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## SIMATIC PCS 7 Process Control System

### Technology components

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### Catalog ST PCS 7 T · 2015

Supersedes:
Catalog ST PCS 7 T · December 2013

Refer to the Industry Mall for current updates of this catalog:
www.siemens.com/industrymall
and as PDF at the following address:
www.siemens.com/stpcs7t

The products contained in this catalog can also be found in the Interactive Catalog CA 01.
Article No.: E86060-D4001-A510-D4-7600

Please contact your local Siemens branch.

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Answers for industry.

Integrated technologies, vertical market expertise and services for greater productivity, energy efficiency, and flexibility.

Siemens is the world’s leading supplier of innovative and environmentally friendly products and solutions for industrial companies. End-to-end automation technology and industrial software, solid market expertise, and technology-based services are the levers we use to increase our customers’ productivity, efficiency and flexibility.

We consistently rely on integrated technologies and, thanks to our bundled portfolio, we can respond more quickly and flexibly to our customers’ wishes. With our globally unmatched range of automation technology, industrial control and drive technology as well as industrial software, we equip companies with exactly what they need over their entire value chain – from product design and development to production, sales and service. Our industrial customers benefit from our comprehensive portfolio, which is tailored to their market and their needs.

Market launch times can be reduced by up to 50% due to the combination of powerful automation technology and industrial software. At the same time, the costs for energy or waste water for a manufacturing company can be reduced significantly. In this way, we increase our customers’ competitive strength and make an important contribution to environmental protection with our energy-efficient products and solutions.
Efficient automation starts with efficient engineering.

Totally Integrated Automation: Efficiency driving productivity.

Efficient engineering is the first step toward better production that is faster, more flexible, and more intelligent. With all components interacting efficiently, Totally Integrated Automation (TIA) delivers enormous time savings right from the engineering phase. The result is lower costs, faster time-to-market, and greater flexibility.
Making things right with Totally Integrated Automation

Totally Integrated Automation, industrial automation from Siemens, stands for the efficient interoperability of all automation components. The open system architecture covers the entire production process and is based on end-to-end shared characteristics: consistent data management, global standards, and uniform hardware and software interfaces.

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• Time and cost savings due to efficient engineering
• Minimized downtime due to integrated diagnostic functions
• Simplified implementation of automation solutions due to global standards
• Better performance due to interoperability of system-tested components

A unique complete approach for all industries

As one of the world’s leading automation suppliers, Siemens provides an integrated, comprehensive portfolio for all requirements in process and manufacturing industries. All components are mutually compatible and system-tested. This ensures that they reliably perform their tasks in industrial use and interact efficiently, and that each automation solution can be implemented with little time and effort based on standard products. The integration of many separate individual engineering tasks into a single engineering environment, for example, provides enormous time and cost savings.

With its comprehensive technology and industry-specific expertise, Siemens is continuously driving progress in manufacturing industries – and Totally Integrated Automation plays a key role.

Totally Integrated Automation creates real value added in all automation tasks, especially for:
• **Integrated engineering**
  Consistent, comprehensive engineering throughout the entire product development and production process
• **Industrial data management**
  Access to all important data occurring in productive operation – along the entire value chain and across all levels
• **Industrial communication**
  Integrated communication based on international cross-vendor standards that are mutually compatible
• **Industrial security**
  Systematic minimization of the risk of an internal or external attack on plants and networks
• **Safety Integrated**
  Reliable protection of personnel, machinery, and the environment thanks to seamless integration of safety technologies into the standard automation
Totally Integrated Power
We bring power to the point – safely and reliably.

Efficient, reliable, safe: These are the demands placed on electrification and especially power distribution. And our answer – for all application areas of the energy system – is Totally Integrated Power (TIP). It’s based on our comprehensive range of products, systems, and solutions for low and medium voltage, rounded out by our support throughout the entire lifecycle – from planning with our own software tools to installation, operation, and services.

Smart interfaces allow linking to industrial or building automation, making it possible to fully exploit all the optimization potential of an integrated solution. This is how we provide our customers around the world with answers to their challenges. With highly efficient, reliable, and safe power distribution, we lay the foundation for sustainable infrastructure and cities, buildings, and industrial plants. We bring power to the point – wherever and whenever it is needed.

More information: www.siemens.com/tip
Totally Integrated Power offers more:

- **Consistency:** For simplified plant engineering and commissioning as well as smooth integration into automation solutions for building or production processes.
- **One-stop-shop:** A reliable partner with a complete portfolio for the entire process and lifecycle – from the initial idea to after-sales service.
- **Safety:** A comprehensive range of protection components for personnel safety and line and fire protection, safety by means of type testing.
- **Reliability:** A reliable partner who works with customers to develop long-lasting solutions that meet the highest quality standards.
- **Efficiency:** Bringing power to the point means greater plant availability and maximum energy efficiency in power distribution.
- **Flexibility:** End-to-end consistency and modular design of Totally Integrated Power for any desired expansions and adaptation to future requirements.
- **Advanced technology:** Reliable power distribution especially for applications in which supply is critical, continuous refinement of the technology.

Challenges are our speciality.
Positioning and definition

As an important component of Totally Integrated Automation (TIA), the SIMATIC PCS 7 process control system is integrated seamlessly in a comprehensive range of perfectly matched products, systems, and solutions for all hierarchy levels of industrial automation - from the enterprise management level, to the control level, all the way down to the field level.

With the rugged, high-performance SIMATIC PCS 7 system components from Catalog ST PCS 7, you already have a versatile platform for cost-effective implementation and economical operation of your process control systems. Perfect interplay of these system components makes it possible for you to sustain high-quality production and to establish new products significantly faster on the market.

With SIMATIC PCS 7 technology components from Catalog ST PCS 7 T that can be seamlessly integrated into the process control system, you can expand the functional scope of the system components in a carefully targeted manner for specific automation tasks.

This covers a wide spectrum, for example:
- Telecontrol for monitoring and controlling remote units
- Automation technology for electrical low-voltage or medium-voltage switchgear
- Industry-specific automation systems for the cement and mining industries, as well as for laboratory and training facilities
- Graphical objects for task-oriented optimization of process visualization
- Block libraries for technological functions, package unit and panel integration, monitoring and analyzing mechanical assets, as well as for building automation systems (heating, ventilation, air-conditioning – FMCS/HVAC)
- Editors and function blocks for the efficient configuration of small or medium-sized automation systems with simple parameter control and materials management
- Process analytical technology for quality assurance through optimization of development and production processes based on up-to-date measurements, and critical quality and performance attributes
- Simulation system for testing and commissioning of plant-specific application software
- Flexible, high-performance Manufacturing Execution System (MES)
- System expansion for operator systems for the integration of third-party controllers, programmable logic controllers and package units
- Products for migration of the process control systems TELEPERM M, APACS+/QUADLOG or Bailey INFI 90/NET 90 with SIMATIC PCS 7
SIMATIC PCS 7 technology components have been released for all versions and service packs of SIMATIC PCS 7 system components. Development and testing of SIMATIC PCS 7 technology components is dependent on the corresponding SIMATIC PCS 7 system components, so versioning and release is normally performed asynchronously, that is following a delay of between 3 and 6 months.

**Compatibility**

A special Note at the end of each "Overview" section provides information about the relationship between the SIMATIC PCS 7 technology components and the versions and service packs of SIMATIC PCS 7 system components.

**Product lifecycle management, quality and service**

The SIMATIC PCS 7 system and technology components designed for automation in the process industry are embedded in the SIMATIC product portfolio.

All the products of this portfolio, as well as the associated processes and services, are coordinated over their entire lifecycle, starting from planning and design, through product launch, operation, maintenance and modernization, as far as removal from the market by professional product lifecycle management. This means they are subject to uniform guidelines and processes.

A certified quality management system provides the foundations for the high quality of SIMATIC products and services. The quality strategy that it supports is oriented towards customer requirements and has constant customer satisfaction as its goal.

SIMATIC PCS 7 system and technology components benefit from comprehensive global industry services and specific service programs, such as SIMATIC PCS 7 Life Cycle Services, over their entire life cycle. In the appendix to this catalog, you will find an overview of the complete offering as well as information about the scope of services.
Telecontrol
PCS 7 TeleControl

Introduction

Overview

Plants are often scattered over very large grounds in the energy and transportation industries, and especially in the water & wastewater and oil & gas industries. In such cases it is necessary to integrate outstations for monitoring and controlling highly remote plant units (usually with a small or medium degree of automation) into the control system of the complete plant. This is carried out by means of telecontrol protocols over a WAN (Wide Area Network).

Conventional automation solutions for telecontrol systems use process control systems for the more complex central areas of the plant, and simpler Remote Terminal Units (RTUs) for the outstations, and then combine these separately configured plant units in a host network control system.
Overview (continued)

Direct integration of the telecontrol center

However, it is far more efficient if the telecontrol center for the RTUs is directly integrated into the process control system. The network control system as the superimposed integration level can then be omitted.

The SIMATIC PCS 7 TeleControl products are suitable for integration of the telecontrol center into the process control and engineering of the SIMATIC PCS 7 process control system. They support the RTU linking in various ways (see graphic “Integration and communication options with SIMATIC PCS 7 TeleControl” and table “Integratable remote stations – current range, communication options and features”).

As far as the scope and performance of the automation functions are concerned, the requirements of the widely distributed plant sections are usually in the bottom to mid range, which means you can use automation stations of reduced dimensions for the outstations. SIMATIC PCS 7 TeleControl particularly supports the following outstations for distributed automation on site:

<table>
<thead>
<tr>
<th>RTU type</th>
<th>RTU category</th>
<th>Possible telecontrol protocols</th>
</tr>
</thead>
</table>
| Controller integrated in SIMATIC ET 200S | Small with 30 ... 200 I/Os | • Modbus RTU  
• IEC 60870-5-101  
• IEC 60870-5-104 |
| SIMATIC S7-1200/S7-1200F controller | Small with 30 ... 150 I/Os | • DNP3  
• Modbus RTU  
• IEC 60870-5-104 |
| SIMATIC S7-300/S7-300F controller | Medium with 100 ... 2 000 I/Os | • SINAUT ST7  
• DNP3  
• Modbus RTU  
• IEC 60870-5-101  
• IEC 60870-5-104 |
| SIMATIC S7-400/S7-400F controller | Large with 500 ... 5 000 I/Os | • SINAUT ST7  
• DNP3  
• Modbus RTU  
• IEC 60870-5-101  
• IEC 60870-5-104 |
| SIMATIC S7-400H/S7-400FH controller | | • DNP3  
• IEC 60870-5-101  
• IEC 60870-5-104 |

1) Also in version “SiPLUS extreme”, e.g. for environments with temperatures from -25 °C to +70 °C, condensation or medial load

2) Dependent on CPU size, protocol type, and application

For more information about telecontrol protocols, possible operating modes, and special remote configurations, see:

• Catalog ST PCS 7 AO, Add-ons for the SIMATIC PCS 7 Process Control System, section Industry-specific applications, Telecontrol, Telecontrol - SIPLUS RIC (telecontrol protocols IEC 60870-5-101/104 and Modbus RTU)
• Catalog IK PI, Industrial Communication SIMATIC NET, Industrial Remote Communication, TeleControl Professional for substations (substations for ST7 protocol and substations for DNP3 protocol)

Note:
SIMATIC PCS 7 TeleControl V8.1 can be operated in combination with the OS engineering software and OS runtime software SIMATIC PCS 7 V8.1 as well as with PCS 7 PowerControl V8.1 (see section "Switchgear automation") and PCS 7 OPEN OS V8.1 (see section "Controller integration"). The SIMATIC PCS 7 software must be ordered from Catalog ST PCS 7.
Telecontrol
PCS 7 TeleControl

Introduction

Benefits

- SIMATIC PCS 7 TeleControl cannot only integrate newly configured RTUs into SIMATIC PCS 7, but also migrate units which already exist in outdoor areas.
- As a result of its high level of integration, automation based on SIMATIC PCS 7 TeleControl offers decisive advantages compared to previous automation solutions with telecontrol engineering.
  - The uniform SIMATIC PCS 7 software platform allows high efficiency during operation, and results in low costs for training, configuration and servicing.
  - The homogeneous GUI for local and remote processes simplifies operation and simultaneously reduces the risk of an operator error.
- The Data Base Automation (DBA) software efficiently supports engineering and takes into account the conformity with SIMATIC PCS 7.
  - DBA considerably facilitates project-specific adaptation of the system and importing of existing configurations in the course of migration.
  - Extensions can be added during plant operation.

Application

Remote control and monitoring of distributed stations, as well as data recording and transmission, with the following focal points:

- Water industry
  - Well, pumping and slide valve stations in water supply networks and irrigation plants
  - Pumping and slide valve stations in water and wastewater pipelines
  - Storm-water tanks and siphon stations in wastewater networks
  - Storage units (elevated tanks)

- Oil and gas industries
  - Compressor, pressure reduction, transfer, block valve, and metering stations in gas networks
  - Pumping and slide valve stations in oil pipelines
  - Automation on the wellhead of gas and oil wells
  - Stations for the injection of water or CO₂ in gas or oil fields

- Energy management, environmental protection, and transportation
  - Equipment for power generation and distribution
  - District heating
  - Traffic control systems
  - Tunnels
  - Railway stations
  - Lighthouses
  - Environmental monitoring equipment
  - Weather stations

Design

The telecontrol center for the outstations (RTU) is integrated into the process control of the SIMATIC PCS 7 process control system in the form of an operator station in single station or server design (also redundant as option). No additional automation system for conditioning and connecting telecontrol-specific data need be planned in the SIMATIC PCS 7 system. With large quantity frameworks, a PCS 7 TeleControl operator station (single station/server) is preferably responsible only for the telecontrol mode (dedicated). With small quantity frameworks, a server or a single station can also control SIMATIC PCS 7 automation systems in central plant areas in addition to the RTUs (dual-channel mode).

To enable engineering of the PCS 7 TeleControl operator station (single station/server), the functions of the engineering station of the SIMATIC PCS 7 process control system are expanded by DBA technology (Data Base Automation) and the SIMATIC PCS 7 TeleControl block library.

For communication with the RTUs, SIMATIC PCS 7 TeleControl uses the telecontrol protocols SINAUT ST7, DNP3 and Modbus RTU (via serial as well as TCP/IP communication connections) and also IEC 60870-5-101 (serial) and IEC 60870-5-104 (Ethernet TCP/IP).

With serial RTU interfacing, the telecontrol connection can be implemented cost-effectively at the control center end (PCS 7 TeleControl OS as single station or server) using the following components:

- SINAUT TIM communication modules (SINAUT ST7 telecontrol protocol)
- TCP/IP serial converter e. g. devices from the companies MOXA or Lantronix (telecontrol protocols DNP3, Modbus RTU, IEC 60870-5-101)

Remote stations can be connected either directly via Ethernet TCP/IP or via TCP/IP WAN routers to the SIMATIC PCS 7 plant bus (telecontrol protocols SINAUT ST7, DNP3, Modbus RTU, IEC 60870-5-104). When using the SINAUT ST7 telecontrol protocol, the SINAUT TIM communication module can be used in addition to the TCP/IP WAN router or as an alternative.
The table "Integrable outstations" shows the current connection possibilities depending on the type of RTU and type of communication.

