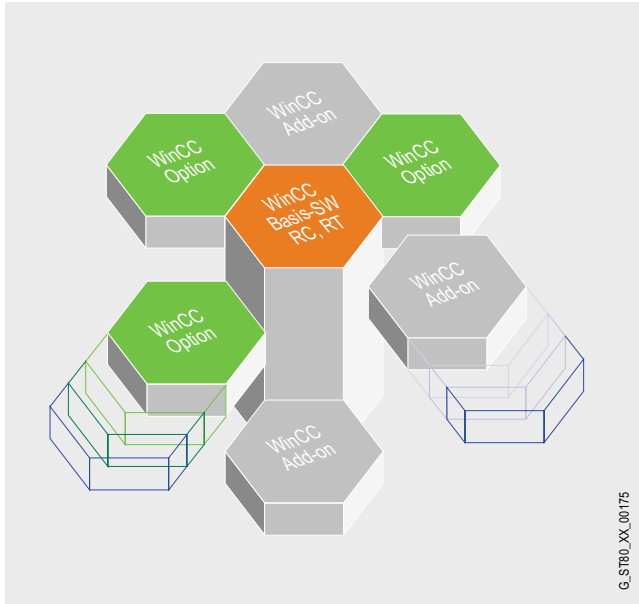
G_ST80_XX_00175

- The universal WinCC basic software is the basis for modular expansions. These functional expansions can be obtained in the form of WinCC options and as WinCC add-ons.
- WinCC options are created by WinCC Development and are Siemens Automation and Drives products. You can obtain support from our Advisory Services and via the central hotline.

Options for scalable plant configurations
- WinCC/Server
  - To set up a powerful client/server system
- WinCC/Web Navigator
  - To control and monitor plants via the Internet, in-house intranet or LAN
- WinCC/Central Archive Server (CAS)
  - For configuring a central archive server

Options to increase availability
- WinCC/Redundancy;
  - For increased system availability through redundancy
- SIMATIC Maintenance Station
  - For system-integrated diagnostics and plant-based asset management
- WinCC/ProAgent
  - For reliable process diagnostics
- WinCC/Messenger (only for WinCC V5.1)
  - For the automatic or manual sending of text, voice and image data via e-mail directly from WinCC
- WinCC/Guardian (only for WinCC V5.1)
  - For the integration of live camera images into WinCC images, video monitoring and storage of video sequences in a database

Options for IT and Business Integration
- WinCC/DataMonitor (for WinCC V6.2)
  - For display and analysis of current process states and historical data on office PCs with standard tools
- WinCC/Connectivity Pack (for WinCC V6.2)
  - Access to WinCC archive via OPC HDA, OPC A&E, OPC XML Server and WinCC OLE-DB/OLE-DB
- WinCC/Connectivity Station (for WinCC V6.2)
  - Gateway to WinCC server data over OPC HDA, OPC A&E, OPC XML server and WinCC OLE-DB /OLE-DB from independent computers
- WinCC/IndustrialDataBridge
  - Configurable link to databases and IT systems
- SIMATIC WinBDE
  - Machine data acquisition and evaluation
- WinCC/Client Access license (for WinCC V6)
  - Access from (office) PCs to WinCC archive data

Options for SCADA expansions
- WinCC/User Archives
  - To manage data sets in user archives
- WinCC/Storage (for WinCC V5.1 only; WinCC V6 features a comparable functionality in the basic system)
  - For the long-term acquisition of process data, messages and protocols

Options for process control
- WinCC/Basic Process Control (for WinCC V5.1 only; standard feature in WinCC V6 basic system)
  - With functional expansions for instrumentation and control

Options for industry-specific expansions (FDA-compliant)
- WinCC/Advanced User Administrator (for WinCC V5.1)
  - Central management of WinCC users, plant-wide (to CFR 21 Part 11)
- SIMATIC Logon Service (for WinCC V6.2)
  - Central management of WinCC users, plant-wide (to CFR 21 Part 11)
- WinCC/Audit (for WinCC V6.2) change and version management
  - Generation of audit trails for engineering and runtime
- WinCC/ ChangeControl change and version management
  - Generation of audit trails for engineering

Options for individual system expansions
- WinCC/IndustrialX
  - For the creation of customized WinCC Active-X objects in a VB development environment
- WinCC/ODK
  - For the use of open programming interfaces (Open Development Kit)

Options for comprehensive support
- WinCC/Comprehensive Support
  - Comprehensive support package; contains current updates/upgrades for WinCC basic software and options and the WinCC Knowledge Base CD

■ **More Information**

WinCC Options

Additional information is available in the Internet under

http://www.siemens.com/wincc/options

Ordering data

	Order No.		Order No.

Options for WinCC

WinCC/Server
- for WinCC V5.1 — **6AV6 371-1CA05-0AX0**
- for WinCC V6.2 — **6AV6 371-1CA06-2AX0**

WinCC/Web Navigator

V1.2 SP2; for WinCC V5.1 SP2
- Base Pack (3 client licenses) — **6AV6 371-1DH05-1AX8**
- 10 client licenses — **6AV6 371-1DH05-1BX8**
- 25 client licenses — **6AV6 371-1DH05-1CX8**
- 50 client licenses — **6AV6 371-1DH05-1DX8**

V6.2, for WinCC V6.2 [2]
- Base Pack (3 client licenses) — **6AV6 371-1DH06-2AX0**
- 10 client licenses — **6AV6 371-1DH06-2BX0**
- 25 client licenses — **6AV6 371-1DH06-2CX0**
- 50 client licenses — **6AV6 371-1DH06-2DX0**

V6.1 ASIA; for WinCC V6.0 SP3 ASIA
- Base Pack (3 client licenses) — **6AV6 371-1DH06-1AV0**
- 10 client licenses — **6AV6 371-1DH06-1BV0**
- 25 client licenses — **6AV6 371-1DH06-1CV0**
- 50 client licenses — **6AV6 371-1DH06-1DV0**

WinCC/Web Navigator China/Taiwan

V1.2; for WinCC V5.1 [1]
- Base Pack (3 client licenses) — **6AV6 371-1DH05-1AV0**
- 10 client licenses — **6AV6 371-1DH05-1BV0**
- 25 client licenses — **6AV6 371-1DH05-1CV0**
- 50 client licenses — **6AV6 371-1DH05-1DV0**

WinCC/Web Navigator Powerpacks V1.x
- 3 to 10 clients — **6AV6 371-1DH05-0AB0**
- 3 to 25 clients — **6AV6 371-1DH05-0AC0**
- 3 to 50 clients — **6AV6 371-1DH05-0AD0**
- 10 to 25 clients — **6AV6 371-1DH05-0BC0**
- 10 to 50 clients — **6AV6 371-1DH05-0BD0**
- 25 to 50 clients — **6AV6 371-1DH05-0CD0**

WinCC/Web Navigator Powerpacks V6.1 für ASIA-Varianten V6.1
- 3 to 10 clients — **6AV6 371-1DH06-1AB0**
- 3 to 25 clients — **6AV6 371-1DH06-1AC0**
- 3 to 50 clients — **6AV6 371-1DH06-1AD0**
- 10 to 25 clients — **6AV6 371-1DH06-1BC0**
- 10 to 50 clients — **6AV6 371-1DH06-1BD0**
- 25 to 50 clients — **6AV6 371-1DH06-1CD0**

Options for WinCC (continued)

WinCC/Web Navigator Powerpacks V6.2
- 3 to 10 clients — **6AV6 371-1DH06-2AB0**
- 3 to 25 clients — **6AV6 371-1DH06-2BC0**
- 3 to 50 clients — **6AV6 371-1DH06-2CD0**

WinCC/Web Navigator Diagnostics Client
- for WinCC V5.1 SP2 — **6AV6 371-1DH05-1EX8**
- for WinCC V5.1 China/Taiwan — **6AV6 371-1DH05-1EV0**
- for WinCC V6.0 SP3 ASIA — **6AV6 371-1DH06-1EV0**
- for WinCC V6.2 — **6AV6 371-1DH06-2EX0**

WinCC/Web Navigator Diagnostics Server
- for WinCC V5.1 SP2 — **6AV6 371-1DH05-1FX8**
- for WinCC V5.1 China/Taiwan — **6AV6 371-1DH05-1FV0**
- for WinCC V6.0 SP3 ASIA — **6AV6 371-1DH06-1FV0**
- for WinCC V6.2 — **6AV6 371-1DH06-2FX0**

WinCC/Web Navigator Upgrade

V1.x to V6.2
- for 3 clients — **6AV6 371-1DH06-2AX4**
- for 10 clients — **6AV6 371-1DH06-2BX4**
- for 25 clients — **6AV6 371-1DH06-2CX4**
- for 50 clients — **6AV6 371-1DH06-2DX4**

V6.x to V6.2
- for 3, 10, 25, 50 clients [3] — **6AV6 371-1DH06-2XX3**
- for Web Navigator Diagnose Client — **6AV6 371-1DH06-2EX3**
- for Web Navigator Diagnose Server — **6AV6 371-1DH06-2FX3**

V1.x ASIA to V6.1 ASIA
- for 3 clients — **6AV6 371-1DH06-1AV4**
- for 10 clients — **6AV6 371-1DH06-1BV4**
- for 25 clients — **6AV6 371-1DH06-1CV4**
- for 50 clients — **6AV6 371-1DH06-1DV4**

WinCC/Web Load Balancing V6.2
- Load Balancing — **6AV6 371-1DH06-2JX0**
- Load Balancing StepUp — **6AV6 371-1DH06-2FJ0**

WinCC/Central Archive Server (CAS) V6.2 — **6AV6 371-1DQ16-2XX0**

WinCC/Redundancy
- for WinCC V5.1 — **6AV6 371-1CF05-0AX0**
- for WinCC V6.2 — **6AV6 371-1CF06-2AX0**

1) WinCC V5.1 China/Taiwan/Korea/Japan is required
2) V6.0 and higher in German, English, French, Italian, Spanish
3) incl. Upgrade for Diagnostics Client, Diagnostics Server, Load Balancing and Load Balancing StepUp.

6

Visualization
SIMATIC WinCC

WinCC options

Ordering data

	Order No.
Options for WinCC (continued)	
SIMATIC WinCC/ProAgent	
Software option package for process error diagnosis based on S7 GRAPH V5 and higher and S7 PDIAG V5 and higher, functional enhancement for SIMATIC WinCC, electronic documentation in English, French and German; functions and standard screens for use on an FI45, PC (resolution 1024 x 768 pixels) and Panel PC 577/677/877 15" (resolution 1024 x 768 pixels) in English, French and German, runtime license (single license), for WinCC version:	
• V5.1 (ProAgent V5.6)	6AV6 371-1DG05-6AX0
• V6.2 (ProAgent V6.0 SP4)	6AV6 371-1DG06-0EX4
Upgrade	
• to SIMATIC WinCC/ProAgent V5.6	6AV6 371-1DG05-6AX4
• to SIMATIC WinCC/ProAgent V6.0 SP4	6AV6 371-1DG06-0EX4
WinCC/Messenger V2.0 + SP1	6AV6 371-1EJ05-0DX0
Option for WinCC V5.1 only	
WinCC/Guardian V2.0 + SP1	
Option for WinCC V5.1 only	
• Single User Edition	6AV6 371-1EJ05-0EX0
• Network Edition	6AV6 371-1EJ05-0FX0
WinCC/DataMonitor WebEdition V6.2; for WinCC V6.2	
• 1 client license	6AV6 371-1DN06-2LX0
• 3 client licenses	6AV6 371-1DN06-2AX0
• 10 client licenses	6AV6 371-1DN06-2BX0
• 25 client licenses	6AV6 371-1DN06-2CX0
• 50 client licenses	6AV6 371-1DN06-2DX0
WinCC/DataMonitor WebEdition V6.1 ASIA; for WinCC V6.0 SP3 ASIA	
• 3 client licenses	6AV6 371-1DN06-1AV0
• 10 client licenses	6AV6 371-1DN06-1BV0
• 25 client licenses	6AV6 371-1DN06-1CV0
• 50 client licenses	6AV6 371-1DN06-1DV0
WinCC/DataMonitor Powerpacks V6.2	
• 1 to 3 clients	6AV6 371-1DN06-2LA0
• 3 to 10 clients	6AV6 371-1DN06-2AB0
• 10 to 25 clients	6AV6 371-1DN06-2BC0
• 25 to 50 clients	6AV6 371-1DN06-2CD0
WinCC/DataMonitor Powerpacks V6.1 (for ASIA version V6.1)	
• 3 to 10 clients	6AV6 371-1DN06-1AB0
• 3 to 25 clients	6AV6 371-1DN06-1AC0
• 3 to 50 clients	6AV6 371-1DN06-1AD0
• 10 to 25 clients	6AV6 371-1DN06-1BC0
• 10 to 50 clients	6AV6 371-1DN06-1BD0
• 25 to 50 clients	6AV6 371-1DN06-1CD0
WinCC/DataMonitor Upgrade	6AV6 371-1DN06-2XX3
from V6.x to V6.2	

	Order No.
Options for WinCC (continued)	
WinCC/Connectivity Pack V6.2	
Basic package	
• WinCC/Connectivity Pack V6.2	6AV6 371-1DR06-2AX0
• WinCC/Connectivity Station V6.2	6AV6 371-1DR16-2AX0
Upgrade	
• WinCC/Connectivity Pack V6.x -> V6.2	6AV6 371-1DR06-2AX3
WinCC/IndustrialDataBridge	
V6.1 option for WinCC V6.2	
for data transfer with databases and OPC servers; language versions: German/English	
• 128 Tags	6AV6 371-1DX06-1AX0
• 512 Tags	6AV6 371-1DX06-1BX0
• 2048 Tags	6AV6 371-1DX06-1CX0
• 10000 Tags	6AV6 371-1DX06-1DX0
WinCC/IndustrialDataBridge Powerpack	
• 128 to 512 Tags	6AV6 371-1DX06-1AB0
• 128 to 2048 Tags	6AV6 371-1DX06-1AC0
• 128 to 10000 Tags	6AV6 371-1DX06-1AD0
• 512 to 2048 Tags	6AV6 371-1DX06-1BC0
• 512 to 10000 Tags	6AV6 371-1DX06-1BD0
• 2048 to 10000 Tags	6AV6 371-1DX06-1CD0
SIMATIC WinBDE V7.2 + SP2	
Complete package (Runtime with configuration software) on CD-ROM	
Machine data management Workstation	
License for connection of	
• 1 machine/unit of equipment	6AV6 371-1EW06-0AX0
• 8 machines/units of equipment	6AV6 371-1EW06-0CX0
• 32 machines/units of equipment	6AV6 371-1EW06-0EX0
Machine data management Supervisor	
License for connection of	
• 64 machines/units of equipment	6AV6 371-1EW06-0GX0
• 128 machines/units of equipm.	6AV6 371-1EW06-0HX0
WinBDE Terminal Server License	
• for Workstation	6AV6 371-1EW06-0LX0
• for Supervisor	6AV6 371-1EW06-0MX0
WinCC/Client Access License	6AV6 371-1ES06-0AX0
for access to the historical WinCC data	
WinCC/Client Access License per processor	6AV6 371-1ES06-0CX0
for access to the historical WinCC data; any number of clients per processor	

Ordering data

	Order No.		Order No.
Options for WinCC (continued)		*Options for WinCC* (continued)	
WinCC/User Archives		**WinCC/Audit and ChangeControl for WinCC V6.2**	
• for WinCC V5.1	**6AV6 371-1CB05-0AX0**	• WinCC/Audit RT V6.2 Creation of audit trails in RT	**6AV6 371-1DV06-2AX0**
• for WinCC V6.2	**6AV6 371-1CB06-2AX0**	• WinCC/ ChangeControl V6.2 Configuration of audit trails (Eng.)	**6AV6 371-1DV26-2AX0**
WinCC/Storage V5.2 Option for WinCC V5.1	**6ES7 652-0XX05-2YC0**	• WinCC/Audit RC V6.0 SP2 Configuration of audit trails (Eng. and RT) with RT license	**6AV6 371-1DV16-2AX0**
WinCC/Basic Process Control		**WinCC/IndustrialX**	
• V5.2; for WinCC V5.1	**6ES7 652-0XX05-2YA0**	• V1.1 for WinCC V5	**6AV6 371-1EL15-0AX0**
WinCC/Advanced User Administrator Expanded user administration for WinCC V5.1		• V6.2 for WinCC V6.2	**6AV6 371-1EL16-2AX0**
		WinCC/ODK	
• Runtime license for one operator station	**6DL5 401-8AX22-0XX1**	• V5 SP1; for WinCC V5.1	**6AV6 371-1CC05-0BX0**
Central user management for WinCC V5.1; runtime license for one operator station		• V6.0 SP4; for WinCC V6.2	**6AV6 371-1CC06-0EX0**
		WinCC/ODK Upgrade • to V6.0 SP4	**6AV6 371-1CC06-0EX4**
SIMATIC Logon Service Central user management for WinCC V6.2 or higher; runtime license for one operator station	**6ES7 658-7BX31-2YA0**	**WinCC/CDK**	
		• for WinCC V5.1	**6AV6 371-1EE05-0AX0**
		• for WinCC V6.0	on request

6

HMI packages with WinCC flexible and WinCC

■ **Overview**

HMI complete systems

SIMATIC Panel PC with SIMATIC WinCC flexible

• SIMATIC Panel PC packages with WinCC flexible are an innovative solution for simple visualization tasks directly at the machine in the field of HMI

This package can only be supplied if a Panel PC is ordered together with the WinCC flexible Runtime software. It cannot be ordered subsequently.

SIMATIC Panel PC with SIMATIC WinCC

• SIMATIC Panel PC packages with WinCC make it easy to order all the components required for an HMI solution on the basis of a Panel PC.

This package can only be supplied if a Panel PC is ordered together with the WinCC software. It cannot be ordered subsequently.

SIMATIC Panel PC with SIMATIC WinCC flexible

The order configurator gives you a free choice of how the Panel PC hardware is configured – depending on individual requirements for display and system performance.

Customers must install the desired WinCC flexible Runtime software and the communication hardware and software themselves. The WinCC flexible Runtime software is supplied with the devices. The package also contains the runtime options for WinCC flexible/Archives and WinCC flexible/Recipes.

Runtime licenses are required for WinCC flexible Runtime. You can choose from the following types of license:

• License for 128 Power Tags
• License for 512 Power Tags
• License for 2048 Power Tags

The term PowerTags is used exclusively to describe process variables that have a process link to the controller.

Variables without process link, constant limit values of variables, and messages are also available for additional system performance.

HMI packages with WinCC flexible and WinCC

■ Overview (continued)

SIMATIC Panel PC with SIMATIC WinCC

The order configurator gives you a free choice of how the Panel PC hardware is configured – depending on individual requirements for display and system performance. It is only necessary in this case to comply with the minimum requirements that WinCC places on the basic hardware.

Minimum configuration:

- Processor: Pentium III 933 MHz or Celeron 650 MHz or higher
- 12" or 15" display
  (min. resolution 600 x 800 pixels)
- Main memory min. 256 MB
- Min. 10 GB with CD-ROM
- Windows 2000 Multi-Laguage or Windows XP Professional Multi-Language

For process communication, you can choose between the on-board, CP 5611-compatible PROFIBUS interface or the powerful modules CP 1613 for Industrial Ethernet and CP 5613 for PROFIBUS.

From the configurator for the WinCC package, another order item can be selected that then contains the relevant WinCC software package and the communication module.

Both order items are delivered together. Customers must install the communication hardware and the WinCC software themselves.

Licenses are required for WinCC Runtime. You can choose from the following types of license:

- License for 128 Power Tags
- License for 256 Power Tags
- License for 1024 Power Tags
- License for 8192 Power Tags (with WinCC V6.2)
- License for 65536 Power Tags

The term Power Tags is used exclusively to describe process variables that have a process link to the controller. Variables without process link, constant limit values of variables, and messages are also available for additional system performance.

■ Ordering data

	Order No.
SIMATIC WinCC flexible Package (with Archives and Recipes) [1] [2]	**6AV6 623-2■A00-0AA0**
runtime license included	
• 128 Power Tags	**B**
• 512 Power Tags	**D**
• 2048 Power Tags	**F**
SIMATIC WinCC Package [1]	**6AV6 382-1■00-0AX0**
WinCC V5.1 Runtime for Windows NT / 2000	
• 128 Power Tags	**C**
• 256 Power Tags	**D**
• 1024 Power Tags	**E**
• 64k Power Tags	**F**
Communication module	
• without/using on-board interfaces	**A**
• Industrial Ethernet (with CP 1613-A2)	**B**
• PROFIBUS (with CP 5613-A2)	**C**
Communication software for CP 1613/CP 5613	see chapter 7
SIMATIC WinCC Package [1]	**6AV6 382-2■A06-2AX0**
WinCC V6.2 Runtime [2] [3]	
• 128 Power Tags	**C**
• 256 Power Tags	**D**
• 1024 Power Tags	**E**
• 8192 Power Tags	**H**
• 65536 Power Tags	**F**
Communication using on-board interfaces	

1) **Only if a Panel PC is ordered at the same time**
2) The latest version is delivered
3) Using license, not by authorization

Note:
For ordering data of the Panel PCs and accessories see "SIMATIC Panel PCs".

■ More information

Additional information is available in the Internet under:
http://www.siemens.com/simatic-hmi

6

Visualization

Communication

7

Communication
Communications processors for Industrial Ethernet

■ **Overview**

CPs with an internal microprocessor

CP 1616 (PCI), CP 1604 (PC/104-*Plus*), CP 1613 A2 (PCI)

- Protocol software executes on the CP
- Free PC resources for applications
- Suitable for comprehensive applications
- Recommended for applications with HMI systems with high performance requirements, e.g. WinCC
- Recommended for large systems (8 stations or more, e.g. SIMATIC)
- Constant communication throughput
- Can be used for redundant communication
- Use for PROFINET IO real-time applications (RT, IRT with CP 1616/CP 1604)
- Time synchronization

You can find software for the PC products under Windows on the SIMATIC NET CD for Windows operating systems including the associated manuals in pdf format and comprehensive additional information on SIMATIC NET products and communication.

The required configuration tools (e.g. STEP 7/NCM PC) are included in all software packages.

The appropriate OPC server and configuration tools are included in the scope of supply of the respective communication software.

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CP 1616

Overview

- PCI module for connecting PCs and SIMATIC PGs/PCs to PROFINET IO (Universal Key 3.3 V and 5 V; 33 MHz/66 MHz; 32-bit, runs in 64-bit PCI-X systems)
- Full/half duplex with autonegotiation
- With Ethernet real-time ASIC ERTEC 400
- Integral 4-port real-time switch
- Communication services:
  - PROFINET IO controller and/or PROFINET IO device
  - Support of IRT in motion control applications
- High performance through direct memory access
- Integration in network management systems through the support of SNMP
- Comprehensive diagnostics possibilities for installation, start-up and operation of the module
- Powerful configuration tools are part of the scope of delivery of the module

Ordering data

	Order No.
CP 1616 Communications processor PCI card (32-bit; 3.3/5 V univ. key) with ASIC ERTEC 400 for connecting PCs to PROFINET IO with 4-port real-time switch (RJ45); for use with DK-16xx PN IO development kit; NCM PC	**6GK1 161-6AA00**
Accessories	
Development Kit DK-16xx PN IO V2.0 Software Development Kit for CP 1616/CP 1604; driver and IO-Base software for CP 1616/CP 1604 as PN IO-Controller and IO-Device in source code for transfer to other PC-based operating systems; including executable example code for SUSE Linux 9.3	see *http://www.siemens.com/simatic-net/dk16xx*
IE FC RJ45 Plug 180 RJ45 plug-in connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface	
• 1 package = 1 unit	**6GK1 901-1BB10-2AA0**
• 1 package = 10 units	**6GK1 901-1BB10-2AB0**
• 1 package = 50 units	**6GK1 901-1BB10-2AE0**
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. quantity 1000 m, minimum order quantity 20 m	**6XV1 840-4AH10**
IE FC TP Flexible Cable GP 2 x 2 (Type B) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug for occasional movement; PROFINET-compatible; with UL approval; sold by the meter; max. quantity 1000 m, minimum order quantity 20 m	**6XV1 870-2B**

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Communication
Communications processors for Industrial Ethernet

CP 1604

■ Overview

- PC/104-*Plus* module for connecting PC/104 Plus systems to PROFINET IO
- Full/half duplex with autonegotiation
- With Ethernet real-time ASIC ERTEC 400
- Integral 4-port real-time switch
- Communication services:
  - PROFINET IO controller and/or PROFINET IO device
  - Support of IRT in motion control applications
- High performance through direct memory access
- Integration in network management systems through the support of SNMP
- Comprehensive diagnostics possibilities for installation, start-up and operation of the module
- Powerful configuration tools are included in delivery of module

7

■ Ordering data · Order No.

	Order No.
CP 1604 Communications processor PCI/104-*Plus* card (32-bit) with ASIC ERTEC 400 for connecting PC/104 Plus systems to PROFINET IO with 4-port real-time switch (RJ45), for use with DK-16xx PN IO development kit; NCM PC	**6GK1 160-4AA00**
CP 1604 Microbox Package A Package for implementing the CP 1604 in the SIMATIC Microbox PC; comprising the CP 1604, connection board, power supply and expansion racks for Microbox PC; for use with Development Kit DK-16xx PN IO; NCM PC	**6GK1 160-4AU00**
Accessories	
Connection Board for CP 1604 A Connection board for CP 1604 with 4x RJ45 sockets incl. connecting cable	**6GK1 160-4AC00**
Power Supply for CP 1604 A Redundant power supply for CP 1604 for operating the integral 4-port switch of the CP 1604 with the PC/104 system switched off	**6GK1 160-4AP00**
Development Kit DK-16xx PN IO V2.0 Software Development Kit for CP 1616/CP 1604; driver and IO-Base software for CP 1616/CP 1604 as PN IO-Controller and IO-Device in source code for transfer to other PC-based operating systems; including executable example code for SUSE Linux 9.3	see *http://www.siemens.com/ simatic-net/dk16xx*
IE FC RJ45 Plug 180 RJ45 plug-in connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface	
• 1 pack = 1 unit	**6GK1 901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1 901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1 901-1BB10-2AE0**
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. quantity 1000 m, minimum order quantity 20 m	**6XV1 840-4AH10**
IE FC TP Flexible Cable GP 2 x 2 (Type B) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug for occasional movement; PROFINET-compatible; with UL approval; sold by the meter; max. quantity 1000 m, minimum order quantity 20 m	**6XV1 870-2B**

A) Subject to export regulations: AL: N and ECCN: EAR99H

CP 1613 A2

Overview

- PCI card (32 bit; 33 MHz/66 MHz; 3.3 V/5 V universal key) with microprocessor for connection of PG/PC to Industrial Ethernet with 10/100 Mbit/s Autosensing/Autonegotiation
- Communication services using
  - Open IE communication (TCP/IP and UDP)
  - ISO transport protocol
  - PG/OP communication
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE)
- 15-pole ITP connection
- RJ45 connection
- Time synchronization
- ISO and TCP/IP transport protocol onboard
- SNMP-supported diagnostics
- The appropriate OPC server and configuration tools are included in the respective scope of supply of the communication software

Ordering data

	Order No.		Order No.
CP 1613 A2 Communications processor A PCI card (32-bit, 33 MHz/66 MHz; 3.3 V/5 V universal key) for connection to Industrial Ethernet (10/100 Mbit/s) with ITP and RJ45 connection over S7-1613 and S7-REDCONNECT, incl. driver for 32-bit Windows XP Professional, 2003 Server, Windows 2000 Professional/Server	**6GK1 161-3AA01**	**S7-REDCONNECT Edition 2006** Software for fail-safe S7 commun. over redundant networks incl. S7-OPC server, S7-1613 2006, runtime software, software and electronic manual on CD-ROM, license key on diskette, Class A, for 32-bit Windows XP Professional, 2003 Server, 2000 Professional/Server; for CP 1613/CP 1613 A2 German/English	
S7-1613 Edition 2006 Software for S7 and S5 commun., incl. PG/OP communication, OPC server and NCM PC; up to 120 connections, runtime software, software and electronic manual on CD-ROM, license key on diskette, Class A, for 32-bit Windows XP Professional, 2003 Server, Windows 2000 Professional/Server; for CP 1613/CP 1613 A2 German/English		• Single License for 1 installation	**6GK1 716-0HB64-3AA0**
		• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 716-0HB00-3AL0**
		• Upgrade to Version 2006	**6GK1 716-0HB64-3AE0**
• Single License for 1 installation	**6GK1 716-1CB64-3AA0**	**Power Pack S7-REDCONNECT Edition 2006**	**6GK1 716-0HB64-3AC0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 716-1CB00-3AL0**	For expanding S7-1613 2006 to S7-REDCONNECT, single license for 1 installation, runtime software, software and electronic manual on CD-ROM, license key on diskette, Class A, for 32-bit Windows XP Professional, 2003 Server, Windows 2000 Professional/Server; for CP 1613/CP 1613 A2 German/English	
• Upgrade S7-1613 V6.0 to S7-1613 Edition 2006	**6GK1 716-1CB64-3AE0**		

A) Subject to export regulations: AL: N and ECCN: EAR99H

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Communication
Communications processors for Industrial Ethernet

S7-REDCONNECT

■ Overview

PC with 2 x CP 1613 A2
and S7-REDCONNECT

Industrial Ethernet

S7-400H

H-CPU in single mode

ET 200M

G_IK10_XX_10048
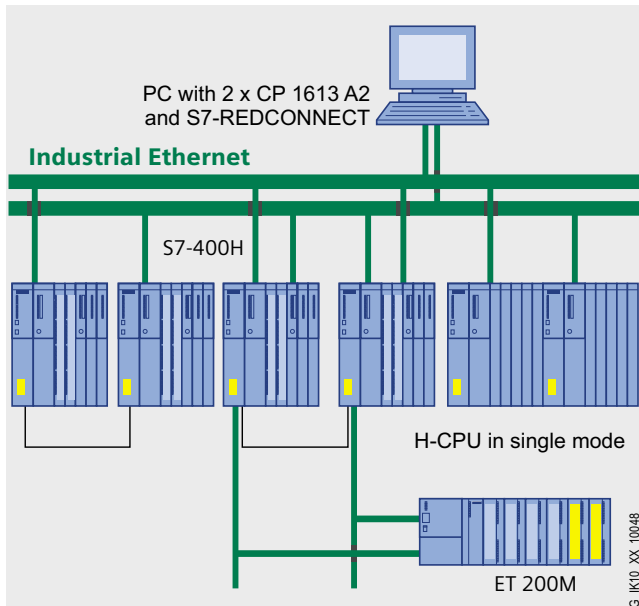
- For connecting PCs over redundant Industrial Ethernet to the SIMATIC S7-400H
- Protected from communication failures arising from a fault in the double bus or in redundant rings
- For redundantly configured Industrial Ethernet
- Can also be implemented in non-redundant networks
- No additional programming overhead for the PC and in H systems
- The appropriate OPC server and configuration tools are included in the scope of supply of the respective communication software
- Enhanced redundancy over 4-way communication (STEP 7 V5.1 + SP4 and higher)

■ Ordering data

	Order No.
S7-REDCONNECT Edition 2006	**6GK1 716-0HB64-3AA0**
Software for fail-safe S7 commun. over redundant networks incl. S7-OPC server, S7-1613 2006, runtime software, software and electronic manual on CD-ROM, license key on disk, Class A, for 32-bit Windows XP Professional, 2003 Server, 2000 Professional/Server; for CP 1613/CP 1613 A2 German/English	
• Single License for 1 installation	**6GK1 716-0HB64-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 716-0HB00-3AL0**
• Upgrade to Version 2006	**6GK1 716-0HB64-3AE0**
Power Pack S7-REDCONNECT Edition 2006	**6GK1 716-0HB64-3AC0**
For expanding S7-1613 2006 to S7-REDCONNECT, single license for 1 installation, runtime software, software and electronic manual on CD-ROM, license key on diskette, Class A, for 32-bit Windows XP Professional, 2003 Server, Windows 2000 Professional/ Server; for CP 1613/CP 1613 A2 German/English	

Communication
Communications processors for Industrial Ethernet

■ Overview

PC/PG withSOFTNET
for Industrial Ethernet

Industrial Ethernet

S7-400 with CP 343-1

S7-200 with CP 243-1

S5-115U to -155U with CP 1430 TF

S7-300 with CP 443-1

G_IK10_XX_10045
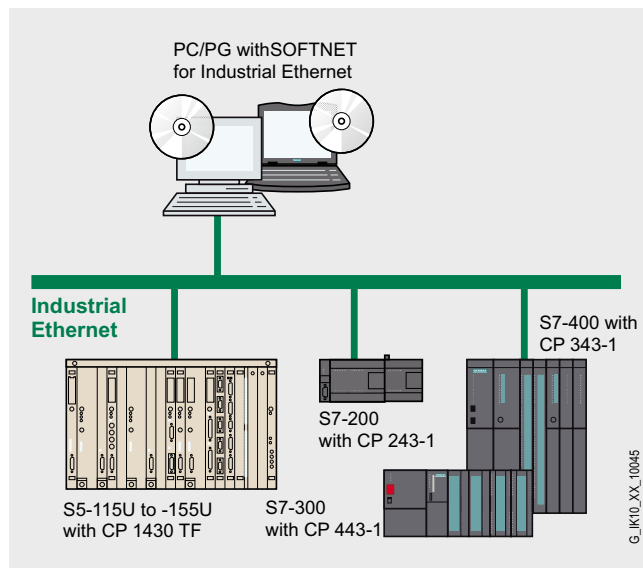
- For coupling programming devices/PCs/workstations to programmable controllers
- Communication services:
  - PG/OP communication
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE)
- Can be used with
  - Layer 2 Ethernet card (PCI)
  - CP 7515 (PC Card CardBus)
  - Integrated Industrial Ethernet interface
  - Modem (Remote Access Service RAS)
- Complete protocol stack as a software package
- The appropriate OPC server and configuration tools are included in the scope of supply of the respective communication software

■ Ordering data   Order No.