### Outstations for integration (RTU)
#### Current range, communication options and features

<table>
<thead>
<tr>
<th>Telecontrol protocol</th>
<th>SINAUT ST7</th>
<th>Modbus RTU</th>
<th>DNP3</th>
<th>IEC 60870-5-101</th>
<th>IEC 60870-5-104</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of communication</td>
<td>Serial</td>
<td>Ethernet TCP/IP</td>
<td>Serial</td>
<td>Ethernet TCP/IP</td>
<td>Serial</td>
</tr>
<tr>
<td>Interface on the PCS 7 TeleControl OS</td>
<td>TIM 4R-IE</td>
<td>TCP/IP WAN router or/and TIM 4R-IE</td>
<td>TCP/IP serial converter</td>
<td>TCP/IP WAN router</td>
<td>TCP/IP serial converter</td>
</tr>
<tr>
<td>RTU/ interface</td>
<td>ET 200S with integrated CPU (corresponds to S7-314)</td>
<td>–</td>
<td>–</td>
<td>IM 151-7 CPU or IM 151-8 PN/ DP CPU as well as 1 SI Modbus module</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>S7-1200/ S7-1200F</td>
<td>–</td>
<td>–</td>
<td>CM 1241 + SW library</td>
<td>CPU + SW library</td>
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<tr>
<td></td>
<td>S7-300/ S7-300F</td>
<td>TIM 3V-IE</td>
<td>TIM 3V-IE</td>
<td>CP 341</td>
<td>CP 343 + SW library</td>
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<td>S7-400/ S7-400F</td>
<td>TIM 4R-IE</td>
<td>TIM 4R-IE</td>
<td>CP 441</td>
<td>CP 443 + SW library</td>
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<tr>
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<td>S7-400H/ S7-400FH</td>
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<tr>
<td>Third-party station</td>
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<td>Depends on type of station</td>
<td>Depends on type of station</td>
<td>Depends on type of station</td>
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<td>Dedicated lines and radio networks</td>
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<tr>
<td>Master/slave</td>
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<tr>
<td>Peer-to-peer</td>
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<tr>
<td>Mesh networks</td>
<td>–</td>
<td>–</td>
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<tr>
<td>Time tagging in RTU</td>
<td>–</td>
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<td>–</td>
<td>–</td>
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<tr>
<td>RTU time synchronization</td>
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<tr>
<td>Data buffering in RTU</td>
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<tr>
<td>S7 routing</td>
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<tr>
<td>International standard</td>
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<td>(many variants)</td>
<td>(many variants)</td>
<td>–</td>
</tr>
</tbody>
</table>
Telecontrol
PCS 7 TeleControl

Introduction

Design (continued)

The telecontrol protocols used by SIMATIC PCS 7 TeleControl for remote communication are matched to the conditions of the widely distributed communication infrastructure.

The WAN transmission media suitable for communication between the RTUs and the telecontrol center are diverse, e.g.

- Private networks
  - Wireless
  - Dedicated line
  - WLAN

- Public networks
  - GPRS
  - EGPRS
  - UMTS
  - DSL

Based on the four basic topological forms (point-to-point, multi-point, star and ring), differently structured telecontrol networks can be implemented with these media versions, e.g. star over wireless, dedicated line or DSL. Through a combination of several basic topologies of the same or different media versions, it is also possible to design more complex network topologies, even with redundant communication paths. Optimum adaptation to the local conditions and the infrastructure which may already exist is possible in this manner.

Migration of existing telecontrol systems

SINAUT ST1 stations based on SIMATIC S5

In the course of migration of existing plants, RTUs based on SIMATIC S5 can also be integrated via SIMATIC PCS 7 TeleControl into the process control system. In the process, the ST1 telecontrol protocol is converted into the ST7 protocol in the central TIM communication module.

Units with Modbus RTU communication

Existing plant sections that have a Modbus infrastructure, even those outdoors, can be integrated into SIMATIC PCS 7 using SIMATIC PCS 7 TeleControl. These sections can be integrated into SIMATIC PCS 7 using the Modbus RTU protocol via serial lines or TCP/IP connections.

Whereas RTUs with Modbus TCP/IP interface can be integrated directly, third-party RTUs require special interface converters for telecontrol communication.

Third-party stations with telecontrol protocols

In addition to the Modbus RTU telecontrol protocol, the DNP3 (serial and TCP/IP), IEC 60870-5-101 (serial) and IEC 60870-5-104 (TCP/IP) telecontrol protocols also support the control center interfacing of third-party RTUs in the course of migration. A prerequisite is that the RTU supports the corresponding protocol and that the required interface converters are available.

Third-party stations with OPC

Third-party RTUs for which an OPC server exists can be integrated into the process control with the PCS 7 TeleControl operator system using additional engineering services on the basis of the DBA technology. SIMATIC PCS 7 TeleControl then supports data exchange between the operator system (OPC client) and the RTU (OPC server) per OPC DA.

SINAUT LSX systems

Existing SINAUT LSX systems can also be migrated with SIMATIC PCS 7 TeleControl. The SIMATIC S7 controllers with the EDC telecontrol protocol (Event Driven Communication) installed in the SINAUT LSX system are integrated into SIMATIC PCS 7 TeleControl with PCS 7 TeleControl S7 EDC drivers (for ordering data, refer to the following catalog section PCS 7 TeleControl operator system). Because the SINAUT LSX system can coexist at all levels next to the new system architecture as long as necessary, step-by-step modernization is possible without short-lived intermediate solutions.

Mode of operation

With SIMATIC PCS 7 TeleControl, the outstations can be integrated into SIMATIC PCS 7 so that the operator notices no difference between central or remote automation with regard to the operating philosophy and alarm response.

The OS clients of the client/server multi-user system are able to display data from RTUs and SIMATIC PCS 7 automation systems (AS) - which they receive from a server with dual-channel functionality or from two separate servers - together in one process image. Display is primarily on faceplates for process objects such as motors, valves etc., but also by means of trend curves and messages.

If the PCS 7 TeleControl OS server is of redundant design, the redundant pair of PCS 7 TeleControl OS servers matches all internally generated information, e.g. alarm states and results of calculations.

The communication mode between the control center and RTU depends on the type of WAN, the configuration of the telecontrol communication, and the support by the telecontrol protocol.
Function

Conditioning and display of data on the PCS 7 TeleControl OS (single stations/servers) are carried out by SIMATIC PCS 7 TeleControl blocks present in a library. These blocks support operator prompting in conformance with SIMATIC PCS 7 using symbols and faceplates, and also the hierarchy of the SIMATIC PCS 7 alarms.

In addition to blocks for processing of process data, the library also contains blocks for diagnostics and control of communication. If necessary, the supplied basic library can be extended using the DBA Type Editor by new script-based block types specific to the project.

Engineering can be automated efficiently and in conformance with SIMATIC PCS 7 using the DBA technology. DBA supports plant expansion during ongoing operation, and facilitates project-specific adaptation of the system as well as importing of existing configurations in the course of migration.

When linking RTUs by means of the SINAUT ST7, DNP3, IEC 60870-5-101 or IEC 60870-5-104 telecontrol protocol, the raw data in the remote stations is provided with a time tag and transmitted to the PCS 7 TeleControl OS (server/single station) acting as control center. Adaptation, further processing and archiving are carried out there. This procedure is appropriate for the event-based principle of operation of the telecontrol protocol as well as the subsequent chronological processing of data which was buffered in the remote station.

The time and date of the remote stations connected per SINAUT ST7, DNP3, IEC 60870-5-101 or IEC 60870-5-104 can be synchronized by the PCS 7 TeleControl OS (time master). Switch-over between daylight-saving time and standard time is also taken into account.

In order to comply with guidelines, statutory directives and standards it may be necessary to provide special proof, e.g. proof of conformity with the ATV M260 guideline for sewage treatment plants. For this we recommend the ACRON software package equipped with even more functionality for long-term archiving and logging. ACRON is an add-on product in the Catalog ST PCS 7 AO (Add-ons for SIMATIC PCS 7).
Telecontrol
PCS 7 TeleControl

**PCS 7 TeleControl Engineering Station**

**Overview**

The PCS 7 TeleControl OS Engineering software package is used to configure a SIMATIC PCS 7 industrial workstation of single station or server design as a SIMATIC PCS 7 TeleControl engineering station.

**Design**

**PCS 7 TeleControl OS Engineering**

The software product PCS 7 TeleControl OS Engineering contains the OS engineering package PCS 7 TeleControl OS DBA and the associated engineering license.

Ordering data for the SIMATIC PCS 7 Engineering Software and for further SIMATIC PCS 7 software components for the PCS 7 TeleControl engineering station can be found in the Catalog ST PCS 7, section "Engineering system", "ES software".

SIMATIC PCS 7 Industrial Workstations suitable as basic hardware for a SIMATIC PCS 7 TeleControl engineering station can be found in Catalog ST PCS 7, section "Industrial Workstation/PC".

**PCS 7 TeleControl OS DBA**

PCS 7 TeleControl OS DBA is an OS engineering package for expansion of the SIMATIC PCS 7 Engineering Software, comprising the OS Data Base Automation (DBA) software and a library with OS symbols, OS faceplates, and OS diagnostics displays for remote stations (RTUs) of a telecontrol system.

Using the DBA type editor it is possible to assign the frequently unstructured variables of an RTU once to a block type and to display the tag structured on the operator station via the block’s faceplate (OS faceplate). Each block type contains at least one faceplate and one symbol.

The DBA automatically generates the OS runtime database with the display hierarchy, required tags, interrupts, alarm messages, and alarm priorities, as well as the specific faceplates and block symbols. The display hierarchy is the basis for navigation between the process displays, for alarm management, and for implementation of safety measures. PCS 7 TeleControl OS DBA automatically positions the type-specific block symbols, for example, measured value, counter value, motor or gate valve, in the OS process pictures. These symbols are linked to the corresponding function blocks and faceplates using the database. Manual configuration is mainly limited to the design and positioning of the static graphic elements, for example, tubes or tanks.

The PCS 7 TeleControl OS symbols, faceplates and diagnostics displays created in conformance with SIMATIC PCS 7 take into account the specific features of telecontrol applications. This is demonstrated, for example, by the example of the counter block which offers versatile conditioning options for information on transported or processed quantities and volumes.

**Definition of new user blocks**

New user blocks can also be defined using the DBA type editor, and are handled during database generation like the blocks from the basic library.

In addition to arrangement of information in a variable structure, these user blocks can also calculate derived values using Visual Basic scripts in the server. This results in numerous possibilities for extending the functionality and for adapting the system to individual customer requirements.

Type-specific OS faceplates and OS symbols for the user blocks can be created using the standard tools for SIMATIC PCS 7 OS engineering (Graphics Designer and Faceplate Designer).

Faceplates from the SIMATIC PCS 7 TeleControl library

**Upgrade**

Existing SIMATIC PCS 7 TeleControl OS Engineering Software V8.0 can be upgraded to V8.1 using the SIMATIC PCS 7 TeleControl Upgrade Package. This SIMATIC PCS 7 TeleControl Upgrade Package is suitable for upgrading SIMATIC PCS 7 TeleControl OS Runtime Software V8.0. The SIMATIC PCS 7 ES and OS software V8.0 can be upgraded separately to V8.1 using the upgrade packages in Catalog ST PCS 7, sections "Upgrades for engineering system" and "Upgrades for operator system".

**Engineering of Remote Terminal Units (RTUs) based on S7-300**

Using the technology blocks of the SIMATIC PCS 7 Industry Library (sublibrary "Industry Library for S7"), Remote Terminal Units (RTUs) based on S7-300 can also be configured in CFC in APL style system compatibility. For information about the SIMATIC PCS 7 Industry Library and ordering data, refer to the chapter "Technology libraries".
### Ordering data

<table>
<thead>
<tr>
<th>Engineering software</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCS 7 TeleControl OS Engineering V8.1</td>
<td>6ES7658-7JX18-0YA5</td>
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</table>
| Software package without SIMATIC PCS 7 engineering software; for expanding a SIMATIC PCS 7 Engineering Station V8.1 (unlimited POS) for PCS 7 TeleControl OS Engineering Engineering software, 2 languages (English, German), software class A, runs with Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit), floating license for 1 user Delivery form package (without SIMATIC PCS 7 Software Media Package):  
  - License key USB stick, certificate of license  
  - Software and electronic documentation in 2 languages (German and English) on DVD |

### Upgrade Package

<table>
<thead>
<tr>
<th>Upgrade Package</th>
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</thead>
<tbody>
<tr>
<td>SIMATIC PCS 7 TeleControl Upgrade Package V8.0 to V8.1</td>
<td>6ES7652-5GX18-0YE0</td>
</tr>
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</table>
| Software package without SIMATIC PCS 7 ES/OS software V8.1 Engineering and Runtime software, 2 languages (English, German), software class A, runs with Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit), single license for 1 installation Delivery form package (without SIMATIC PCS 7 Software Media Package):  
  - License key USB stick, certificate of license  
  - Software and electronic documentation in 2 languages (German and English) on DVD |

Note: SIMATIC PCS 7 ES and OS software V8.0 must be upgraded to V8.1 by means of a separate upgrade package (see Catalog ST PCS 7, Chapter “Update/Upgrade Packages”).
The PCS 7 TeleControl OS software packages offered for OS runtime mode are tailored to the architecture of the SIMATIC PCS 7 operator system. They support single station systems as well as multi-user systems based on a client-server architecture.

### Overview

Uniform process control for central and remote units

### Design

PCS 7 TeleControl OS servers and PCS 7 TeleControl OS single stations can integrate both local SIMATIC PCS 7 automation systems and widely distributed outstations (RTUs) of a telecontrol system into the process control.

Depending on the configuration of a PCS 7 TeleControl operator system as single station or client/server combination (single or redundant), the following software components are required:

<table>
<thead>
<tr>
<th>Software required</th>
<th>SIMATIC PCS 7 architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OS single station</td>
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<tr>
<td>PCS 7 OS Software Single Station V8.1</td>
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<td>see Catalog ST PCS 7, section “OS software” in chapter “Operator system”</td>
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<tr>
<td>PCS 7 OS Software Server V8.1</td>
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<td>see Catalog ST PCS 7, section “OS software” in chapter “Operator system”</td>
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<td>PCS 7 OS Software Client V8.1</td>
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<td>see Catalog ST PCS 7, section “OS software” in chapter “Operator system”</td>
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<tr>
<td>PCS 7 TeleControl OS Runtime V8.1</td>
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<tr>
<td>PCS 7 TeleControl Driver (alternative)</td>
<td>SINAUT</td>
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<tr>
<td>DNP3</td>
<td>–</td>
</tr>
<tr>
<td>IEC 60870-5-101/-104</td>
<td>–</td>
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<tr>
<td>Modbus RTU</td>
<td>–</td>
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<tr>
<td>S7 EDC</td>
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</table>

Ordering data for SIMATIC PCS 7 OS Runtime licenses for expanding the OS Runtime POs (single station/server) and additional SIMATIC PCS 7 OS software components for PCS 7 TeleControl Operator Systems can be found in Catalog ST PCS 7, Chapter “Operator system”, section “OS software”.

SIMATIC PCS 7 Industrial Workstations suitable as basic hardware for configuration of an operator station as PCS 7 TeleControl OS single station, PCS 7 TeleControl OS server or PCS 7 TeleControl OS client can be found in Catalog ST PCS 7, section “Industrial Workstation/PC”.

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Design (continued)

**PCS 7 TeleControl OS software for single station, server and redundant server**

The software product PCS 7 TeleControl OS Runtime contains the PCS 7 TeleControl OS software including the object library with the PCS 7 TeleControl OS faceplates and symbols as well as the Runtime license for operation on an OS single station or OS server.

An additional PCS 7 TeleControl Driver license is required for each telecontrol protocol used (SINAUT, DNP3, IEC 60870-5-101/-104, Modbus RTU, S7 EDC) per PCS 7 TeleControl OS single station and per PCS 7 TeleControl OS server.

The SIMATIC PCS 7 OS software must be ordered separately. In the ST PCS 7 catalog, you can find the SIMATIC PCS 7 OS software for OS single station and OS server in chapter "Operator system", section "OS software", and the SIMATIC PCS 7 OS software for a redundant OS server pair (including RS 232 connecting cable, 10 m) in the chapter "Operator system", section "OS software".

**Upgrade**

Existing SIMATIC PCS 7 TeleControl OS Runtime Software V8.0 can be upgraded to V8.1 using the SIMATIC PCS 7 TeleControl Upgrade Package. This Upgrade Package is also suitable for upgrading the SIMATIC PCS 7 TeleControl OS Engineering Software V8.0. The SIMATIC PCS 7 ES and OS software V8.0 can be upgraded separately to V8.1 using the upgrade packages in Catalog ST PCS 7, sections "Upgrades for engineering system" and "Upgrades for operator system".
## Telecontrol

PCS 7 TeleControl Operator System

### Ordering data

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<th>Runtime software</th>
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<td>Software package without SIMATIC PCS 7 OS software; for expanding a SIMATIC PCS 7 OS V8.1 (server/single station) for PCS 7 TeleControl Runtime software, 2 languages (English, German), software class A, runs with Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit), single license for 1 installation</td>
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<td>• Software and electronic documentation in 2 languages (German and English) on DVD</td>
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<td>Requirement: Software PCS 7 TeleControl OS Runtime</td>
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<tr>
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### Upgrade Package

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<td>Software package without SIMATIC PCS 7 ES/OS software V8.1</td>
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<tr>
<td>Engineering and runtime software, 2 languages (English, German), software class A, runs with Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit), single license for 1 installation</td>
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<tr>
<td>Note: SIMATIC PCS 7 ES and OS software V8.0 must be upgraded to V8.1 by means of a separate upgrade package (see Catalog ST PCS 7, Chapter &quot;Update/Upgrade Packages&quot;).</td>
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</table>
Automation levels in power supply and distribution

Electrical energy is distributed or transformed in electrical switchgear, whereby loads/consumers are bundled in load groups. With the help of switching devices, network nodes implemented as busbars connect incoming and outgoing cables, the so-called feeders.

When such a substation is dimensioned, account must also be taken of changes to the network topology in the event of faults, as well as the isolation and grounding of equipment for maintenance work.

In the past, plants for automating electrical switchgear for the power supply of processes were always strictly separated from plants for process automation. With SIMATIC PCS 7 PowerControl it is now possible to integrate switchgear automation devices into the SIMATIC PCS 7 process control system by means of Ethernet TCP/IP communication using the IEC 61850 transmission protocol, as well as via PROFINET DP.

The process automation and automation of electrical switchgear for medium-voltage in the range of 4 to 30 kV can therefore be combined in a single control system.

Intelligent electronic devices (IEDs) such as SIPROTEC protective devices or interoperable third-party devices are used for automating switchgears, that is, for protection, control, measuring and monitoring functions in electrical energy transmission and distribution.

Conventional process control system integration of protection devices on PROFIBUS DP is specified, in particular, for:
- Repeated use of an existing PROFIBUS DP infrastructure
- Partial modernization of existing plants
- Hybrid configurations comprising IEC 61850 and PROFINET DP integration in plant expansions

Operator control and monitoring of the protection devices based on technology objects is uniform from the viewpoint of the operator, i.e. regardless of the integration via IEC 61850 or PROFIBUS DP.

Note:
SIMATIC PCS 7 PowerControl V8.1 can be operated in combination with the OS engineering software and OS runtime software SIMATIC PCS 7 V8.1 as well as with SIMATIC PCS 7 TeleControl V8.1 (see section "Telecontrol") and SIMATIC PCS 7 OPEN OS V8.1 (see section "Controller integration"). The SIMATIC PCS 7 software must be ordered from Catalog ST PCS 7.
Benefits

Integration of switchgear automation with SIMATIC PCS 7 PowerControl provides substantial cost savings over the entire life cycle of the plant by means of, for example:

- Simpler plant structures with more transparency in the technological dependencies
- Further increase in the level of integration of the plant
- Uniform process control and further expansion of the operator’s task area
- Long-term investment security thanks to globally valid standard IEC 61850
- Rational, integrated engineering and fast commissioning
- Lower administration, service and training costs resulting from a uniform holistic view
- Cost-effective modernization of plants using an existing PROFIBUS DP infrastructure

Design

Integration options for automating medium voltage switchgears

Using SIMATIC PCS 7 PowerControl, switchgear automation devices can be integrated into the SIMATIC PCS 7 process control system as follows:

- Via Ethernet TCP/IP communication with IEC 61850 transmission protocol
  - Protective devices directly on the plant bus
  - Protective devices via a station controller (PCS 7 AS mEC RTX) on the plant bus
  - Protective devices via a station gateway (single or redundant) on the plant bus
- With the help of driver blocks of the PCS 7 PowerControl PROFIBUS Driver Library
  - SIPROTEC protection devices on PROFIBUS DP

PCS 7 PowerControl OS Engineering

The SIMATIC PCS 7 PowerControl OS Engineering software product expands a SIMATIC PCS 7 Engineering Station by the engineering functionality specific to PowerControl.

Ordering data for the SIMATIC PCS 7 Engineering Software (unlimited POs) and for further software components for SIMATIC PCS 7 engineering can be found in Chapter "Engineering system", Section "ES software" of Catalog ST PCS 7.
Design (continued)

PCS 7 PowerControl Library

The PCS 7 PowerControl Library which can be be ordered separately supports connection of switchgear via a station controller, station gateway or PROFIBUS DP with AS blocks, symbols and faceplates. It supplies technology blocks for electrical equipment, such as:

- Feeder
- Motor, generator
- Transformer
- Synchronization unit
- Line
- Busbar

Supplementary products from Catalog ST PCS 7 AO, Section "Switchgear automation", provide specific device driver libraries in addition to this for plant configurations using station controller or station gateway interfaces.

A license for the PCS 7 PowerControl Library is only valid for one station controller or one automation system (plants with station gateway).

The symbols and faceplates of the PCS 7 PowerControl Library are comparable with the corresponding symbols and faceplates of the OS library for direct device coupling over the plant bus. Regardless of the mode of device interfacing, the visualization on the operator station is therefore always identical.

PCS 7 PowerControl PROFIBUS Driver Library

Using the driver blocks of the PCS 7 PowerControl PROFIBUS Driver Library, SIPROTEC protection devices connected to the fieldbus PROFIBUS DP can also be integrated into SIMATIC PCS 7. The driver blocks establish a communications link between the SIMATIC PCS 7 automation system and the lower-level protection devices on PROFIBUS DP. During engineering, the protection devices are integrated via the driver blocks and linked into the CFC editor with technology blocks from the PCS 7 PowerControl Library. The correct symbols and faceplates are then available for process control.

The library supports a wide range of SIPROTEC protection devices, e.g. the 7SJ, 6MD, 7UM, 7UT, 7VE series.

PCS 7 PowerControl OS Runtime

For PowerControl-specific operator control and monitoring, you will need one PCS 7 PowerControl OS Runtime software product for each OS single station and OS server. A PCS 7 PowerControl IEC 61850 driver is already included.

The SIMATIC PCS 7 OS software must be ordered separately. You will find the SIMATIC PCS 7 OS software for the OS single station and OS server in Catalog ST PCS 7, Chapter "Operator System", Section "OS software". You will also find the SIMATIC PCS 7 OS software for a redundant OS server pair (incl. RS 232 connecting cable, 10 m) in Chapter "Operator System", Section "OS redundancy" of the catalog.

Selection guide for SIMATIC PCS 7 PowerControl

Upgrade

Existing SIMATIC PCS 7 PowerControl OS Engineering software V8.0 and SIMATIC PCS 7 PowerControl OS Runtime software V8.0 can be upgraded to V8.1 using the SIMATIC PCS 7 PowerControl Upgrade Package OS.

For upgrading the SIMATIC PCS 7 PowerControl Library from V8.0 to V8.1, we also offer the SIMATIC PCS 7 PowerControl Upgrade Package Library.

The SIMATIC PCS 7 ES and OS software V8.0 can be upgraded separately to V8.1 using the upgrade packages in Catalog ST PCS 7, sections "Upgrades for engineering system" and "Upgrades for operator system".
Function

Specific functional and performance features of SIMATIC PCS 7 PowerControl

Engineering station and operator station functions (OS single station/OS server) of the SIMATIC PCS 7 process control system have been expanded by SIMATIC PCS 7 PowerControl.

Functional and performance features for SIMATIC PCS 7 Engineering
- Object library with function blocks, symbols, and faceplates
- Object-oriented type-instance concept
- Automatic generation of the objects for the operator station
- Integration of new devices by importing their IEC 61850 Device Description (ICD)

Functional and performance features for SIMATIC PCS 7 process control
- Faceplates for SIPROTEC protective devices in the SIMATIC PCS 7 APL style (look&feel)
- Standardized behavior in the case of alarms, messages, and operator control and monitoring
- Diagnostics functionality for every IED

Example of a plant display for medium-voltage switchgear with trend window and faceplate of a medium-voltage motor

More information

Additional information is available on the Internet at:
www.siemens.com/simatic-pcs7/powercontrol
### Ordering data

<table>
<thead>
<tr>
<th>PCS 7 PowerControl</th>
<th>Article No.</th>
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<td>OS Engineering V8.1</td>
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</table>
| Software package without SIMATIC PCS 7 engineering software; for expanding a SIMATIC PCS 7 Engineering Station V8.1 (unlimited POs) for PCS 7 PowerControl OS Engineering Engineering software, 2 languages (English, German), software class A, runs with Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit), floating license for 1 user Delivery form package (without SIMATIC PCS 7 Software Media Package):  
- License key USB stick, certificate of license  
- Software and electronic documentation in 2 languages (German and English) on DVD |
| PCS 7 PowerControl Library V8.1 | 6ES7658-7NX18-2YA0 |
| AS blocks, symbols and faceplates for integrating electrical equipment via a station controller/station gateway  
Runtime software, software class A, 2 languages (English, German), runs with Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit), single license for 1 installation, valid for one AS or one station controller Delivery form package (without SIMATIC PCS 7 Software Media Package):  
- Certificate of license  
- Software and electronic documentation in 2 languages (German and English) on DVD |
| PROFIBUS Driver Library V8.1 | 6ES7658-7PX18-2YA0 |
| AS driver blocks for integrating SIPROTEC protection devices on PROFIBUS DP  
Runtime software, software class A, 2 languages (English, German), runs with Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit), single license for 1 installation, valid for one AS Delivery form package (without SIMATIC PCS 7 Software Media Package):  
- Certificate of license  
- Software and electronic documentation in 2 languages (German and English) on DVD |
Industry-specific systems

CEMAT: Cement plant automation

Overview

CEMAT is a process control system that was designed for the specific requirements of the cement industry and has proved successful over many years of use worldwide in the harsh environmental conditions of cement works.

The current system platform for CEMAT is the SIMATIC PCS 7 process control system whose modern architecture offers the ideal basis for future-proof and economical solutions in the cement industry. CEMAT utilizes the basic functionality, the open system interfaces, the flexibility and the scalability of SIMATIC PCS 7 and optimizes the operating philosophy as well as the diagnostic, signaling and interlocking concept with industry-specific software for the special tasks in lime and cement works. This industry software was developed in close collaboration with cement manufacturers and is the product of over 35 years of experience in the cement industry.

Note:
The current CEMAT V8.1 uses SIMATIC PCS 7 V8.1 as system platform. SIMATIC PCS 7 V8.1 is not supplied with CEMAT, but can be ordered separately (see Catalog ST PCS 7).

Function

Drive faceplate with analog-value display, analog-value selection dialog, and curve display (from right to left)

The functionality for the cement industry supplied by CEMAT is integrated into the system structure of SIMATIC PCS 7 during installation, and can be classified as follows:

- Engineering components with function block libraries specially tailored to the cement industry
- Automation components for open-loop/closed-loop control with communications components for the controller connection
- HMI components with:
  - Redundancy and archiving functions
  - Library for all control system objects with information, diagnostic, and multimedia dialogs
  - Message system with industry-specific service functions
  - Diagnostic system for fast recognition of faults and reduction of downtimes
  - Additional functions such as signal tracking and signal status information
  - APL-style design
- Web-compatible visualization of process displays and faceplates
- Management information: listing and statistics functions as well as long-term archiving
- Technological interfaces for linking technological add-on modules which are not part of the CEMAT product spectrum (also products from other manufacturers).

Message display with sector-specific information and message selection area
Function (continued)

It is especially worth noting the extensive multimedia support, e.g. by means of:

- Video sequences for operating and service personnel
- Showing of pictures in process pictures
- Integration of AutoCAD drawings (DXF format)
- Integration of plant plans
- Context-sensitive provision of information depending on place and time

Note on the upgrade

Existing installations as of CEMAT V6.1 can be upgraded by means of the CEMAT Upgrade Package V8.1 to CEMAT V8.1. The upgrade from CEMAT V6.1, V7.0 or V7.1 also incorporates a WinCC user archive upgrade, so one CEMAT Upgrade Package is required for each engineering station, OS server and OS single station.

Object-based information area with I/O information

Ordering data

<table>
<thead>
<tr>
<th>MINERALS AUTOMATION STANDARD CEMAT V8.1</th>
<th>Article No.</th>
<th>CEMAT Engineering software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEMAT Engineering V8.1</td>
<td>6DL5436-8AX18-0XA0</td>
<td>Engineering software, software class A, 2 languages (English, German), runs with Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit), single license for 1 installation</td>
</tr>
<tr>
<td>Delivery form package: Software and documentation in 2 languages (English and German) on DVD, license key USB stick, certificate of license</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEMAT OS software for single station incl. AS runtime licenses (PLC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEMAT Single Station V8.1 (3 AS)</td>
<td>6DL5434-8AA18-0XA0</td>
<td>OS software Single Station Runtime incl. 3 runtime licenses for AS (PLC), software class A, 2 languages (English, German), runs with Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit), single license for 1 installation</td>
</tr>
<tr>
<td>Delivery form package: Software and documentation in 2 languages (English and German) on DVD, license key USB stick, certificate of license</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEMAT ES/OS software for single station incl. runtime licenses (PLC)</td>
<td>6DL5438-8AA18-0XA0</td>
<td>CEMAT ES Single Station V8.1 (1 AS)</td>
</tr>
<tr>
<td>Engineering software and OS software Single Station Runtime incl. 1 runtime license for AS (PLC), software class A, 2 languages (English, German), runs with Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit), single license for 1 installation</td>
<td></td>
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</tr>
<tr>
<td>Delivery form package: Software and documentation on DVD, license key USB stick, certificate of license</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEMAT OS software for client</td>
<td>6DL5435-8AX18-0XA0</td>
<td>CEMAT Client V6.1</td>
</tr>
<tr>
<td>OS software Client Runtime, software class A, 2 languages (English, German), executes with Windows 7 Ultimate/Enterprise SP1 (32/64-bit), single license for 1 installation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delivery form package: Software and documentation in 2 languages (English and German) on DVD, license key USB stick, certificate of license</td>
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</tr>
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</table>
# Industry-specific systems

## CEMAT: Cement plant automation

### Ordering data

<table>
<thead>
<tr>
<th>CEMAT OS software for redundant server pair including AS runtime licenses (PLC)</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEMAT Server Redundancy V8.1 (3 AS) OS software Runtime for redundant server pair including runtime licenses for 3 AS (PLC), software class A, 2 languages (English, German), runs with Windows Server 2008 R2 Standard SP1 (64-bit), single license for 2 installations</td>
<td>6DL5433-8AA18-0XA0</td>
</tr>
</tbody>
</table>

| CEMAT Server Redundancy V8.1 (6 AS) OS software Runtime for redundant server pair including runtime licenses for 6 AS (PLC), software class A, 2 languages (English, German), runs with Windows Server 2008 R2 Standard SP1 (64-bit), single license for 2 installations | 6DL5433-8AB18-0XA0 |

| CEMAT Server Redundancy V8.1 (9 AS) OS software Runtime for redundant server pair including runtime licenses for 9 AS (PLC), software class A, 2 languages (English, German), runs with Windows Server 2008 R2 Standard SP1 (64-bit), single license for 2 installations | 6DL5433-8AC18-0XA0 |

| CEMAT Server Redundancy V8.1 (unlimited AS) OS software Runtime for redundant server pair including runtime licenses for unlimited AS (PLC), software class A, 2 languages (English, German), runs with Windows Server 2008 R2 Standard SP1 (64-bit), single license for 2 installations | 6DL5433-8AD18-0XA0 |

### CEMAT OS PowerPacks for redundant server pair

<table>
<thead>
<tr>
<th>CEMAT Server Redundancy V8.1 For expansion of the AS runtime licenses of a redundant server pair Software class A, 2 languages (English and German), runs with Windows Server 2008 R2 Standard SP1 (64-bit), single license for 2 installations</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• For expansion from 3 to 6 AS</td>
<td>6DL5433-8AB18-0XD0</td>
</tr>
<tr>
<td>• For expansion from 6 to 9 AS</td>
<td>6DL5433-8AC18-0XD0</td>
</tr>
<tr>
<td>• For expansion from 9 to unlimited AS</td>
<td>6DL5433-8AD18-0XD0</td>
</tr>
</tbody>
</table>

### CEMAT Upgrade Package V8.1 For upgrading existing CEMAT installations V6.1 and higher Engineering and runtime software, software class A, 2 languages (English and German), runs with Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit), single license for 1 installation | Article No. |
| • For expansion from 3 to 6 AS | 6DL5430-8AX18-0XE0 |
| • For expansion from 6 to 9 AS | 6DL5433-8AC18-0XD0 |
| • For expansion from 9 to unlimited AS | 6DL5433-8AD18-0XD0 |

### More information

Siemens AG  
Process Industries and Drives  
Process Automation  
Automation and Engineering  
Erlangen  

E-mail: cemat.industry@siemens.com

Additional information is available on the Internet at:  
www.siemens.com/cemat
The MINERALS AUTOMATION STANDARD is the process control system based on CEMAT that is tailored to the special requirements of the mining industry. It combines the functions developed over 35 years for automating cement plants with the automation functions typically required in mining.