SOFTNET-S7 Edition 2006 for Industrial Ethernet

Software for S7 and S5-compat. communication, incl. OPC server, PG/OP communication and NCM PC; up to 64 connections, runtime software, software and electronic manual on CD-ROM, license key on diskette, Class A, for 32-bit Windows XP Professional, 2003 Server, 2000 Professional/Server; German/English

• Single License for 1 installation	**6GK1 704-1CW64-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 704-1CW00-3AL0**
• Upgrade V6.0 to Edition 2006	**6GK1 704-1CW64-3AE0**

SOFTNET-PG Edition 2006 for Industrial Ethernet

Software for PG/OP commun., runtime software, software and electronic manual on CD-ROM, license key on diskette, Class A, for 32-bit Windows XP Professional, 2003 Server, 2000 Professional/Server; German/English

• Single License for 1 installation	**6GK1 704-1PW64-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 704-1PW00-3AL0**
• Upgrade V6.0 to Edition 2006	**6GK1 704-1PW64-3AE0**

SOFTNET-S7 Lean Edition 2006 for Industrial Ethernet

Software for S7 and S5-compat. communication, incl. OPC server, PG/OP communication and NCM PC; up to 8 connections, runtime software, software and electronic manual on CD-ROM, license key on diskette, Class A, for 32-bit Windows XP Professional, 2003 Server, 2000 Professional/Server; German/English

• Single License for 1 installation	**6GK1 704-1LW64-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 704-1LW00-3AL0**
• Upgrade V6.0 to Edition 2006	**6GK1 704-1LW64-3AE0**

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Communication
Communications processors for Industrial Ethernet

SOFTNET PN IO

■ Overview
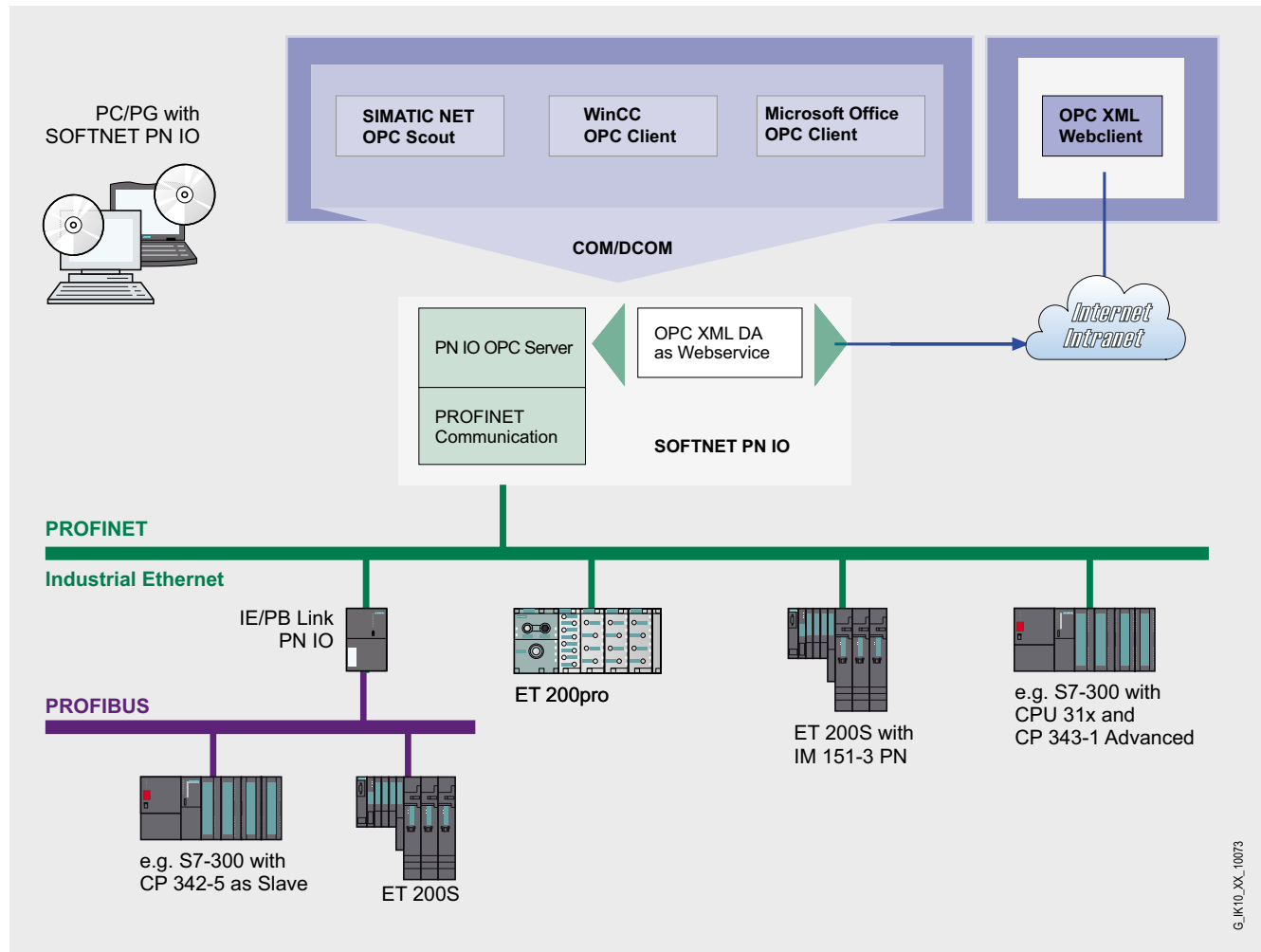
- Software with PROFINET IO controller function for coupling PG/PC and IPC with PROFINET IO devices
- Areas of application:
  - PC-based control systems
  - HMI systems
  - Testing applications
- Communication services:
  - PROFINET IO controller

- Can be used with
  - integrated interfaces of SIMATIC PG/PC
  - you can find more information about the environment of use at www.siemens.com/simatic-net/ik-info
- Cost-effective solution for the low-end performance range
- OPC server for I/O interfacing over PROFINET included in scope of supply

■ Ordering data

	Order No.
SOFTNET PN IO Edition 2006	
Software for PROFINET IO controller with OPC server and NCM PC; Runtime software, software and electronic manual on CD-ROM, License Key on disk, class A, for 32-bit Windows XP Professional, 2003 Server; Windows 2000 Professional, German/English	
• Single License for 1 istallation	**6GK1 704-1HW64-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 704-1HW00-3AL0**
• Upgrade SOFTNET PN IO V6.0 to SOFTNET PN IO Edition 2006	**6GK1 704-1HW64-3AE0**

OPC Server for Industrial Ethernet

■ **Overview**

- The appropriate OPC servers are included in the scope of supply of the respective communication software.
- Standardized, open, manufacturer-independent interface

- Interfacing of OPC-capable Windows applications to S7-communication and S5-compatible communication functions (SEND/RECEIVE), PROFINET and SNMP
- OPC-Scout with browser functions as OPC client and OCX Data Control

Communication
Communications processors for Industrial Ethernet

OPC server for Industrial Ethernet

Ordering data	Order No.		Order No.

DX OPC server Edition 2006

DX OPC server upgrade; runtime software, software and electronic manual on CD-ROM, license key on diskette, Class A, for 32-bit Windows XP Professional, 2003 Server, 2000 Professional/Server; required: SIMATIC NET IE PC/ Windows product Edition 2005 with OPC interface; German/English

- **Single License** for 1 installation — 6GK1 706-0XW64-3AA0
- **Upgrade DX OPC server** V6.0 to DX OPC server Edition 2006 — 6GK1 706-0XW64-3AE0

PN CBA OPC server Edition 2006

PROFINET OPC server for CBA; runtime software, software and electronic manual on CD-ROM, license key on diskette, Class A, for 32-bit Windows XP Professional, 2000 Professional/ Server; German/English

- **Single License** for 1 installation — 6GK1 706-0HB64-3AA0
- **Upgrade PN CBA OPC-Server** V6.0 to PN CBA OPC server Edition 2006 — 6GK1 706-0HB64-3AE0

SNMP OPC server Edition 2006

Including MIB compiler; single license for 1 installation of the runtime software, software and electr. manual on CD-ROM; license key on diskette, for 32-bit Windows XP Professional, 2003 Server, 2000 Professional WS/Server; for CP 1613 German/English

- **Basic** Administration of up to 20 IP addresses — 6GK1 706-1NW64-3AA0
- **Upgrade DX OPC-Server** ab V6.0 auf DX OPC-Server Edition 2006 — 6GK1 706-1NW64-3AE0
- **Extended** Administration von bis zu 200 IP-Adressen — 6GK1 706-1NX64-3AA0
- **Upgrade SNMP OPC-Server Extended** ab V6.0 auf SNMP OPC-Server Extended Edition 2006 — 6GK1 706-1NX64-3AE0
- **Powerpack** Upgrade von SNM OPC-Server Basic auf SNM OPC-Server Extended — 6GK1 706-1NW64-3AC0

■ Overview

PC card with an internal microprocessor

CP 5613 A2, CP 5613 FO, CP 5614 A2

Recommended solution for:

- PC-based control systems
  (Soft Control, PLC, Numeric Control, Robot Control)
- Process control systems
- Operator control and monitoring systems (HMI)
- PROFIBUS DP slave interface (CP 5614 A2, CP 5614 FO)
- PROFIBUS plants with large quantity framework
  (more than 8 stations)
- Multi-protocol operation
- Use of several CPs in one system
- Designs with fiber-optic interface (FO)

PC card without an internal microprocessor

CP 5512, CP 5611 A2

Recommended solution for:

- Configuring tools (e.g. STEP 7)
- PROFIBUS DP diagnostics station (e.g. with
  COM PROFIBUS or as DP master Class 2)
- PROFIBUS DP slave interface
- PROFIBUS systems with up to 8 stations
- Mono protocol mode

You can find the software for the PC products available under Windows on the SIMATIC NET CD for the Windows operating system, including the manuals in pdf format. Furthermore you can find comprehensive information on SIMATIC NET products and communication.

The required configuration tools (e.g. STEP 7/NCM PC) are included in all software packages.

The appropriate OPC server and configuration tools are included in the scope of supply of the respective communication software.

Communication
Communications processors for PROFIBUS

CP 5613 A2

■ **Overview**

- PCI card (universal key 5 V/3.3 V) with microprocessor for system connection for PCs and SIMATIC PG/PC to PROFIBUS with up to 12 Mbit/s
- Communication services:
  - PROFIBUS DP masters according to IEC 61158/EN 50170
  - PG/OP communication with STEP 5 and STEP 7
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE) based on the FDL interface
  - PROFIBUS FMS acc. to IEC 61158/EN 50170
- Comprehensive diagnostics possibilities for installation, start-up and operation of the module
- High performance over direct dual-port RAM access
- Event and filter mechanisms to reduce the loading on the host CPU
- Multi-protocol mode and parallel operation of up to 4 CPs
- Implementation in Motion Control applications is possible because a constant bus cycle time is supported
- The appropriate OPC server and configuration tools are included in the scope of supply of the respective communication software

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Ordering data

	Order No.		Order No.

CP 5613 A2
Communications processor

PCI card (32-bit; 3.3 V/5 V) for connection to PROFIBUS incl. DP-Base software with NCM PC; DP-RAM interface for DP master, incl. PG and FDL protocol; single license for 1 installation, runtime software, software and electronic manual on CD-ROM, Class A, for 32-bit Windows 2000 Professional/Server, Windows XP Professional, 2003 Server German/English

- Single License for 1 installation **6GK1 561-3AA01**
- Upgrade for CP 5613 A2, CP 5613 FO and CP 5614 FO V6.0 to Edition 2006 **6GK1 561-3AA01-3AE0**

Development Kit DK-5613

Software Development Kit for CP 5613/CP 5614/ CP 5613 A2/CP 5614 A2/ CP 5613 FO/ CP 5614 FO for integration in other operating system environments on systems with a PCI slot

see
http://www.siemens.com/ simatic-net/dk5613

DP-5613 Edition 2006

Software for DP, with PG and FDL protocol, OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, License Key on disk, class A, for 32-bit Windows XP Professional; 2003 Server, 2000 Professional/Server, for CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5614 FO German/English

- Single License for 1 installation **6GK1 713-5DB64-3AA0**
- Software Update Service for 1 year, with automatic extension; requirement: current software version **6GK1 713-5DB00-3AL0**
- Upgrade DP-5613 V6.0 or higher to DP-5613 Edition 2006 **6GK1 713-5DB64-3AE0**

S7-5613 Edition 2006

Software for S7 communication incl. PG and FDL protocol, OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on diskette, class A, for 32-bit Windows XP Professional; 2003 Server, 2000 Professional/Server, for CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5614 FO German/English

- Single License for 1 installation **6GK1 713-5CB64-3AA0**
- Software Update Service for 1 year, with automatic extension; requirement: current software version **6GK1 713-5CB00-3AL0**
- Upgrade S7-5613 V6.0 or higher to S7-5613 Edition 2006 **6GK1 713-5CB64-3AE0**

FMS-5613 Edition 2006

Software for FMS protocol incl. PG/OP communication; FDL, FMS-OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on diskette, class A for 32-bit Windows XP Professional; 2003 Server, 2000 Professional/Server, for CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5614 FO German/English

- Single License for 1 installation **6GK1 713-5FB64-3AA0**
- Software Update Service for 1 year, with automatic extension; requirement: current software version **6GK1 713-5FB00-3AL0**
- Upgrade FMS-5613 V6.0 or higher to FMS-5613 Edition 2006 **6GK1 713-5FB64-3AE0**

PROFIBUS FastConnect bus connector RS 485 Plug 180 **6GK1 500-0FC00**

with 180° cable outlet

PROFIBUS bus terminal 12M **6GK1 500-0AA10**

Bus terminal for connection of PROFIBUS stations up to 12 Mbit/s with cable

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Communication
Communications processors for PROFIBUS

CP 5613 FO

■ **Overview**

- PCI card with microprocessor for system connection for PCs and SIMATIC PGs/PC to the optical PROFIBUS at up to 12 Mbit/s
- Integral fiber-optic interface for direct FO connection
- Communication services:
  - PROFIBUS DP master according to IEC 61158/EN 50170
  - PG/OP communication with STEP 5 and STEP 7
  - S7 communication
  - S5 compatible communication (SEND/RECEIVE) based on FDL interface
  - PROFIBUS FMS acc. to IEC 61158/EN 50170
- Comprehensive diagnostics possibilities for installation, start-up and operation of the module
- High performance over direct dual-port RAM access
- Event and filter mechanisms to reduce the loading on the host CPU
- Multi-protocol mode and parallel operation of up to 4 CPs
- Implementation in Motion Control applications is possible because a constant bus cycle time is supported
- The appropriate OPC server and configuration tools are included in the scope of supply of the respective communication software

■ **Ordering data**

	Order No.		Order No.
CP 5613 FO D **Communications processor** PCI card (32-bit; 5 V) for conn. to optical PROFIBUS incl. DP-Base software with NCM PC; DP-RAM interface for DP master, incl. PG and FDL protocol; single license for 1 installation, runtime software, software and electronic manual on CD-ROM, Class A, for 32-bit Windows 2000 Professional/server: Windows XP Professional, 2003 Server German/English	**6GK1 561-3FA00**	**S7-5613 Edition 2006** Software for S7 communication incl. PG and FDL protocol, OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on diskette, class A, for 32-bit Windows XP Professional; 2003 Server, 2000 Professional/Server, for CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5614 FO German/English	
• Upgrade for CP 5613 A2, CP 5613 FO and CP 5614 FO V6.0 and higher to Edition 2006	**6GK1 561-3AA01-3AE0**	• Single License for 1 installation	**6GK1 713-5CB64-3AA0**
Development Kit DK-5613 Software Development Kit for CP 5613/CP 5614 for integration in other operating system environments on systems with a PCI slot	see *http://www.siemens.com/simatic-net/dk5613*	• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 713-5CB00-3AL0**
		• Upgrade S7-5613 V6.0 and higher to S7-5613 Edition 2006	**6GK1 713-5CB64-3AE0**
DP-5613 Edition 2006 Software for DP, incl. PG and FDL protocol, OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on diskette, class A, for 32-bit Windows XP Professional; 2003 Server, 2000 Professional/Server, for CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5614 FO German/English		**FMS-5613 Edition 2006** Software for FMS protocol incl. PG/OP communication; FDL, FMS-OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on diskette, class A for 32-bit Windows XP Professional; 2003 Server, 2000 Professional/Server, for CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5614 FO German/English	
• Single License for 1 installation	**6GK1 713-5DB64-3AA0**		
• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 713-5DB00-3AL0**	• Single License for 1 installation	**6GK1 713-5FB64-3AA0**
		• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 713-5FB00-3AL0**
• Upgrade DP-5613 V6.0 and higher to DP-5613 Edition 2006	**6GK1 713-5DB64-3AE0**	• Upgrade FMS-5613 V6.0 and higher to FMS-5613 Edition 2006	**6GK1 713-5FB64-3AE0**

D) Subject to export regulations: AL: N and ECCN: 5D992B1

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Communication
Communications processors for PROFIBUS

■ Overview

- PCI card (universal key 5 V/3.3 V) with microprocessor for system connection for PCs and SIMATIC PG/PC to PROFIBUS with up to 12 Mbit/s
- Communication services:
  - PROFIBUS DP master and slave interface according to IEC 61158/ EN 50170 on a PCI card
  - PG/OP communication with STEP 5 and STEP 7
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE) based on the FDL interface
  - PROFIBUS FMS acc. to IEC 61158/EN 50170
- Comprehensive diagnostics possibilities for installation, start-up and operation of the module
- High performance over direct dual-port RAM access
- Event and filter mechanisms to reduce the loading on the host CPU
- Multi-protocol mode and parallel operation of up to 4 CPs
- Implementation of Motion Control applications is possible because a constant bus cycle time is supported
- The appropriate OPC server and configuration tools are included in the scope of supply of the respective communication software

■ Ordering data

	Order No.		Order No.
CP 5614 A2 Communications processor	**6GK1 561-4AA01**	**S7-5613 Edition 2006**	
PCI card (32-bit; 3.3 V/5 V) master and slave connection to PROFIBUS incl. DP-Base software with NCM PC; DP-RAM interface for DP master, incl. PG and FDL protocol; single license for 1 installation, runtime software, software and electronic manual on CD-ROM, Class A, for 32-bit Windows 2000 Professional/ Server Windows XP Professional, 2003 Server; German/English		Software for S7 communication incl. PG and FDL protocol, OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on diskette, class A, f. 32-bit Windows XP Professional; 2003 Server, 2000 Professional/ Server, for CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5614 FO German/English	
• Upgrade for CP 5613 A2, CP 5613 FO and CP 5614 FO V6.0 and higher to Edition 2006	**6GK1 561-3AA01-3AE0**	• Single License for 1 installation	**6GK1 713-5CB64-3AA0**
Development Kit DK-5613	see *http://www.siemens.com/ simatic-net/dk5613*	• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 713-5CB00-3AL0**
Software Development Kit for CP 5613/CP 5614/ CP 5613 A2/CP 5614 A2/ CP 5613 FO/CP 5614 FO for integration in other operating system environments on systems with a PCI slot		• Upgrade S7-5613 V6.0 and higher to S7-5613 Edition 2006	**6GK1 713-5CB64-3AE0**
DP-5613 Edition 2006		**FMS-5613 Edition 2006**	
Software for DP, incl. PG and FDL protocol, OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on diskette, class A, for 32-bit Windows XP Professional; 2003 Server, 2000Professional/Server, for CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5614 FO German/English		Software for FMS protocol incl. PG/OP communication; FDL, FMS-OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on diskette, class A for 32-bit Windows XP Professional; 2003 Server, 2000 Professional/Server, for CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5614 FO German/English	
• Single License for 1 installation	**6GK1 713-5DB64-3AA0**	• Single License for 1 installation	**6GK1 713-5FB64-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 713-5DB00-3AL0**	• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 713-5FB00-3AL0**
• Upgrade DP-5613 V6.0 and higher to DP-5613 Edition 2006	**6GK1 713-5DB64-3AE0**	• Upgrade FMS-5613 V6.0 and higher to FMS-5613 Edition 2006	**6GK1 713-5FB64-3AE0**

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Communication
Communications processors for PROFIBUS

CP 5512

■ **Overview**

- For connecting programming devices, PCs and notebook computers with a PC slot (CardBus 32 bit) to PROFIBUS and the MPI of SIMATIC S7
- Communication services:
  - PROFIBUS DP master class 1 including acyclic DP expansions with SOFTNET-DP
  - PROFIBUS DP master class 2 including acyclic DP expansions with SOFTNET-DP
  - PROFIBUS DP slave with SOFTNET-DP slave
  - PG/OP communication
  - S7 communication with SOFTNET-S7
  - S5-compatible communication (SEND/RECEIVE based on the FDL interface) with SOFTNET-DP or SOFTNET-S7
- PC card type II (CardBus 32-bit); for programming devices/ PCs with PC card slot and notebook computers
  - can be used with:
    STEP 7 and NCM PC; (ProTool, Micro/Win, ProTool/Pro, SIMATIC PDM for PG/OP communication)
  - SOFTNET-S7 (for S7 communication)
  - SOFTNET-DP, SOFTNET-DP slave (for DP)
- The appropriate OPC servers are included in the scope of supply of the respective communication software

■ **Ordering data**   Order No.   Order No.

	Order No.		Order No.
CP 5512 Communications processor PC card (CardBus, 32-bit) for conn. a programming device or Notebook computer to PROFIBUS or MPI, with 32-bit Windows XP Professional/ Windows 2000 Professional, executable under 32-bit Windows 2000 Professional and Windows XP Professional in conjunction with STEP 7 V5.2; German/English	**6GK1 551-2AA00**	**SOFTNET-DP Edition 2006** Software for DP protocol (master class 1 and 2), incl. FDL protocol with OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on disk, class A, for 32-bit Windows 2000 Professional/Server, Windows XP Professional, 2003 Server, for CP 5512, CP 5611, CP 5611 A2; German/English	
		• Single License for 1 installation	**6GK1 704-5DW64-3AA0**
SOFTNET-S7 Edition 2006 Software for S7 communication incl. FDL protocol with OPC server and NCM PC, runtime software, software and electronic manual on CD-ROM, license key on diskette, Class A, for 32-bit Windows 2000 Professional/Server, Windows XP Professional, 2003 Server, for CP 5512, CP 5611, CP 5611 A2; German/English		• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 704-5DW00-3AL0**
		• Upgrade SOFTNET-DP V6.0 and higher to SOFTNET-DP Edition 2006	**6GK1 704-5DW64-3AE0**
		SOFTNET-DP Slave Edition 2006 Software for DP slave, with DP-OPC server and NCM PC, single license for 1 installation, runtime software, software and electronic manual on CD-ROM, license key on diskette, class A, for 32-bit Windows 2000 Profes- sional/ Server, Windows XP Professional, 2003 Server, for CP 5512, CP 5611, CP 5611 A2; German/English	
• Single License for 1 installation	**6GK1 704-5CW64-3AA0**		
• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 704-5CW00-3AL0**	• Single License for 1 installation	**6GK1 704-5SW64-3AA0**
		• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 704-5SW00-3AL0**
• Upgrade SOFTNET-S7 V6.0 and higher to SOFTNET-S7 Edition 2006	**6GK1 704-5CW64-3AE0**		
		• Upgrade SOFTNET-S7 Slave V6.0 and higher to SOFTNET-S7 Slave Edition 2006	**6GK1 704-5SW64-3AE0**
		PROFIBUS FastConnect bus connector RS 485 Plug 180 with 180° cable outlet	**6GK1 500-0FC00**

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CP 5611 A2

Overview

- PCI card (universal key 5 V/3.3 V) for connecting PCs and SIMATIC PG/PC to PROFIBUS up to 12 Mbit/s and to the MPI interface of SIMATIC S7
- Communication services:
  - PROFIBUS DP master class 1 including acyclic DP expansions with SOFTNET-DP
  - PROFIBUS DP master class 2 including acyclic DP expansions with SOFTNET-DP
  - PROFIBUS DP slave with SOFTNET-DP slave
  - PG/OP communication
  - S7 communication with SOFTNET-S7
  - S5-compatible communication (SEND/RECEIVE based on the FDL interface) with SOFTNET-DP or SOFTNET-S7
- Can be used with:
  - STEP 7, STEP 7-Micro/Win, ProTool, ProTool/Pro, SIMATIC PDM (for PG/OP communication)
  - COM PROFIBUS
  - SOFTNET-S7 (for S7 communication)
  - SOFTNET-DP, SOFTNET-DP-Slave (for DP)
- The appropriate OPC server and configuration tools are included in the scope of supply of the respective communication software

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Communication
Communications processors for PROFIBUS

CP 5611 A2

Ordering data

	Order No.		Order No.

CP 5611 A2
Communications processor   A

PCI card (32-bit) for connection of a PG or PC to PROFIBUS

Order No.: **6GK1 561-1AA01**

CP 5611 MPI
Communications processor   A

Comprising a PCI card
(32-bit, 3.3 V/5 V, 33/66 MHz),
CP 5611 A2 and MPI cable, 5 m

Order No.: **6GK1 561-1AM01**

SOFTNET-S7 Edition 2006

Software for S7 communication incl. FDL protocol with OPC server and NCM PC, runtime software, software and electronic manual on CD-ROM, license key on diskette, Class A, for 32-bit Windows 2000 Professional/Server, Windows XP Professional, 2003 Server, for CP 5512, CP 5611, CP 5611 A2; German/English

- Single License for 1 installation — **6GK1 704-5CW64-3AA0**
- Software Update Service for 1 year, with automatic extension; requirement: current software version — **6GK1 704-5CW00-3AL0**
- Upgrade SOFTNET-S7 V6.0 and higher to SOFTNET-S7 Edition 2006 — **6GK1 704-5CW64-3AE0**

SOFTNET-DP Edition 2006

Software for DP protocol (master class 1 and 2), incl. FDL protocol with OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on disk, class A, for 32-bit Windows 2000 Professional/ Server, Windows XP Professional, 2003 Server, for CP 5512, CP 5611, CP 5611 A2; German/English

- Single License for 1 installation — **6GK1 704-5DW64-3AA0**
- Software Update Service for 1 year, with automatic extension; requirement: current software version — **6GK1 704-5DW00-3AL0**
- Upgrade SOFTNET-DP V6.0 and higher to SOFTNET-DP Edition 2006 — **6GK1 704-5DW64-3AE0**

A) Subject to export regulations: AL: N and ECCN: EAR99H

SOFTNET-DP Slave
Edition 2006

Software for DP slave, with DP-OPC server and NCM PC, single license for 1 installation, runtime software, software and electronic manual on CD-ROM, license key on diskette, class A, for 32-bit Windows 2000 Professional/ Server, Windows XP Professional, 2003 Server, for CP 5512, CP 5611, CP 5611 A2; German/English

- Single License for 1 installation — **6GK1 704-5SW64-3AA0**
- Software Update Service for 1 year, with automatic extension; requirement: current software version — **6GK1 704-5SW00-3AL0**
- Upgrade SOFTNET-S7 Slave V6.0 and higher to SOFTNET-S7 Slave Edition 2006 — **6GK1 704-5SW64-3AE0**

PROFIBUS FastConnect
bus connector
RS 485 Plug 180

with 180° cable outlet

Order No.: **6GK1 500-0FC00**

PROFIBUS bus terminal 12M

Bus terminal for connection of PROFIBUS stations up to 12 Mbit/s with plug-in cable

Order No.: **6GK1 500-0AA10**

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Overview

PC/PG with CP 5611 A2/ CP 5512 and SOFTNET for PROFIBUS

PROFIBUS

S5-115U to S5-155U with CP 5431 FMS/DP

S7-300 with CP 342-5 or CP 343-5

S7-400 with CP 443-5

G_IK10_XX_50039

- Software for coupling PCs/programming devices and notebooks to programmable controllers
- Can be used together with CP 5512 (PC card, CardBus 32-bit). CP 5611 A2 (PCI) and integral PROFIBUS interface of the SIMATIC PG/PC
- Communication services:
  - PROFIBUS DP master Class 1 and 2 with acyclic expansions
  - PROFIBUS DP slave
  - PG/OP communication
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE based on the FDL interface)
- The appropriate OPC servers are included in the scope of supply of the respective communication software

Ordering data

	Order No.		Order No.
SOFTNET-S7 Edition 2006		**SOFTNET-DP Slave Edition 2006**	
Software for S7 communication incl. FDL protocol with OPC server and NCM PC, runtime software, software and electronic manual on CD-ROM, license key on diskette, Class A, for 32-bit Windows 2000 Professional/Server, Windows XP Professional, 2003 Server, for CP 5512, CP 5611, CP 5611 A2; German/English		Software for DP slave, with DP-OPC server and NCM PC, single license for 1 installation, runtime software, software and electronic manual on CD-ROM, license key on diskette, class A, for 32-bit Windows 2000 Professional/ Server, Windows XP Professional, 2003 Server, for CP 5512, CP 5611, CP 5611 A2; German/English	
• Single License for 1 installation	**6GK1 704-5CW64-3AA0**	• Single License for 1 installation	**6GK1 704-5SW64-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 704-5CW00-3AL0**	• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 704-5SW00-3AL0**
• Upgrade SOFTNET-S7 V6.0 and higher to SOFTNET-S7 Edition 2006	**6GK1 704-5CW64-3AE0**	• Upgrade SOFTNET-S7 Slave V6.0 and higher to SOFTNET-S7 Slave Edition 2006	**6GK1 704-5SW64-3AE0**
SOFTNET-DP Edition 2006			
Software for DP protocol (master class 1 and 2), incl. FDL protocol with OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on disk, class A, for 32-bit Windows 2000 Professional/ Server, Windows XP Professional, 2003 Server, for CP 5512, CP 5611, CP 5611 A2; German/English			
• Single License for 1 installation	**6GK1 704-5DW64-3AA0**		
• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 704-5DW00-3AL0**		
• Upgrade SOFTNET-DP V6.0 and higher to SOFTNET-DP Edition 2006	**6GK1 704-5DW64-3AE0**		

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Communication
Engineering Tools

SINEMA E 2006

Overview

- Planning, configuration, simulation, and site survey software for IWLAN networks according to the IEEE 802.11 a/b/g/h standard
- Automatic determination of the optimal WLAN infrastructure for new and existing networks
- Optimization functions for minimization of channel interference
- Visualization and analysis of WLAN networks according to signal strength, data rate, signal-to-noise ratio, overlapping and applications (PROFINET, TCP/IP, Voice over WLAN)
- Configuration of single and multiple devices as well as uploading/downloading of IWLAN device parameters
- Site survey functions (measurements) for the acquisition, conditioning, evaluation and visualization of measured WLAN signals
- Integrated and expandable catalog entries for WLAN devices, antennas and radio hindrances as well as standard graphics formats for importing layout plans
- Report function for documenting the configured and measured WLAN infrastructure

Application

SINEMA E (**SI**MATIC **Ne**twork **Ma**nager **E**ngineering) is the generic term for the engineering of network products such as SCALANCE W.

SINEMA E 2006 contains the following functions for the engineering of IWLAN networks:

Technical clarification
- Wizard-supported tender preparation

Planning
- Measurement (site survey) of an existing WLAN network
- Planning, simulation, and optimization of a WLAN infrastructure
- Simultaneous configuring of device groups
- Generation of a report with installation guidelines

Start-up
- Identification, upload/download from devices
- Measurement (site survey) for verification and optimization of planning
- Report for final documentation

Maintenance and service
- Optimization and fault rectification with the help of measurements (site survey)

The functional scope of the software is subdivided into "lean" and "standard" licenses. With the standard license, additional functions are possible for the acquisition, evaluation and visualization of measured WLAN signals (site survey) as well as extended simulation and planning (automatic placement, contour presentation, storage/comparison of simulations, extended filter options).
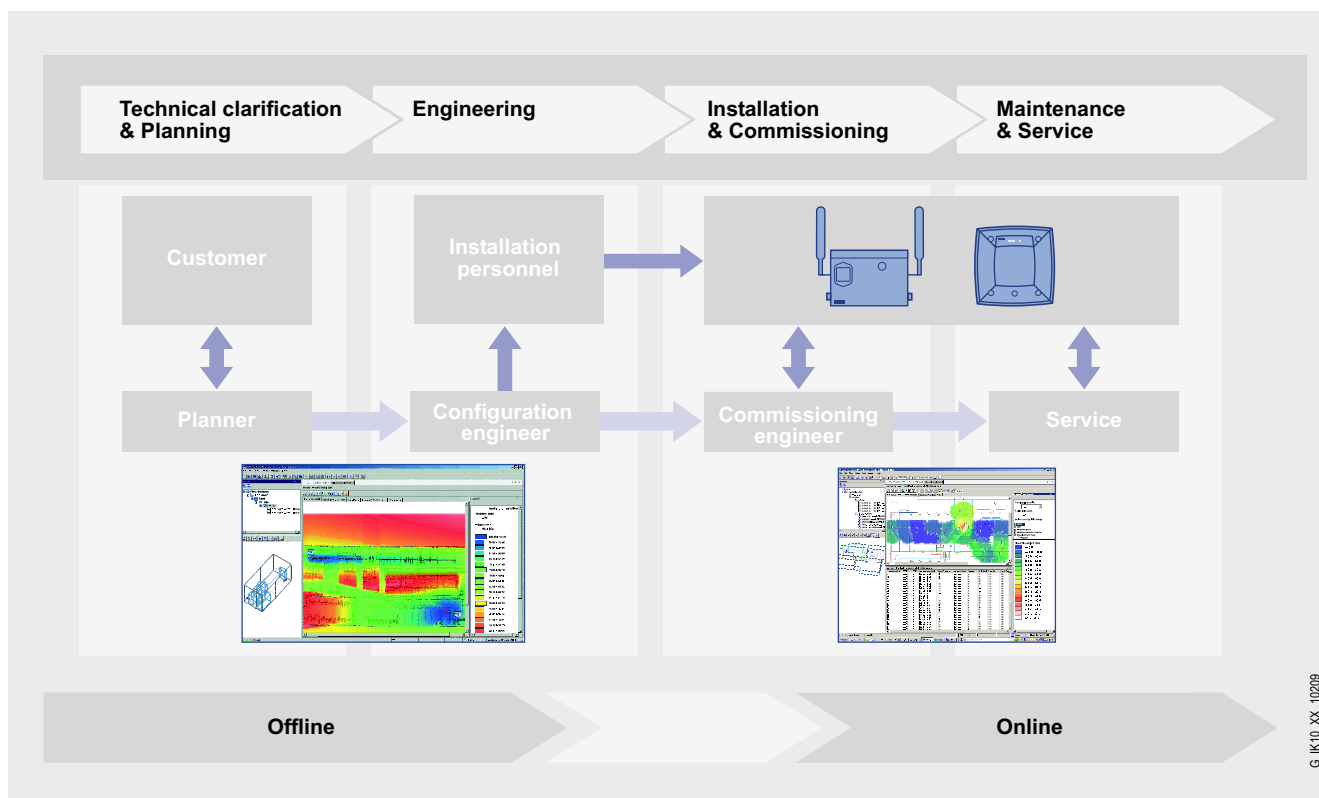
Diagram to show use of the SINEMA E software for planning and measuring WLAN networks

SINEMA E 2006

■ Integration

Supported products

WLAN access points

- SCALANCE W788-1PRO
- SCALANCE W788-2PRO
- SCALANCE W788-1RR
- SCALANCE W788-2RR
- Hipath AP2610,2620,2630,2640[1]
- Access points to Wi-Fi 802.11 a/b/g/h standard[1]

WLAN clients

- SCALANCE W744-1PRO
- SCALANCE W746-1PRO
- SCALANCE W747-1RR
- IWLAN/PB Link PN IO
- Clients to Wi-Fi 802.11 a/b/g/h standard[1]

LAN/WLAN adapter for upload/download functions

- SIMATIC NET CP 1613 A2
- SIMATIC NET CP 1612
- SIMATIC NET CP 7515
- Standard LAN adapter[2]
- Standard WLAN card[3]

WLAN adapter for WLAN measurements (site survey)[4]

- Standard mode
  - Standard WLAN adapter[3]
- Advanced mode
  - SIMATIC NET CP 7515
  - PCMCIA WLAN adapter[5]

1) No configuration possible offline or online (Hipath is configured by means of the Hipath WLAN controller)

2) Integral LAN port of notebooks and programming devices such as Power PG M from Siemens

3) WLAN PCMCIA adapter, such as SIMATIC NET CP 7515, or integrated WLAN interfaces of the notebooks and programming devices from Siemens

4) SINEMA E standard license required

5) Driver supports cards with the Atheros Chipsets AR5001A, AR5001X, AR5002G, AR5002X, AR5004G, AR5004X, AR5005GS such as NetGear WAG511 V2, Cisco Aironet CB21AG 802.11 a/b/g

■ Ordering data

Order No.

SINEMA

Engineering software for planning, configuring and simulating industrial WLAN applications in office and industrial environments on PG/PC in accordance with the 802.11 a/b/g/h standard; software and electronic manual on CD-ROM, license key on diskette, Class A, for 32-bit Windows XP Professional +SP2; German/English

• SINEMA E 2006 Lean	D	**6GK1 781-0AA00-6AA0**
• SINEMA E 2006 Standard Acquisition, evaluation and visualization of measured WLAN signals (site survey); as well as extended simulation and planning (automatic placement, contour presentation, storage/comparison of simulations, extended filter options)	D	**6GK1 782-0AA00-6AA0**
• SINEMA E 2006 Powerpack Upgrade-Software from SINEMA E Lean to SINEMA E Standard	D	**6GK1 782-4AA00-6AC0**

D) Subject to export regulations: AL: N and ECCN: 5D992B1

■ More information

Additional information is available in the Internet under:

http://www.siemens.com/sinema

7

Communication
Engineering Tools

SINEMA E 2006

■ Overview

The operating systems listed in the table refer exclusively to the communication products specified!

Please refer to the description of the relevant IPC for details of the available operating system that has been released for that IPC.

	Rack PC: **IL 43, 840, 847B** Box PC: **627, 627B, 840** Panel PC: **477/477B, 577, 677, 677B, 877**	**420, 427B**
CPs and Software for Industrial Ethernet		
CP 1613 A2	●	—
S7-1613 Edition 2006 under • Windows 2000 Professional/ Server + SP3/4, Windows XP Professional + SP1/2, Windows 2003 Server + SP1	●	—
CP 1612	●	—
SOFTNET-S7 Edition 2006 / SOFTNET-S7 Lean Edition 2006 under • Windows 2000 Professional/ Server + SP3/4, Windows XP Professional + SP1/2, Windows 2003 Server + SP1	●	—
• Windows 2000 Professional/ Server + SP3/4, Windows XP Professional + SP1/2, Windows 2003 Server + SP1, XPembedded + SP1/SP2/FP 2007	—	●
SOFTNET-PG Edition 2006 under • Windows 2000 Professional/ Server + SP3/4, Windows XP Professional + SP1/2, Windows 2003 Server + SP1	●	—
• Windows 2000 Professional/ Server + SP3/4, Windows XP Professional + SP1/2, Windows 2003 Server + SP1, XPembedded + SP1/SP2/FP 2007	—	●
SOFTNET PN IO Edition 2006 under • Windows 2000 Professional/ Server + SP3/4, Windows XP Professional + SP1/2, Windows 2003 Server + SP1	●	—
• Windows 2000 Professional/ Server + SP3/4, Windows XP Professional + SP1/2, Windows 2003 Server + SP1, XPembedded + SP1/SP2/FP 2007	—	●

	Rack PC: **IL 43, 840, 847B** Box PC: **627, 627B, 840** Panel PC: **577, 677, 677B, 877**	**420, 427B**
CPs and Software for PROFIBUS		
CP 5613 A2 / CP 5613 FO / CP 5614 A2 / CP 5614 FO with • Windows 2000 Professional/ Server + SP3/4, Windows XP Professional + SP1/2, Windows 2003 Server + SP1	●	—
DP-5613 Edition 2006 / FMS-5613 Edition 2006 / S7-5613 Edition 2006 under • Windows 2000 Professional/ Server + SP3/4, Windows XP Professional + SP1/2, Windows 2003 Server + SP1	●	—
CP 5611 A2/CP 5512 [1]	●	—
SOFTNET-DP Edition 2006 / SOFTNET-S7 Edition 2006 / SOFTNET-DP Slave Edition 2006 under • Windows 2000 Professional/ Server + SP3/4, Windows XP Professional + SP1/2, Windows 2003 Server + SP1	●	—
• Windows 2000 Professional/ Server + SP3/4, Windows XP Professional + SP1/2, Windows 2003 Server + SP1, XPembedded + SP1/SP2/FP 2007	●	●

CPs and Software for PROFINET

	Industrial PC slots / Embedded platform slots	
CP 1616 (PCI) [2]	PCI	—
CP 1604 (PC/104-*Plus*) [2]	—	PC/104-*Plus*

1) CP 5512 can be used with Box PC 620 only.
2) In order to use this CP, it is necessary to port the Development Kit DK-16xx PN IO to the relevant PLC and operating system environment. You can request the DK-16xx PN IO over the Internet at *www.siemens.com/simatic-net/dk16xx* It contains sample software for Linux Suse 9.3.

7

Manufacturing Execution Systems (MES)

8

8/2	**SIMATIC IT**

Manufacturing Execution Systems

SIMATIC IT

Overview
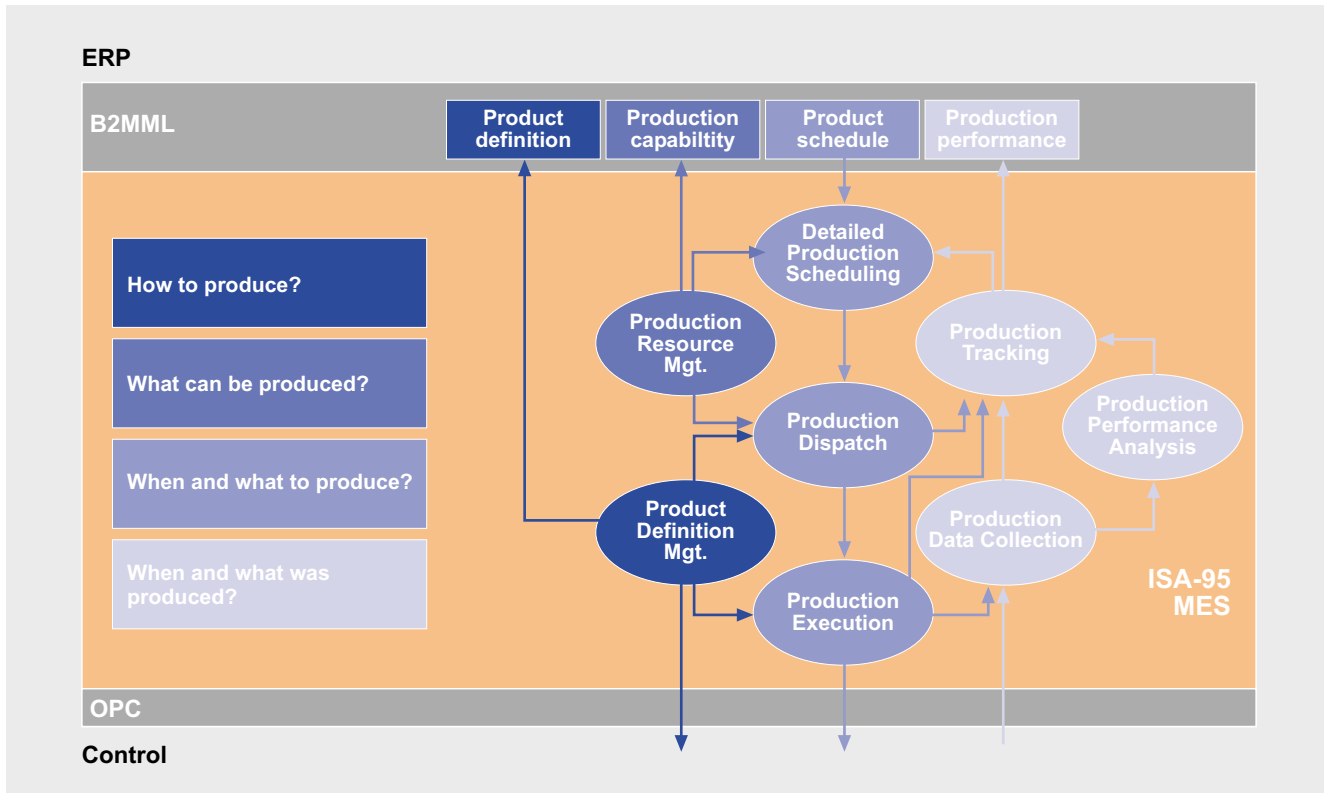
In order to remain competitive, manufacturers must reduce their time-to-market, increase the transparency and flexibility of production, optimize planning and scheduling, and reduce waste, warehouse costs and downtimes. At the same time, the best quality, fulfillment of regulations, and optimum production efficiency in globally distributed production plants must be ensured at optimum costs.

Manufacturing Execution Systems (MES) enable an effective integration of production processes and business systems and assist during all production phases in the coordination of all manufacturing relevant resources and applications.

SIMATIC IT – the Manufacturing Execution System from Siemens – allows customers to model their complete manufacturing expertise, define their operating processes precisely and collect data from the ERP and manufacturing level in real time. This enables manufacturers to control their operations more effectively and increase their flexibility. Providing a faster and more adequate response to any production event, SIMATIC IT supports the enterprise in reducing downtimes, waste and reworks, optimizing stock, and responding quicker to customer requests.

Benefits

With SIMATIC IT, Siemens offers essential benefits. First, even complex business and production structures can be easily modeled and future changes efficiently integrated. Second, the customers' production model – the representation of his business and production processes – remains fully transparent, understandable and, most important, independent from the controlled systems. Third, the model can, therefore, be used at any enterprise location: Processes can be standardized and "best practices" can be utilized across the enterprise.

SIMATIC IT offers a seamless and consistent approach from modeling through to implementation, because the model itself will execute and control the new MES application. This reduces project times, prevents implementation errors, provides seamless documentation, and effectively protects the know-how used. SIMATIC IT thus reduces the total cost of ownership of an MES implementation and offers additional investment security.

Using libraries, the plant and production models defined by the SIMATIC IT Framework can be stored at any time and redeployed in other projects. This reduces introduction and maintenance costs as well as project times considerably.

SIMATIC IT complies with ISA-95, the internationally recognized standard for manufacturing execution systems. Customers can, therefore, rely on the ISA-95 standard and safeguard their investments in MES. Not only does SIMATIC IT cover ISA-95 functions, but it actually uses ISA-95 as a blueprint for its product architecture. As an active member of the ISA-95 Committee, Siemens continues to contribute to the further development of the standard.

Manufacturing Execution Systems

Overview (cont.)

SIMATIC IT

With SIMATIC IT, comprising the functionality of several SIMATIC IT Components coordinated by SIMATIC IT Production Modeler, Siemens implements the requirements of the internationally recognized MES standard ISA-95. SIMATIC IT is positioned on the market with the concept of collection of functionalities, provided by SIMATIC IT Components. These collections of components are called Bundles, and a short description of each one follows:

- **SIMATIC IT MIS** (Manufacturing Information Management) provides the capability of defining KPIs, according to the Plant Model, calculating them, contextualized against manufacturing events. With SIMATIC IT MIS users can really measure the performances of their plants.
- **SIMATIC IT Genealogy** fulfills the target of managing materials across the enterprise. Backward and Forward Genealogy, basic material tracking, material master Data synchronization with ERP System are the typical functions supported. With SIMATIC IT Genealogy fulfillment for Regulatory Compliance is guaranteed.
- **SIMATIC IT Orders Management** supports order management from scheduling to execution. Orders dispatching, re-sequencing, execution monitoring and reporting are fully supported by this bundle. With SIMATIC IT Orders Management an unparalleled Manufacturing Flexibility enables users to consistently handle orders, against daily operations.
- **SIMATIC IT Tracking & Tracing** combines functionality from MIS and Genealogy bundles. Production KPIs can be calculated and efficiency calculations are supported. With SIMATIC IT Tracking & Tracing Production Data Tracking becomes true.

- **SIMATIC IT Basic Production Management** combines functionality from Genealogy and Orders Management bundles. The requirements from ISA-95 for Basic Production Execution are fulfilled, supporting materials usage against orders. SIMATIC IT Basic Production Management supports the entire visibility and management of orders in the plant.
- **SIMATIC IT Production Suite** encompasses the entire SIMATIC IT proposition for a full-functionality MES System, ranging from Order Management, Material Management, Tracking & Tracing, Product Genealogy, KPI Management, Resource Management, Product Definition, ERP Interface, etc. SIMATIC IT Production Suite fulfills all the requirements for a Flexible Manufacturing environment.

Every single bundle embeds one license of the following components. Extensions to the single license are available:

- **SIMATIC IT Report Manager** offers comprehensive and fully integrated, user-friendly reporting functions. SIMATIC Report Manager meets the regulatory requirements for ad hoc reporting (e.g. EC 178/2002, US Bio-Terrorism Act) and offers valuable operational insights.
- **SIMATIC IT Client Application Builder** is the GUI for MES Application based on a full WEB-based environment. Based on standard technology, provides patented functionality for pages refresh optimization. SIMATIC IT Client Application Builder fully supports Zero Administration Cost Clients.

The SIMATIC IT MES offering is completed by a series of products, which are also available as stand-alone programs, independent from the SIMATIC IT Production Suite:

- **SIMATIC IT Unilab**: Laboratory Information Management System (LIMS) – manages and controls laboratory data and processes
- **SIMATIC IT Interspec**: Specifications Management System (PLM) – manages and controls production specifications across the company and thereby facilitates the Product Life Cycle management
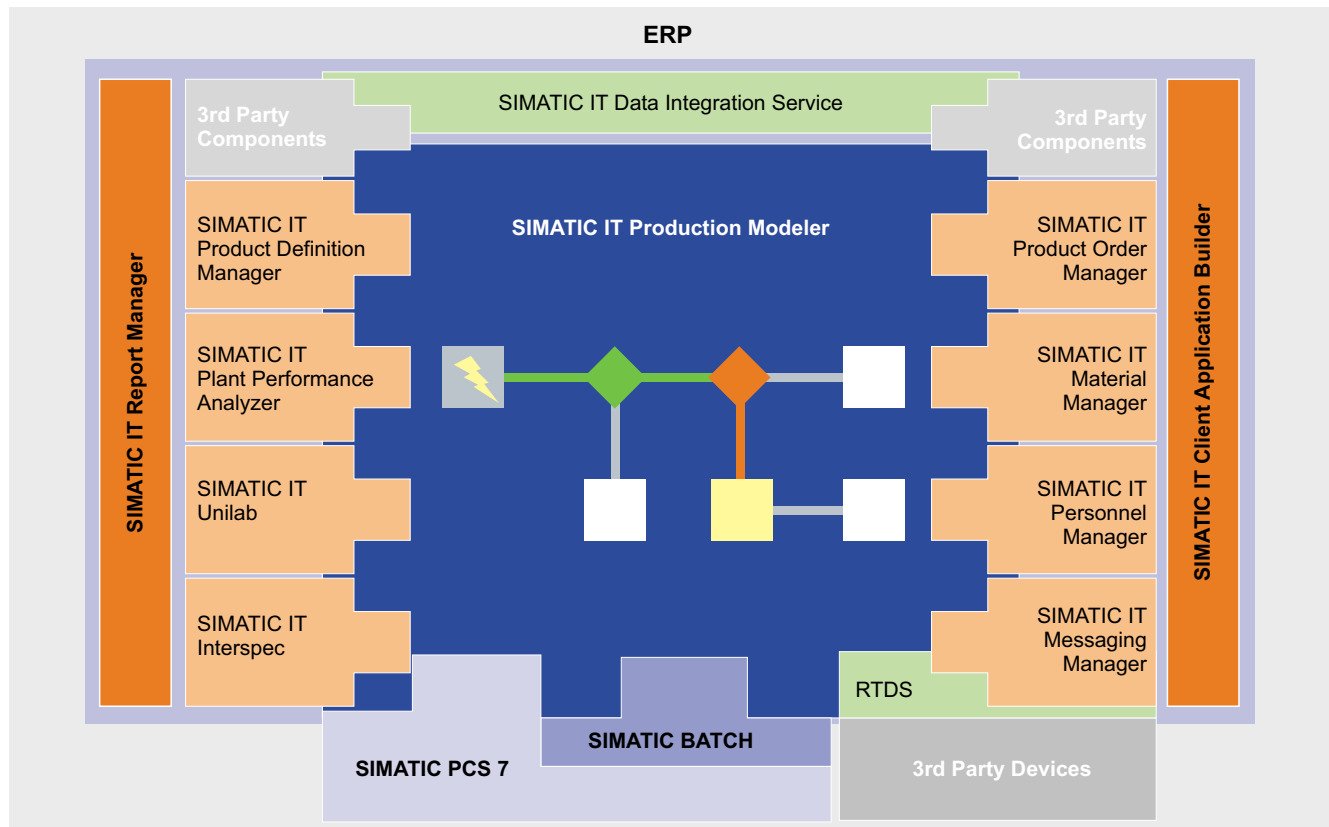
Manufacturing Execution Systems

SIMATIC IT

■ Overview (cont.)

SIMATIC IT Framework can integrate third party components and legacy applications, allowing them to be included and used in the same way as SIMATIC IT Components.

For questions about SIMATIC IT
please contact:
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Additional information is available on the web at:

http://www.siemens.de/simatic-it
http://www.siemens.com/simatic-it

8

Drives

9

Drives

■ **Overview**

SINAMICS

SINAMICS is the new drives family from Siemens designed for machine construction and plant engineering applications.

Depending on the application, the SINAMICS range offers the ideal version for any drive task:

- SINAMICS G
  for standard applications with asynchronous motors
- SINAMICS S
  for demanding drive tasks with synchronous/asynchronous motors

MICROMASTER/COMBIMASTER

- The MICROMASTER inverter system can be used as a speed-controlled standard drive:
  - via the PROFIBUS DP interface or
  - via an analog/digital interface
  - it can be commissioned using the STARTER/DRIVE MONITOR or DRIVE ES tool
- The COMBIMASTER is a standard synchronous motor with integral frequency inverter (degree of protection IP66) which can also be used with three-phase low-voltage motors from other vendors or positioned on the machine.

SIMODRIVE POSMO

The intelligent positioning unit can be used as a distributed I/O node:

- using the PROFIBUS DP interface
- it can be commissioned using SimoCom U or SimoCom A or Drive ES tool

Drive ES
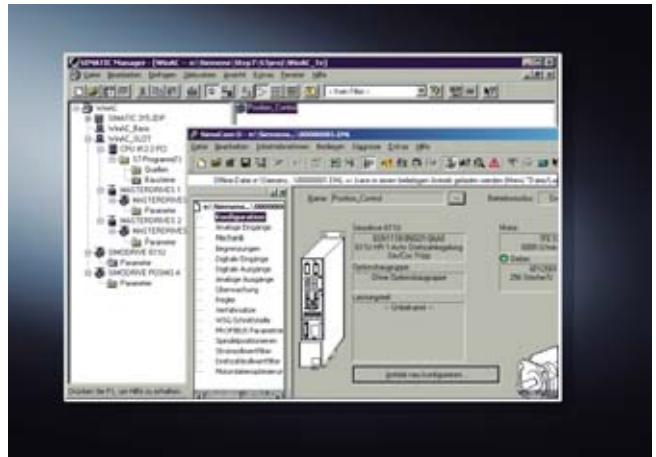
Drive ES (drive engineering system) enables drives of the SIMOVERT MASTERDRIVES, SIMODRIVE, SIMOREG DC-Master, MICROMASTER and SINAMICS series to be fully integrated into the SIMATIC automation world in terms of communication, configuration and data storage.

Drive ES consists of software packages which can be obtained individually. These include:

- Drive ES Basic
- Drive ES SIMATIC
- Drive ES Graphic

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■ **Overview**

SINAMICS G   ## SINAMICS S

Mixer/mills

Metal forming
technology

Packaging

Extrusion

Pumps/fans/
compressors

Rolling mills

Machine tools

Textiles

Woodworking

Conveyor systems

Printing and paper
machines

G_D211_EN_00137

Applications of the SINAMICS drive family

Applications

SINAMICS is the new family of Siemens drives designed for machine and plant engineering applications. SINAMICS offers solutions for all drive tasks:

• Simple pump and fan applications in the process industry.

• Complex individual drives in centrifuges, presses, extruders, elevators, as well as conveyor and transport systems.

• Drive line-ups in textile, plastic film and paper machines, as well as in rolling mill plants.

• Highly dynamic servo drives for machine tools, as well as packaging and printing machines

Versions

Depending on the application, the SINAMICS range offers the ideal version for any drive task.

• SINAMICS G is designed for standard applications with asynchronous (induction) motors. These applications have less stringent requirements regarding the dynamics and accuracy of the motor speed.

• SINAMICS S handles complex drive tasks with synchronous/ asynchronous (induction) motors and fulfills stringent requirements regarding
  - dynamics and accuracy
  - integration of extensive technological functions in the drive control system.

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Drives
SINAMICS

The SINAMICS drive family

■ **Overview** (continued)

Platform concept and Totally Integrated Automation

All SINAMICS versions are based on a platform concept. Common hardware and software components, as well as standardized tools for design, configuration and commissioning tasks, ensure high-level integration across all components. SINAMICS handles a wide variety of drive tasks with no system gaps.

The different SINAMICS versions can be easily combined with each other.