Like CEMAT, the MINERALS AUTOMATION STANDARD also uses the modern SIMATIC PCS 7 process control system, with its open and flexibly scalable architecture, as its system platform. This means that it also benefits from the innovative Advanced Process Library (APL), which takes the experience gained by configuration engineers and plant operators over many years and transforms it into an excellent range of basic functions that have an attractive design and are extremely easy to use.

Building on this, the MINERALS AUTOMATION STANDARD optimizes both the operating philosophy as well as the diagnostics, signaling, and interlocking concept by using industry-specific software for the special tasks of the mining industry.

Note:
The latest MINERALS AUTOMATION STANDARD V8.1 is based on CEMAT V8.1. CEMAT V8.1 uses SIMATIC PCS 7 V8.1 as system platform. SIMATIC PCS 7 V8.1 is not supplied with CEMAT, but can be ordered separately (see Catalog ST PCS 7).
Industry-specific systems

MINERALS AUTOMATION STANDARD

Function (continued)

Message display with sector-specific information and message selection area

It is especially worth noting the extensive multimedia support, e.g. by means of:

- Video sequences for operating and service personnel
- Showing of pictures in process pictures
- Integration of AutoCAD drawings (DXF format)
- Integration of plant plans
- Context-sensitive provision of information depending on place and time

Note on the upgrade

Existing installations based on CEMAT V8.0 can be upgraded by means of the CEMAT Upgrade Package V8.1 to CEMAT V8.1. The upgrade also incorporates a WinCC user archive upgrade, so one CEMAT Upgrade Package is required for each engineering station, OS server and OS single station.

Ordering data

<table>
<thead>
<tr>
<th>MINERALS AUTOMATION STANDARD V8.1</th>
<th>Article No.</th>
<th>MINERALS AUTOMATION STANDARD V8.1</th>
<th>Article No.</th>
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<tr>
<td>CEMAT Engineering software</td>
<td></td>
<td>CEMAT ES/OS software for single station incl. runtime licenses (PLC)</td>
<td>6DL543-8AX18-0XA0</td>
</tr>
<tr>
<td>CEMAT Engineering V8.1</td>
<td>6DL5436-8AX18-0XA0</td>
<td>CEMAT ES Single Station V8.1 (1 AS)</td>
<td>6DL5436-8AA18-0XA0</td>
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<tr>
<td>Engineering software, software class A, 2 languages (English, German), runs with Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit), single license for 1 installation</td>
<td>Delivery form package: Software and documentation in 2 languages (English and German) on DVD, license key USB stick, certificate of license</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEMAT OS software for single station incl. AS runtime licenses (PLC)</td>
<td></td>
<td>CEMAT Single Station V8.1 (3 AS)</td>
<td>6DL543-8AA18-0XA0</td>
</tr>
<tr>
<td>CEMAT Single Station V8.1 (3 AS)</td>
<td></td>
<td>OS software Single Station Runtime incl. 3 runtime licenses for AS (PLC), software class A, 2 languages (English, German), runs with Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit), single license for 1 installation</td>
<td>6DL5434-8AA18-0XA0</td>
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<tr>
<td>OS software Single Station Runtime incl. 3 runtime licenses for AS (PLC), software class A, 2 languages (English, German), runs with Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit), single license for 1 installation</td>
<td>Delivery form package: Software and documentation in 2 languages (English and German) on DVD, license key USB stick, certificate of license</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEMAT Client V8.1</td>
<td></td>
<td>CEMAT OS software for client</td>
<td>6DL5435-8AX18-0XA0</td>
</tr>
<tr>
<td>OS software Client Runtime, software class A, 2 languages (English, German), executes with Windows 7 Ultimate/Enterprise SP1 (32/64-bit), single license for 1 installation</td>
<td>Delivery form package: Software and documentation on DVD, license key USB stick, certificate of license</td>
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</table>
### Ordering data

<table>
<thead>
<tr>
<th>CEMAT OS software for redundant server pair including AS runtime licenses (PLC)</th>
<th>Article No.</th>
<th>CEMAT Server Redundancy V8.1 for expansion of the AS runtime licenses of a redundant server pair</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEMAT Server Redundancy V8.1 (3 AS) OS software Runtime for redundant server pair including runtime licenses for 3 AS (PLC), software class A, 2 languages (English, German), runs with Windows Server 2008 R2 Standard SP1 (64-bit), single license for 2 installations</td>
<td>6DL5433-8AA18-0XA0</td>
<td>For expansion from 3 to 6 AS 6DL5433-8AB18-0XD0</td>
</tr>
<tr>
<td>CEMAT Server Redundancy V8.1 (6 AS) OS software Runtime for redundant server pair including runtime licenses for 6 AS (PLC), software class A, 2 languages (English, German), runs with Windows Server 2008 R2 Standard SP1 (64-bit), single license for 2 installations</td>
<td>6DL5433-8AB18-0XA0</td>
<td>For expansion from 6 to 9 AS 6DL5433-8AC18-0XD0</td>
</tr>
<tr>
<td>CEMAT Server Redundancy V8.1 (9 AS) OS software Runtime for redundant server pair including runtime licenses for 9 AS (PLC), software class A, 2 languages (English, German), runs with Windows Server 2008 R2 Standard SP1 (64-bit), single license for 2 installations</td>
<td>6DL5433-8AC18-0XA0</td>
<td>For expansion from 9 to unlimited AS 6DL5433-8AD18-0XD0</td>
</tr>
<tr>
<td>CEMAT Server Redundancy V8.1 (unlimited AS) OS software Runtime for redundant server pair including runtime licenses for unlimited AS (PLC), software class A, 2 languages (English, German), runs with Windows Server 2008 R2 Standard SP1 (64-bit), single license for 2 installations</td>
<td>6DL5433-8AD18-0XA0</td>
<td></td>
</tr>
</tbody>
</table>

### More information

Siemens AG  
Process Industries and Drives  
Process Automation  
Automation and Engineering  
Erlangen  
E-mail: cemat.industry@siemens.com  
Additional information is available on the Internet at: www.siemens.com/MinAS
One feature of laboratory work is the frequent modification of experiments through which valuable knowledge, data and parameters are gained for series production. Particularly essential for automation of the laboratory - in addition to high quality, efficiency and safety - is therefore fast and flexible adaptation of the laboratory equipment to the automation technology.

With the PCS 7 LAB Collection we offer you a SIMATIC PCS 7 automation project that is specifically tailored to these particular laboratory requirements. The matching SIMATIC PCS 7 system platform is described in detail in the configuration lists of this project.

This enables you to assemble your laboratory automation system flexibly depending on the project specifications and to have an influence on the construction and installation technology. The selected components can be ordered separately by means of the SIMATIC PCS 7 Main Catalog ST PCS 7 and supplementary SIMATIC Catalogs.

The PCS 7 LAB Collection is not only suitable for autonomous laboratory automation. The integration of the laboratory automation system into the SIMATIC PCS 7 plant network permits both an efficient exchange of information and the simple transfer of laboratory results to the production department.

Note:
The SIMATIC PCS 7 software V8.1 in the configuration lists is supplied with the latest service pack when required.

Application
Preferred field of application for the PCS 7 LAB Collection are:
- Process-engineering laboratories in the process industry (chemical and pharmaceutical industries, biotechnology, food and beverage industry)
- Training establishments (universities, technical colleges)
- Test bench automation systems
Design (continued)

System platform for PCS 7 LAB Collection

The license of the PCS 7 LAB Collection authorizes the user to download a preconfigured laboratory automation project. In addition to automation examples of typical laboratory applications, this also includes the source code for the laboratory devices supported.

Hardware and SIMATIC PCS 7 system software for automation, engineering, operator control and monitoring can be ordered individually using the following configuration lists, the main SIMATIC PCS 7 Catalog ST PCS 7, and the supplementary SIMATIC Catalogs, e.g. ST 70, ST 80 or IK PI.

The hardware and software components described in the configuration lists of the PCS 7 LAB Collection are categorized as follows:
- System for automation, engineering, operator control and monitoring, alternatives:
  - All-in-one system with the SIMATIC PCS 7 functionality for operator control and monitoring (OS), engineering (ES) and automation (AS) in one device: SIMATIC PCS 7 BOX RTX ES/OS compact system
  - Distributed system in which the AS functionality is allocated to an external SIMATIC PCS 7 automation system: SIMATIC PCS 7 AS RTX and SIMATIC PCS 7 ES/OS system (e.g. SIMATIC PCS 7 BOX ES/OS system)
- Distributed I/O for connection of laboratory devices, alternatives based on:
  - ET 200pro or
  - ET 200S
- Components for serial connection of third-party devices, based on ET 200S

Configuration list for SIMATIC PCS 7 BOX RTX ES/OS complete system

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Article number</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6ES7650-·······</td>
<td>SIMATIC PCS 7 BOX RTX ES/OS system with SIMATIC PCS 7 ES, OS and AS system functionality, assembled and preinstalled; based on SIMATIC IPC627D with Windows 7 Ultimate 32-bit operating system, multi-language (English, German, French, Italian, Spanish, Chinese) as well as with SIMATIC PCS 7 ES Single Station V8.1 including 250 AS/OS Runtime PO, 5 languages (German, English, French, Italian, Spanish), SIMATIC PCS 7 Runtime License RTX, SIMATIC WinAC RTX 2010 and SIMATIC PCS 7 V8.1 Software Media Package</td>
</tr>
<tr>
<td>-4BA00-1F-</td>
<td>CPU Intel Core i3-4330TE (2 Cores/4 Threads, 2.4 GHz, 4 MB cache, VT-x); RAM 8 GB DDR3 1600, DIMM, 250 GB HDD SATA, DVD±R/RW</td>
<td></td>
</tr>
<tr>
<td>-4BB00-1F-</td>
<td>CPU Xeon E3-1268Lv3 (4 Cores/8 Threads, 2.3 (3.3) GHz, 8 MB cache, VT-d, AMT); RAM 8 GB DDR3 1600, DIMM, 240 GB SSD, DVD±R/RW</td>
<td></td>
</tr>
<tr>
<td>-4BC00-1F-</td>
<td>CPU Xeon E3-1268Lv3 (4 Cores/8 Threads, 2.3 (3.3) GHz, 8 MB cache, VT-d, AMT); RAM 8 GB DDR3 1600, DIMM, ECC, RAID1, 2 × 320 GB HDD SATA (2.5”); DVD±R/RW</td>
<td></td>
</tr>
<tr>
<td>-4B 00-1FA-</td>
<td>Without panel</td>
<td></td>
</tr>
<tr>
<td>-4B 00-1FB-</td>
<td>22” Single Touch Panel, 1920 × 1080 pixels</td>
<td></td>
</tr>
<tr>
<td>-4B 00-1F 0/1/2/3/4/5-</td>
<td>110/230 V AC industrial power supply to NAMUR; European power cable (0), Great Britain (1), Switzerland (2), USA (3), Italy (4), China (5)</td>
<td></td>
</tr>
<tr>
<td>-4B 00-1F 6-</td>
<td>24 V DC industrial power supply</td>
<td></td>
</tr>
</tbody>
</table>

Optional accessories

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Article number</th>
<th>Designation</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>6ES7648-0CB00-0YA0-</td>
<td>SIMATIC PC keyboard (USB connection); keyboard layout German/International</td>
</tr>
<tr>
<td>1</td>
<td>6AV2181-8AT00-0AX0-</td>
<td>SIMATIC HMI USB mouse; optical mouse with scroll wheel and USB connection, color anthracite</td>
</tr>
</tbody>
</table>

Further accessories:
Possible additional accessories (to be provided by customer):
- PROFIBUS cable
### Industry-specific systems

**PCS 7 LAB Collection**

**Design (continued)**

*Configuration list for combination of SIMATIC PCS 7 ES/OS system and SIMATIC PCS 7 AS RTX*

**Example 1: SIMATIC PCS 7 BOX ES/OS System and SIMATIC PCS 7 AS RTX**

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Article number</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6ES7650-·····-····</td>
<td>SIMATIC PCS 7 BOX ES/OS system with SIMATIC PCS 7 ES and OS system functionality, assembled and preinstalled, based on SIMATIC IPC627D with Windows 7 Ultimate 64-bit operating system, multi-language (English, German, French, Italian, Spanish, Chinese) as well as with SIMATIC PCS 7 ES Single Station V8.1 including 250 AS/OS Runtime PO, 5 languages (German, English, French, Italian, Spanish), SIMATIC PCS 7 BCE V8.1 Runtime License and SIMATIC PCS 7 V8.1 Software Media Package</td>
</tr>
<tr>
<td></td>
<td>-4SA51-1H</td>
<td>CPU Intel Core i3-4330TE (2 cores/4 threads, 2.4 GHz, 4 MB cache, VT-x); RAM 8 GB DDR3 1600, DIMM; 250 GB HDD SATA; DVD±R/RW</td>
</tr>
<tr>
<td></td>
<td>-4BB81-1H</td>
<td>CPU Xeon E3-1268Lv3 (4 cores/8 threads, 2.3 (3.3) GHz, 8 MB cache, VT-d, AMT); RAM 8 GB DDR3 1600, DIMM; 240 GB SSD; DVD±R/RW</td>
</tr>
<tr>
<td></td>
<td>-4BC81-1H</td>
<td>CPU Xeon E3-1268Lv3 (4 cores/8 threads, 2.3 (3.3) GHz, 8 MB cache, VT-d, AMT); RAM 8 GB DDR3 1600, DIMM, ECC; RAID1, 2 × 320 GB HDD SATA (2.5’’); DVD±R/RW</td>
</tr>
<tr>
<td></td>
<td>-4B 81-1-HA</td>
<td>Without panel</td>
</tr>
<tr>
<td></td>
<td>-4B 81-1-HB</td>
<td>22” Single Touch Panel, 1920 × 1080 pixels</td>
</tr>
<tr>
<td></td>
<td>-4B 81-1-H1/2/3/4/5</td>
<td>110/230 V AC industrial power supply to NAMUR; European power cable (0), Great Britain (1), Switzerland (2), USA (3), Italy (4), China (5)</td>
</tr>
<tr>
<td></td>
<td>-4B 81-1-H6</td>
<td>24 VDC industrial power supply</td>
</tr>
</tbody>
</table>

| 1        | 6ES7654-0UE13-0XX0 | SIMATIC PCS 7 AS RTX Assembled and preinstalled automation system on the basis of the SIMATIC IPC427C with Windows Embedded Standard 2009 operating system, WinAC RTX 2010 controller software, and SIMATIC IPC DiagMonitor diagnostics software, pre-installed on a 4 GB Compact Flash card, suitable for SIMATIC PCS 7 V7.1 SP2 or higher and SIMATIC PCS 7 V8.0/V8.1 SIMATIC PCS 7 AS Runtime License for 100 PO |

| 1        | 6ES7653-2BA00-0XB5 | • Type of delivery package |
|          | 6ES7653-2BA00-0XH5 | • Type of delivery online |

| 1        | 6ES7652-0XD18-2YB5 | SIMATIC PCS 7 SFC Visualization V8.1 for display and operation of SFC sequential control systems on an operator station; 6 languages (English, German, French, Italian, Spanish, Chinese) |
|          | 6ES7652-0XD18-2YH5 | • Type of delivery package |
|          |                    | • Type of delivery online |
Example 2: Other SIMATIC PCS 7 ES/OS system and SIMATIC PCS 7 AS RTX

If the SIMATIC PCS 7 AS RTX is not combined with a SIMATIC PCS 7 BOX ES/OS system but with a different SIMATIC PCS 7 ES/OS system, the SIMATIC PCS 7 AS/OS Engineering Software and the SIMATIC PCS 7 OS Software Single Station are not part of the scope of delivery, and must be ordered separately. The above configuration list is then changed as follows:

### Optional accessories

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Article number</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6ES7648-0CB00-0YA0</td>
<td>SIMATIC PC keyboard (USB connection); keyboard layout German/International</td>
</tr>
<tr>
<td>1</td>
<td>6AV2181-8AT00-0AX0</td>
<td>SIMATIC HMI USB mouse; optical mouse with scroll wheel and USB connection, color anthracite</td>
</tr>
</tbody>
</table>

### Further accessories:

Possible additional accessories (to be provided by customer):