SINAMICS is part of the Siemens „Totally Integrated Automation" concept. Integrated SINAMICS systems covering configuration, data storage and communication at automation level, ensure low-maintenance solutions with the SIMATIC, SIMOTION and SINUMERIK control systems.
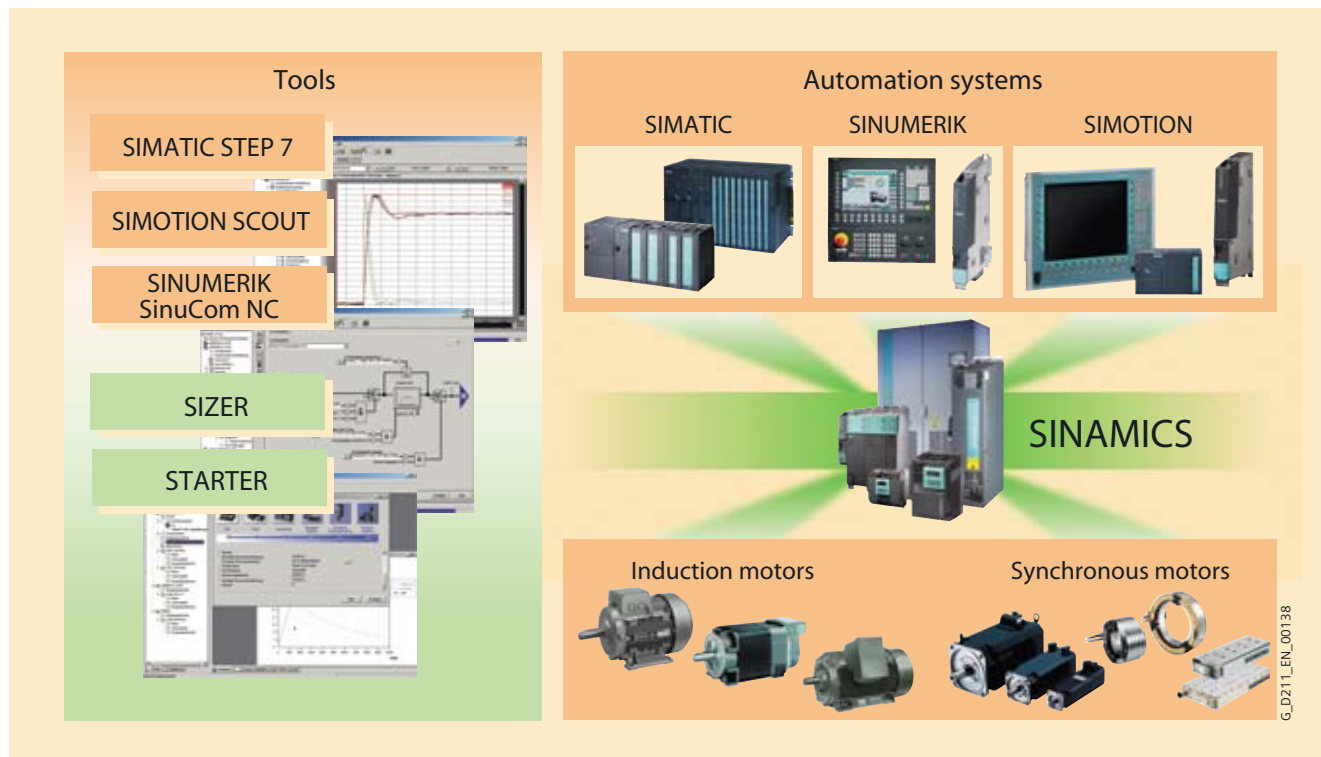
SINAMICS as part of the Siemens modular automation system

Quality in accordance with DIN EN ISO 9001

SINAMICS conforms with the most exacting quality requirements. Comprehensive quality assurance measures in all development and production processes, ensure a consistently high level of quality.

Of course, our quality assurance system is certified by an independent authority in accordance with DIN EN ISO 9001.

Suitable for global use

SINAMICS meets the requirements of relevant international standards and regulations – from the EN standards through IEC standards to UL and cULus regulations

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■ **Overview** (continued)

The SINAMICS drive family

SINAMICS for every output rating

G110 · 0.12 kW · G120 · S120 · S120 · G130 · S120 · S120 · G150/S150 · 1.5 MW · GM150/SM150 · 30 MW · 100 MW

SINAMICS for every power range

G110 · Basic functionality · G120 · G130 · G150/GM150 · S120 · S120 · S120 · S120 · S150/SM150 · S120 · S120 · S120 · S120 · Motion Control Performance

SINAMICS for every application

G110 · Single drives · G120 · G130 · G150/GM150 · S150 · High-performance single drives · SM150 · S120 · S120 · S120 · S120 · Coordinated drives/high-performance drives

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Tailored to the respective areas of application, SINAMICS is divided into the family members:

Low-voltage converters (line supply < 1000 V)
- **SINAMICS G110** – the versatile drive in the low outputs
- **SINAMICS G120** – the modular single drive for low to medium power ranges
- **SINAMICS G130** and **SINAMICS G150** – the universal drive solution for high-power single drives
- **SINAMICS S120** – the flexible, modular drive system for demanding drive tasks
- **SINAMICS S150** – the sophisticated drive solution for high-performance single drives

Medium-voltage converters (line supply > 1000 V)
- **SINAMICS GM150** – the universal drive solution for single drives
- **SINAMICS SM150** – the sophisticated drive solution for single and multi-motor drives

The SINAMICS range is characterized by the following system features:
- uniform functionality based on a single platform concept
- standardized engineering
- high degree of flexibility and combination
- wide power range
- designed for global use
- SINAMICS Safety Integrated
- greater efficiency and effectivity
- multiple communications options
- Totally Integrated Automation

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Drives
SINAMICS

The SINAMICS drive family

Application

The members of the SINAMICS family

SINAMICS low-voltage inverters			
SINAMICS G110	**SINAMICS G120**	**SINAMICS G130/G150**	**SINAMICS S120**
The versatile drive for low power ranges	*The modular single drive for low to medium power ran-ges*	*The universal drive solution for high-performance single drives*	*The flexible, modular drive system for complex drive tasks*

Main applications

• Machines and plants for industrial and commercial applications	• Machines and plants for industrial and commercial applications (mechanical engineering, automotive, textiles, chemicals, printing, steel)	• Machines and plants in the process and production industry, water/waste, power stations, oil and gas, petrochemicals, chemical raw materials, paper, cement, stone, steel	• Machines and plants for industrial applications (packaging, plastics, textile, printing, wood, glass, ceramics, presses, paper, lifting equipment, semiconductors, automated assembly and testing equipment, handling)

Application examples

• Pumps and fans • Auxiliary drives • Conveyor belts • Billboards • Door/gate operating mechanisms • Centrifuges	• Pumps and fans • Compressors • Conveyor belts	• Pumps and fans • Compressors • Extruders and mixers • Mills	• Motion Control applications (e.g. positioning, synchronous operation) • Numeric Control – Interpolating motion control • Converting • Technological applications

Highlights

• Compact • Flexible adaptation to different applications • Simple, fast commissioning • Clear terminal layout • Optimum interaction with • SIMATIC and LOGO!	• Modular • Flexible expansion capability • Simple, fast commissioning • Regenerative feedback • Innovative cooling concept • Optimum interaction with SIMOTION and SIMATIC • SINAMICS Safety Integrated	• Space-saving • Low-noise • Simple, fast commissioning • SINAMICS G130: modular components • SINAMICS G150: ready-to-connect cabinet unit • Optimum interaction with SIMATIC	• For universal use • Flexible and modular • Scalable in terms of power, function, number of axes, performance • Simple, fast commissioning, auto-configuration • Innovative system architecture • Wide range of motors • Optimum interaction with SIMOTION and SINUMERIK • SINAMICS Safety Integrated

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■ **Application** (continued)

The members of the SINAMICS family

SINAMICS low-voltage inverters	SINAMICS medium-voltage inverters	
SINAMICS S150	**SINAMICS GM150**	**SINAMICS SM150**
The advanced drive solution for high-performance single drives	*The drive solution for variable-speed drives*	*The drive solution for high-performance variable-speed single and multi-motor drives*
Main applications		
• Machines and plants in the process and production industry, food, beverages and tobacco, automotive and steel industry, mining/open-cast mining, shipbuilding, lifting equipment/conveyors	• Machines and plants in the processing industry	• Machines and plants, e.g. steel manufacture and mining
Application examples		
• Test bay drives • Centrifuges • Elevators and cranes • Cross cutters and shears • Conveyor belts • Presses • Cable winches	• Pumps and fans • Compressors • Extruders and mixers • Mills • Shipbuilding	• Rolling mills • Mine cages • Test stands • Conveyor belts
Highlights		
• Four-quadrant operation as standard • High control accuracy and dynamic response • Almost free of line harmonic distortion, THD falls well below the IEEE 519 level. • Tolerant to fluctuations in line voltage • Option of power factor compensation • Simple, fast commissioning • Ready-to-connect cabinet unit • Optimum interaction with SIMATIC	• Space-saving • Simple, fast commissioning • Ready-to-connect cabinet unit • Optimum interaction with SIMATIC	• Four-quadrant operation as standard • High-efficiency and motor-friendly operation • High control accuracy and dynamic response • Almost no line harmonic distortions • Option of power factor compensation • Simple, fast commissioning • Ready-to-connect cabinet unit • Optimum interaction with SIMATIC

9

Drives
SINAMICS

Overview

The new SINAMICSG120 frequency inverter has a modular structure (Power Module with Control Unit and BOP) and features numerous innovative functions, e.g. for safety (Safety Integrated), communication capability and energy recovery. With its various device versions (frame sizes FSA to FSF) in the power range of 0.37 kW to 90 kW it is suitable for a wide range of drive solutions.

Application

SINAMICS G120 is ideal

- as a universal drive in all industrial and commercial applications
- in the automotive, textiles, printing and chemical industries
- for end-to-end applications, e.g. in conveyor systems

Benefits

- Flexibility through modularity. For a future-proof drive concept – each innovation step can be executed in the same system. This ensures minimum cost and effort. Only those functions that are really required are ordered – selected and scaled to suit the customer. Ease of replacement provides maximum service friendliness
- Thanks to the safety functionalities, savings on design of drives in a safety-related integrated automation and drives environment
- Communications capability via PROFIBUS, PROFINET: Reduction of interfaces, plant-wide engineering etc.
- For simple converters, unique regenerative feedback through an innovative Power Module (no braking resistance and braking chopper, no line reactor and very low heat development)
- Enhanced ruggedness thanks to an innovative cooling concept and varnishing of the electronics modules (longer life)
- Engineering and commissioning using familiar tools SIZER and STARTER: ensures fast configuring and simple commissioning
- Simple exchange of devices and parameter cloning thanks to optional and preinstalled MMC card
- Low-noise motor operation thanks to high pulse frequency
- Compact, small design
- Worldwide certification: in UL and CE, Safety Integrated (IEC 61508/SIL2)

9

SINAMICS G120 frequency converter

Design

The SINAMICS G120 is a modular frequency inverter for standard drives. Each SINAMICS G120 consists of two operative units, the Power Module (PM) and a Control Unit (CU). A BOP (Basic Operator Panel) is available for parameterization, operator control and visualization or this can be done using the STARTER commissioning software.

By suitably combining the various Control Units and Power Modules it is possible to obtain application- and cost-optimized drive solutions. Both the Power Modules PM240 (with integral braking chopper, prepared for resistance braking) and the Power Modules PM250 (regenerative) are suitable for use in safety applications. In conjunction with a Safety Control Unit (identified with the type suffix "-F") the drive becomes a Safety Integrated Drive. This has a fail-safe controller for asynchronous motors in a number of different control modes (U/f, FCC, vector control with and without sensor).
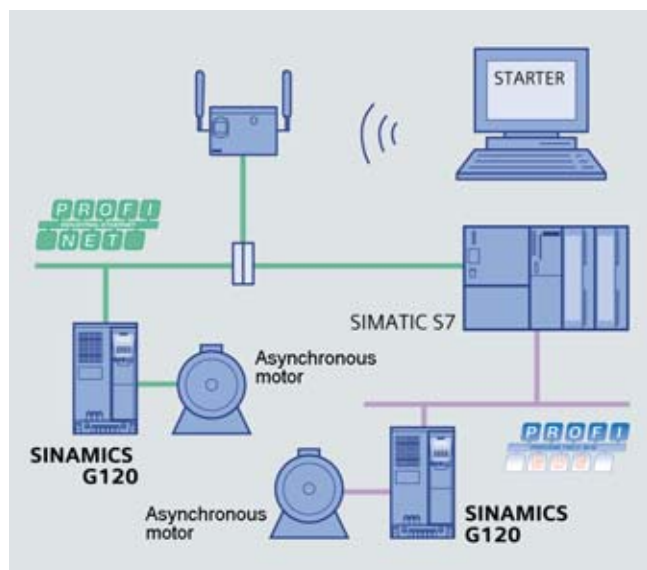
Configuration example of SINAMICS G120, PROFIBUS and PROFINET variants, together with SIMATIC S7 and SCALANCE Wireless communication. Control and parameterization via STARTER software.

Technical specifications

Electrical data	
Line voltages; power ranges	380 to 480 V 3 AC, ± 10%; 0,37 … 90 kW
Network types	IT, TN, TT
Line frequency	50 Hz/60 Hz
Output frequency	0 … 650 Hz
Control methods	V/f control, linear ($M \sim n$)
	V/f control, quadratic ($M \sim n^2$)
	V/f control, parameterizable
	Sensorless Vector Control
	Vector Control with encoder (closed-loop control circuit)
	Torque control
Fixed frequencies	16, parameterizable
Digital inputs	Up to 9 digital inputs, depending on the Control Unit, for fail-safe versions 2 fail-safe digital inputs, 24 V DC
Analog version: analog input	2 analog inputs, scalable from 0 to 10 V
Digital outputs	3
Communication interfaces	RS 485/USS (CU240S/CU240E); PROFIBUS (CU240S DP); PROFIsafe (CU240S DP-F); PROFINET (CU240S PN)
Functions	
Software functions	Torque control, flying restart, slip compensation, automatic restart after interruption of operation due to power failure, free function blocks for logical and arithmetic operations
	Signal interconnection with BICO technology
	Kinetic buffering, positioning deceleration ramp
	Simple process control with internal high-quality PID controller
	Parameterizable ramp-up times 0 to 650 s, ramp smoothing
	Compound braking for controlled rapid deceleration
	3 switchable motor data sets
Protection functions	Undervoltage, overvoltage, ground fault, stall protection, thermal motor protection I²t, inverter overtemperature, motor overtemperature
Safety Integrated function	Yes
Connectable motors	Asynchronous motors
Mechanical data	
Degree of protection	IP20
Cooling method	Innovative cooling concept; cooling of power electronics via heat sinks with external fan; open-loop and closed-loop control electronics cooled by convection
Standards	
Compliance with standards	CE, UL, cUL, C-tick, Safety Integrated IEC 61508/SIL2

9

Drives
SINAMICS

SINAMICS S120 drive system

■ **Overview**

Flexibility for successful machine design

As part of the SINAMICS family of drives, the SINAMICS S120 drive system is a modular system for high-performance applications in the machine and plant engineering industry.
SINAMICS S120 offers high-performance single-axis and multi-axis drives for a very wide range of industrial applications. Thanks to its scalability and flexibility, SINAMICS S120 is the ideal system for satisfying the ever increasing demand for more axes and better performance. SINAMICS S120 supports flexible machine designs and speedy implementation of customer-specific drive solutions.

The response to ever increasing demands

Modern machines are expected to be built at ever lower cost, but promise ever greater productivity. The SINAMICS S120 drive concept meets both these challenges! It is easy to configure and thus helps to reduce project completion times, while its excellent dynamic response and accuracy permit higher cycle rates for maximum productivity.

Applications in machine and plant engineering

Regardless of whether the application involves continuous material webs or cyclic, highly dynamic processes – SINAMICS S120 means increased machine performance in many sectors:
• Packaging machines
• Plastics processing machines
• Textile machines
• Printing machines
• Paper machines
• Hoisting equipment
• Handling and assembly systems
• Machine tools
• Rolling mills
• Test stands

Modularity for the machine construction industry

SINAMICS S120 enables the free combination of power and control performance. It is every bit as possible to implement multi-axis drive solutions with higher-level motion control as it is to implement single-drive solutions using the modular SINAMICS S120 system.

More flexibility with central control intelligence

In the SINAMICS S120 system, the drive intelligence is combined with closed-loop control functions in Control Units.

These units are capable of controlling drives in Vector, Servo an *U/f* modes. They also perform the speed and torque control functions as well as other intelligent drive functions for all axes on the drive..

Free performance selection for Vector and Servo control modes

The use of SINAMICS S120 Vector control is recommended for drive solutions with continuous material webs, such as wire-drawing machines, film and paper-making machines, as well as for hoisting gear, centrifuges and marine propulsion drives with harmonic circular motion.

Servo control with SINAMICS S120 is used for cyclic processes with precise and simultaneously highly dynamic position control with servomotors, e.g. in textile, packaging, printing machines and machine tools.

SINAMICS S120 – Functions for more efficiency

• Basic functions: speed control, torque control, positioning functions
• Intelligent starting functions for independent restarting following power supply interruption
• BICO technology with interconnection of drive-related I/Os for easy adaptation of the drive system to its operating environment
• Integrated safety functions for rational implementation of safety concepts
• Regulated infeed/regenerative feedback functions to prevent undesirable system perturbation, allowing recovery of braking energy and ensuring greater stability against fluctuations in the line

DRIVE-CLiQ – The digital interface between all components

All components of SINAMICS S120, including the motors and encoders, are connected to one another via a shared serial interface called DRIVE-CLIQ.

The standardized cables and connectors reduce the wide variety of different parts and cut the storage costs. Converter boards (Sensor Modules) for converting conventional sensor signals to DRIVE-CLIQ are available for non-Siemens motors and retrofit applications.

Fast and automatic: the electronic rating plate

An important component of the digital logic of the SINAMICS S120 drive system are the electronic rating plates on each component, which enable automatic identification of all drive components via the DRIVE-CLIQ link. As a result, data do not need to be entered manually during commissioning or component replacement, which in turn helps to ensure that drives are commissioned successfully! The electronic rating plates of the motors contain, for example, the parameters of the electrical equivalent circuit diagram and the characteristic data of the built-in motor encoder, but also information such as order number and identification number.

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■ Overview (continued)

Flexibility and scalability thanks to modular design

DC/AC units (= Motor Modules), which are available in booksize and chassis formats, are distinguished by their modular design. The entire drive intelligence is organized into Control Units. These perform all the closed-loop control functions for the drive group. They also execute all other drive functions, such as the interconnection of drive-related I/Os, positioning functions, and so on, and feature PROFIBUS DP or PROFINET as a central interface for linking up to higher-level automation systems.

Line Modules function as the central energy supply to the voltage-source DC link. Line Modules are optionally available with regulated infeed/regenerative feedback to provide a constant DC link voltage and high level of supply compatibility. Motor Modules supply the motors with energy from the DC link.

On AC/AC units, the infeed and the power supply for the motor are combined in one device, the Power Module, which is available in the blocksize and chassis formats. In single-axis applications, the drive control functions are performed by a special Control Unit (CU310) mounted on the Power Module, in multi-axis applications by a Control Unit (e.g. CU320) connected by a DRIVE-CLIQ link. In this case, a CU adapter instead of the Control Unit is mounted on the Power Module.

Blocksize, booksize and chassis formats

All formats can be freely combined

Thanks to their DRIVE-CLIQ interfaces, all the different S120 formats can be combined freely, e.g. Line Modules in chassis format can be freely combined with Motor Modules in booksize format for multi-axis applications with high total output.

Drives
SINAMICS

SINAMICS S120 drive system

■ **Overview** (continued)

Control (e. g. SIMATIC)

PROFINET

PROFIBUS

SINAMICS S120
AC Drive
with CU310

SINAMICS S120
AC Drive
with CU310

230 V 1 AC
400 V 3 AC

230 V 1 AC
400 V 3 AC

DRIVE-CLiQ

DRIVE-CLiQ

Motors

G_D211_EN_00074

Control (e. g. SIMATIC)

PROFIBUS

DRIVE-CLiQ

SINAMICS S120
AC Drive

DRIVE-CLiQ

Motors

G_D211_EN_00075

CU320   SINAMICS S120

+   =   **SINAMICS S120**
for positioning tasks
and speed control

SIMOTION D   SINAMICS S120

+   =   **SINAMICS S120 with
Motion Control system
SIMOTION D**
for sophisticated Motion Control
tasks directly in the drive

G_D211_EN_00076

SINAMICS S120 and SIMOTION – The perfect team

Modern machines must be capable of handling ever more complex motion control tasks and performing them with increasing accuracy and speed. Against this background, the SIMOTION motion control system and the high-performance SINAMICS S120 drive system form the perfect team. The SIMOTION D variant which is physically integrated in the SINAMICS S120 drive, in particular, is the ideal solution for machines with a large number of axes and high demands on precision. This distributed automation structure allows the machine to be segmented into different axis groups, each of which is controlled by a separate SIMOTION motion control system. Communication between the SIMOTION systems takes place via either PROFIBUS DP or PROFINET. Another important aspect: the compact machine design thanks to the distributed automation structure and a Control Unit directly in the drive.
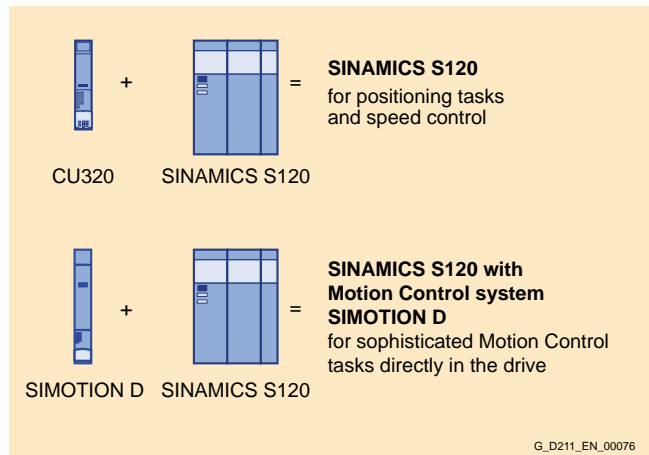
Totally Integrated Automation – The one-of-a-kind automation platform

With Totally Integrated Automation, Siemens is the only supplier to offer an integrated spectrum of products and systems for all sectors from one source. Customized to meet individual customer requirements, sector-specific automation solutions can be implemented efficiently on the basis of TIA. Lower life cycle costs for plant operation and a significant reduction in the time to market result in a considerable improvement in productivity and higher investment security.

Easy – Totally Integrated Automation with SINAMICS S120

In addition to SIMATIC, SIMOTION and SINUMERIK, SINAMICS is also one of the core components of TIA. The STARTER commissioning tool, for instance, is an integral component of the TIA platform. All the components of the automation solution can thus be parameterized, programmed and commissioned on one standardized engineering platform and without any gaps. Integrated data management functions ensure data consistency and easy archiving of the entire plant project.

PROFIBUS – The No. 1 fieldbus

PROFIBUS DP, the standard fieldbus of the TIA system, is supported by all SINAMICS S120 variants. It provides a high-performance, system-wide communication network which links all automation components: HMI (operator control and monitoring), controls, drives and I/O devices.

PROFINET – For more performance and open IT communication

SINAMICS S120 is also available with a PROFINET interface. This Ethernet-based bus allows the fast interchange of control data over PROFINET IO with IRT or RT, and makes SINAMICS S120 a suitable choice for integration in top-performance multi-axis applications.

In addition, PROFINET also uses standard IT mechanisms (TCP/IP) to transport information, e.g. operating and diagnostic data, to higher-level systems. A SINAMICS S120 with this interface can thus easily be integrated into factory IT networks.

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■ **Overview** (continued)

SINAMICS S120 drive system components

SINAMICS S120 drive system

Line-side components

Line reactors

Line filters

Line Modules

Basic Line Modules

Smart Line Modules

Active Line Modules

Active Interface Modules

Power supply

For applicable 24 V device, see Catalog KT 10.1

DC link components

Braking Module

Braking resistors

Capacitor Module

Control Supply Module

Control Units

CU310

CU320

SIMOTION Control Units

D425

D435

D445

CX32

Motor Modules

Single Motor Modules

Double Motor Modules

Sensor Modules

SMC10/SMC20

SMC30

SME20/SME25

Power Modules

Load-side components

Motor reactors

Sinusoidal filters

AC motors

Connection system

Synchronous motors

1FT6 motors

1FK7 motors

1FS6 motors

1FW3 torque motors

Gear units

Geared motors

Asynchronous motors

1PH7 motors

1PL6 motors

1PH4 motors

MOTION-CONNECT

Power cables

Signal cables

G_D211_EN_00077

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SIZER configuration tool

■ **Overview**
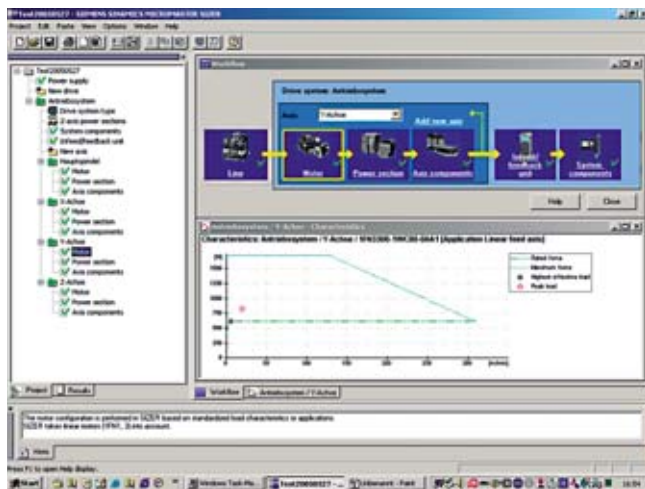
The SIZER configuration tool provides an easy-to-use means of configuring the SINAMICS and MICROMASTER 4 drive families, as well as the SINUMERIK solution line CNC control and SIMOTION Motion Control. It provides support when setting up the technologies involved in the hardware and firmware components required for a drive task. SIZER supports the complete configuration of the drive system, from simple individual drives to complex multi-axis applications.

SIZER supports all of the engineering steps in a workflow:

• Selection of the power supply
• Motor design as a result of load configuring
• Calculation of the drive components
• Selecting the required accessories
• Selection of the line-side and motor-side power options

When SIZER was being designed, particular importance was placed on high usability and a universal, function-based approach to the drive task. The extensive user guidance makes using the tool easy. Status information keeps you continually informed of the progress of the configuration process.

The SIZER user interface is available in German and English.

The drive configuration is saved in a project. In the project, the components and functions used are displayed in a hierarchical tree structure.

The project view permits the configuration of drive systems and the copying/inserting/modifying of drives already configured.

The configuration process produces the following results:

• A parts list of the components required
• Technical data
• Characteristics
• Comments on system reactions
• Location diagram and dimension drawings

These results are displayed in a results tree and can be reused for documentation purposes.

User support is provided by the technological online help menu, which provides the following information:

• Detailed technical data
• Information about the drive systems and their components
• Decision-making criteria for the selection of components

Minimum hardware and software requirements

• PG or PC with Pentium™ II 400 MHz (Windows™ 2000), Pentium™ III 500 MHz (Windows™ XP)
• 256 MB RAM (512 MB RAM recommended)
• Minimum 990 MB free hard disk space
• Additional 100 MB free hard disk space on Windows system drive
• Monitor resolution 1024×768 pixels
• Windows™ 2000 SP2, XP Professional SP1, XP Home Edition SP1
• Microsoft Internet Explorer 5.5 SP2

■ **Ordering data**   Order No.

SINAMICS MICROMASTER SIZER configuration tool German/English	**6SL3 070-0AA00-0AG0**

STARTER drive/commissioning software

Overview
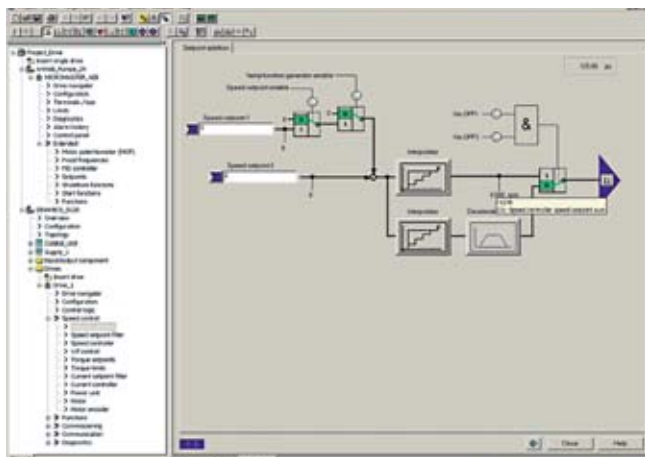
The easy-to-use STARTER drive/commissioning software can be used to

- start up
- optimize and
- for diagnostics

This software can be operated either as a stand-alone PC application or can be integrated into the SCOUT engineering system (on SIMOTION) or STEP 7 (with Drive ES Basic). The basic functions and handling are the same regardless.

In addition to the SINAMICS drives, the current version of STARTER also supports MICROMASTER 4 devices and inverters for the SIMATIC ET 200S FC distributed I/O system.
The project wizards can be used to create the drives within the structure of the project tree.

Beginners are supported by solution-based dialog guidance, whereby a standard graphics-based display maximizes clarity when setting the drive parameters. First commissioning is guided by wizards, which make all the basic settings in the drive. This ensures that even though only a small number of parameter settings have been made, the drive configuration has already progressed far enough to permit axis movement.

Examples of individual settings:

- terminals
- bus interface
- setpoint channel (e.g. fixed setpoints)
- closed-loop speed control (e.g. ramp-function generator, limits)
- BICO interconnections
- diagnosics

Experts can gain rapid access to the individual parameters via the Expert List and do not have to navigate dialogs.

In addition, the following functions are available for optimization purposes:

- self-optimization
- trace (depending on drive)

Diagnostics functions provide information about:

- control/status words
- parameter status
- operating conditions
- communication states

Performance features

- Easy to Use: Only a small number of settings need to be made for successful first commissioning: axis turning
- Solution-based dialog-based user guidance simplifies commissioning
- Self-optimization functions reduce manual effort for optimization
- The built-in trace function provides optimum support during commissioning, optimization and troubleshooting

Minimum hardware and software requirements

- PG or PC with Pentium™ II 400 MHz (Windows™ 2000), Pentium™ III 500 MHz (Windows™ XP)
- 256 MB RAM (512 MB RAM recommended)
- Monitor resolution 1024×768 pixels
- Windows™ 2000 SP3, XP Professional SP1
- Microsoft Internet Explorer 5.01

Integration

A PROFIBUS communications module and a connecting cable are required to make the communication link between the PG/PC and a control unit.