- PROFIBUS cable
### Design (continued)

**Configuration list for ET 200pro I/O system**

#### Additional accessories

Possible additional accessories (to be provided by customer):
- Cable material for connection of 120/230 VAC supply
- Cable material for 24 VDC power supply
- PROFIBUS cable
- M12 connector for ET 200pro

#### Arrangement of the ET 200pro modules to match the configuration

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Article number</th>
<th>Designation</th>
</tr>
</thead>
</table>
| 1        | 6ES7141-4BF00-0AB0 | Digital input module 8 DI for ET 200pro  
High Feature, 24 V DC, with module diagnostics; including bus module |
| 1        | 6ES7142-4BD00-0AB0 | Digital output module 4 DO for ET 200pro  
High Feature, 24 V DC, 2 A, with module diagnostics; including bus module |
| 1        | 6ES7144-4FF01-0AB0 | Analog input module 4 AI U for ET 200pro  
High Feature, ± 10 V; ± 5 V; 0 ... 10 V; 1 ... 5 V, with channel diagnostics; including bus module |
| 1        | 6ES7144-4GF01-0AB0 | Analog input module 4 AI I for ET 200pro  
High Feature, ± 20 mA; 0 ... 20 mA; 4 ... 20 mA, with channel diagnostics; including bus module |
| 1        | 6ES7144-4JF00-0AB0 | Analog input module 4 AI RTD for ET 200pro  
High Feature, resistors: 150, 300, 600 and 3000 Ω; resistance thermometers: Pt100, 200, 500, 1000, Ni100, 120, 200, 500 and 1000; with channel-discrete diagnostics, including bus module |
| 1        | 6ES7145-4FF00-0AB0 | Analog output module 4 AO U for ET 200pro  
High Feature, ± 10 V; 0 ... 10 V; 1 ... 5 V, channel diagnostics; including bus module |
| 1        | 6ES7145-4GF00-0AB0 | Analog output module 4 AO I for ET 200pro  
High Feature, ± 20 mA; 0 ... 20 mA; 4 ... 20 mA, channel diagnostics; including bus module |
| 1        | 6ES7154-2AA01-0AB0 | Interface module IM 154-2 for ET 200pro  
High Feature; including terminating module |
| 6        | 6ES7194-4CA00-0AA0 | Interface module CM IO 4 x M12  
4 x M12 sockets for connection of digital/analog sensors or actuators to ET 200pro |
| 1        | 6ES7194-4CB00-0AA0 | Interface module CM IO 8 x M12  
8 x M12 sockets for connection of digital sensors or actuators to ET 200pro |
| 1        | 6ES7194-4GA00-0AA0 | ET 200pro module rack, narrow  
for interface, electronics and power modules: 500 mm |

#### Optional accessories

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Article number</th>
<th>Designation</th>
</tr>
</thead>
</table>
| 1        | 6EP1336-3BA10  | SITOP PSU8200, 1-phase, 24 V DC, 20 A  
Stabilized power supply; input: 120 to 230 V AC/DC, output: 24 V DC, 20 A |
### Configuration list for ET 200S I/O system

**Arrangement of the ET 200S modules to match the configuration**

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Article number</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6ES7131-4BD01-0AB0</td>
<td>DI 4 x DC 24 V, High Feature; digital input module for ET 200S with diagnosis, short-circuit monitoring; ordering unit: 5 units</td>
</tr>
<tr>
<td>1</td>
<td>6ES7132-4BB31-0AB0</td>
<td>DO 2 x DC 24 V/2 A, High Feature, digital output module for ET 200S with diagnostics; channel-based switching of substitute value on failure of CPU (parameterizable), channel-based short-circuit monitoring, channel-based wire-break monitoring on “1” signal; Ordering unit: 5 units</td>
</tr>
<tr>
<td>2</td>
<td>6ES7134-4FB01-0AB0</td>
<td>AI 2 x U (± 5 V, 1 ... 5 V, ± 10 V)/13bit, standard analog input module for ET 200S; module-internal diagnostics, overflow/underflow diagnostics</td>
</tr>
<tr>
<td>2</td>
<td>6ES7134-4GB01-0AB0</td>
<td>AI 2 x I, 2-wire MU (4 ... 20 mA)/13bit, standard analog input module for ET 200S; module-internal diagnostics, overflow/underflow diagnostics, wire-break monitoring</td>
</tr>
<tr>
<td>2</td>
<td>6ES7134-4GB11-0AB0</td>
<td>AI 2 x I, 4-wire MU (± 20 mA, 4 ... 20 mA)/13bit, standard analog input module for ET 200S; module-internal diagnostics, overflow/underflow diagnostics, wire-break monitoring</td>
</tr>
<tr>
<td>1</td>
<td>6ES7134-4JB51-0AB0</td>
<td>AI 2/4 x RTD standard for resistance thermometers or resistance measurement Analog input module for ET 200S</td>
</tr>
<tr>
<td>2</td>
<td>6ES7135-4LB02-0AB0</td>
<td>AO 2 x U (1 ... 5 V, ± 10 V)/15 bit, high feature analog output module for ET 200S</td>
</tr>
<tr>
<td>2</td>
<td>6ES7135-4MB02-0AB0</td>
<td>AO 2 x I (± 20 mA, 4 ... 20 mA)/15 bit, high feature analog output module for ET 200S</td>
</tr>
<tr>
<td>1</td>
<td>6ES51710-8MA11</td>
<td>SIMATIC S5, 35 mm DIN rail, length 483 mm for 19” cabinets</td>
</tr>
<tr>
<td>5</td>
<td>6ES7193-4CA40-0AA0</td>
<td>Terminal module TM-EE15S26-A1 2 x 6 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, screw terminals; ordering unit: 5 units</td>
</tr>
<tr>
<td>2</td>
<td>6ES7138-4CA01-0AA0</td>
<td>PM-E power module; 24 V DC/10 A Monitoring of the load voltage</td>
</tr>
<tr>
<td>2</td>
<td>6ES7193-4CC20-0AA0</td>
<td>Terminal module TM-P1SS23-A1 2 x 3 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, screw terminals; ordering unit: 1 unit</td>
</tr>
<tr>
<td>1</td>
<td>6ES7151-1BA02-0AB0</td>
<td>Interface module IM 151-1 for ET 200S, High Feature</td>
</tr>
</tbody>
</table>

### Optional accessories

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Article number</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6EP1336-3BA10</td>
<td>SITOP PSU8200, 1-phase, 24 V DC, 20 A Stabilized power supply; input: 120 to 230 V AC/DC, output: 24 V DC, 20 A</td>
</tr>
</tbody>
</table>

### Additional accessories

Possible additional accessories (to be provided by customer):
- Cable material for connection of 120/230 VAC supply
- Cable material for 24 VDC power supply
- PROFIBUS cable
Industry-specific systems

PCS 7 LAB Collection

Design (continued)

Configuration list for ET 200S components for serial connection of third-party devices

The PCS 7 LAB Collection supports the connection of devices communicating in serial mode via ET 200S interface modules 1SI. A block library for addressing the devices is supplied with the PCS 7 LAB Collection.

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Article number</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>6ES7138-4DF01-0AB0</td>
<td>Interface module 1SI with RS 232C/422/485 serial interface; ASCII and 3964R protocol</td>
</tr>
<tr>
<td>1</td>
<td>6ES5710-8MA11</td>
<td>SIMATIC S5 35 mm DIN rail Length: 483 mm (for 19” cabinets)</td>
</tr>
<tr>
<td>2</td>
<td>6ES7193-4CA40-0AA0</td>
<td>TM-E15S26-A1 terminal module 2 x 6 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, screw-type terminals; Ordering unit: 5 units</td>
</tr>
<tr>
<td>1</td>
<td>6ES7138-4CA01-0AA0</td>
<td>PM-E power module: 24 V DC/10 A With monitoring of the load voltage</td>
</tr>
<tr>
<td>1</td>
<td>6ES7193-4CC20-0AA0</td>
<td>TM-P15S23-A1 terminal module 2 x 3 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, screw-type terminals; Ordering unit: 1 units</td>
</tr>
<tr>
<td>1</td>
<td>6ES7151-1BA02-0AB0</td>
<td>Interface module IM 151-1 for ET 200S, High Feature</td>
</tr>
</tbody>
</table>

Installation

Setup and installation depend on the space available and the requirements of the operating environment in the laboratory. According to the construction guidelines of the SIMATIC PCS 7 process control system, the products defined by means of the configuration lists are suitable not only for wall mounting, but also for mounting in enclosures or cabinets.

This enables you to be very flexible in planning the construction. Both centralized and distributed structure versions can be implemented.

Ordering data

<table>
<thead>
<tr>
<th>Article No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6DL5408-8AX01-0XL1</td>
<td>PCS 7 LAB Collection License for preconfigured SIMATIC PCS 7 automation project for laboratory automation Runtime software, software class A, 2 languages (English, German), single license for 1 installation Delivery package: Certificate of License</td>
</tr>
</tbody>
</table>

Note:

The Certificate of License authorizes the user to download the PCS 7 LAB Collection software from the following Internet address:


The PCS 7 LAB Collection software is preconfigured for the I/O modules of the ET 200pro or ET 200S distributed I/O systems defined in a configuration list. They include, among others:

- Function block library for communication via ASCII protocol
- Function blocks for high-speed event-controlled process value recording using the AR_SEND function
- Documented examples of applications

More information

Additional information is available on the Internet at:

www.siemens.com/simatic-pcs7-lab
PCS 7 Advanced Process Graphics

Overview

PCS 7 Advanced Process Graphics (APG) provide graphical objects for optimizing the process visualization of overview displays that correspond to levels 1 and 2 of the topology-oriented and task-oriented plant hierarchy. They allow the operator to detect trends in the process and to respond to them before an alarm is triggered.

PCS 7 Advanced Process Graphics is optimized for interoperation with the PCS 7 Advanced Process Library (APL). Cooperation with other libraries is also possible, but requires more engineering effort.

Benefits

In combination with the PCS 7 Advanced Process Library, harmonized overall solutions can be generated. The APG graphic objects are oriented to the design and the operating philosophy of the PCS 7 Advanced Process Library. APL objects adapted to the appearance of APG objects optimize the interplay.

Note: PCS 7 Advanced Process Graphics V8.1 can be used in combination with SIMATIC PCS 7 V8.1.

In comparison to technology-oriented presentation of the process, the task-oriented presentation using graphics objects from the spectrum of PCS 7 Advanced Process Graphics offers a number of benefits, such as:

- More compact, simplified presentation in overview displays
- Quick acquisition of the current plant situation
- Situation-specific and task-specific process views for supporting operating tasks
- Attention management for faster reaction times
- Recognition of schematic plant situations
- Improved understanding of the process
- Development of the mental and cognitive capabilities of the operator
Efficient process control

### Application

PCS 7 Advanced Process Graphics handles the visualization of subsystems in overview displays in accordance with levels 1 and 2 of the topology-oriented and task-oriented plant hierarchy. Possible applications for PCS 7 Advanced Process Graphics exist in a number of sectors, e.g.:

- Chemical industry
- Pharmaceutical industry
- Water and wastewater
- Glass and solar industry
- Oil & gas
- Food and beverage industry
- Mining

### Ordering data

<table>
<thead>
<tr>
<th>Article No.</th>
<th>Description</th>
</tr>
</thead>
</table>
| 6DL5410-8BX18-0Y0A | PCS 7 Advanced Process Graphics Engineering and Runtime V8.1  
Engineering and runtime software with engineering and runtime licenses, valid for all ESes, ASes and OSes of a SIMATIC PCS 7 project  
2 languages (English, German), software class A, runs with Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit)  
Delivery form package  
(without SIMATIC PCS 7 Software Media Package):  
- Certificate of license  
- Software and electronic documentation in 2 languages (German and English) on DVD |
| 6DL5410-8BX18-0YE0 | PCS 7 Advanced Process Graphics Engineering and Runtime Upgrade Package V8.0 to V8.1  
Engineering and runtime software with engineering and runtime licenses, valid for all ESes, ASes and OSes of a SIMATIC PCS 7 project  
2 languages (English, German), software class A, runs with Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit)  
Delivery form package  
(without SIMATIC PCS 7 Software Media Package):  
- Certificate of license  
- Software and electronic documentation in 2 languages (German and English) on DVD |

### Function

PCS 7 Advanced Process Graphics focuses the attention of the operator on the most important aspects and supports decision-making in accordance with the plant situation. The following functions are implemented in PCS 7 Advanced Process Graphics:

- Hybrid display with bar graph and process tag status information
- Bar graph without process tag status information
- Spider chart with variable number of value axes
- Trend charts displayed in one screen, can be combined with bar graph
- "Loop in Tag" function for fast, targeted navigation
Efficient process control
The SIMATIC PCS 7 Industry Library (IL) expands the concentrated standard functionality of the SIMATIC PCS 7 process control system in the SIMATIC PCS 7 Advanced Process Library (APL) to include technological blocks and faceplates for industry-specific applications. It also supports operator control and monitoring via SIMATIC HMI Comfort Panels as well as the integration of SIMATIC S7 package units into SIMATIC PCS 7 applications.

At the heart of the SIMATIC PCS 7 Industry Library are tried-and-tested industry libraries with blocks in the modern APL design, for example, from areas such as water/wastewater and building automation.

Note:
The SIMATIC PCS 7 Industry Library V8.1 can be used together with SIMATIC PCS 7 V8.1.

Application
Together with the SIMATIC PCS 7 Advanced Process Library, the SIMATIC PCS 7 Industry Library enables harmonized overall solutions with a uniform look and feel for specific control system tasks in many different industries, e.g.:
- Chemical industry
- Pharmaceutical industry
- Water and wastewater
- Glass and solar
- Oil and gas
- Food and beverages
- Minerals and mining

It helps accelerate the engineering process, simplifies process control and reduces the time-to-market.

Design
The SIMATIC PCS 7 Industry Library functionality is distributed across two sublibraries which can be installed separately:
- Industry Library for PCS 7
- Industry Library for S7

The product structure, however, is geared toward the operational environment in the SIMATIC PCS 7 process control system. As a result, the SIMATIC PCS 7 Industry Library is available in the form of an engineering component and a runtime component (separately or combined in one product):
- SIMATIC PCS 7 Industry Library Engineering:
  Engineering software with engineering license for one engineering station
- SIMATIC PCS 7 Industry Library Runtime:
  Runtime license for one automation system (SIMATIC PCS 7 automation systems of all designs and S7-300 controllers)

The SIMATIC PCS 7 Industry Library Engineering product component enables you to carry out configuration work on a SIMATIC PCS 7 engineering station with both sublibraries.

The SIMATIC PCS 7 Industry Library Runtime product component also allows you to execute blocks from both sublibraries on one automation system.

Keep in mind that SIMATIC PCS 7 process objects (Runtime POs) are used up by the technological blocks of the SIMATIC PCS 7 Industry Library.
## Technology libraries

### Industry Library for PCS 7

Sublibrary for the functional expansion of the SIMATIC PCS 7 Advanced Process Library with:

- Hierarchical multi-control room operation
- Support of SIMATIC HMI Comfort Panels
- Panel interface blocks for APL and IL functions
- Functions for facility management systems (FMCS) or automation of heating, ventilating and air-conditioning (HVAC)

**Technology blocks**
- Equipment monitoring and prioritization for up to 16 items of equipment
- Time switch for up to 8 time intervals
- Parameter management
- Standard interfacing of external APC applications
- Analog monitoring of 8 freely selectable limits
- Analog monitoring with additional binary limit monitoring
- Polyline with faceplate and configurable number of turning points
- Setpoint encoder with a variable number of setpoints
- Simulation blocks
- Control of diverter values
- Jump distributor for up to 5 jump destinations
- Communication functions

### Industry Library for S7

Sublibrary for the configuration and integration of package units that are based on S7-300 controllers with:

- Support of SIMATIC HMI Comfort Panels
- Panel interface blocks for IL functions
- Functions for facility management systems (FMCS) or automation of heating, ventilating and air-conditioning (HVAC)

**Technology blocks**
- Analog monitoring of 8 freely selectable limits
- Analog monitoring with additional binary limit monitoring
- Equipment monitoring for up to 8 items of equipment
- Analog measured value monitoring
- Digital measured value monitoring
- 3-point actuator (flaps, motors, valves, etc.)
- Operator control blocks
- Valve control
- Motor control (standard motor, with 2 directions of rotation, with variable speed)
- Control of motor valves with additional panel operation

### Package units and RTUs based on S7-300

The function blocks and faceplates of the Industry Library for S7 sublibrary integrate package units, RTUs and distributed systems into a SIMATIC PCS 7 project based on a uniform concept. They represent technology blocks, such as motor, valve, measured value monitoring or closed-loop control, with message, acknowledgment and time-stamp functions that are compatible with SIMATIC PCS 7. The function blocks are configured in CFC.