For example, PROFIBUS communications module CP 5512 (PC-MCIA type 2 card + adapter with 9-pin SUB-D socket for connection to PROFIBUS). For Windows 2000/XP Professional and PCMCIA 32)
Order No: 6GK1551-2AA00

and connecting cable between CP 5512 and PROFIBUS
Order No.: 6ES7901-4BD00-0XA0

PC converter connecting sets are available for MICROMASTER 4, SINAMICS G110 and SINAMICS G120 for a safe point-to-point connection to the PC.
Order No. for MICROMASTER 4: 6SE6400-1PC00-0AA0
(the scope of supply includes a 9-pin Sub-D connector and an RS232 standard cable, 3 m)
Order No. for SINAMICS G110 and SINAMICS G120:
6SL3255-0AA00-2AA1
(the scope of supply includes a 9-pin Sub-D connector and an RS232 standard cable, 3 m, and the STARTER startup tool on CD-ROM).

Ordering data

	Order No.
STARTER for SINAMICS and MICROMASTER commissioning tool ger/en/fr/it	**6SL3 072-0AA00-0AG0**

More information

STARTER commissioning tool can be downloaded from the internet:

http://www4.ad.siemens.de/WW/view/com/10804985/133100

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STARTER drive/commissioning software

■ Overview

MICROMASTER

The standard MICROMASTER and COMBIMASTER frequency inverters are characterized by a functionally structured parameterization, ease of commissioning and simple connection technology.

The wide range of line voltages enables the fourth generation of MICROMASTER to be used throughout the world.

The basic operator panel (BOP) can be used as required either for the MICROMASTER 411, 420 and 440 or COMBIMASTER 411. A special BOP-2 is also available for the MICROMASTER 430.

Thanks to the optional PROFIBUS module, the frequency converters can be fully integrated into the Totally Integrated Automation concept.

MICROMASTER 420

The MICROMASTER 420 is especially suitable for applications involving conveyor belts, materials handling, pumps, fans and machine tools. It is the ideal low-cost frequency inverter solution for three-phase lines, but is also available in a single-phase power supply version.

Main features:
- Particularly flexible configuration due to modular design
- 3 freely programmable, isolated digital inputs
- One analog input (scalable), can also be used as 4th digital input
- One programmable analog output
- PI controller
- RS 485 serial interface

MICROMASTER 430

The MICROMASTER 430 has been specially developed for use with pumps and fans in industrial applications. The demands associated with this sector are ideally satisfied by the adapted operator panel with manual/automatic switchover, special pump and fan software, and a design for quadratic torque applications.

Main features:
- FCC (flux current control) for high drive quality
- Integral control of up to three additional drives (motor staging) which are directly connected to the power supply
- Low-energy function with motor switch-off for maximum possible saving of energy with lowest conveyor requirements
- Detection of pump drives running dry
- 4 skip frequencies to protect the piping in the case of resonance

MICROMASTER 440

The MICROMASTER 440 is perfect for a wide variety of complex applications in conveying, textiles, elevators, hoisting gears as well as in mechanical engineering and in the packaging industry.

Main features:
- High quality vector control
- 3 output relays
- 2 programmable analog outputs
- 6 freely programmable, isolated digital inputs
- 2 analog inputs (programmable/scalable),
- can also be used as digital inputs BiCo technology

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STARTER drive/commissioning software

■ Overview (continued)

COMBIMASTER 411/MICROMASTER 411

The COMBIMASTER 411 is the perfectly matched, space-saving combination of the MICROMASTER 411 frequency inverter and Siemens low-energy motors.

The MICROMASTER 411 permits the inverter unit to also be directly mounted on non-Siemens motors instead of the terminal box.

COMBIMASTER 411/MICROMASTER 411 are ideally suited for distributed use.

Main features:

- Rugged housing
- Degree of protection:
  - Inverter IP66
  - Motor IP55, on request also IP56/IP65
- PI controller
- RS 232 serial interface

■ Ordering data   Order No.

Standard configuration

MICROMASTER 411
Three-phase MICROMASTER inverter for mounting on motor (with integral EMC filter, class B)
Input voltage:
3 AC 380 V - 480 V, ±10%

Rated motor power /
rated current at 400 V /
housing size

• 0.37 kW (0.50 hp) / 1.2 A / CS B	**6SE6 411-6BD13-7BA1**
• 0.55 kW (0.75 hp) / 1.6 A / CS B	**6SE6 411-6BD15-5BA1**
• 0.75 kW (1.0 hp) / 2.1 A / CS B	**6SE6 411-6BD17-5BA1**
• 1.1 kW (1.5 hp) / 3.0 A / CS B	**6SE6 411-6BD21-1BA1**
• 1.5 kW (2.0 hp) / 4.0 A / CS B	**6SE6 411-6BD21-5BA1**
• 2.2 kW (3.0 hp) / 5.9 A / CS C	**6SE6 411-6BD22-2CA1**
• 3 kW (4.0 hp) / 7.7 A / CS C	**6SE6 411-6BD23-0CA1**

MICROMASTER 420
One-phase MICROMASTER inverter for 230 V (with integral EMC filter, class A)
Input voltage:
1 AC 200 V - 240 V, ±10%

Rated motor power /
output current

• 0.12 kW (0.16 hp) / 0.9 A	**6SE6 420-2AB11-2AA1**
• 0.25 kW (0.33 hp) / 1.7 A	**6SE6 420-2AB12-5AA1**
• 0.37 kW (0.5 hp) / 2.3 A	**6SE6 420-2AB13-7AA1**
• 0.55 kW (0.75 hp) / 3 A	**6SE6 420-2AB15-5AA1**
• 0.75 kW (1 hp) / 3.9 A	**6SE6 420-2AB17-5AA1**
• 1.1 kW (1.5 hp) / 5.5 A	**6SE6 420-2AB21-1BA1**
• 1.5 kW (2 hp) / 7.4 A	**6SE6 420-2AB21-5BA1**
• 2.2 kW (3 hp) / 10.4 A	**6SE6 420-2AB22-2BA1**
• 3 kW (4 hp) / 13.6 A	**6SE6 420-2AB23-0CA1**

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Drives
SINAMICS

STARTER drive/commissioning software

Ordering data

	Order No.			Order No.

Standard configuration

MICROMASTER 430
Three-phase MICROMASTER
inverter for 400 V (with integral
EMC filter, class A)
Input voltage:
3 AC 380 V - 480 V, ±10%

Power / output current

• 7.5 kW (10.0 hp) / 19 A			**6SE6 430-2AD27-5CA0**
• 11 kW (15.0 hp) / 26.0 A			**6SE6 430-2AD31-1CA0**
• 15 kW (20 hp) / 32.0 A			**6SE6 430-2AD31-5CA0**
• 18.5 kW (25 hp) / 38.0 A	A		**6SE6 430-2AD31-8DA0**
• 22 kW (30 hp) / 45.0 A	A		**6SE6 430-2AD32-2DA0**
• 30 kW (40 hp) / 62.0 A	A		**6SE6 430-2AD33-0DA0**
• 37 kW (50 hp) / 75.0 A	A		**6SE6 430-2AD33-7EA0**
• 45 kW (60 hp) / 90.0 A	A		**6SE6 430-2AD34-5EA0**
• 55 kW (75 hp) / 110.0 A	A		**6SE6 430-2AD35-5FA0**
• 75 kW (100 hp) / 145.0 A	A		**6SE6 430-2AD37-5FA0**
• 90 kW (120 hp) / 178.0 A	A		**6SE6 430-2AD38-8FA0**

MICROMASTER 440
Three-phase MICROMASTER
VECTOR inverter for 400 V
(with integral EMC filter, class A)
Input voltage:
3 AC 380 V - 480 V, ±10%

Power / output current

• 2.2 kW (3 hp) / CT/VT 5.9 A/5.9 A			**6SE6 440-2AD22-2BA1**
• 3 kW (4 hp) / CT/VT 7.7 A/7.7 A			**6SE6 440-2AD23-0BA1**
• 4 kW (5 hp) / CT/VT 10.2 A/10.2 A			**6SE6 440-2AD24-0BA1**
• 5.5 kW (7.5 hp) / CT/VT 13.2 A/18.4 A			**6SE6 440-2AD25-5CA1**
• 7.5 kW (10 hp) / CT/VT 18.4 A/26 A			**6SE6 440-2AD27-5CA1**
• 11 kW (15 hp) / CT/VT 26 A/32 A			**6SE6 440-2AD31-1CA1**
• 15 kW (20 hp) / CT/VT 32 A/38 A	A		**6SE6 440-2AD31-5DA1**
• 18.5 kW (25 hp) / CT/VT 38 A/45 A	A		**6SE6 440-2AD31-8DA1**
• 22 kW (30 hp) / CT/VT 45 A/62 A	A		**6SE6 440-2AD32-2DA1**
• 30 kW (40 hp) / CT/VT 62 A/75 A	A		**6SE6 440-2AD33-0EA1**
• 37 kW (50 hp) / CT/VT 75 A/90 A	A		**6SE6 440-2AD33-7EA1**
• 45 kW (60 hp) / CT/VT 90 A/110 A	A		**6SE6 440-2AD34-5FA1**
• 55 kW (75 hp) / CT/VT 110 A/145 A	A		**6SE6 440-2AD35-5FA1**
• 75 kW (100 hp) / CT/VT 145 A/178 A	A		**6SE6 440-2AD37-5FA1**

A) Subject to export regulations: AL: N and ECCN: EAR99H

Note:
Further information and full ordering data can be found in the Catalogs
DA 51.2, DA 51.3 and D81.1.

Standard configuration

COMBIMASTER 411
4-pole inverter motor
(with integral filter, class B)
Input voltage:
3 AC 380 V - 480 V, ±10%

Rated motor power /
rated current at 400 V /
motor design IM B3

	Order No.
• 0.37 kW (0.50 hp) / 1.2 A / CS B	**1UA1 073-4AB20**
• 0.55 kW (0.75 hp) / 1.6 A / CS B	**1UA1 080-4AB20**
• 0.75 kW (1.0 hp) / 2.1 A / CS B	**1UA1 083-4AB20**
• 1.1 kW (1.5 hp) / 3.0 A / CS B	**1UA1 090-4AB20**
• 1.5 kW (2.0 hp) / 4.0 A / CS B	**1UA1 096-4AB20**
• 2.2 kW (3.0 hp) / 5.9 A / CS C	**1UA1 106-4AB20**
• 3 kW (4.0 hp) / 7.7 A / CS C	**1UA1 107-4AB20**

Additional components

	Order No.
Operator panel BOP-2 for MICROMASTER 430	**6SE6 400-0BE00-0AA0**
Operator panel BOP for MICROMASTER 411 and COMBIMASTER 411 (requires: operator panel assembly set) MICROMASTER 420 and MICROMASTER 440	**6SE6 400-0BP00-0AA0**
Operator panel-assembly set for MICROMASTER 411 and COMBIMASTER 411 (incl. interface cable)	**6SE6 401-1DF00-0AA0**
PROFIBUS module for	
• MICROMASTER 411	**6SE6 401-1PB00-0AA0**
• COMBIMASTER 411 (Order code)	**M54**
PROFIBUS module for MICROMASTER 420, MICROMASTER 430 and MICROMASTER 440	**6SE6 400-1PB00-0AA0**

9

Overview

SIMODRIVE POSMO CD

SIMODRIVE POSMO CD/CA are complete converter and control units for a distributed single-axis drive system and are direct no-des on the PROFIBUS DP.

They make it possible to solve control and drive tasks using independent, modular functional units directly "on site" at the machine.

The system can be installed virtually anywhere close at machine level thanks to its high degree of protection IP65.

A line infeed module is usually required for generating the DC supply voltage for the SIMODRIVE POSMO CD. The SIMODRIVE POSMO CA can be directly connected to the 3-phase AC TN system. The 24 V DC electronics power supply is generated in the device. For diagnostics, a 24 V DC electronics power supply can also be fed in externally.

Benefits

- Flexibility thanks to installation at machine level, for various types of motors
- Reduced control cabinet overhead by locating the drives directly "on site" at the machine
- Low installation overhead thanks to linking via the communication bus and power bus
- Direct linking of drive-related process signals via 4 terminals programmable as either inputs or outputs
- Reduced installation costs thanks to pre-assembled power cables
- High-speed diagnostics via
- LED for Fault/Ready on the drive unit
- PROFIBUS DP and SimoCom U
- Easy drive replacement for servicing because all start-up data is stored on the memory card

Design

- The SIMODRIVE POSMO CD/CA is a complete functional unit consisting of:
  - Power section
  - Electronic control system
  - Positioning control with program memory
  - Motion Control with PROFIBUS DP interface
- Power infeed, looping through and motor connection are implemented with non-interchangeable safety locking devices
- Connection is made using the plug-in PROFIBUS DP unit or via ECOFAST. Pre-assembled cables with built-on flanges are offered for the PROFIBUS DP unit.
- M12 plug-in connectors are used for
  - parameterizable digital inputs/outputs
  - parameterizable diagnostic signals
- The measuring systems for recording the position and speed are connected using plugs protected against reversed polarity. These have a design identical to the power socket con-nectors.

PROFIBUS DP

PROFIBUS DP makes high-speed data interchange possible with the higher-level master such as a SIMATIC S7. Synchronized motion control with PROFIBUS DP V2 enables the interpolating operation of the SIMODRIVE POSMO CD/CA with a higher-level control such as a SINUMERIK 802D/SINUMERIK 840Di.

Ordering data   Order No.

Standard configuration

SIMODRIVE POSMO CD 600 V DC (400 – 750 V DC)		
Copper PROFIBUS coupling (M20)		
• without additional measuring system		
- P_N = 5 kW; I_{max} = 18 A	A	**6SN2 703-2AA00-0BA1**
- P_N = 10 kW; I_{max} = 36 A	A	**6SN2 703-2AA00-0CA1**
SIMODRIVE POSMO CA 3 AC 400 V – 480 V		
- P_N = 5 kW; I_{max} = 18 A		
Connection:		
• TN systems		
Copper PROFIBUS coupling (M20)		
- without additional measuring system	A	**6SN2 703-3AA10-0BA1**
- with additional measuring system	A	**6SN2 703-3AB10-0BA1**

A) Subject to export regulations: AL: N and ECCN: EAR99H

9

Drives

SIMODRIVE POSMO SI

■ Overview

SIMODRIVE POSMO SI is a single-axis servo drive for a distributed servo-drive system as direct node on the PROFIBUS DP.

This servo-drive system is a self-contained, fully functional mechatronic unit. Control and drive tasks can be solved directly on site using autonomous, modular function units.

The high IP65/IP67 degree of protection of the system permits individual installation on the machine.

A line infeed module is usually required to generate the DC supply voltage. The 24 V DC electronics power supply is generated in the device.

For diagnostic purposes, a 24 V DC electronics power supply can also be fed in externally.

■ Benefits

- Reduced control cabinet overhead by locating the drives directly "on site" at the machine
- Fast machine installation due to mounting of a complete drive unit
- Low installation overhead thanks to linking via the communication bus and power bus
- Direct linking of drive-related process signals via 4 programmable inputs or outputs
- Reduced installation costs thanks to pre-assembled power cables
- High-speed diagnostics via
  - LED for Fault/Ready on the drive unit
  - PROFIBUS DP and SimoCom U
- Easy drive replacement for servicing because all start-up data is stored on the memory card

■ Application

- Handling
- Packaging machinery
- Textile machinery
- Woodworking machinery
- Machine tools

■ Design

Power and information electronics is integrated in the motor with the SIMODRIVE POSMO SI.

- The SIMODRIVE POSMO SI is a complete function unit consisting of:
  - 1FK6 synchronous motor
  - Power section
  - Electronic control system
  - Positioning control with program memory
  - Motion Control with PROFIBUS DP interface
- Power infeed, looping through and motor connection are implemented with non-interchangeable safety locking devices
- Connection is made using the plug-in PROFIBUS DP unit. Pre-assembled cables with built-on flanges are offered for the PROFIBUS DP unit.
- M12 plug-in connectors are used for
  - parameterizable digital inputs/outputs
  - parameterizable diagnostic signals

PROFIBUS DP

PROFIBUS DP makes high-speed data interchange possible with the higher-level master such as a SIMATIC S7. Synchronized motion control with PROFIBUS DP V2 enables the interpolating operation of the SIMODRIVE POSMO SI with a higher-level control such as a SINUMERIK 802D/SINUMERIK 840Di.

■ Ordering data

Order No.

SIMODRIVE POSMO SI
Distributed servo drive, rated voltage 600 V DC, speed 3000 rpm, forced-ventilated, design IM B5 (IM V1, IM V3), power/signal connector; standstill torque

	Order No.	
6 Nm	6SN2 460-2CF00-0G	■ ■
11 Nm	6SN2 463-2CF00-0G	■ ■

Shaft end:
- With key and groove,
  - Without holding brake ... **A**
  - With holding brake ... **B**
- Smooth shaft
  - Without holding brake ... **G**
  - With holding brake ... **H**

	Order No.	
8 Nm	6SN2 480-2CF00-0G	■ ■
16 Nm	6SN2 483-2CF00-0G	■ ■

Shaft end:
- With key and groove,
  - Without holding brake ... **A**
  - With holding brake ... **B**
- Smooth shaft
  - Without holding brake ... **G**
  - With holding brake ... **H**

	Order No.	
18 Nm	6SN2 500-2CF00-0G	■

Shaft end:
- With key and groove,
  - Without holding brake ... **A**
  - With holding brake ... **B**
- Smooth shaft
  - Without holding brake ... **G**
  - With holding brake ... **H**

Degree of protection:
- IP64 ... **0**
- IP65 and additionally AS flange IP67 ... **2**

Overview

Intelligent positioning motor as distributed node on PROFIBUS DP with the following features:

- Power section and complete motion control in the motor
- Coupled using a communication and power bus
- Degree of protection IP65 (dust-proof and protected against water jets from all directions) in variant SIPLUS POSMO A

Benefits

- Simplification of the machine infrastructure by interfacing over the communication and power bus
- Straightforward communication interface for incorporation into any PROFIBUS environment. Uses the simple PROFIBUS services exclusively
- Two terminals (programmable as either inputs or outputs) for monitoring or controlling external drive-related signals, such as clamping and limit switches
- User-friendly function blocks simplify configuring with STEP 7 in the SIMATIC world
- Easy start-up with the clear, user-friendly start-up tool SimoCom A which is available on the Internet
- TIA-compatible through Drive ES.Thus common
  - Communication
  - Configuration
  - Data management

Application

- Positioning of formats, stops and tools
- Re-setting of process variables (e.g. via valves)
- Simple positioning tasks in the handling sector

Areas of application are found wherever simple positioning tasks must be solved on a decentralized basis on the machine or in the plant, without taking up additional space in the control cabinet and having to accommodate for the associated power losses. Flexible retrofitting of axes is possible without having to extend the control cabinet.

Design

Compact design of converter power section, motor control, position encoder, holding brake (300 W), positioning controller, program memory, and communications interface at the motor.

The motor can be equipped with a modular gearbox with graduated planetary gearing (one gearbox per motor) or worm gearing (75 W).

- The removable terminal cover with integrated PROFIBUS address switch and terminating resistor makes it possible to disconnect the motor without any interruption to communications or power supply of downstream stations.
- All connections are made using standard cables
- Local diagnostics by means of LED (fault/ready), plus two diagnostic socket connectors (programmable analog outputs) for service purposes

PROFIBUS DP

The PROFIBUS DP makes high-speed cyclical data interchange between the slave and higher-level PROFIBUS master possible, e.g. a SIMATIC S7 central processing unit, a communications processor with master capability such as the CP 5412, or a communications module such as the CP 342-5, although standard masters from other manufacturers can also be used.

Ordering data — Order No.

	Order No.
Extension set separate version for SIMODRIVE POSMO A	
Outlet direction, side A	
• Length 1 m	**6FX8 002-6AA00-1AB0**
• Length 3 m	**6FX8 002-6AA00-1AD0**
• Length 5 m	**6FX8 002-6AA00-1AF0**
Outlet direction, side B	
• Length 1 m	**6FX8 002-6AA10-1AB0**
• Length 3 m	**6FX8 002-6AA10-1AD0**
• Length 5 m	**6FX8 002-6AA10-1AF0**

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Drives

Drive ES engineering system

Overview

Communication	Configuration/Commissioning
Drive ES SIMATIC	Drive ES Basic

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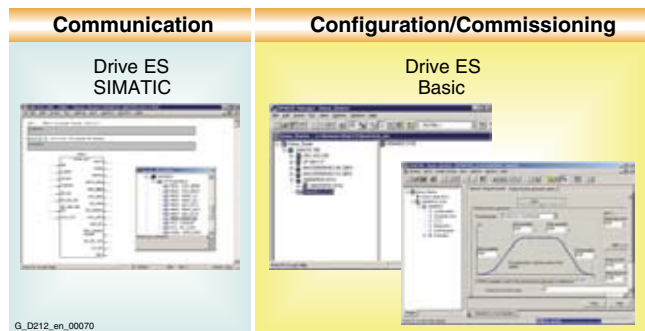
Drive ES is the engineering system used to integrate Siemens drive technology into the SIMATIC automation world easily, efficiently and cost-effectively in terms of communication, configuration and data management. The STEP 7 Manager user interface provides the basis for this procedure.

Various software packages are available for SINAMICS:

- **Drive ES Basic**
  for first-time users of the world of Totally Integrated Automation and the option for routing beyond network limits and the use of the SIMATIC teleservice.
  Drive ES Basic is the basic software program for setting the parameters of all drives online and offline.
  Drive ES Basic processes the automated system and drives on the interface of the SIMATIC Manager. Drive ES Basic is the starting point for common data archiving for complete projects and for extending the use of the SIMATIC teleservice to drives. Drive ES Basic provides the engineering tools for the new motion control functions – peer-to-peer data traffic, equidistance and isochronous operation with PROFIBUS DP.

- **Drive ES SIMATIC**
  Simply parameterize the STEP 7 communication instead of programming. In order to use Drive ES SIMATIC 7 must be installed. It features a SIMATIC function block library, thereby making the programming of the PROFIBUS interface in the SIMATIC-CPU for the drives easy and secure.
  There is no need for separate, time-consuming programming of the data exchange between the SIMATIC-CPU and the drive.
  All Drive ES users need to remember is:
  Copy – Modify – Load – Finished.
  Customized, **fully-developed function blocks** are copied from the library into user-specific projects.
  Frequently-used functions are set to run in program format:
  - Read out complete diagnostics buffer automatically from the drive
  - Complete parameter sets are automatically downloaded into the drive from the SIMATIC CPU – e.g. when a device has to be replaced
  - Part parameter sets (e.g. for recipe and product change) are automatically downloaded into the drive from the SIMATIC-CPU
  - Complete parameterization or part parameter sets are uploaded from the drive into the SIMATIC-CPU, i.e. updated.

- **Drive ES PCS 7**
  integrates drives with the PROFIBUS interface into the SIMATIC PCS 7 process control system.
  Drive ES PCS 7 can only be used with SIMATIC PCS 7 Version 5.2 and higher. Drive ES PCS 7 provides a function block library with function blocks for the drives and the corresponding faceplates for the operator station, which enables the drives to be operated from the PCS 7 process control system.

Ordering data

Order No.

Drive ES Basic V 5.4
Configuration software for the integration of drives into Totally Integrated Automation;
Requirement: STEP 7 V 5.3, SP 3 and higher;
Supply format: on CD-ROM
Ger, En, Fr, Sp, It
with electronic documentation

• Single license	6SW1 700-5JA00-4AA0
• Multi-user license, 60 x	6SW1 700-5JA00-4AA1
• Update service for single-user license	6SW1 700-0JA00-0AB2
• Update service for multi-user license	6SW1 700-0JA00-1AB2
• Upgrade from V 5.x to V 5.4	6SW1 700-5JA00-4AA4

Drive ES SIMATIC V 5.4
Function block library for SIMATIC for the parameterization of communication with the drives;
Requirement: STEP 7 V 5.3, SP 3 and higher;
Supply format: on CD-ROM
Ger, En, Fr, Sp, It
with electronic documentation

• Single license, incl. 1 runtime license	6SW1 700-5JC00-4AA0
• Runtime license	6SW1 700-5JC00-1AC0
• Update service for single-user license	6SW1 700-0JC00-0AB2
• Upgrade from V 5.x to V 5.4	6SW1 700-5JC00-4AA4

Drive ES PCS 7 V 6.1
Function block library for PCS 7 for the integration of drives;
Requirement: PCS 7 V 6.1;
Supply format: on CD-ROM
Ger, En, Fr, Sp, It
with electronic documentation

• Single license, incl. 1 runtime license	6SW1 700-6JD00-1AA0
• Runtime license	6SW1 700-5JD00-1AC0
• Update service for single-user license	6SW1 700-0JD00-0AB2
• Upgrade from V 5.x to V 6.1	6SW1 700-6JD00-1AA4

For further information please visit us on the Internet at:
http://www.siemens.com/drivesolutions

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10

SIMATIC ET 200
distributed I/O stations

SIMATIC ET200 distributed I/O stations

Introduction

Overview
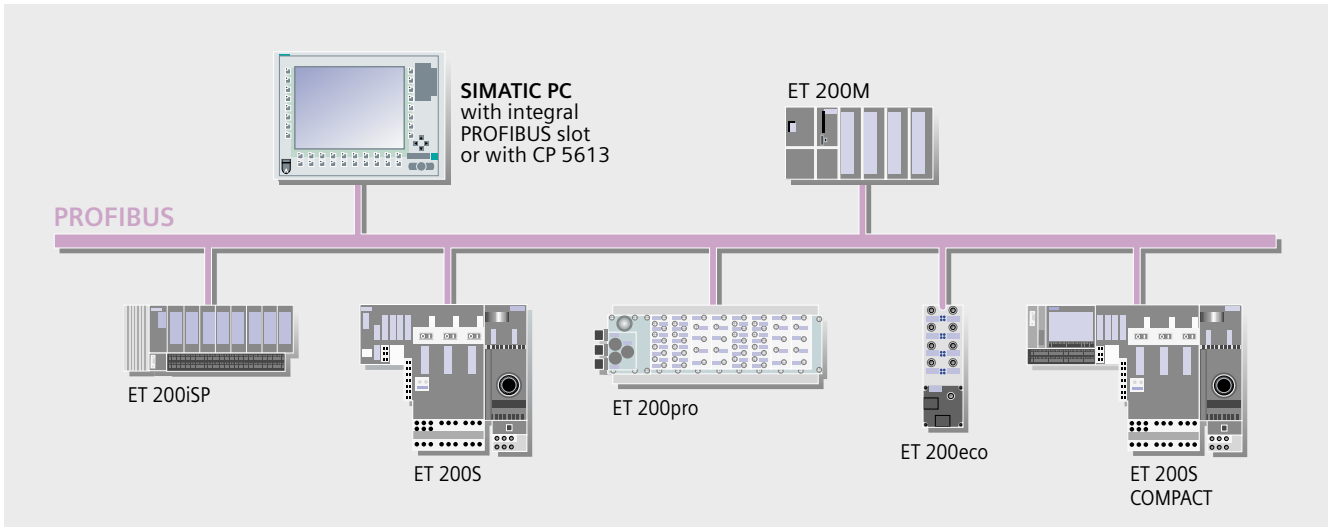
Connection of distributed I/O stations to PC-based control/SIMATIC PC via PROFIBUS

Input/output modules can be connected to SIMATIC PC via distributed I/O stations SIMATIC ET 200, PROFIBUS and PROFINET. On the PC, integrated interfaces or communications processors for PROFIBUS are used.

- Distributed configuration:
  - I/O stations with input/output modules next to the sensors and actuators on site
  - Connection between SIMATIC PCs, I/O modules and other field devices via a single cable, the fieldbus
  - SIMATIC PC-based control as PROFIBUS master, distributed I/O stations as slave
- The distributed I/O stations SIMATIC ET 200 are consistent, powerful and flexible which offers solutions for almost every automation task.

- They offer a complete range of modules from compact to bit-modular for the perfect fit in control cabinets or complete solutions without a control cabine.
- SIMATIC ET 200 offers more than distributed inputs and outputs:
  From motor starters, frequency link converters to safety systems, from technological modules and pneumatic components to real CPU functionality all functions are perfectly integrated.
- The integrated optical interfaces at ET 200S and ET 200M make the economical connection to the fiber-optic cables possible.