### Operator control and monitoring via SIMATIC HMI Comfort Panel

Operator control and monitoring on a SIMATIC HMI Comfort Panel can be configured with the panel interface blocks of the "Industry Library for PCS 7" and "Industry Library for S7" sub-libraries. Configuration takes place in the CFC parallel to the technological block (e.g. the motor). Taking operating rights and hierarchical operating concepts (multi-control room operation) into consideration, the technological function can then be operated both from an operator station and from a SIMATIC HMI Comfort Panel.

### Building automation systems (heating, ventilating and air-conditioning – FMCS/HVAC)

With the functions for building automation systems (FMCS/HVAC) in the "Industry Library for PCS 7" and "Industry Library for S7" sub-libraries, the SIMATIC PCS 7 process control system can perform open and closed-loop control tasks for heating, ventilating and air-conditioning in the industrial facilities in addition to the primary process automation tasks. A common system platform for process and building automation with a uniform visualization and engineering environment provides many advantages and offers significant cost savings for operation, servicing and stocking of spare parts.

The following components are available:

- Time switch with 8 parameterizable switching channels
- Blocks for calculating:
  - Absolute humidity, enthalpy and saturation humidity from relative humidity and temperature
  - Thermal output and energy of water from volume flow, as well as flow and return temperatures
- Blocks for converting:
  - Absolute humidity to relative humidity and vice versa
  - Temperature unit from Celsius to Fahrenheit and vice versa
- Polygon block, e.g. for setpoint input with reference to outdoor temperature
- HX diagram guided block for central control of a ventilation system
- Optimization of periods of use of heating and cooling systems depending on the outdoor temperature
## Technology libraries

### SIMATIC PCS 7 Industry Library (IL)

<table>
<thead>
<tr>
<th>Ordering data</th>
<th>Article No.</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SIMATIC PCS 7 Industry Library</strong></td>
<td></td>
<td><strong>Engineering and Runtime</strong></td>
</tr>
<tr>
<td>Engineering and Runtime V8.1 Block library for SIMATIC PCS 7 and SIMATIC S7 with function blocks and faceplates as well as electronic documentation</td>
<td>6DL5410-8AX18-0YA0</td>
<td><strong>SIMATIC PCS 7 Industry Library Upgrade</strong> Package V8.0 to V8.1 Block library for SIMATIC PCS 7 and SIMATIC S7 with upgrade license for all engineering and runtime licenses of a project</td>
</tr>
<tr>
<td>Engineering license for one engineering station</td>
<td></td>
<td>Engineering license for one engineering station combined with runtime license for one automation system</td>
</tr>
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<td>Delivery form package (without SIMATIC PCS 7 Software Media Package):</td>
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<tr>
<td>- Certificate of license</td>
<td></td>
<td>- Certificate of license</td>
</tr>
<tr>
<td>- Software and electronic documentation in 2 languages (German and English) on DVD</td>
<td></td>
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</tr>
<tr>
<td>SIMATIC PCS 7 Industry Library</td>
<td></td>
<td><strong>Runtime V8.1</strong></td>
</tr>
<tr>
<td>Runtime V8.1 Language-neutral, single license</td>
<td>6DL5410-8AA18-0YL1</td>
<td><strong>Runtime licenses for 30 automation systems</strong></td>
</tr>
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<td>Delivery form package (without SIMATIC PCS 7 Software Media Package):</td>
<td></td>
<td>Routine license for 1 automation system</td>
</tr>
<tr>
<td>Certificate of license</td>
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<td>Routine licenses for 30 automation systems</td>
</tr>
<tr>
<td>• Runtime license for 1 automation system</td>
<td></td>
<td>• Runtime licenses for 30 automation systems</td>
</tr>
</tbody>
</table>

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Overview

The SIMATIC PCS 7 Condition Monitoring Library (CML) expands the functionality of the SIMATIC PCS 7 Advanced Process Library (APL) with blocks for monitoring and analyzing mechanical assets (plant components such as pumps, valves, etc.). The CML blocks serve to increase the efficiency and availability of mechanical assets and to detect any damage at an early stage. They are designed in the APL style and therefore fit perfectly into APL-based process pictures.

The SIMATIC PCS 7 Condition Monitoring Library includes the following blocks:
- PumpMon for monitoring of centrifugal pumps
- VlvMon for monitoring of control valves
- SteadyState for detection of stationary states in a dynamic process
- PST for the online valve test without interfering with production
- PressDropMon for monitoring pressure loss/pressure drop, e.g. in filters

Notes:
- The SIMATIC PCS 7 Condition Monitoring Library V8.1 is available as download file: http://support.automation.siemens.com/WW/view/en/99741825
- The SIMATIC PCS 7 Condition Monitoring Library V8.1 can be used in combination with SIMATIC PCS 7 V8.1 (incl. SIMATIC PCS 7 Advanced Process Library).
- To implement a Partial Stroke Test application, S7 F systems V6.1+SP2 must be installed before the PST block.

Function

PumpMon block

The PumpMon block suitable for electric centrifugal pumps with both constant and variable speeds provides the following functions:
- Visualization of the current operating point of the pump in relation to the pump characteristic curve
- Early detection of imminent pump damage and warning in the event of unfavorable operating states
- Optimization of pump design through statistical evaluation of operating data

VlvMon block

Response monitoring of the valve: continuous setpoint and dashed actual-value characteristic

The VlvMon block that can be used for continuously adjustable valves with position feedback features the following functions:
- Detection and monitoring of wear-related movement data (added movement distance, number of direction changes)
- Early detection of imminent valve damage (e.g. deposits or caking, wear) through monitoring of reaction times and flow characteristic curves
- Warning of valve damage when approaching wear limits or unfavorable operating states, for example, continuous operation without valve standstill, permanent standstill, exceeding the maximum number of strokes or the maximum number of direction changes

SteadyState block

The SteadyState block is used for the detection of stationary states in a dynamic process or steady state of a signal. It analyzes the input signal and decides online (without delay) whether this signal is steady or not.
Function (continued)

**PST block**

The PST block for the partial stroke test is used for:
- Testing the movement of the valve by partial closure during normal operation
- Increasing the diagnostic level for actuators, e.g. safety cut-off valves
- Extension of the intervals between the required full proof tests maintaining the same SIL level

Configuration example of the Partial Stroke Test (PST)

Partial Stroke Test extends the test interval for the Full Stroke Test from 1 to 2 years

The scope of supply includes the following in addition to the PST block and its faceplate:
- Add-on functions for partial stroke test application
- PST engineering templates
- Pre-configured PST reports

**PressDropMon block**

Based on the flow resistance, the PressDropMon block monitors the pressure loss or pressure drop in plant components depending on the flow rate. Such monitoring makes sense for all plant components whose flow resistance can change in an unwanted manner during operation due to buildup or blockage, for example, in filters, separators, heat exchangers or pipelines.

**License information**

The SIMATIC PCS 7 Condition Monitoring Library is available free of charge. Depending on the block type used, the following number of process objects (PO) for “SIMATIC PCS 7 AS Runtime” and “SIMATIC PCS 7 OS Runtime” apply per block instance:
- PumpMon: 20 POs
- VlvMon: 10 POs
- SteadyState: 2 POs
- PST: 30 POs
- PressDropMon: 10 POs

**Ordering data**

<table>
<thead>
<tr>
<th>SIMATIC PCS 7</th>
<th>Article No.</th>
</tr>
</thead>
</table>

License information

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- PumpMon: 20 POs
- VlvMon: 10 POs
- SteadyState: 2 POs
- PST: 30 POs
- PressDropMon: 10 POs
Parameter control and materials management
The PCS 7 Advanced Process Functions (APF) specially developed for the chemical and food & beverages industries expand the functional scope of the SIMATIC PCS 7 system components. They rationalize the configuration and operation of small and medium-sized automation systems with easier material processing which is characterized by dosing, mixing and agitating processes.

The APFs comprise modules for:
- Material management
- Parameter management
- Storage location management
- Order management
- Archive management

They support automation of the production process which starts with the raw materials intake and ends with release for filling and packing.

Batch processes can be automated using simple recipe structures (lists or parameter recipes) by means of the APF editors and function blocks. Clear information about materials and storage locations make a valuable contribution towards production optimization.

The function blocks that can be connected in CFC diagrams represent items such as materials, parameter records or subsystem-specific tasks. When coupled with so-called user archives, they allow master data to be managed and results data to be archived and evaluated via predefined OS displays on the SIMATIC PCS 7 operator station.

Notes:
- The PCS 7 Advanced Process Functions (APF) V2.0 require OS Engineering and OS Runtime Software SIMATIC PCS 7 V8.1. SIMATIC PCS 7 system components are not supplied with the APF products, but must be ordered separately (see Catalog ST PCS 7).
- A prerequisite for delivery of the APF products is successful completion of an APF training course. Please contact your local sales representative for further information.

Benefits:
- Significant cost savings over the entire lifecycle of the plant.
- Long-term investment security
- Logical, system-wide engineering
- Fast commissioning
- Broad-based implementation spectrum throughout the production area

- High degree of application reliability based on tested software modules
- SIMATIC BATCH integration, automatic material comparison
- Simple design of operating screens with APF faceplates and SIMATIC BATCH OCX controls
- Vertical integration for simple requirements, creation of batches in SIMATIC BATCH via runtime interface
Parameter control and materials management

Advanced Process Functions (APF)

Design

APF modules

Material management

The material management module comprises material master data management and material batch management.

Material master data management supplies the material properties for the AS and OS. An OS editor is available for creating, editing and deleting material master data. Material master data can be loaded and compared manually or automatically over an integrated interface.

The material batch properties are available to the AS and OS. An OS editor supports creating, editing and deleting material master data. Material batches can, however, also be created or deleted by the automation system. Material batch data can be compared or loaded either automatically or manually.

Parameter management

The parameter management module supplies the parameter data for the AS and OS. It has an OS editor for editing the parameter records, as well as an interface for loading and comparing data. The current parameter record can be displayed in a special faceplate. The parameters can be normalized or recalculated in the faceplate.

Order management

The elementary task of this module is to manage the orders (order data records) in an order list. The orders use the previously defined parameter records in the form of a recipe. The orders can be created and controlled via defined interfaces using the OS or AS. The creation and control of orders from the IT level can be implemented on a project-specific basis.

Integration in SIMATIC BATCH

For more sophisticated recipe control, APF can be used together with SIMATIC BATCH instead of with parameter control. APF automatically matches the materials (including material classes/types) with the material master data of SIMATIC BATCH. For further processing in SIMATIC BATCH, the orders can be separated into individual batches in an "Order Creation Dialog". Using the SIMATIC BATCH OCX controls, it is easy to create OS images for batch operation.

Vertical integration

With the APF runtime interface, batches with parameters can be created, released and started in SIMATIC BATCH by means of scripting. These actions can also be triggered by process interrupts or by external systems.

Storage location management

The "Storage location management" APF module coordinates the plant storage locations. This includes tasks such as:

- Comparison of required and actual values for the storage locations
- Posting and clearing materials and material lots (including partial quantities)
- Rapid identification of storage locations in accordance with various selection criteria

Archive management (for material, parameter and order management)

In the archive management module, archive data records are created, updated or deleted using function blocks in the AS. The archive data records can be automatically exported and saved, e.g. time-controlled.

Order Creation Dialog

Vertical integration

With the APF runtime interface, batches with parameters can be created, released and started in SIMATIC BATCH by means of scripting. These actions can also be triggered by process interrupts or by external systems.

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Order Creation Dialog

Vertical integration

With the APF runtime interface, batches with parameters can be created, released and started in SIMATIC BATCH by means of scripting. These actions can also be triggered by process interrupts or by external systems.

Storage location management

The "Storage location management" APF module coordinates the plant storage locations. This includes tasks such as:

- Comparison of required and actual values for the storage locations
- Posting and clearing materials and material lots (including partial quantities)
- Rapid identification of storage locations in accordance with various selection criteria

Archive management (for material, parameter and order management)

In the archive management module, archive data records are created, updated or deleted using function blocks in the AS. The archive data records can be automatically exported and saved, e.g. time-controlled.

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## Advanced Process Functions (APF)

<table>
<thead>
<tr>
<th>Ordering data</th>
<th>Article No.</th>
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</tr>
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<tbody>
<tr>
<td>Advanced Process Functions Engineering Package</td>
<td>PCS 7 APF Engineering Basic Package V2.0</td>
<td>6DL5423-8AX02-0YA0</td>
</tr>
<tr>
<td></td>
<td>For expansion of an engineering station based on SIMATIC PCS 7 V8.1</td>
<td>PCS 7 APF Engineering Basic Package Upgrade V1.4 to V2.0</td>
</tr>
<tr>
<td></td>
<td>Engineering software, software class A, 2 languages (German, English), executable with SIMATIC PCS 7 AS/OS engineering software V8.1 on Windows 7 Ultimate/Enterprise SP1 (32/64 bit) operating system or Windows Server 2008 R2 Standard SP1 (64 bit), floating license for 1 user</td>
<td>Software package without SIMATIC PCS 7 ES software V8.1</td>
</tr>
<tr>
<td></td>
<td>Delivery form package (without SIMATIC PCS 7 Software Media Package): Software and documentation in 2 languages (English and German) on CD, license key USB stick, certificate of license</td>
<td>Engineering software, software class A, 2 languages (German, English), executable with SIMATIC PCS 7 AS/OS engineering software V8.1 on Windows 7 Ultimate/Enterprise SP1 (32/64 bit) operating system or Windows Server 2008 R2 Standard SP1 (64 bit), floating license for 1 user</td>
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<tr>
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<td>PCS 7 APF Runtime Package Upgrade V1.4 to V2.0</td>
<td>Software package without SIMATIC PCS 7 OS software V8.1</td>
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<td></td>
<td>For expansion of an operator station based on SIMATIC PCS 7 V8.1 (OS single station or OS server)</td>
<td>Runtime software, software class A, 2 languages (German, English), executable with SIMATIC PCS 7 OS Software Single Station/Server V8.1 on Windows 7 Ultimate/Enterprise SP1 (32/64 bit) operating system or Windows Server 2008 R2 Standard SP1 (64 bit), floating license for 1 user</td>
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<tr>
<td></td>
<td>Runtime software, software class A, 2 languages (German, English), executable with SIMATIC PCS 7 OS Software Single Station/Server V8.1 on Windows 7 Ultimate/Enterprise SP1 (32/64 bit) operating system or Windows Server 2008 R2 Standard SP1 (64 bit), floating license for 1 user</td>
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<td>PCS 7 APF Runtime Package Upgrade V1.4 to V2.0</td>
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SIMATIC SIPAT:
Optimization of product development and production
Process Analytical Technology

SIMATIC SIPAT: Optimization of product development and production

Overview

Process Analytical Technology (PAT) was initiated by the Food & Drug Administration. With this technology you can design, analyze, optimize and control product development processes and production processes so that the quality required for the end product can be absolutely guaranteed. The basis is up-to-date measurements of critical quality and performance attributes of raw materials, process materials and procedures.

Intended uses for PAT:
- Gaining comprehensive knowledge concerning the product and its development process
- Determination of relevant factors influencing the quality of the end product from the recorded product and process data
- Estimation of the end product quality through continuous analysis of the influencing factors
- Early introduction of closed-loop control measures for safeguarding the quality of the end product
- Safeguarding of consistent product quality when upscaling the process from laboratory operation to production and when changing production quantities
- Validation of process in accordance with statutory directives
- Improvement of total performance of process

Real-time tracking of parameters relevant to product quality not only helps you to understand and control the total process better, it also helps to reduce or even completely eliminate final inspections. The preparation of samples for quality control at the end of the process (which can sometimes be extremely time-consuming) or for follow-up checks can thus be omitted.

The results obtained with PAT during product development in the laboratory can be easily upscaled to production mode. The production quantities can be rapidly and flexibly adapted to changing market requirements while keeping the quality.

All these features result in very short product development and launch times with significant cost advantages.

SIMATIC SIPAT from Siemens is the appropriate software platform for integration of PAT in the process industry. PAT can then be integrated into existing or new infrastructures. These can feature SCADA/process control systems (optionally with batch automation), Manufacturing Execution Systems (MES), Enterprise Resource Planning Systems (ERP), Laboratory Information Management Systems (LIMS), data portals, knowledge management systems, etc. Linking to the SIMATIC PCS 7 process control system by means of OPC.

Important features of SIMATIC SIPAT:
- Modular, scalable architecture with uniform interfaces for process analyzers and data mining applications
- Can be integrated into existing or new infrastructures
- Data recording: recording of product and process data using standard analyzers
- Data mining: data evaluation and determination of relevant quality parameters, for example, through modeling and validation with multivariate data analysis (MVDA)
- Real-time prediction of quality parameters
- Continuous monitoring and control of product quality
- Online visualization, report functions, and analysis of historical data
- Support for simple and fast process validation
- Audit functionality for compliance with statutory directives
- Conformity with the directives defined in 21 CFR Part 11 with regard to version management, saving of raw data, and access privileges

Note:
The current software SIMATIC SIPAT V4.1 can be used in combination with SIMATIC PCS 7 V8.0+SP1.
**Benefits**

Application of Process Analytical Technology (PAT) with SIMATIC SIPAT allows you to considerably increase the effectiveness and profitability of processes in the laboratory and during production.

The numerous advantages that you gain by using SIMATIC SIPAT are categorized as follows:

- **Considerable cost reductions**
  - Avoidance of rejects/rewriting
  - Reduced stocks of raw materials, intermediate products and end products
  - Reduction in offline laboratory costs
  - Flexible adaptation of production quantities depending on demand
- **Better quality and overall performance**
  - Product approval in real-time
  - Guaranteed, uniformly high product quality
  - Higher product yield
  - Reduced risk of recalls
  - Minimized danger of contamination
- **Shorter development and product launch times**
  - Improvement in efficiency through operative excellence
  - Simpler compliance with statutory directives through optimization of validation
  - Easier and faster transfer from one system to another
- **Strengthening and improving the competitive position**
  - Winning of market shares through faster product development and launching
  - Process patenting secures a lead over the competition
- **Image upgrading**
  - Innovative product/production technologies
  - Compliance with legislation
  - Impressive process knowledge
  - Minimization of risk of recalls, warning notifications or declarations of consent

**Application**

SIMATIC SIPAT is recommended primarily for use in the following industries:

- Pharmaceutical industry
- Fine chemicals
- Food, beverages and tobacco industries
- Paper and cellulose industries

**Design**

The software supplied on the SIMATIC SIPAT DVD is structured as follows:

- **SIMATIC SIPAT Central Database**
  Central relational database which contains both configuration and runtime data
- **SIMATIC SIPAT Station Service**
  Windows service for execution of methods (data collection, update, calculation)
- **SIMATIC SIPAT Runtime Information Service**
  Windows service for communication between distributed SIMATIC SIPAT Base Stations and the central SIMATIC SIPAT database
- **SIMATIC SIPAT Productivity Pack**
  Uniform interface for integration of analyzers in SIMATIC SIPAT. In combination with the device manufacturer’s software, allows parameterization, calibration, and control of these devices in addition to data acquisition
- **SIMATIC SIPAT Watchdog Service**
  Windows service for monitoring the availability of individual SIMATIC SIPAT stations
- **SIMATIC SIPAT Data Logger Service**
  Windows service for saving runtime data (writing in central SIMATIC SIPAT database, buffering in event of power failure)
Process Analytical Technology

SIMATIC SIPAT: Optimization of product development and production

Design (continued)

SIMATIC SIPAT Workflow Service
Windows service for online execution of workflows for parameterization/calibration of analyzers and for preparation of SIMATIC SIPAT methods

SIMATIC SIPAT Umetrics Server
Windows service for online execution of models of the following Umetrics software products:
• Umetrics SIMCA QP+
• Umetrics SIMCA P+
• Umetrics SBOL

SIMATIC SIPAT CAMO Server
Windows service for online execution of models of the following CAMO software products:
• Camo Unscrambler OLUP
• Camo Unscrambler OLUC

SIMATIC SIPAT Matlab Server
Windows service for online execution of the Matlab models

SIMATIC SIPAT Client
SIMATIC SIPAT user interface for access to data of the SIMATIC SIPAT database. It supports the following functions:
• Configuring SIMATIC SIPAT methods and creating the required chemometric models
• Controlling and visualizing execution of the methods

SIMATIC SIPAT OPC Services (Automation Service, Writer Service, Alarm Service)
Windows services for OPC data exchange with SCADA/process control systems (DCS), e.g. SIMATIC PCS 7

SIMATIC SIPAT Archiver Service
Windows service for long-term archiving of SIPAT runtime data in an XML file (archived data can be removed from the runtime database, SIMATIC SIPAT Central Database).

This distributed software structure can be flexibly mapped on different PC-based hardware configurations (e.g. SIMATIC Industrial PC) depending on the process size and customer requirements.

All software components can be executed on a SIMATIC Industrial PC (IPC). For reasons of improved performance, however, distributed IPC architectures are characteristic of SIMATIC SIPAT (see graphic: “Example of a distributed SIMATIC SIPAT architecture”).

The following table shows the hardware assignment of the software components for the recommended SIMATIC SIPAT architecture:

<table>
<thead>
<tr>
<th>Hardware component (IPC) - functional name</th>
<th>SIMATIC SIPAT software component</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIMATIC SIPAT Database Server</td>
<td>SIMATIC SIPAT Central Database</td>
<td>Microsoft SQL is supported.</td>
</tr>
<tr>
<td>SIMATIC SIPAT Base Station</td>
<td>SIMATIC SIPAT Station Service</td>
<td>Typically for up to four methods</td>
</tr>
<tr>
<td></td>
<td>SIMATIC SIPAT Productivity Pack</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SIMATIC SIPAT Watchdog Service</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SIMATIC SIPAT Data Logger Service</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SIMATIC SIPAT Workflow Service</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SIMATIC SIPAT Umetrics Server</td>
<td>Can also be installed on a separate Chemometrics server; one SIMATIC SIPAT Umetrics/Camo/Matlab server per basic operation is preferred.</td>
</tr>
<tr>
<td></td>
<td>SIMATIC SIPAT CAMO Server</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SIMATIC SIPAT Matlab Server</td>
<td></td>
</tr>
<tr>
<td>SIMATIC SIPAT Collector Station</td>
<td>SIMATIC SIPAT Productivity Pack</td>
<td></td>
</tr>
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<td>SIMATIC SIPAT Watchdog Service</td>
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<td>SIMATIC SIPAT Workflow Service</td>
<td></td>
</tr>
<tr>
<td>SIMATIC SIPAT Client Station</td>
<td>SIMATIC SIPAT Client</td>
<td></td>
</tr>
<tr>
<td>SIMATIC SIPAT OPC Server</td>
<td>SIMATIC SIPAT OPC Services</td>
<td>Known DCOM properties can be avoided if the SIMATIC SIPAT OPC Services are installed on the OPC server; they can also be installed on an existing OPC server.</td>
</tr>
<tr>
<td>SIMATIC SIPAT Archive Server</td>
<td>SIMATIC SIPAT Archiver Service</td>
<td>Can also be installed on an existing archive server.</td>
</tr>
<tr>
<td>SIMATIC SIPAT Chemometrics Server</td>
<td>SIMATIC SIPAT Umetrics Server, SIMATIC SIPAT CAMO Server or SIMATIC SIPAT Matlab Server</td>
<td>Alternative, customer-specific</td>
</tr>
</tbody>
</table>
Design (continued)

Other possibilities for flexible adaptation to the technological process result from the license model which is fixed in the product range of SIMATIC SIPAT V4.1. It is defined as follows:

**SIMATIC SIPAT**

**SIMATIC SIPAT Base Station (4 methods)**
The full license contains:
- 4 × SIMATIC SIPAT Concurrent Method
- 1 × SIMATIC SIPAT Productivity Pack Analyser Type

SIMATIC SIPAT Base Station is the PAT application for a production unit. It uses the data from one or more analyzers together with the data in the environment of existing systems (DCS, SCADA, MES, ERP, LIMS, or Historian) for the determination of "Qualitative Process Fingerprints" or the prediction of "Critical-to-Quality" parameters. To this end it collects run-time data from the various sources using configurable methods, matches these with each other, and carries out complex calculations.

All recorded production, configuration and Audit Trail data is saved together with user-specific context information in the SIMATIC SIPAT Central Database. The data can be used to improve understanding of the process and to optimize the process.

**SIMATIC SIPAT Basic Package (1 method)**
The SIMATIC SIPAT Basic Package bundles a SIMATIC SIPAT Base Station license with a SIMATIC SIPAT Concurrent Method license (1 method), a SIMATIC SIPAT Data Miner license, and a SIMATIC SIPAT Productivity Pack Analyser Type license.

**SIMATIC SIPAT Base Station (w/o methods)**
In contrast to SIMATIC SIPAT Base Station (4 methods), this package does not contain SIMATIC SIPAT Concurrent Method or SIMATIC SIPAT Productivity Pack Analyser Type licenses.

**SIMATIC SIPAT Concurrent Method (1 method)**
The SIMATIC SIPAT Concurrent Method expands a SIMATIC SIPAT Base Station or a SIMATIC SIPAT Basic Package by one method in each case, to up to four simultaneously executed methods.

**SIMATIC SIPAT Concurrent Method (unlimited)**
This license authorizes an unlimited number of methods. It is subject to a contractual agreement which requires a regular report on the runtime of the methods.

**SIMATIC SIPAT Data Miner**
The SIMATIC SIPAT Data Miner is typically used offline to process historical data and to transfer it to chemometric software. The SIMATIC SIPAT Data Miner carries out version assignment and administration (lifecycle) for the MVDA model determined by the chemometric software. It also supports validation and optimization of these models.

**SIMATIC SIPAT Productivity Pack (Analyser Type/Analysers)**
The SIMATIC SIPAT Productivity Pack integrates analyzers via uniform interfaces, so-called instrument collectors, in SIMATIC SIPAT. The instrument collectors are used for bidirectional data exchange with analyzers. They use device software and interfaces of the device manufacturers (manufacturer’s software license required).

Each instrument collector of a particular type serves as a driver for the individual instruments of this type. Instrument collectors for the following types of device are currently available:
- ABB Bomem
- Bruker OPUS
- Dr. Schleuniger / Bruker Tandem
- Thermo Fisher Antaris
- Kaiser Optics
- Expo ePAT601
- Carl Zeiss 500/600
- Mettler Toledo MonARC
- Mettler Toledo FBRM
- Mettler Toledo ReactIR

**SIMATIC SIPAT Productivity Pack OPC UA Analysers**
This SIMATIC SIPAT Productivity Pack integrates analyzers with their own OPC UA ADI server. SIMATIC SIPAT communicates with the device-specific server via the OPC UA ADI client.

**SIMATIC SIPAT Demo Version**
The SIMATIC SIPAT Demo Version license limits the duration of use of SIMATIC SIPAT to 180 days. The SIMATIC SIPAT Demo Version includes:
- 1 × SIMATIC SIPAT Base Station (4 methods)
- 2 × SIMATIC SIPAT Productivity Pack Analyser Type
- 4 × SIMATIC SIPAT Productivity Pack Analysers
- 4 × SIMATIC SIPAT Productivity Pack OPC UA Analysers
- 1 × SIMATIC SIPAT Data Miner

**SIMATIC SIPAT Test Environment**
SIMATIC SIPAT Test Environment allows you to design a test system (mapping of a production plant) for new SIMATIC SIPAT versions or new customer developments. It includes:
- 1 × SIMATIC SIPAT Base Station (unlimited methods)
- 4 × SIMATIC SIPAT Productivity Pack Analysers
- 8 × SIMATIC SIPAT Productivity Pack Analysers
- 8 × SIMATIC SIPAT Productivity Pack OPC UA Analysers
- 1 × SIMATIC SIPAT Data Miner
Design (continued)

**SIMATIC SIPAT EXPRESS**

SIMATIC SIPAT EXPRESS is the name of the OEM version of SIMATIC SIPAT. OEMs have the option of equipping their products with a preconfigured SIMATIC SIPAT EXPRESS, which the customer can use in this form, but cannot modify. The following SIMATIC SIPAT EXPRESS licenses are available:

- **SIMATIC SIPAT EXPRESS Base Station**
  - OEM version of the SIMATIC SIPAT Base Station

- **SIMATIC SIPAT EXPRESS Concurrent Method (1 method)**
  - OEM version of the SIMATIC SIPAT Concurrent Method

- **SIMATIC SIPAT EXPRESS Data Miner**
  - OEM version of the SIMATIC SIPAT Data Miner

- **SIMATIC SIPAT EXPRESS Productivity Pack (Analysers Type/Analysers)**
  - OEM version of the SIMATIC SIPAT Productivity Pack (Analysers Type/Analysers)

- **SIMATIC SIPAT EXPRESS Productivity Pack OPC UA Analyser**
  - OEM version of the SIMATIC SIPAT Productivity Pack OPC UA Analyser

- **SIMATIC SIPAT EXPRESS Productivity Pack SIPAT**
  - This Productivity Pack allows you to integrate a SIMATIC SIPAT EXPRESS Base Station into a SIMATIC SIPAT system. This process revokes the EXPRESS version restrictions concerning modifications and expansions.

- **SIMATIC SIPAT EXPRESS Engineering Station**
  - The SIMATIC SIPAT EXPRESS Engineering Station allows you to configure and service a SIMATIC SIPAT EXPRESS system.

Function

Important functions of SIMATIC SIPAT V4.1:

**Data acquisition**

Recording of process analysis data

SIMATIC SIPAT can be used together with various analyzers to record product and process data. Depending on the device-specific functions and the software support provided by the manufacturer, SIMATIC SIPAT cannot just be used for data acquisition, but also for configuration of the analyzer, including calibration and system performance test.

**Receipt/reading of data and data distribution**

SIMATIC SIPAT uses open technologies based on industrial standards for data exchange with external systems, for example, with the SIMATIC PCS 7 process control system. SIMATIC SIPAT can read in process parameters such as temperature, pressure or pH value for application in a PAT procedure via an OPC interface. OPC communication can also be used to inform SIMATIC SIPAT about the beginning or end of a batch, procedure or phase.

In addition to the online data of analyzers and the SIMATIC PCS 7 process control system, SIMATIC SIPAT can also use quality parameters from ERP systems, LIMS systems such as SIMATIC IT Unilab, or MES systems such as SIMATIC IT Production Suite, such as the results of a raw material analysis.

**Device calibration and system performance test**

The performance of analyzers is usually checked before they are put into use. SIMATIC SIPAT takes this workflow into account, and triggers a calibration or a system performance test on the basis of internal or external standards. For tracking purposes, SIMATIC SIPAT saves the results as well as other data recorded with this device.
Function (continued)

Data mining

The Data Miner is used to preprocess the product and process data recorded with SIMATIC SIPAT. It can be used to evaluate data and to design and validate models.

SIMATIC SIPAT records data during runtime, preprocesses it and, if necessary, can use models in the background to provide predictions. The results can be visualized and/or distributed with SIMATIC SIPAT. SIMATIC SIPAT can work together with different types of data mining or MVDA software packages. Chemometric functions from Umetrics are already integrated as standard in SIMATIC SIPAT.

The models are saved with version and status data in the SIMATIC SIPAT archive. It is unnecessary to combine all predictions for a specific PAT procedure in one single model. A procedure can include several models which can be arranged hierarchically or in parallel. The data required for this purpose can be used repeatedly.

In contrast to other PAT systems, which are usually limited to a model of an analyzer or perhaps to an additional model of a single procedure, SIMATIC SIPAT can be used to develop a general process model that enables the end product quality parameters to be predicted.

Model types

- **Model of a single analyzer**
  Model on the basis of the recorded data of a particular analyzer, for example, through creation of a near infrared procedure (NIR), the prediction of specific parameters, principal component analysis (PCA) or a partial least squares procedure (PLS)

- **Model of a single procedure**
  Model on the basis of the recorded data of a particular single procedure (data from sensors, analyzers etc.), for example, a combination of pH value, temperature, pressure, dissolved oxygen and NIR data during operation of a single bioreactor

- **Host process/product (range) model**
  Model on the basis of the recorded data of various single procedures of the total process range - from the raw materials up to the end product. This model is a special feature of SIMATIC SIPAT.