Detailed information is available in the following catalogs
Industrial Communication and Field Devices (IK PI),
Automation and Drives (CA 01),
Low Voltage Controlgear, Switchgear and Systems (NS K),
Online on the Internet at
www.siemens.com/automation/mall

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SIMATIC ET 200pro, ET 200eco

Overview

SIMATIC ET 200pro

- Distributed I/O system with degree of protection IP65/67 for applications at the machine level without a cabinet
- Compact, multifunctional all-in-one solution: Digital inputs/outputs, fail-safe modules, motor starters up to 5.5 kW, etc.
- Communication via PROFIBUS or PROFINET
- Mixed configuration of fail-safe modules and standard modules possible in one and the same station
- New interface module IM 154-8 CPU with CPU functionality based on the CPU 315-2 PN/DP with 2 integrated communication interfaces (one combined MPI/DP interface and one PROFINET interface with three ports)
- Free choice of connection method: direct, ECOFAST or M12 7/8"
- Power module for easy implementation of load groups
- Module replacement during normal operation (hot swapping)
- Easy installation as well as independent wiring
- PROFIBUS transmission rate up to 12 Mbit/s
- Extensive diagnostics: Module-specific or channel-specific
- Intelligent motor starters for starting and protecting motors and loads to 5.5 kW
  - Versions: direct starters and reversing starters – standard and high-feature
- Analog electronic modules for connecting of different types temperature probes
- RFID communication module RF 170C for connection of Siemens RFID systems
- Use of ET 200pro for standard pneumatic applications with PM 148-P
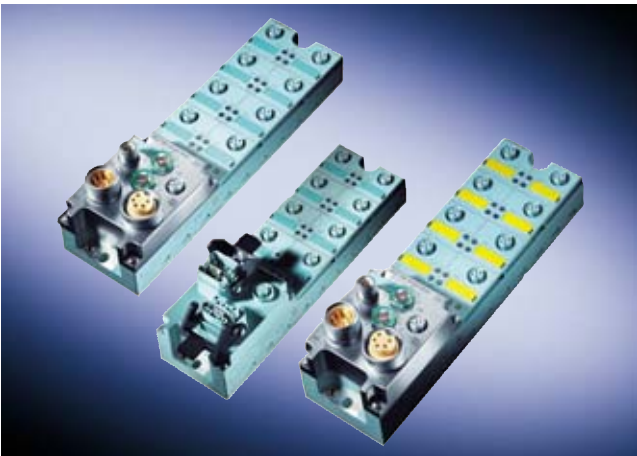
SIMATIC ET 200eco

- Compact, inexpensive I/O for processing digital signals
- Designed without a control cabinet with IP65/IP67 degree of protection and flexible quick connection technology
- Comprises a basic module and various terminal blocks for application-specific implementation options:
  - ECOFAST: 2 x hybrid fieldbus interfaces with ID connector for setting PROFIBUS addresses
  - M12: 2 x M12 and 2 x 7/8" with 2 rotary coding switches for setting PROFIBUS addresses
- Terminal block comprising T functionality for bus and power supply, so that during commissioning and servicing, the modules can be removed from and reconnected to the PROFIBUS without interrupting operation
- Module versions: 8 DI, 16 DI, 8 DI/8 DO (1.3 A), 8 DI/8 DO (2.0 A), 8 DO (2.0 A), 16 DO (0.5 A)
- Transmission rates up to 12 Mbit/s
- Fail-safe DI modules with safety-related signal processing according to PROFIsafe

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SIMATIC ET200 distributed I/O stations
Distributed configuration with control cabinet

SIMATIC ET 200S, ET 200S COMPACT

■ Overview
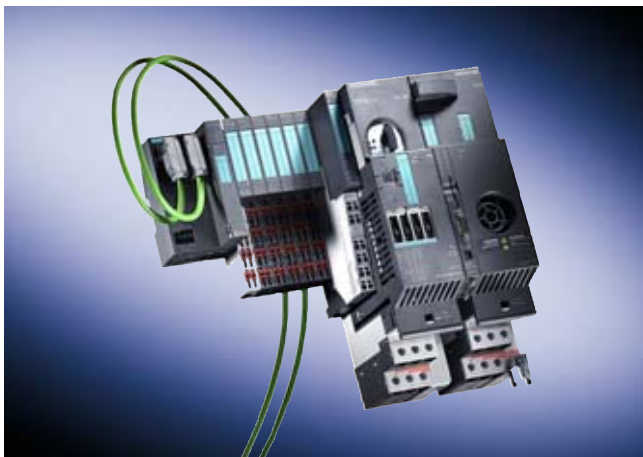
SIMATIC ET 200S

- Distributed I/O systems in IP20 degree of protection with low wiring costs, particularly suitable for extremely time-critical tasks, e.g. fast closed-loop control
- Bit-modular design for precise adaptation to the automation task
- New 8-channel digital I/O module for even more compact design
- Communication via PROFIBUS or PROFINET
- Combination of digital and analog input/output modules, power modules, motor starters and frequency converter for control of drives up to 7.5 or 4 kW
- With integrated CPU as small controller on PROFIBUS DP, as master or slave
- Replacement of electronic modules during operation ("hot swapping")
- Channel precision diagnostics for high availability
- Optional integrated fiber-optic interface
- Transmission rate up to 12 Mbit/s
- "Fast connect" as the connectors do not have to be stripped
- Ex approval according to category 3 for zone 2 to ATEX 100a
- Slot reservation using spare modules
- PROFIBUS DP master interface module for use as subordinate PROFIBUS master
- Fail-safe DI modules with safety-related signal processing according to PROFIsafe

SIMATIC ET 200S COMPACT

- Block I/O in degree of protection IP20 with 32 channels, comprising terminal block and electronics block
- 2 selectable options – one station with 32 DI or mixed station with 16 DI and 16 DO
- Bit-modular expansion to up to 80 channels or a maximum of 12 modules
- Entire ET 200S module range can be used (except F modules)
- The basis of the block I/O is the interface module ET 200S BASIC
- Separation of connections and electronics with fixed wiring
- Screw-type or spring-loaded connections
- Standard terminal block with 2-wire terminals; 3-wire and 4-wire terminals using add-on terminals or standard terminal strips
- Installation on DIN rail
- Hot swapping for the expansion modules
- Communication via PROFIBUS
- Up to 100 bytes of inputs and outputs (address space)

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SIMATIC ET200 distributed I/O stations
Distributed configuration with control cabinet

■ Overview

SIMATIC ET 200M

- Modular I/O system with degree of protection IP20, particularly suitable for user-specific and complex automation tasks.
- Can be expanded with S7-300 automation system signal, communication and function modules
- Applicable Ex analog input or output modules with HART optimize the ET 200M for use in process engineering.
- Can be used in redundant systems (S7-400H, S7-400F/FH)
- Comprises a field bus interface module IM 153 (for PROFIBUS or PROFINET), up to 12 S7-300 I/O modules (set up with bus connectors or active bus modules) and, if applicable, a power supply unit.
- Ultra-compact design with new digital I/O modules with 64 channels
- Modules can be replaced during operation (hot swapping) with the bus modules active
- Can be supplied with integrated fiber optic interface if required
- PROFIBUS transmission rates up to 12 Mbit/s
- Ex approval to Cat. 3 for Zone 2 acc. to ATEX100a
- Failsafe digital inputs and outputs as well as analog inputs for safety-related signal processing according to PROFIsafe.

SIMATIC ET 200iSP

- Failsafe distributed I/O system to degree of protection IP30 for use in hazardous gaseous and dusty areas, i.e. in Zones 1 and 2 as well as 21 and 22
- Sensors and actuators can also be situated directly in Zone 0 or 20.
- Individual configuration and flexible expansion with the modular design for optimization to the respective automation task
- Independent wiring enables prewiring without the electronics connected
- Optimized for integration into process control systems (e.g. SIMATIC PCS 7)
- Parameters can be assigned using SIMATIC PDM
- Optimal integration of HART field devices (HART transparency)
- Connection to PROFIBUS DP via isolating transformers
- Module replacement (hot swapping) and configuration expansion (Configuration in Run) possible during operation
- Extensive diagnostics possibilities
- Condensation-proof modules in temperature range -20 °C … +60 °C
- Full redundancy of PROFIBUS and power supply

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Expansion components

Expansion components

■ Overview

SIMATIC Flat Panel

The flat panels are used wherever the PC computer unit and the operator control/display unit have to be installed separately for technical reasons or to suit the application. SIMATIC Flat Panels are suitable for direct connection to any PC, but are especially suitable for use with the SIMATIC Box or SIMATIC Rack PC.

SIMATIC Flat Panels are LCD monitors with a rugged industrial design with 12", 15", 17" and 19" TFT displays.

Installation method:

Equally suitable for installation in the machine, control cabinets, consoles and booms, or 19" racks.

Type of operator control:
- Devices for display only without operator functionality
- As option devices for with touch operation

SCD Monitors

The SCD 1297, SCD 1597, SCD 1997 and SCD 19101-D monitors are LCD monitors in a rugged industrial design.

Built-in versions:
- Desktop units
- Built-in units (for control cabinets, consoles and booms)
- 19" rack-mounted units

Type of operator control:
- Devices for display only
- Devices for touch operation
- Devices for keyboard/mouse operation
  (only 19" rack-mounted units)

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Introduction

■ Overview (cont.)

Printers

The product range for printers in industrial design comprises:

- Dot-matrix printers
- Ink-jet printers

The printers are available with extensive accessories.

All printers are suitable for the use in a rough industrial environment and are therefore adequately protected against environmental influences.

Input devices

The range of input devices comprises keyboards, mouse and operation channel extensions.

Various versions of keyboards are available, e.g. as desktop or 19" build-in versions, with touch pad or track ball.

Operation channel extensions for mouse and keyboard are active.

All input devices are designed for industrial use.

Expansion components
Industrial LCD monitors

Overview
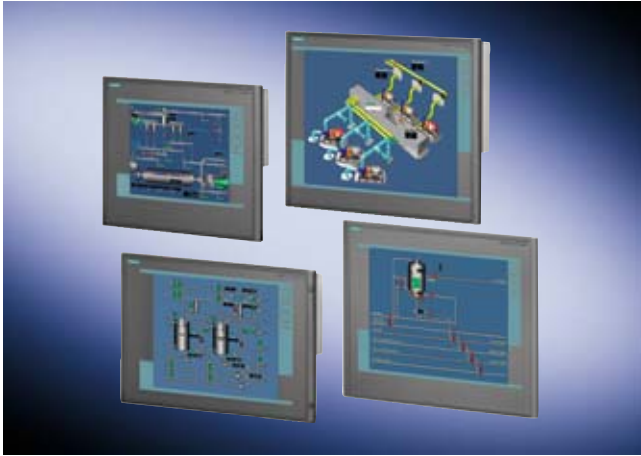
- Flat Panels are rugged, industrial standard LCD monitors
- They can be used wherever CRT monitors are used
- Installation
  - Equally suitable for installation in machines, control cabinets, consoles and booms or in 19" racks
- Possible operation:
  - Simple display devices without operator functionality
  - Optional devices with touch control
  - Rear connection of I/O devices (optional)

Benefits

- Rugged industrial type:
  - Failsafe and with a long service life thanks to a high degree of shock and vibration resistance as well as extremely high electromagnetic compatibility.
  - Housing front to degree of protection, protected IP65/NEMA4 against the ingress of dust and water
  - Scratch-resistant, non-reflective glass screen, i.e. high mechanical protection against pressure and protection against scratching
  - Complies with the CE standard for industry
- Multiple variants
- No X-rays
- Low energy requirements
- Less tiring work:
  - Large viewing angle of up to 170° horizontally and vertically
  - Focused, high-contrast picture display
  - No flickering, uniform brightness
  - Automatic picture adjustment (Auto Adjust)
- Configuration using On-Screen Display (OSD)
- Small space requirements and low weight
- Long service life

Design

- Rugged aluminum front
- TFT display versions:
  - 12" with 800 x 600 pixels
  - 15" with 1024 x 768 pixels
  - 17" with 1280 x 1024 pixels
  - 19" with 1280 x 1024 pixels
- 256K to 16 million colors
- Anti-glare and hardened mineral glass screen
- Basic display or touch screen option
- 24 V DC power supply, also optional with 100-240 V AC (50/60 Hz)
- Can be located up to 5 m from the computing unit

Scope of delivery:
- Power supply cable for variants with AC power supply unit
- Connecting cables 1.8 m (other cable lengths available separately as accessories)
- Operating instructions, 2 languages (German and English)
- CD-ROM with hardware drivers and documentation

Special functions of extended version

- Can be located up to 30 m from the computing unit
- Rear USB interface
- Dimmable backlit display
- Combined DC / AC power supply
- EX22 approval (available soon)
- Marine approvals

Special features for switch-over from CRT monitors on LCD monitors

Resolution:
When the corresponding LCD monitor is selected, make sure that the resolution of the LCD monitor is suitable for the visualization application.

Ordering data

Flat Panel Monitor	Order No.
Flat Panel Monitor	**6AV7 861-■■■0-■AA0**

Display size:

• 12"	1	*
• 15"	2	*
• 17"	4	1
• 19"	3	*

Operating functions:

• display device without operating functions	A
• touch screen (analog/resistive)	T

Power supply:

• 24 V DC (not with Extended version)	A
• 100-230 V AC (with power cable for Europe) / 24 V DC	B

Version:

• Standard: Can be located up to 5 m away	0	
• Extended: Can be located up to 30 m away, special functions	1	1

*) This version is available as Standard and as Extended Version.
Please select **0** for Standard, **1** for Extended.

Accessories

	Order No.
Mounting elements for Panel PC 57x/67x/87/Flat Panel for screw mounting the 19" front panel at the front, e.g., in 19" rack cabinet	**6AV7 672-8KE00-0AA0**
Connecting cables for standard and extended versions	
• Video (VGA)	
- 3.0 m	**6AV7 860-0AH30-0AA0**
- 5.0 m	**6AV7 860-0AH50-0AA0**
• Video (DVI-D)	
- 3.0 m	**6AV7 860-0BH30-0AA0**
- 5.0 m	**6AV7 860-0BH50-0AA0**
• USB for optional touch screen	
- 3.0 m	**6AV7 860-0CH30-0AA0**
- 5.0 m	**6AV7 860-0CH50-0AA0**
Connection cables for extended version	
• Cable set 10 m (DVI-D, CAT5 cable (USB), USB transmitter module)	**6AV7 860-1EX21-0AA1**
• Cable set 15 m (DVI-D, CAT5 cable (USB), USB transmitter module)	**6AV7 860-1EX21-5AA1**
• Cable set 20 m (DVI-D, CAT5 cable (USB), USB transmitter module)	**6AV7 860-1EX22-0AA1**
• Cable set 30 m (DVI-D, CAT5 cable (USB), USB transmitter module)	**6AV7 860-1EX23-0AA1**

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Expansion components
Industrial LCD monitors

SIMATIC Flat Panels

■ **Dimension drawings**
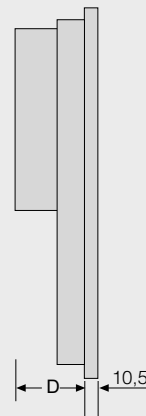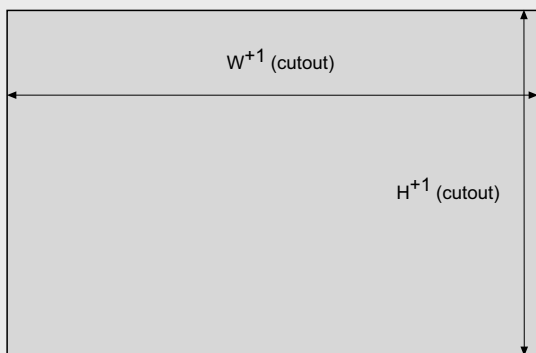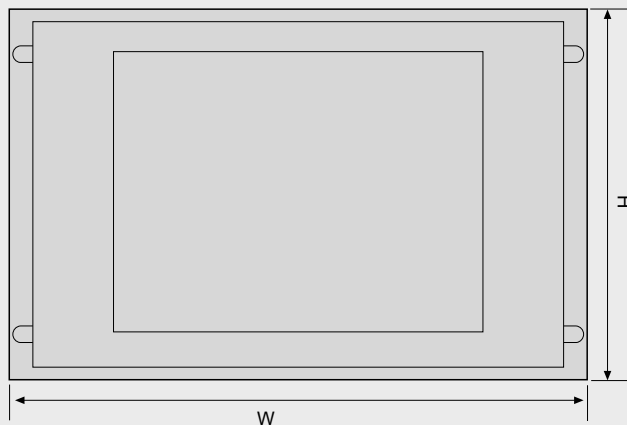
Dimensions in mm

Front dimensions	W	H
Touch panels		
12"	400	310
15"	483	310
17"	483	400
19"	483	400

Installation cutout	W^{+1}	H^{+1}	D
Touch panels			
12"	368	290	51
15"	450	290	55
17"	450	380	57
19"	450	380	57

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■ Overview

- The SCD 1297/1597/1997 sind LCD monitors are rugged, industry standard LCD monitors
- They can be used in any application in which picture tube monitors (CRT monitors) are used
- Built-in versions:
  - Built-in units (for control cabinets, consoles and booms)
  - 19" rack-mounted units (for 19" racks)
  - desktop units (with 19" display only)
- Type of operator control:
  - Devices for display only
  - Devices for touch operation
  - Devices for keyboard/mouse operation
    (only 19" rack-mounted units)

■ Benefits

- Rugged industrial design:
  - Safe from power-failure and durable thanks to high resistance to shock and vibration as well as extremely high EMC compatibility
  - Housing to IP65 degree of protection, resistant to dust and humidity
  - Mineral glass screen, i.e. high mechanical protection against pressure and protected from scratches
  - Complies with the "Industry" CE standard
- Wide range of variants
- No x-ray radiation
- Low energy requirements
- Comfortable working:
  - Large reading angle between 120° horizontal and 100° vertical
  - Sharp, high-contrast display
  - No flicker, constant brightness
  - Auto Adjust
- Configuration through on-screen display (OSD)
- Low space requirements and low weight
- Long service life

■ Design

- Rugged aluminium housing
- 12"/15"/19" TFT display
- Non-reflective, hardened mineral glass screen
- Only display, touch screen or membrane keyboard (with 36 function keys)
- Line frequency 30-80 kHz
- Image refresh frequency 50-72 Hz
- 100-240 V AC power supply, 12 V DC and 24 V DC
- Can be positioned up to 20 m from the processor unit

Two rack-mounted versions of the SCD 1297, 1597, 1997 monitors are available:

- Built-in units
  (for control cabinets, consoles and booms)
  - SCD 1297/1597/1997-E – for display only
  - SCD 1297/1597/1997-ET with analog resistive touch screen
  - SCD 1297/1597-K with keyboard and mouse functionality
- 19"rack-mounted units (for 19" racks)
  - SCD 1297/1597-R – for display only
  - SCD 1297/1597-RT with analog resistive touch screen

Included in the delivery are:

- Power cable for variants with AC power supply
- Connection cables 1.8 m, 5 m, 10 m or 20 m
- Instruction manual, 2 languages (German and English)
- CD-ROM with touch drivers

Special consideration when changing from CRT to LCD monitors

- Screen diagonals:
  For LCD monitors, the rule of thumb applies: "display size in inches plus 2" gives the comparable CRT monitor size (14" CRT corresponds to 12" LCD).
- Resolution:
  On selecting the corresponding LCD monitor, it is important to note that the resolution of the LCD monitor corresponds to the resolution of the visualization application.

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Expansion components
Industrial LCD monitors

SCD Monitors

■ **Ordering data**   Order No.   Order No.

LCD monitors	6AV8 101- ■■■ 00-0 ■ A 1
Display/type:	
• 12" TFT (SCD 1297)	**0**
• 15" TFT (SCD 1597)	**1**
• 19" TFT (SCD 1997)	**2**
Built-in versions:	
• Built-in unit (E)	**B**
• 19" rack-mounted unit (R)	**C**
Operating functions:	
• Display device without operating functions	**A**
• Touch (T)	**B**
• Keyboard (only with built-in unit) (K)	**C**
Connecting cable:	
• Video + Touch	
- 1.8 m	**B**
- 5.0 m	**D**
- 10.0 m	**F**
- 20.0 m	**H**
• Video (not for Keyboard and Touch functionality)	
- 20.0 m	**J**
• Video + 2*PS/2 (only for Keyboard functionality)	
- 1.8 m	**L**
- 5.0 m	**N**
• Video + X27 (only for Keyboard functionality)	
- 10.0 m	**Q**
- 20.0 m	**S**

A) Subject to export regulations: AL: N and ECCN: EAR99H

Accessories

Connecting cable	
• Video + Touch	
- 1.8 m	**6AV8 107-0BA00-0AA0**
- 5.0 m	**6AV8 107-0DA00-0AA0**
- 10.0 m	**6AV8 107-0FA00-0AA0**
- 20.0 m	**6AV8 107-0HA00-0AA0**
• Video	
- 20.0 m	**6AV8 107-0HB00-0AA0**
• Video + 2*PS/2	
- 1.8 m	**6AV8 107-0BC00-0AA0**
- 5.0 m	**6AV8 107-0DC00-0AA0**
• Video + X27	
- 10.0 m	**6AV8 107-0FC00-0AA0**
- 20.0 m	**6AV8 107-0HC00-0AA0**
100-240 V AC power supply	**6AV8 107-1AA00-0AA0**
for SCD monitors (with angle section + power cable)	
Insertable strip	
• for SCD 1297-K	**6AV8 107-2AA00-0AA0**
• for SCD 1597	**6AV8 107-2AB00-0AA0**

Desktop units

LCD monitors 19"	A	**6GF6 220-1DA01**
SCD 19101-D, desktop unit (baugleich SCD 1898-I)		
LCD monitors 19" Touch	A	**6GF6 220-1DB01**
SCD 19101-DT, desktop unit (successor model with same construction for SCD 1898-IT, with USB Touch)		

Dimensional drawings

SCD 1297-E, SCD 1297-ET
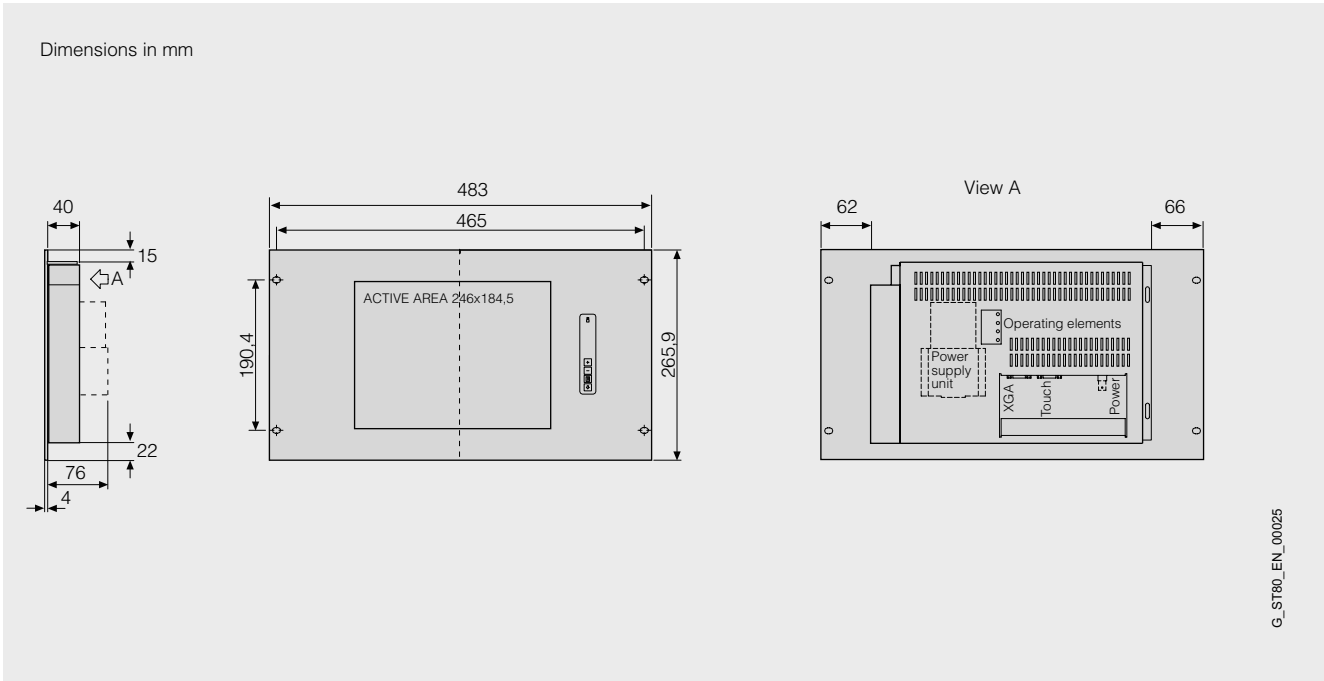
SCD 1297-R, SCD 1297-RT

Expansion components
Industrial LCD monitors

SCD Monitors

■ **Dimensional drawings** (cont.)

Dimensions in mm

SCD 1297-K

Dimensions in mm
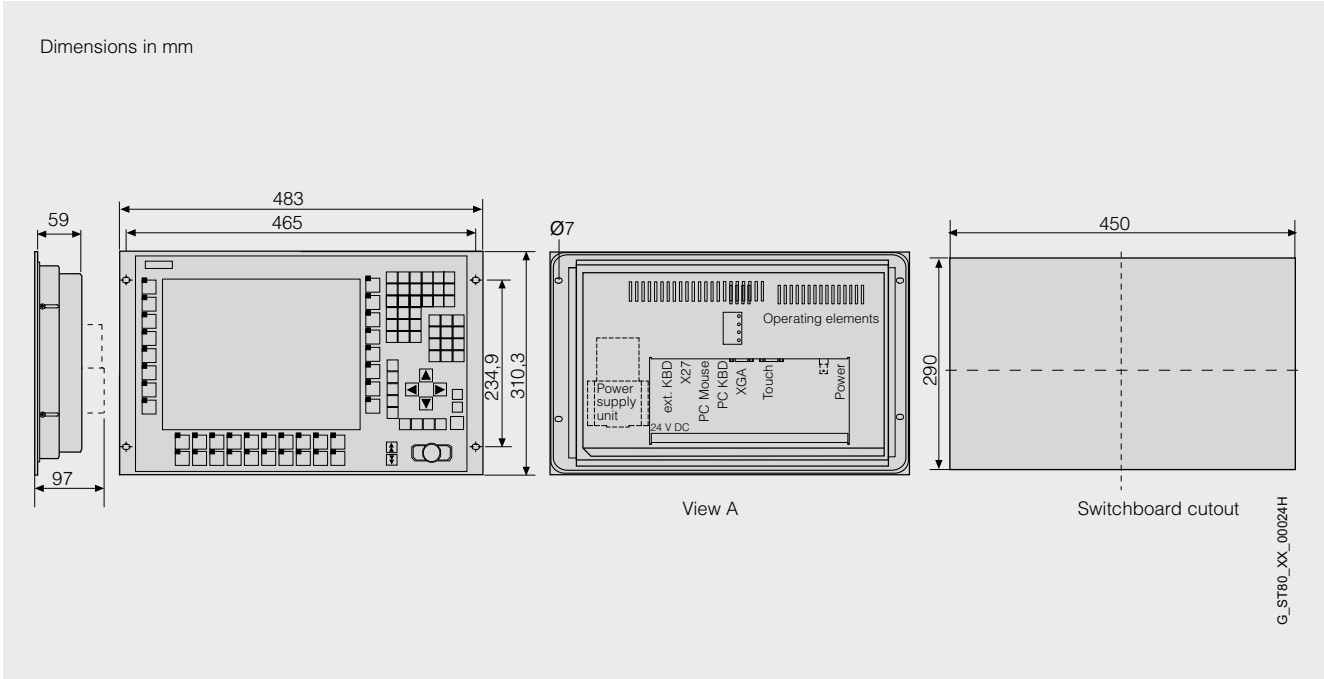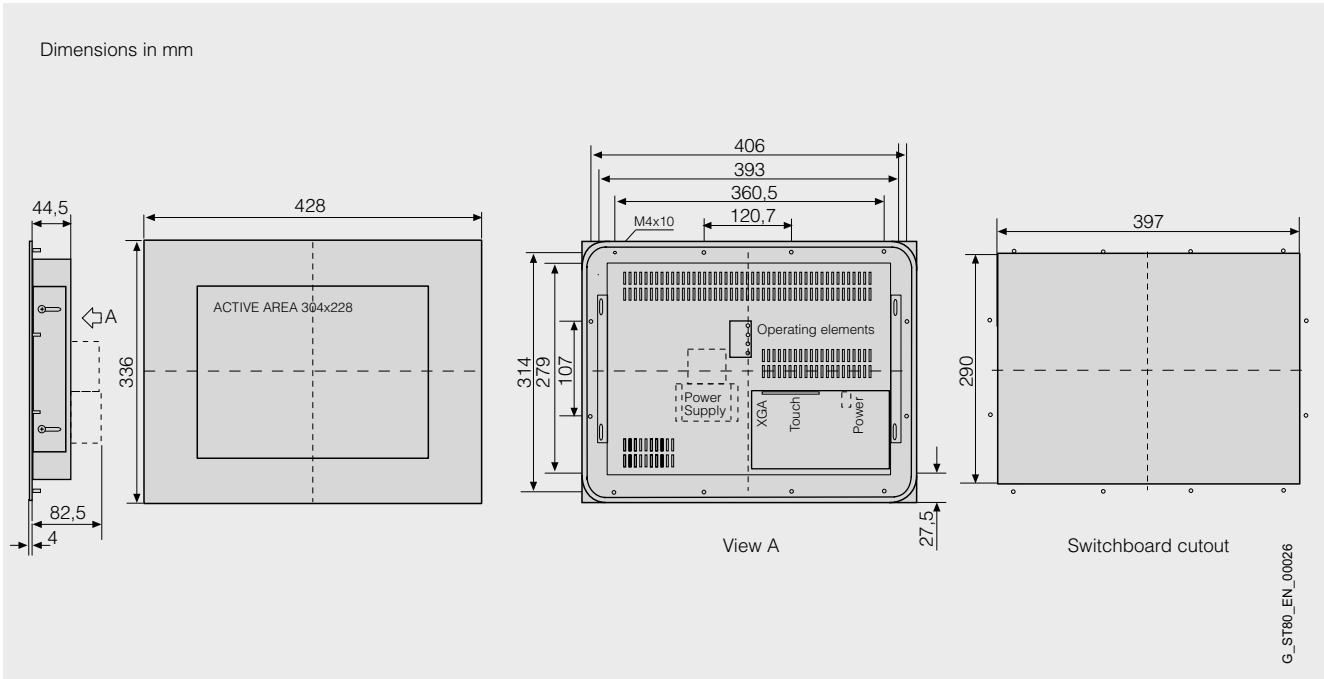
SCD 1597-E

■ **Dimensional drawings** (cont.)
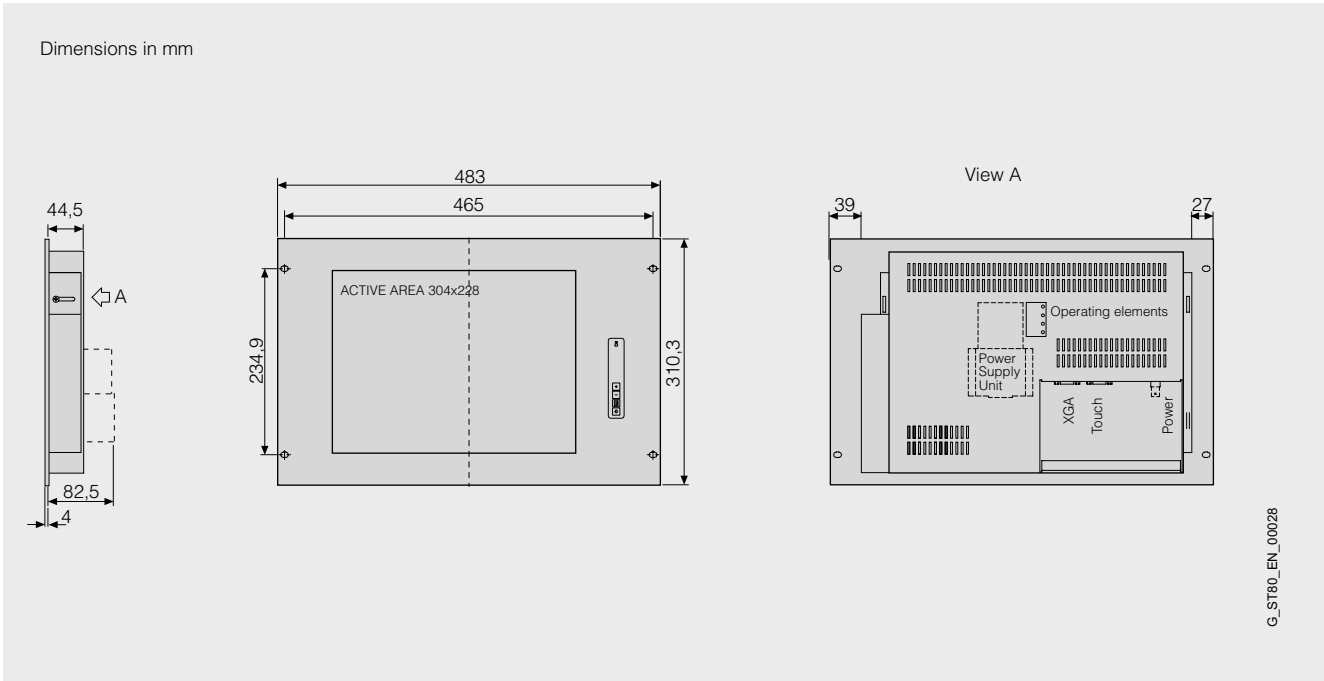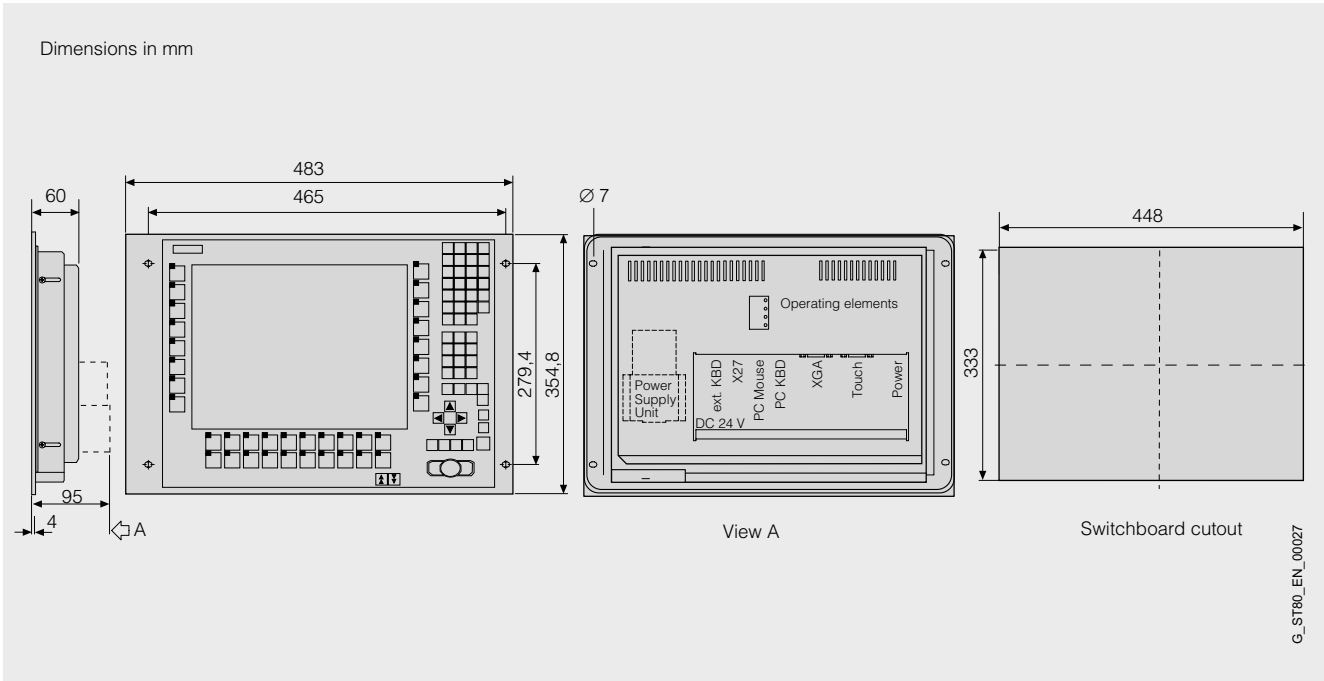
Dimensions in mm

View A

ACTIVE AREA 304x228

Operating elements

Power Supply Unit

XGA Touch Power

G_ST80_EN_00028

SCD 1597-R, SCD 1597-RT

Dimensions in mm

Ø 7

Operating elements

Power Supply Unit

DC 24 V ext. KBD X27 PC Mouse PC KBD XGA Touch Power

View A

Switchboard cutout

G_ST80_EN_00027

SCD 1597-K

11

Expansion components
Industrial LCD monitors

■ **Dimensional drawings** (cont.)
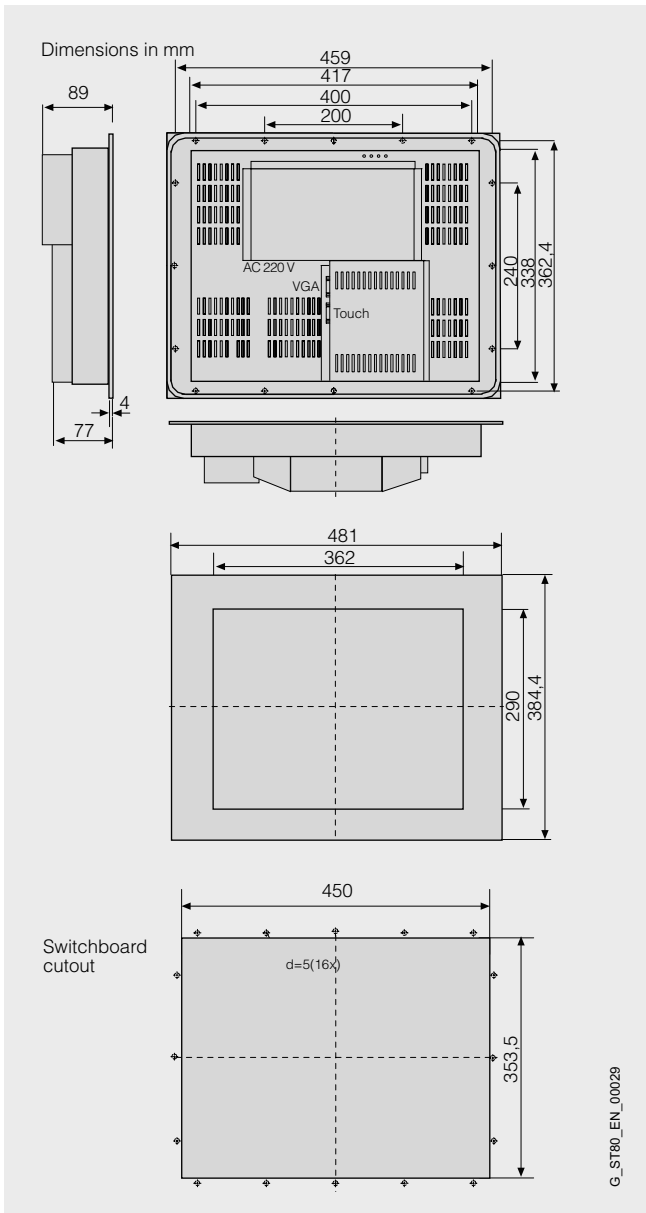
Dimensions in mm

SCD 1997-E, SCD 1997-ET

■ **Dimensional drawings** (cont.)
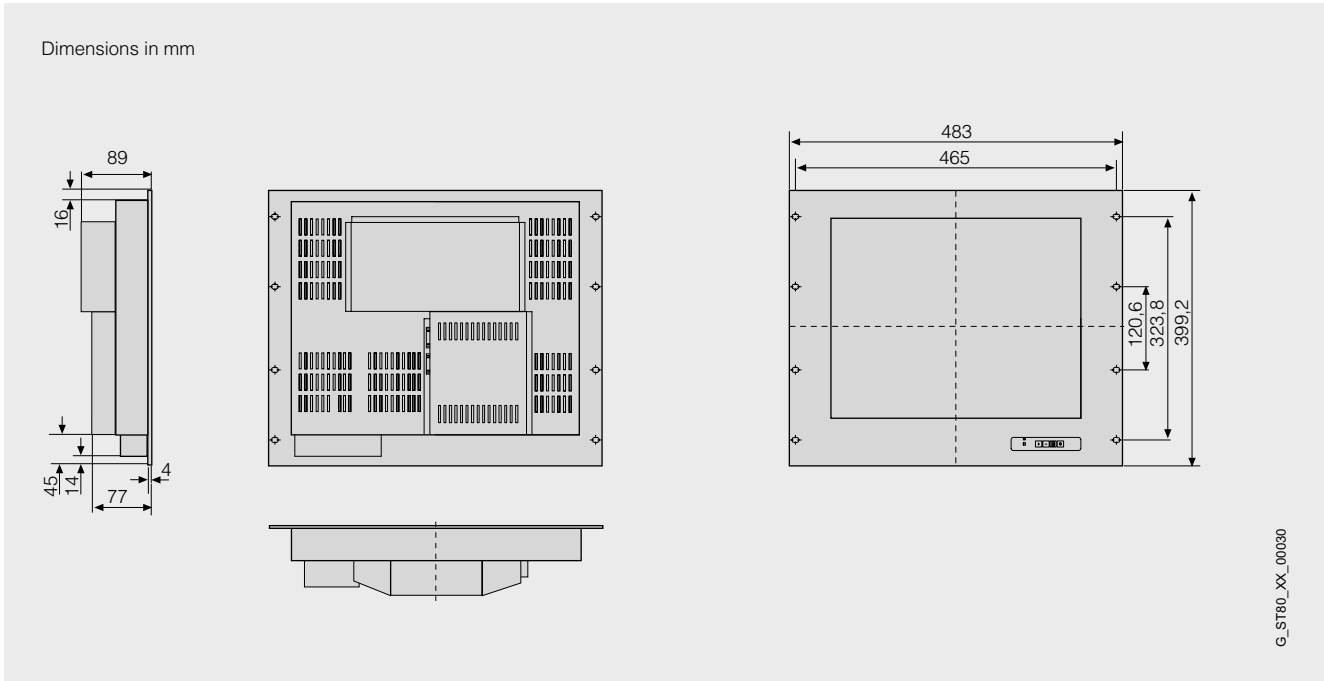
Dimensions in mm

G_ST80_XX_00030

SCD 1897-R, SCD 1897-RT

Dimensions in mm

G_ST80_XX_00031

SCD 19101-D/DT

11
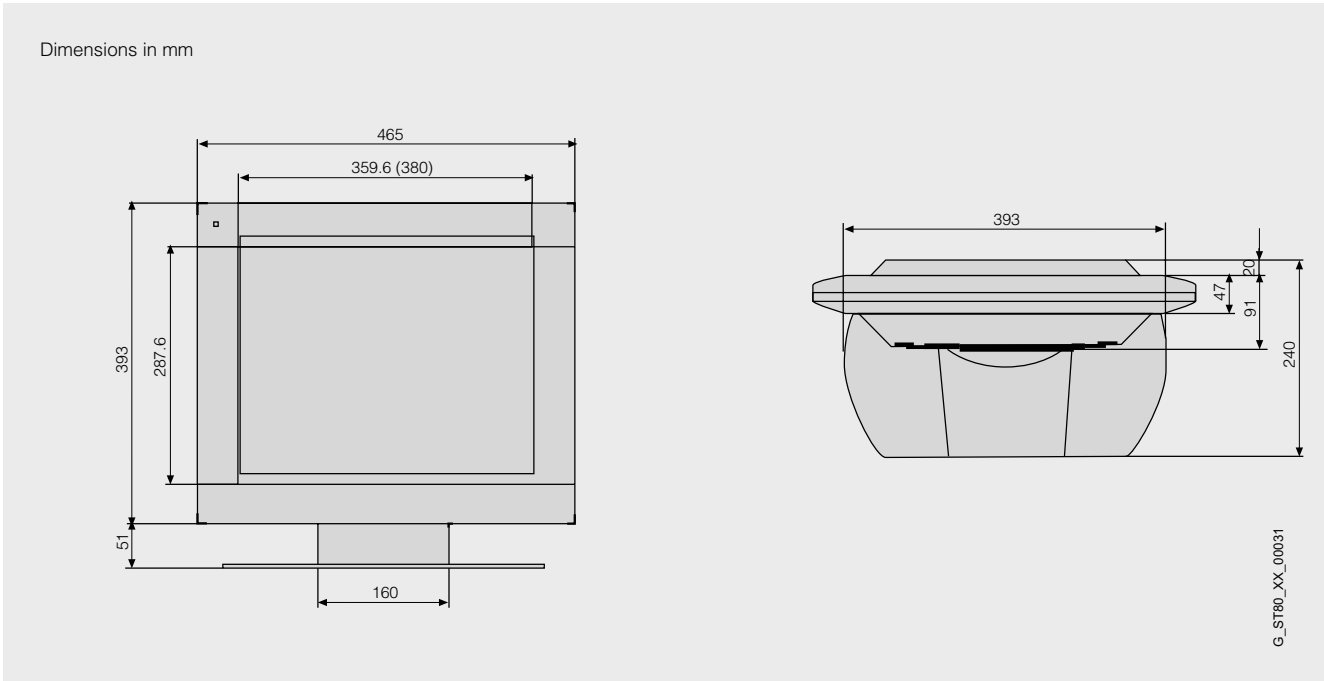
Expansion components
Industrial LCD Monitors

SCD Monitors (15 kHz versions)

Overview
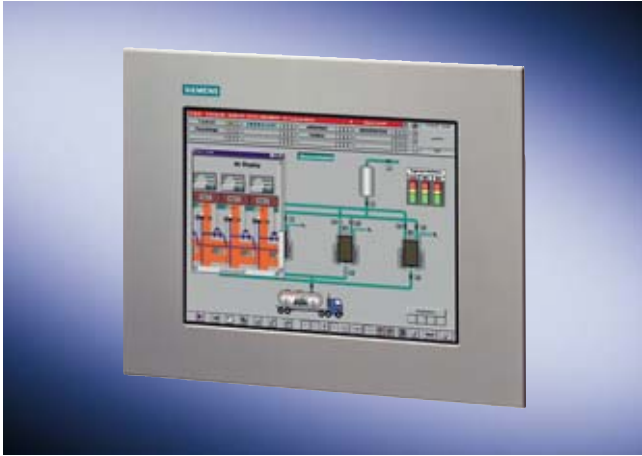
The SCD 1215-E monitor is a reliable 12" display and the 15 kHz version of the SCD 1297-E. It differs from the SCD 1297-E in respect of the following technical data:

- Line frequency 15 ... 97 kHz
- Ports 5 x BNC
- Looping through operation is possible (75 Ω, switched)

Benefits

- Distance from monitor to video source up to 25 m
- Small space requirement
- High shock and vibration resistance
- No X-rays
- High electromagnetic compatibility

Design

The SCD 1215-E is a display unit without operator function. The keys for the on-screen display (OSD) are fitted at the rear. The SCD 1215-E is designed for mounting in cubicles.

Notes

Good picture quality is only guaranteed with an interference-free standard video signal at the monitor input.

Information on the subject of "Special requirements for the operation of LCDs with 15 kHz and higher – possible measures for trouble-free operation" is available from the A&D Mall on the Internet at *www.siemens.com/automation/mall* under the headings for the respective LCD monitors.

Screen diagonal

The rule of thumb for LCDs is: "display size in inch plus 2 equals the comparable size of a CRT monitor" (a 12" LCD is equivalent to a 14" CRT).

Ordering data

	Order No.
Standard configuration	
LCD monitor SCD 1215-E	**6GF6 240-4MV**
Industrial LCD, 15 ... 97 kHz, Scaling DSP, color TFT panel with large viewing angle and safety glass, operation via OSD, analog input 5 x BNC, UL 1950, IP65	
Accessories	
DC/DC converter	**6AV8 107-1BA00-0AA0**
For connection of 12" and 15" LCD monitors with 12 V DC to a 24 V DC supply. It transforms the voltage to 12 V DC.	
High-quality video cable	
• Length 2 m	**6GF6 902-0VK**
• Length 5 m	**6GF6 905-0VK**

Dimensional drawings

SCD 1215-E, dimensional drawing, dimensions in mm (inch)

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Overview
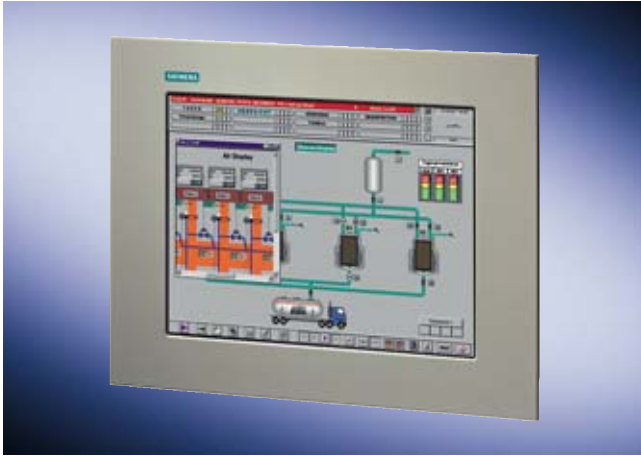
The SCD 1515-E LCD monitor is a reliable 15" display and the 15-kHz version of the SCD 1297-E. It differs from the SCD 1297-E in respect of the following technical data:

- Line frequency 15 ... 97 kHz
- Ports 5 x BNC
- Looping through operation is possible (75 Ω, switched)

Benefits

- Distance from monitor to video source up to 25 m
- Small space requirement
- High shock and vibration resistance
- No X-rays
- High electromagnetic compatibility

Design

The SCD 1515-E is a display unit without operator function. The keys for the on-screen display (OSD) are fitted at the rear. The SCD 1515-E is designed for mounting in cubicles.

Notes

Good picture quality is only guaranteed with an interference-free standard video signal at the monitor input.

Information on the subject of "Special requirements for the operation of LCDs with 15 kHz and higher – possible measures for trouble-free operation" is available from the A&D Mall on the Internet at *www.siemens.com/automation/mall* under the headings for the respective LCD monitors.

Screen diagonal

The rule of thumb for LCDs is: "display size in inch plus 2 equals the comparable size of a CRT monitor" (a 12" LCD is equivalent to a 14" CRT).

Ordering data

	Order No.
Standard configuration	
LCD monitor SCD 1515-E Industrial LCD, 15 ... 97 kHz, scaling DSP, color TFT panel with large viewing angle and safety glass, operation via OSD, analog input 5 x BNC, UL 1950, IP65	**6GF6 230-4MV**
Accessories	
DC/DC converter For connection of 12" and 15" LCD monitors for 12 V DC to a 24 V DC supply. It transforms the voltage to 12 V DC	**6AV8 107-1BA00-0AA0**
High-quality video cable	
• Length 2 m	**6GF6 902-0VK**
• Length 5 m	**6GF6 905-0VK**

Dimensional drawings

SCD 1515-E, dimensional drawing, dimensions in mm (inch)

11
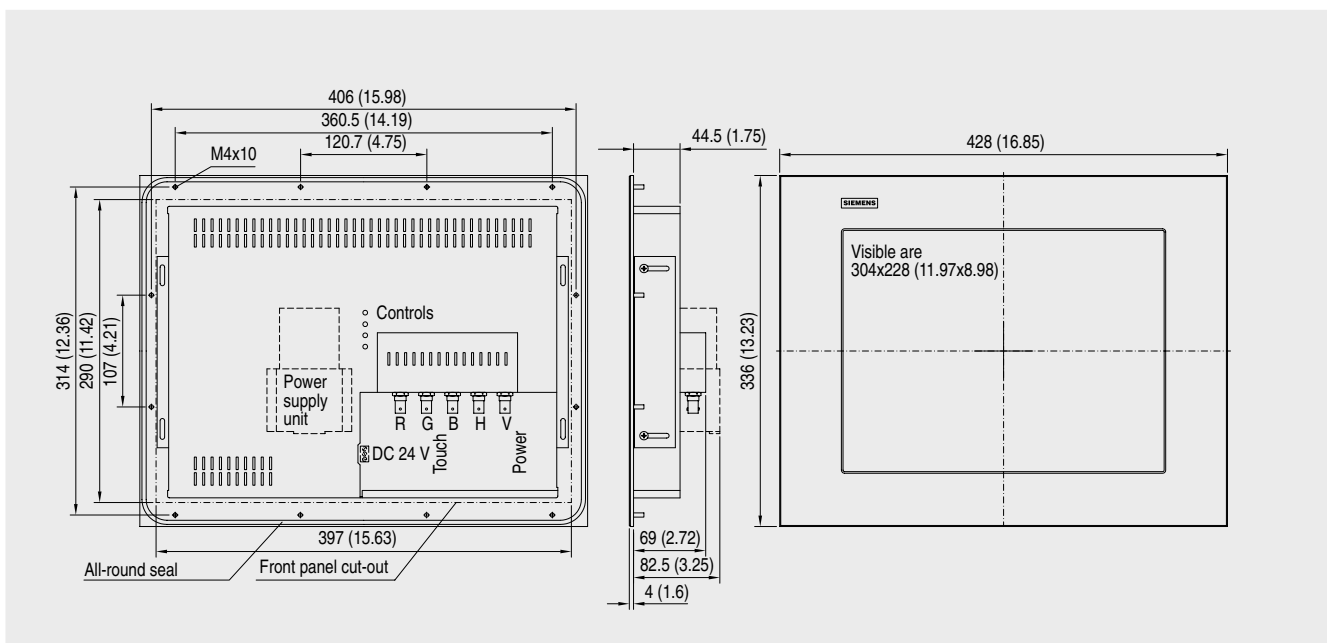
Expansion components
Industrial LCD Monitors

Overveiw

The SCD 1815-I (desktop version) and SCD 1815-E (built-in version) LCD monitors are reliable 18" displays and the 15 kHz versions of the SCD 1897-I and SCD 1897-E. The SCD 1815-E is designed for cubicle mounting in the industrial sector.

These 15 kHz displays differ in respect of the following technical data:

- Line frequency 15 ... 97 kHz
- Ports 5 x BNC
- Looping through operation is possible (75 Ω, switched)
- Galvanic isolation (SCD 1815-I only)

Benefits

- Distance from monitor to video source up to 25 m
- Small space requirement
- Long service life
- High shock and vibration resistance
- No X-rays
- High electromagnetic compatibility
- Large viewing angle

Design

The SCD 1815 units are displays without operator functions. On the SCD 1815-E the keys for the on-screen display (OSD) are at the rear, on the SCD 1815-I they are at the front.
The SCD 1815-E is designed for mounting in cubicles, the SCD 1815-I is a desktop version.

Notes

Good picture quality is only guaranteed with an interference-free standard video signal at the monitor input.

Information on the subject of "Special requirements for the operation of LCDs with 15 kHz and higher – possible measures for trouble-free operation" is available from the A&D Mall on the Internet at *www.siemens.com/automation/mall* under the headings for the respective LCD monitors.

Screen diagonal

The rule of thumb for LCDs is: "display size in inch plus 2 equals the comparable size of a CRT monitor" (a 12" LCD is equivalent to a 14" CRT).

Ordering data

	Order No.
Standard configuration	
LCD monitor SCD 1815-I Desktop version, technical data same as 1815-E.	**6GF6 220-1MV**
LCD monitor SCD 1815-E 18" (1280 x 1024 pixels), built-in version, industrial LCD, 15 ... 97 kHz, scaling DSP, color TFT panel with large viewing angle and safety glass, operation via OSD, analog input 5 x BNC, UL 1950, IP65	**6GF6 220-4MV**
Accessories	
High-quality video cable	
• Length 2 m	**6GF6 902-0VK**
• Length 5 m	**6GF6 905-0VK**

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▪ Dimensional drawings
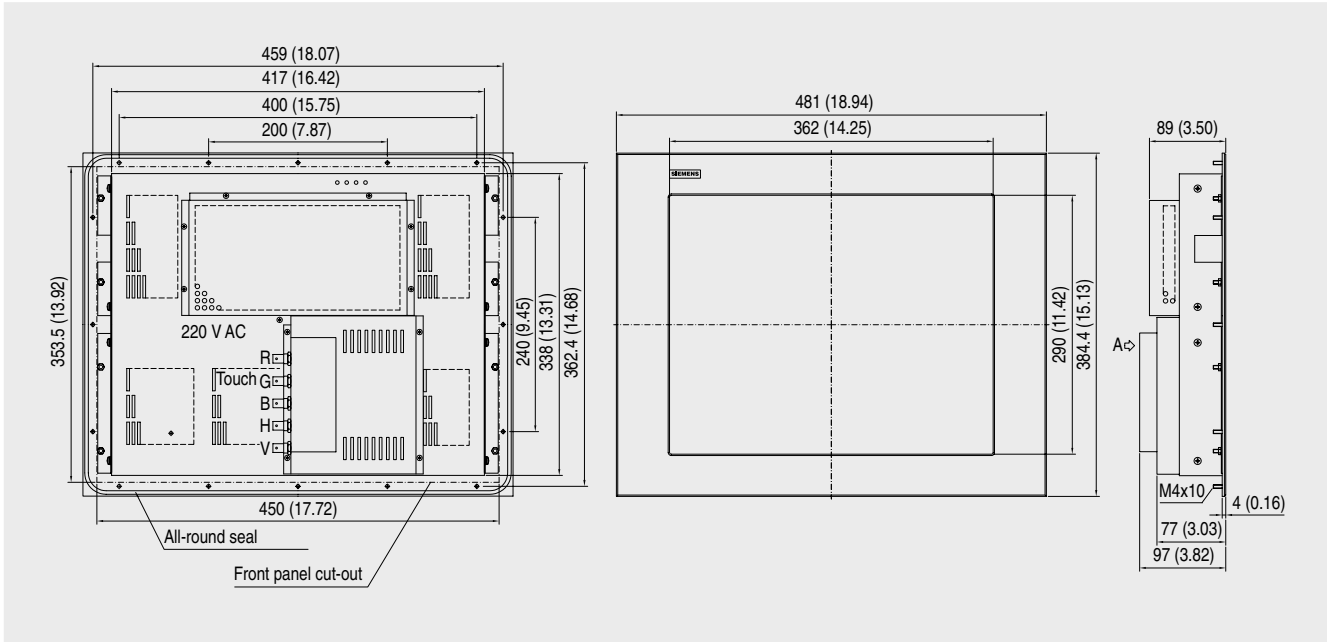
SCD 1815-E, dimensional drawing, dimensions in mm (inch)
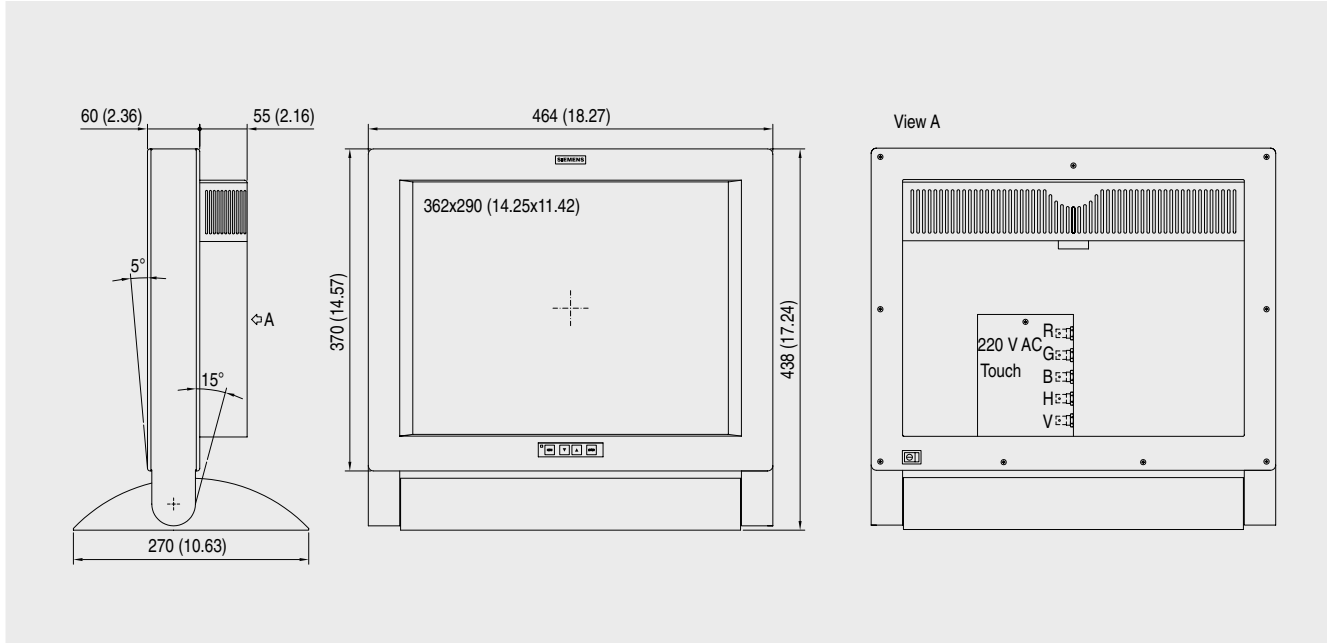
SCD 1815-I, dimensional drawing, dimensions in mm (inch)

Expansion components
Printers (partner products)

Dot-matrix printers T 2240, T 2340

▉ Overview

The T 2240/9 [1], T 2240/24 [1] and T 2340/24 [2] are compact and rugged needle printers for the mid performance range (14,000 pages/month). They are characterized by the following features:

- 9 or 24 needles
- Printing speeds:
  - 500 characters/s on T 2240/9
  - 440 characters/s on T 2240/24 and T 2340/24
- Graphics resolution:
  - 144 x 240 dpi on T 2240/9
  - 360 x 360 dpi on T 2240/24 and T 2340/24
- Throughput 350 pages/h
- Paper sizes:
  - Continuous form or single sheets to DIN A4 on T 2240
  - Continuous form or single sheets to DIN A3 on T 2340
- Emulations:
  - MTPL
  - IBM
  - EPSON
- 22 barcodes, OCR-A and OCR-B
- Max. copy capability:
  - 1 original and 5 copies on T 2240/9
  - 1 original and 3 copies on T 2240/24 and T 2340/24
- Standard interface Parallel Centronics
- Optional interfaces:
  - RS 232/TTY
  - RS 232C
  - RS 422
  - Ethernet on request

1) T 2240 is the successor for previous model T 2030 or DR 2030
2) T 2340 is the successor for previous model T 2130 or DR 2130

▉ Ordering data   Order No.

Standard configuration

T 2240/9 9 needles, DIN A4 (power supply unit is not switchable: operation only possible with 230 V)	**6GF6 520-1LL**
T 2240/24 24 needles, DIN A4 (power supply unit is not switchable: operation only possible with 230 V)	**6GF6 520-1LM**
T 2340/24 24 needles, DIN A3 horizontal (power supply unit is not switchable: operation only possible with 230 V)	**6GF6 520-1LN**

Accessories

Interfaces	
• RS 232C	**6GF6 520-2HA**
• RS 232/TTY	**6GF6 520-2LA**
Linear tractor	
• for T 2240	**6GF6 520-4LL**
• for T 2340	**6GF6 520-4LM**

▉ More information

Information on possible uses, technical details, other printer products and additional components from TallyGenicom is available on the Internet at *http://www.tallygenicom.com* or from:

TallyGenicom GmbH
Sales
Mr. Klaus Häberle
phone: +49 (731) 20 75 – 550
fax: +49 (731) 20 75 – 563
e-mail: khaeberle@tallygenomic.de
technical hotline: +49 (731) 20 75 – 122

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Dot-matrix printers T 2150, T 2250

■ Overview

The T 2150 [1] and T 2250 [2] are multifunctional printers for professional, industrial use at high printing speeds and low noise level.

- 24 needles
- Printing speed 650 characters/s
- Graphics resolution up to 360 x 360 dpi
- Throughput (ECMA) 430 pages/h
- Recommended print volume 26.000 pages/month
- Paper sizes:
  - Continuous form or single sheets to DIN A4 on T 2150
  - Continuous form or single sheets to DIN A3 on T 2250
  - Labels and envelopes
- Emulations:
  - MTPL
  - IBM XL24
  - Epson
  - LQ 2250
  - ECMA 9011
- Banners and 22 barcodes
- Max. copy capability 6 (1 original and 5 copies)
- Standard interfaces
  - Parallel and serial Centronics
  - RS 232C with automatic switching
- Optional Interface:
  - Serial RS232/TTY
  - Serial RS422
  - Ethernet (10/100 Mbit)
  - T 2150: Switchable power supply unit (110 V/230 V)

1) T 2150 is the successor for previous model
   T 2145, T 2040 or DR 2040
2) T 2250 is the successor for previous model
   T 2245, T 2140 or DR 2140

■ Ordering data — Order No.

	Order No.
Standard configuration	
T 2150 24 needles, DIN A4 (switchable power supply unit: 110 V/230 V) ᴬ	**6GF6 520-1LD**
T 2250 24 needles, DIN A3 horizontal (switchable power supply unit: 110 V/230 V)	**6GF6 520-1LE**
Accessories	
Interfaces	
• RS 232/TTY	**6GF6 520-2LB**
• Ethernet (10/100 Mbit) ᴬ	**6GF6 520-2LC**
Automatic single sheet feed	
• Einzug von vorne	**6GF6 520-4LG**
• Einzug von hinten	**6GF6 520-4LH**
2nd/3rd linear tractor	**6GF6 520-4LJ**

A) Subject to export regulations: AL: N and ECCN: EAR99H

■ More information

Information on possible uses, technical details, other printer products and additional components from TallyGenicom is available on the Internet at *http://www.tallygenicom.com* or from:

TallyGenicom GmbH
Sales
Mr. Klaus Häberle
phone: +49 (731) 20 75 – 550
fax: +49 (731) 20 75 – 563
e-mail: khaeberle@tallygenomic.de
technical hotline: +49 (731) 20 75 – 122

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Expansion components
Input devices (partner products)

Keyboards

■ **Overview**

SIMATIC PC keyboard

The original SIMATIC PC keyboard is the ideal input medium for your SIMATIC PC. It combines the convenience of an office keyboard with the EMC of an industrial unit so that the requirements of CE Industry are also complied with for the combination of SIMATIC PC and SIMATIC PC keyboard.

The SIMATIC PC- keyboard with USB connector is available with German or International key layout.

Standard keyboard TK 300

The light basic colored TK 300 standard keyboard is accommodated in an ergonomically designed, low-profile housing.
It has a separate numeric keypad and separate cursor keys and German or International key layout.

Standard keyboard (silver)

Compact standard keyboard (silver) with black keys and PS/2 or USB adapter. The keyboard has membrane contact switches, ensuring high reliability. It has a separate numerical keypad and is available with German or international key assignments. The keys are abrasion resistant and easy to clean.

Industrial membrane keyboard IP65, desktop version with touchpad

Due to the robust 150 μm polyester front cover, this keyboard is ideal for industrial use and particularly suitable for use in harsh industrial environments, where a high degree of protection (IP65) is required. It is developed following the SIMATIC guidelines and is UL/CSA approved and waterproof on the front side. This keyboard is available with German or international key assignments.

Industrial membrane keyboard IP65, 19″ built-in version with touchpad or trackball

Due to the robust 180 μm polyester front cover, this keyboard is ideal for industrial use in 19" switchgear cabinets and particularly suitable for use in harsh industrial environments, where a high degree of protection IP65 on the front side and IP54 on the rear side is required. It is developed following the SIMATIC guidelines and is UL/CSA approved and waterproof on the front side. This keyboard is available with German or international key assignments.

19 withdrawable keyboard with trackball

The new Siemens compact keyboard is constructed for installation in 19" cabinets. It is water-proof and extremely flat. Despite the minimum size, it contains the complete keyboard functionality (full-stroke with Gold-Crosspoint contact technology, keys partly with double assignment). The draw-out keyboard is supplied in combination with a drawer.

■ **Ordering data**

	Order No.			Order No.
SIMATIC PC keyboard German/international, USB port	**6ES7 648-0CB00-0YA0**	**Membrane keyboard IP65, 19" built-in version** For mounting in 19" cubicles		
Standard keyboard TK 300 with PS/2 connector		• with touchpad		
• German key layout	**6GF6 710-1AA**	- German key layout		**6GF6 710-3AE**
• International key layout	**6GF6 710-1BA**	- International key layout		**6GF6 710-3BE**
Standard keyboard, silver		• with trackball		
• with USB connection		- German key layout		**6GF6 710-3BF**
- International key layout, 4x USB Hub	A **6GF6 710-1BE**	- International key layout		**6GF6 710-3BG**
Membrane keyboard IP65, desktop version with touchpad with PS/2 connector		**19" draw-out keyboard with trackball**		
		• German key layout	A	**6GF6 710-3BJ**
• German key layout	**6GF6 710-2AC**	• International key layout	A	**6GF6 710-3BK**
• International key layout	A **6GF6 710-2BC**			

A) Subject to export regulations: AL: N and ECCN: EAR99H

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■ Overview

Operation channel extension

If the distance between the computer and the operator terminal is greater than 10 m you will need an operator communication channel extension (BKV).

Note:
Each operator communication channel extension has PS/2 connections for the mouse and keyboard. For the monitor you will also need a longer video cable to match.

■ Ordering data   Order No.

Standard configuration

BKV active operator communication channel extension, on x27

PS/2 connections

• Length 20 m	**6GF6 980-0KC**
• Length 50 m	**6GF6 980-0KE**

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Expansion components

Appendix

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Appendix

Training

Training is decisive for your success

SITRAIN – the Siemens Training for Automation and Industrial Solutions – provides you with comprehensive support when solving your tasks.

Training by the market leader in automation, plant installation and support permits you to make your decisions with certainty and full command. Especially where the optimum and efficient use of products and plants are concerned. You can eliminate deficiencies in existing plants, and exclude expensive faulty planning right from the beginning.

All in all, this represent an enormous gain for your company: shortened startup times, optimized plant components, faster troubleshooting, reduced down times. In other words, increased profits and lower costs.

Top trainers

Our trainers know their topics in practice, and possess comprehensive didactic experience. Course developers have a direct wire to product development, and directly pass on their knowledge to the trainers.

Practical experience

The practical experience of our trainers makes it possible for them to pass on theoretical matter in a plausible manner. But since it is known that all theory is drab, we attach great importance to practical exercises which can comprise up to half of the course time. You can therefore immediately implement your new knowledge in practice. We train you on state-of-the-art methodically/didactically designed training equipment. You feel absolutely certain when trained in this manner.

Wide variety

With a total of approx. 300 local attendance courses, we train the complete range of A&D products and a large portion of the system solutions from I&S. Telecourses, teach-yourself software and seminars presented on the Web supplement our classical range of courses.

Close to our customers

The distance is short. You can find us approx. 60 times in Germany, and worldwide in 62 countries. You wish to have individual training instead of one of our 300 courses? No problem: we will provide a program tailored exactly to your personal requirements. Training can be carried out in our Training Centers or at your company.

The right mixture: blended learning

Blended learning is understood to be the combination of various training media and sequences. For example, a local attendance course in a Training Center can be optimally supplemented by a teach-yourself program as preparation or follow-up. Furthermore, SITRAIN utilizes supported online training for live instruction on the Internet at agreed times.

The right mixture is the solution. Therefore blended learning can convey complex topics well, and train networked thinking. Additional effect: reduced travelling costs and periods of absence through training sequences independent of location and time.

The international training portal

www.siemens.com/sitrain

All training facilities at a glance: search in the worldwide range of courses at leisure, call up all course dates online, utilize the daily updated display of vacant course spaces – and register directly.

Customer comments on Sitrain

" ... the good course documents, competence and flexibility convinced me."
[Manfred Riek from Festo Systemtechnik, responsible for planning the basic and further training of project engineers]

" ... represents effective training, constructive dialogs, and solutions which provide great help."
[Günter Niedermaier, electrical design manager at AMT, Aalen]

Contact

Visit us on the Internet at:

www.siemens.com/sitrain

or let us advise you personally.
You can request our latest training catalog from:

Course office, Infoline Germany:
Tel.: 01805 / 23 56 11 (0.12 €/Min)
Fax: 01805 / 23 56 12

Standards and Approbations

Operating system licenses for SIMATIC PC

Note for SIMATIC PC / operating system licenses

The operating system license supplied applies only to the installation of the software on the SIMATIC PC with which it is supplied. In accordance with Microsoft OEM license conditions, the software may only be installed on this SIMATIC system.

CE marking

The electronic products described in this catalog comply with the requirements and protection objectives of the following EU guidelines and with the harmonized European standards (EN) which have been published for programmable controllers in the Official Journal of the European Union:

- 89/336/EWG „Electromagnetic Compatibility" (EMC guideline)
- 73/23/EWG „Electrical Equipment for Use Within Specific Voltage Limits" (low voltage guideline)

The EU conformity declarartion is available for examination by:

SIMATIC, SIMATIC NET, SIMATIC PC:
Siemens AG,
Automation and Drives Group,
Dept. A&D AS RD4
P.O. Box 1963
D-92209 Amberg
Federal Republic of Germany

SIMATIC HMI:
Siemens AG
Automation and Drives Group
Dept. A&D AS SM ID
P.O. Box 4848
D-90475 Nürnberg
Federal Republic of Germany

SITOP power:
Siemens AG
Automation and Drives Group
Division Systems Engineering
Dept. A&D SE PS
P.O. Box 2355
D-90713 Fuerth
Federal Republic of Germany

Appendix

Siemens Contacts Worldwide

■ **Overview**

At

http://www.siemens.com/automation/partner

you can find details of Siemens contact partners worldwide responsible for particular technologies.

You can obtain in most cases a contact partner for

• Technical Support
• Spare parts/repairs
• Service
• Training
• Sales
• Consultation/engineering

You start by selecting a

• Country
• Product
• Sector

By further specifying the remaining criteria you will find exactly the right contact partner with his/her respective expertise.

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Overview

Solution Partner

Automation

SIEMENS

Solution Partner

Power Distribution

SIEMENS

Products and systems from Siemens Automation and Drives provide the ideal platform for all automation tasks.

Siemens Solution Partners offer customized future-proof solutions with products and systems from Siemens Automation and Drives. The basis: qualified product and system knowledge coupled with a high degree of solutions and industry-related expertise.

In the Siemens Solution Partner Program you are certain to find the optimum partner for your specific requirements. Since more than 400 companies worldwide belong to the program, you can be sure to get expert support at your location.

The Solution Partner Finder, available to you on the Internet, is a comprehensive database in which all Solution Partners, together with their performance profiles, present themselves.

In addition to the search criteria Technology, Sector and Country, you can also search by Company and ZIP Code. From there it is only a small step to making the first contact.

Call up the Solution Partner Finder as follows:

• CA 01 on CD-ROM:
On the start page via „Contacts & Partners; Siemens Solution Partner Automation and Power Distribution"

• CA 01 online:
Go directly to the Solution Partner Finder:
www.siemens.com/automation/partnerfinder

Additional information about the Siemens Solution Partner Program is available in the Internet at:
www.siemens.com/automation/solutionpartner

Appendix
A&D Online Services

**Information and Ordering
in the Internet and on CD-ROM**

A&D in the WWW

A detailed knowledge of the range of products and services available is essential when planning and configuring automation systems. It goes without saying that this information must always be fully up-to-date.

The Siemens Automation and Drives Group (A&D) has therefore built up a comprehensive range of information in the World Wide Web, which offers quick and easy access to all data required.

Under the address

http://www.siemens.com/automation

you will find everything you need to know about products, systems and services.

Product Selection Using the Interactive Catalog
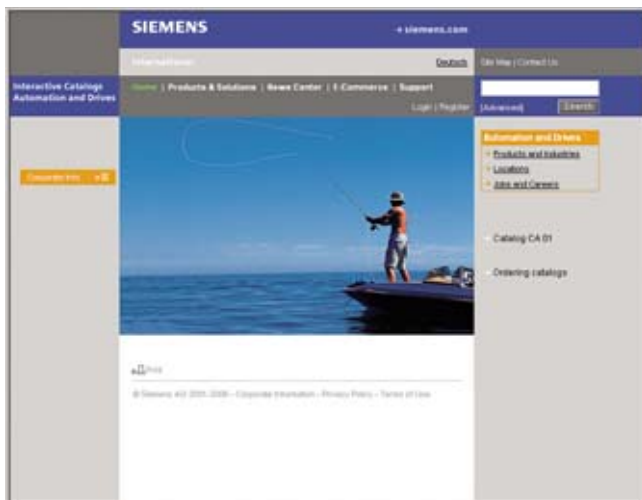
Detailed information together with convenient interactive functions:
The interactive catalog CA 01 covers more than 80,000 products and thus provides a full summary of the Siemens Automation and Drives product base.

Here you will find everything that you need to solve tasks in the fields of automation, switchgear, installation and drives.
All information is linked into a user interface which is easy to work with and intuitive.

After selecting the product of your choice you can order at the press of a button, by fax or by online link.

Information on the interactive catalog CA 01can be found in the Internet under

http://www.siemens.com/automation/ca01

or on CD-ROM or DVD.

Easy Shopping with the A&D Mall

The A&D Mall is the virtual department store of Siemens AG in the Internet. Here you have access to a huge range of products presented in electronic catalogs in an informative and attractive way.

Data transfer via EDIFACT allows the whole procedure from selection through ordering to tracking of the order to be carried out online via the Internet.

Numerous functions are available to support you.

For example, powerful search functions make it easy to find the required products, which can be immediately checked for availability. Customer-specific discounts and preparation of quotes can be carried out online as well as order tracking and tracing.

Please visit the A&D Mall on the Internet under:

http://www.siemens.com/automation/mall

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Our Services for Every Phase of your Project

Configuration and Software Engineering

Support in configuring and developing with customer-oriented services from actual configuration to implementation of the automation project. [1]

Service On Site

With Service On Site we offer services for startup and maintenance, essential for ensuring system availability.

In Germany
0180 50 50 444 [1]

The right support **in every phase**

In the face of harsh competition you need optimum conditions to keep ahead all the time:
A strong starting position. A sophisticated strategy and team for the necessary support – in every phase.
Service & Support from Siemens provides this support with a complete range of different services for automation and drives.

In every phase: from planning and startup to maintenance and upgrading.

Our specialists know when and where to act to keep the productivity and cost-effectiveness of your system running in top form.

Repairs and Spare Parts

In the operating phase of a machine or automation system we provide a comprehensive repair and spare parts service ensuring the highest degree of operating safety and reliability.

In Germany
0180 50 50 446 [1]

Online Support

The comprehensive information system available round the clock via Internet ranging from Product Support and Service & Support services to Support Tools in the Shop.

http://www.siemens.com/automation/service&support

Optimization and Upgrading

To enhance productivity and save costs in your project we offer high-quality services in optimization and upgrading. [1]

Technical Support

Competent consulting in technical questions covering a wide range of customer-oriented services for all our products and systems.

Tel.: +49 (0)180 50 50 222
Fax: +49 (0)180 50 50 223

E-Mail: adsupport@siemens.com

Technical Consulting

Support in the planning and designing of your project from detailed actual-state analysis, target definition and consulting on product and system questions right to the creation of the automation solution. [1]

[1] For country-specific telephone numbers go to our Internet site at:
http://www.siemens.com/automation/service&support

Appendix
Customer Support

■ Knowledge Base on CD-ROM

For locations without online connections to the Internet there are excerpts of the free part of the information sources available on CD-ROM (Service & Support Knowledge Base). This CD-ROM contains all the latest product information at the time of production (FAQs, Downloads, Tips and Tricks, Updates) as well as general information on Service and Technical Support.

The CD-ROM also includes a full-text search and our Knowledge Manager for targeted searches for solutions. The CD-ROM will be updated every 4 months.

Just the same as our online offer in the Internet, the Service & Support Knowledge Base on CD comes complete in 5 languages (German, English, French, Italian, Spanish).

You can order the **Service & Support Knowledge Base** CD from your Siemens contact.

Order no. **6ZB5310-0EP30-0BA2**

Orders via the Internet
(with Automation Value Card or credit card) at:

http://www.siemens.com/automation/service&support

in the Shop domain.

■ Automation Value Card

By entering the card number and PIN you have full access to the Service & Support services being offered. The charge for the services procured is debited from the credits on your Automation Value Card.

All the services offered are marked in currency-neutral credits, so you can use the Automation Value Card worldwide.

Automation Value Card order numbers	
Credits	Order no.
200	**6ES7 997-0BA00-0XA0**
500	**6ES7 997-0BB00-0XA0**
1000	**6ES7 997-0BC00-0XA0**
10000	**6ES7 997-0BG00-0XA0**

Detailed information on the services offered is available on our Internet site at:

http://www.siemens.com/automation/service&support

Service & Support à la Card: Examples

Technical Support	
"Priority"	Priority processing for urgent cases
"24 h"	Availability round the clock
"Extended"	Technical consulting for complex questions

Support Tools in the Support Shop	
"System Utilities"	Tools that can be used directly for configuration, analysis and testing
"Applications"	Complete topic solutions including ready-tested software
"Functions & Samples"	Adaptable blocks for accelerating your developments

Small card – great support

The Automation Value Card is an integral component of the comprehensive service concept with which Siemens Automation and Drives will accompany you in each phase of your automation project.

It doesn't matter whether you want just specific services from our Technical Support or want to purchase high-quality Support Tools in our Online Shop, you can always pay with your Automation Value Card. No invoicing, transparent and safe. With your personal card number and associated PIN you can view the state of your account and all transactions at any time.

Services on card. This is how it's done.

Card number and PIN are on the back of the Automation Value Card. When delivered, the PIN is covered by a scratch field, guaranteeing that the full credit is on the card.

PC-based Automation Competence Center

■ Overview

Know-how and services for PC-based Automation

You require support concerning the design and possibilities of a PC-based Automation project, or even engineering support?

Siemens has installed a team of specialists especially for this purpose in Cologne, Milan, Detroit and Shanghai. These specialists work closely with the development and product marketing departments, and can provide competent support worldwide to our sales departments on all matters of PC-based Automation.
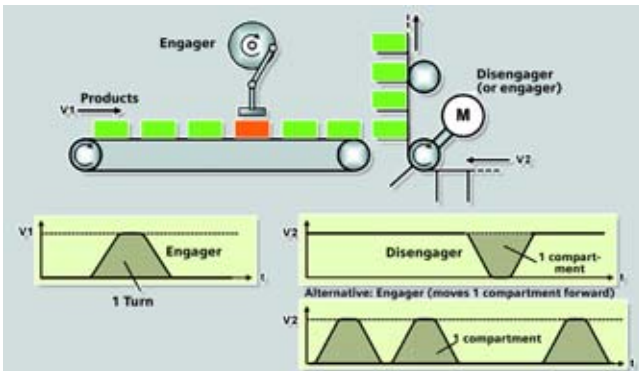
■ Our core competences

- Design of PC-based Automation systems from Siemens
- Customer-specific integration of technologies (add-ons) using high-level languages (C++) in Windows or real-time environments
- Knowledge transfer/workshops for the integration of components from other vendors (e.g. National Instruments) and for applications using the Open Development Kit (ODK or T-Kit)
- Technology and application know-how

■ Reference applications

- Fast recording of measured values
- Software blocks for drive library
- Customized communication using Ethernet (OPC/ActiveX, TCP-Socket)
- Synchronous operation, cross cutter, table interpolation for electric and hydraulic axes
- Integration of PCI cards into PC-based Automation applications (e.g. WinAC and ASi-Bus)
- Customized development and integration of C++ programs
- Interfaces to databases

■ Contacts

Activation of the Competence Center for your application is carried out by your regional partner.

If you do not yet have a contact person in your region, you just have a look an the Internet:
http://www.siemens.com/automation/partner

Further information and up-to-date news on available workshops can be found on the Internet:
http://www.siemens.com/pcbased

Appendix

Safety of Electronic Equipment

Safety of electronic equipment

The information listed here is mainly of a fundamental nature and applies regardless of the type and vendor of the electronic control system.

Reliability

The reliability of devices and components is being driven as high as possible by employing extensive and cost-effective measures in development and production.

This includes

- Selection of high-quality components
- Worst-case design calculation of all circuits
- Systematic and computer-controlled testing of all subcontracted components
- Burn-in of all large-scale integrated circuits (e.g. processors, memories etc.)
- Measures to prevent static charging when working at or with MOS circuits
- Visual checks at various stages of production
- In-circuit testing of all modules, i.e. computer-aided testing of all components and their interaction in the circuit
- Hot endurance run at high ambient temperature over several days
- Meticulous computer-controlled final testing
- Statistical evaluation of all returns for immediate introduction of remedial actions

These measures are regarded as basic measures in safety engineering. They prevent or keep control of the majority of potential faults.

Risks

Wherever faults are liable to cause injury to persons or damage to property it is necessary to introduce measures aimed in particular at the safety of the plant and, therefore, of the control system. Special, plan-specific directives exist for these applications and need to be taken into account when configuring the control system.

In the case of safety-relevant electronic control systems the measures needing to be taken to prevent or keep control of faults are aimed at the risk presented by the plant. In such a case the basic measures listed above are no longer sufficient above a certain level of hazard potential. Additional measures have to be implemented and certified (e.g. dual-channel arrangements, tests, checksums etc.) for the control system.

Division into a safe and a non-safe zone

In practically all plants there are parts which perform safety-related functions (e.g. emergency stop pushbuttons, mesh guards, two-hand controls). In order not to have to consider the complete control system in terms of safety engineering it is customary to divide the control system into a **safe** and a **non-safe zone**. No special requirements are imposed on the safety of the control system in the non-safe zone because there would be no impact on the safety of the plant if the electronics failed in this case. In the safe zone, on the other hand, you are only allowed to use control systems and/or circuits which satisfy the directives in question.

The following zonal divisions are customary in practice:
- Control systems with little safety engineering, e.g. machine control systems
- Control systems with balanced zones, e.g. chemical plants, aerial ropeways
- Control systems with mainly safety engineering, e.g. incineration plants

Important

Even if a maximum of design-based safety is achieved in the configuration of an electronic control systems – e.g. through multi-edge configuration – it is still essential to closely follow the instructions in the operating manuals as otherwise wrong actions may suspend precautions for preventing potential faults or may create additional sources of danger.

Overview

Software types

Software requiring a license is categorized into types.
The following software types have been defined:

- Engineering software
- Runtime software

Engineering software

This includes all software products for creating (engineering) user software, e.g. for configuring, programming, parameterizing, testing, commissioning or servicing.

Data generated with engineering software and executable programs can be duplicated for your own use or for use by third-parties free-of-charge.

Runtime software

This includes all software products required for plant/machine operation, e.g. operating system, basic system, system expansions, drivers, etc.

The duplication of the runtime software and executable programs created with the runtime software for your own use or for use by third-parties is subject to a charge.

You can find information about license fees according to use in the ordering data (e.g. in the catalog). Examples of categories of use include per CPU, per installation, per channel, per instance, per axis, per control loop, per variable, etc.

Information about extended rights of use for parameterization/configuration tools supplied as integral components of the scope of delivery can be found in the readme file supplied with the relevant product(s).

License types

Siemens Automation & Drives offers various types of software license:

- Floating license
- Single license
- Rental license
- Trial license

Floating license

The software may be installed for internal use on any number of devices by the licensee. Only the concurrent user is licensed. The concurrent user is the person using the program. Use begins when the software is started.
A license is required for each concurrent user.

Single license

Unlike the floating license, a single license permits only one installation of the software.

The type of use licensed is specified in the ordering data and in the Certificate of License (CoL). Types of use include for example per device, per axis, per channel, etc.

One single license is required for each type of use defined.

Rental license

A rental license supports the "sporadic use" of engineering software. Once the license key has been installed, the software can be used for a specific number of hours (the operating hours do not have to be consecutive).
One license is required for each installation of the software.

Trial license

A trial license supports "short-term use" of the software in a non-productive context, e.g. for testing and evaluation purposes.
It can be transferred to another license.

Factory license

With the Factory License the user has the right to install and use the software at one permanent establishment only. The permanent establishment is defined by one address only.The number of hardware devices on which the software may be installed results from the order data or the Certificate of License (CoL).

Certificate of license

The Certificate of License (CoL) is the licensee's proof that the use of the software has been licensed by Siemens. A CoL is required for every type of use and must be kept in a safe place.

Downgrading

The licensee is permitted to use the software or an earlier version/release of the software, provided that the licensee owns such a version/release and its use is technically feasible.

Delivery versions

Software is constantly being updated.
The following delivery versions

- PowerPack
- Upgrade

can be used to access updates.

Existing bug fixes are supplied with the ServicePack version.

PowerPack

PowerPacks can be used to upgrade to more powerful software. The licensee receives a new license agreement and CoL (Certificate of License) with the PowerPack. This CoL, together with the CoL for the original product, proves that the new software is licensed.
A separate PowerPack must be purchased for each original license of the software to be replaced.

Upgrade

An upgrade permits the use of a new version of the software on the condition that a license for a previous version of the product is already held.
The licensee receives a new license agreement and CoL with the upgrade. This CoL, together with the CoL for the previous product, proves that the new version is licensed.
A separate upgrade must be purchased for each original license of the software to be upgraded.

ServicePack

ServicePacks are used to debug existing products.
ServicePacks may be duplicated for use as prescribed according to the number of existing original licenses.

License key

Siemens Automation & Drives supplies software products with and without license keys.

The license key serves as an electronic license stamp and is also the "switch" for activating the software (floating license, rental license, etc.).

The complete installation of software products requiring license keys includes the program to be licensed (the software) and the license key (which represents the license).

Detailed explanations concerning license conditions can be found in the "Terms and Conditions of Siemens AG" or under
http://www.siemens.com/automation/mall
(A&D Mall Online-Help System)

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Conditions of sale and delivery

■ Terms and Conditions of Sale and Delivery

By using this catalog you can acquire hardware and software products described therein from Siemens AG subject to the following terms. Please note! The scope, the quality and the conditions for supplies and services, including software products, by any Siemens entity having a registered office outside of Germany, shall be subject exclusively to the General Terms and Conditions of the respective Siemens entity. The following terms apply exclusively for orders placed with Siemens AG.

For customers with a seat or registered office in Germany

The "General Terms of Payment" as well as the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry" shall apply.

For software products, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or registered Office in Germany" shall apply.

For customers with a seat or registered office outside of Germany

The "General Terms of Payment" as well as the "General Conditions for Supplies of Siemens, Automation and Drives for Customers with a Seat or registered Office outside of Germany" shall apply.

For software products, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or registered Office outside of Germany" shall apply.

General

The dimensions are in mm. In Germany, according to the German law on units in measuring technology, data in inches only apply to devices for export.

Illustrations are not binding.

Insofar as there are no remarks on the corresponding pages, - especially with regard to data, dimensions and weights given - these are subject to change without prior notice.

The prices are in € (Euro) ex works, exclusive packaging.

The sales tax (value added tax) is not included in the prices. It shall be debited separately at the respective rate according to the applicable legal regulations.

Prices are subject to change without prior notice. We will debit the prices valid at the time of delivery.

Surcharges will be added to the prices of products that contain silver, copper, aluminum, lead and/or gold if the respective basic official prices for these metals are exceeded. These surcharges will be determined based on the official price and the metal factor of the respective product.

The surcharge will be calculated on the basis of the official price on the day prior to receipt of the order or prior to the release order.
The metal factor determines the official price as of which the metal surcharges are charged and the calculation method used. The metal factor, provided it is relevant, is included with the price information of the respective products.

An exact explanation of the metal factor and the text of the Comprehensive Terms and Conditions of Sale and Delivery are available free of charge from your local Siemens business office under the following Order Nos.:

- 6ZB5310-0KR30-0BA1
  (for customers based in Germany)
- 6ZB5310-0KS53-0BA1
  (for customers based outside Germany)

or download them from the Internet
http://www.siemens.com/automation/mall
(Germany: A&D Mall Online-Help System)

■ Export regulations

The products listed in this catalog / price list may be subject to European / German and/or US export regulations.

Therefore, any export requiring a license is subject to approval by the competent authorities.

According to current provisions, the following export regulations must be observed with respect to the products featured in this catalog / price list:

AL	Number of the German Export List
	Products marked other than "N" require an export license. In the case of software products, the export designations of the relevant data medium must also be generally adhered to.
	Goods labeled with an "AL" not equal to "N" are subject to a European or German export authorization when being exported out of the EU.
ECCN	Export Control Classification Number
	Products marked other than "N" are subject to a reexport license to specific countries.
	In the case of software products, the export designations of the relevant data medium must also be generally adhered to.
	Goods labeled with an "ECCN" not equal to "N" are subject to a US re-export authorization.

Even without a label or with an "AL: N" or "ECCN: N", authorization may be required due to the final destination and purpose for which the goods are to be used.

The deciding factors are the AL or ECCN export authorization indicated on order confirmations, delivery notes and invoices.

Errors excepted and subject to change without prior notice.

Catalogs of the
Automation and Drives Group (A&D)

PDF: These catalogs are only available as pdf files.

www.siemens.com/pcbased

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