Monitoring and open-loop control

Integration in the batch

The model of a single procedure or of the process is used as the basis for development of a model for process control (feedback and feedforward control/correction).

SIMATIC SIPAT is responsible for the quality aspects of the process, and provides the corresponding information for the SCADA/process control system. The SCADA/process control system implements the control measures required to guarantee the quality. To implement the feedforward/feedback control, the two systems are connected in real-time via an OPC interface.

The close connection to a batch system for batch process automation permits synchronization of the recipe-based procedures with SIMATIC SIPAT. SIMATIC SIPAT can then define the end conditions for a particular procedure or phase, for example.

Visualization of data

The graphic user interface (GUI) of SIMATIC SIPAT permits you to record data interactively, to create new PAT procedures, or to view additional information on current or historical production batches. All critical quality parameters can be monitored online.

The process can be monitored by comparing plotter parameters with the golden batch series. Visualization takes place either using the SCADA/process control system or the graphic user interface of SIMATIC SIPAT.

Feedback for SCADA/process control system

SIMATIC SIPAT can be configured so that predicted parameters critical to the quality can be returned to the SCADA/process control system. These can then be used by the SCADA/process control system for control using traditional PID controllers or Advanced Process Control (APC) technologies.

SIMATIC SIPAT can send prediction values or principal components online to the SCADA/process control system and to any OPC servers. ERP and MES systems can also be integrated as outputs. A typical application example is the transfer of information concerning one or more critical quality parameters to an MES or ERP system to approve a batch following a particular single procedure.
Function (continued)

Logging

SIMATIC SIPAT saves all data measured and calculated during the operative execution of a PAT procedure together with the available batch information in a database. This data is available for evaluation using any logging tools.

SIMATIC SIPAT supports logging with:
- Predefined or user-specific reports
- Logging module for creation of CSV files using universal database queries

The logs present in CSV format can be imported into statistics programs or Microsoft Office applications.

Audit functionality

SIMATIC SIPAT is provided with a comprehensive audit functionality which supports quality assurance of the production sequences in accordance with the guidelines for Good Manufacturing Practice (GMP) in the pharmaceutical industry and in the food and fodder industry. This guideline conforms with the corresponding statutory directives, in particular the Food and Drug Administration (FDA) guidelines anchored in 21 CFR Part 11.

The most important audit function blocks include:
- System security and authorization checks
- Electronic signatures
- Recording of all changes to data sets (including information on who, what, and why)
- Storage of documents and repeatability in the online database as well as in the archived data
- Version check for objects such as PAT procedures, models, device settings, etc.

Customized adjustments

The standard functionality provided with SIMATIC SIPAT for design, analysis, optimization and control of product development and production on the basis of up-to-date measurements of critical quality and performance attributes of raw materials, process materials and procedures is extremely comprehensive and versatile. It can be easily configured by trained users via the SIMATIC SIPAT graphic user interface (GUI).

The sequences which can be implemented with the SIMATIC SIPAT standard functions can be adapted and expanded by means of user-specific functions and workflows.

Ordering data

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<tr>
<th>SIMATIC SIPAT V4.1 software and licenses</th>
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Requirement: available only with a SIMATIC SIPAT support contract.

Type of delivery: License key on USB stick, certificate of license, product information, and DVD "SIMATIC SIPAT V4.1."

### SIMATIC SIPAT EXPRESS Base Station V4.1

OEM version of SIMATIC SIPAT Base Station V4.1

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Runtime software, 1 language (English), software class A, runs with Windows 7 Ultimate SP1 32-bit, Windows 7 Enterprise SP1 64-bit or Windows Server 2008 R2 SP1 64-bit, floating license for 1 user

Requirement: 1 × SIMATIC SIPAT Base Station

Type of delivery: License key on USB stick, certificate of license, and product information.

Note: available only with a SIMATIC SIPAT support contract.

### SIMATIC SIPAT EXPRESS Concurrent Method (1 method) V4.1

OEM version of SIMATIC SIPAT Concurrent Method (1 method) V4.1

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Runtime software, 1 language (English), software class A, runs with Windows 7 Ultimate SP1 32-bit, Windows 7 Enterprise SP1 64-bit or Windows Server 2008 R2 SP1 64-bit, floating license for 1 user

Requirement: 1 × SIMATIC SIPAT Base Station

Type of delivery: License key on USB stick, certificate of license, and product information.

### SIMATIC SIPAT Data Miner V4.1

for one simultaneous user per SIMATIC SIPAT database

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Requirement: 1 × SIMATIC SIPAT Base Station

Type of delivery: License key on USB stick, certificate of license, and product information.
### SIMATIC SIPAT: Optimization of product development and production

#### Ordering data

| SIMATIC SIPAT EXPRESS Productivity Pack OPC UA Analyser V4.1 | 6DL5422-4DA14-2BB5 |
| SIMATIC SIPAT Demo Version V4.1 | 6DL5422-8X14-0BT7 |
| SIMATIC SIPAT Test Environment V4.1 | 6DL5422-8X14-0BA5 |
| SIMATIC SIPAT Productivity Pack SIPAT EXPRESS V4.1 | 6DL5422-1EA14-0BB5 |

#### SIMATIC SIPAT EXPRESS Engineering Station V4.1
- Engineering software, 1 language (English), software class A, runs with Windows 7 Ultimate SP1 32-bit, Windows Server 2008 R2 SP1 32-bit, floating license for 1 user.
- Including:
  - 1 x SIMATIC SIPAT Base Station (4 methods)
  - 2 x SIMATIC SIPAT Productivity Pack Analyst Type
  - 4 x SIMATIC SIPAT Productivity Pack Analyst Type
  - 4 x SIMATIC SIPAT Productivity Pack OPC UA Analyst
  - 1 x SIMATIC SIPAT Data Miner

Electronic documentation on DVD "SIMATIC SIPAT V4.1", 1 language (English)

Type of delivery: License key on USB stick, certificate of license, product information, and DVD "SIMATIC SIPAT V4.1"

#### SIMATIC SIPAT Concurrent Method Support incl. SUS
- 5 days/week (Monday to Friday) in the corresponding time period: 08:00 to 17:00 GMT
- Must be ordered 1 x per SIMATIC SIPAT Concurrent Method and always for all SIMATIC SIPAT Concurrent Methods
- Including SIPAT Software Update Service (SUS)

Type of delivery: SIPAT SUS contract, product information

#### More information
- Siemens AG Industry Sector
- Industry Automation Division
- Industrial Automation Systems Karlsruhe
- E-mail: info.sipat@siemens.com
- You can find more information on the Internet at: www.siemens.com/sipat
Application and integration options of SIMIT Simulation Framework

Automation projects are subject to enormous cost pressures in both the manufacturing and process industries. The challenge is therefore to plan, install, and commission the automation of machines and systems within the shortest possible time and with a high quality.

Testing of automation with the SIMIT simulation functionality reduces the commissioning times. This is a significant contribution toward faster achievement of the planned efficiency and productivity of new plants, expansions, and modernizations.

**SIMIT simulates what SIMATIC automates**

The SIMIT Simulation Framework permits testing and commissioning of the project-specific user software on a partially virtual plant. To achieve this, the response of the field technology and of the technological plant/unit can be mapped and simulated in real-time or virtually. Either a real or virtual automation system is used for the control, for example, the SIMIT Virtual Controller.

SIMIT Virtual Controller instances can emulate the SIMATIC S7-300/S7-400 automation systems from the SIMATIC S7 and SIMATIC PCS 7 product range used in an automation project.

Many efficient tests for detection and elimination of potential faults can already be carried out before the real plant is even available, e.g.:
- Application of correct identifications
- Testing of interconnection or interlocking logic

In this manner it is possible to optimize the quality of the configuration process without a risk for the real plant.

**Note:**

SIMIT Simulation Framework V8.1 can be used together with SIMATIC PCS 7 V7 and V8. The SIMIT Virtual Controller V3.0 requires SIMIT Simulation Framework V8.1.

**Benefits**

- Testing and training environments without real hardware
- Virtual controllers for emulation of automation systems
- Flexible simulation and emulation environment for projects of any size
- Synchronized simulation and emulation in real-time or virtual time
- Testing of original automation project
- Higher quality for automation engineering configuration
- Reduced commissioning time and risk due to pretesting
- No simulation configuration in the automation project
Design

**SIMIT Simulation Framework**

SIMIT Simulation Framework runs on state-of-the-art notebooks or desktop computers with Windows 7 Professional/Ultimate (32/64-bit), and also on virtual systems (VMware ESXi Server V5.5). Flexible application is possible, and it can be integrated via open interfaces into the factory automation with SIMATIC S7 and SIMATIC WinCC or into the process automation with SIMATIC PCS 7.

Since the models can be calculated in real-time, SIMIT Simulation Framework can be linked to the real automation technology (“Hardware in the loop”). A “Software in the loop” test is also possible through virtualization of the automation system using the S7-PLCSIM emulation software or the SIMIT Virtual Controller.

Interfacing to the real automation system is usually made via PROFIBUS DP or PROFINET IO. Interfaces (simulation units) simulate the devices on PROFIBUS DP/PROFINET IO in this case. A PRODAVE coupling can also be used for the MPI/DP or IE interface of the automation system for process data traffic with SIMIT Simulation Framework (requirement: PRODAVE driver V6.1; not included in the product package).

Further simulation models can be coupled to SIMIT Simulation Framework:

- Data exchange via standardized interfaces such as OPC DA and shared memory
- Synchronization via the remote control interface

In the case of coupling via the remote control interface, SIMIT Simulation Framework can be either the master or client (slave) for other simulations. Using virtual time management, simulations can also be implemented faster or slower than in real-time.

**SIMIT Simulation Framework software packages**

SIMIT Simulation Framework can be perfectly adapted to individual requirements with three software packages that are scaled in function and scope.

- SIMIT Simulation Framework Standard with:
  - portal view with workflow management for creation of simulation project
  - Standard component library
  - 3D viewer based on VRML (Virtual Reality Modeling Language)
  - Interfaces for PROFIBUS DP, PROFINET IO and PRODAVE
  - Interface for SIMIT Virtual Controller
  - Trends and messages (TME)
  - Scripting environment
  - Editor for creating macro components (MCE)
  - Editor for creating dynamic graphics and animations (DGE)
  - Automatic Control Interface (ACI)
  - Automatic generation of signal lists from SIMATIC Manager data
  - Runtime for components developed with SIMIT Simulation Framework Ultimate

- SIMIT Simulation Framework Professional
  All the features of SIMIT Simulation Framework Standard, plus:
  - Interfaces for S7-PLCSIM, OPC DA and Remote Control
  - Modification of simulation model during runtime
  - Simulation in virtual time
  - Engineering efficiency for SIMATIC PCS 7 (SMD)
  - Automatic model generation based on templates

- SIMIT Simulation Framework Ultimate
  All the features of SIMIT Simulation Framework Professional, plus:
  - Shared memory interface for high-performance coupling
  - XML interface for automatic generation of models and connections
  - Development environment for custom components (CTE)

**SIMIT Simulation Framework extension libraries**

The following extension libraries make available specific technological components:

- SIMIT Simulation Framework FLOWNET Library: Library for simulation of flow networks with homogeneous media (water/gases) including pressures, temperatures and flow rates
- SIMIT Simulation Framework CONTEC Library: Library for 2D simulation of material handling equipment

**SIMIT Virtual Controller**

You can use SIMIT Virtual Controllers to implement testing and training systems of any size without physical hardware. This means you can test the original automation programs completely before commissioning and train operators in the practical work with the configured automation functions.

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Design (continued)

To do so, the SIMIT Simulation Framework Standard, Professional or Ultimate software packages are extended with cumulative SIMIT Virtual Controller instances. SIMIT Virtual Controller instances emulate the SIMATIC S7-300, S7-400 and S7-410 automation systems used in a SIMATIC S7/SIMATIC PCS 7 automation project on the latest notebooks or desktop computers with Windows 7 Professional/Ultimate (32/64 bit) operating system or in a virtual environment (ESXi Server V5.5).

The following products are offered for emulation:

- SIMIT Virtual Controller software for 1 controller
- SIMIT Virtual Controller software for 5 controllers

Specification/Configuration

- Almost unlimited number of SIMIT Virtual Controllers, distributed on multiple computers
- Maximum of two SIMIT Virtual Controller instances per CPU core
- Each computer with SIMIT Virtual Controller needs a SIMATIC NET instance (SIMATIC NET V12 SP2 or SIMATIC NET V8.2 SP2 HF4; not included in the scope of delivery of the SIMIT Virtual Controller, e.g. SOFTNET-IE S7 V12 or SOFTNET-IE S7 LEAN V12)
- A SIMIT Simulation Framework Standard, Professional or Ultimate is required for each simulation system (not included in the scope of delivery of the SIMIT Virtual Controller)

Function

Component-based, signal flow oriented modeling of the plant via the graphical user interface of SIMIT Simulation Framework is based on extendable base libraries. For this, pre-defined components are selected from the library, placed on the graphic interface, connected with one another, and parameters are set. Special simulation skills are not required.

The efficient simulation is based on the abstraction at three different levels: Signals, devices (e.g. actuators and sensors) and technological response. Here, the technological response is represented mathematically and logically or by additive libraries.

Abstraction levels of the simulation

The signal couplings can be created easily by importing the symbol table or a list of signal names. Files of the import/export wizard, control module (CM) files (SIMATIC PCS 7), or suitable Microsoft Excel files (SIMATIC S7) can be used together with simulation templates from the base library to simulate the devices.

Additive libraries support the simulation of the technological response and round off the SIMIT offer:

- FLOWNET can be used for rapid and simple simulation of the dynamic processes of pressures, flows and temperature distributions of water in pipeline networks.
- CONTEC can be used for simulation of material handling equipment.

The user can also create custom components and templates that enable effective customer-specific modeling.
Function (continued)

SIMIT Simulation Framework supports two types of virtual commissioning:

Software in the loop: Pretesting without a physical plant

When SIMIT Simulation Framework is coupled to the SIMIT Virtual Controller or the S7-PLCSIM emulation software, the automation function can be tested in advance in the engineering office without the physical hardware – from the sensor through the automation system and back down to the actuator.

The user program is loaded in SIMATIC Manager into the automation system emulated by the SIMIT Virtual Controller or S7-PLCSIM without modifications and started. It obtains the simulated I/O signals from the SIMIT Simulation Framework via the coupling of the emulated automation system.

Hardware in the loop: Factory Acceptance Test (FAT)

The physical automation systems are loaded with the user program for the Factory Acceptance Test (FAT). SIMIT Simulation Framework simulates the I/O signals, instrumentation, and field devices. The simulation values are sent as message frames to the automation systems via the hardware interfaces (simulation unit). When SIMIT Simulation Framework also simulates the technological response of the plant, the FAT becomes a plant test. Commissioning can be performed on the virtual process in an early phase of the project.

**SIMIT Virtual Controller**

SIMIT Virtual Controllers are powerful emulation systems for the SIMATIC S7-300, S7-400 and S7-410 automation systems which are integrated in the SIMIT Simulation Framework. Coupling to the simulation model takes place by means of I/O signals.

Special features

- SIMIT Virtual Controller are synchronized with each other
- The automation system is loaded by means of the engineering system as in the actual automation system
- Runtime is independent of the engineering system
- Automation programs can run in virtual time (faster or slower than in real-time)
- Current states of the SIMIT Virtual Controller and the SIMIT simulation model can be saved in the shared snapshot

A separate emulation manager is supported:

- Definition of available computer hardware for virtual controllers, simulation and operator stations
- Specification of virtual controllers and assignment to computer hardware
- Configuration of communication connections between virtual controllers and operator stations (SIMATIC PCS 7, SIMATIC WinCC)
- Import of SIMATIC PCS 7 system configuration and symbol table
- Generation and distribution of configuration files

System and communication functions

For detailed information on supported SIMATIC S7/SIMATIC PCS 7 system and communication functions as well as communication services, see SIMIT manual:


Note:

The SIMIT Virtual Controller does not support, among others:

- SIMATIC PCS 7 Route Control
- BRAUMAT Classic
- Data record communication
- Named Connections via RFC1006
- Communication blocks TSEND, TRECIV
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# SIMIT: Simulation and Virtual Commissioning

## Ordering data

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## SIMIT Upgrades from V7.1 to V8.1

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## More information

For additional information, refer to the Internet at www.siemens.com/simit.
Interfacing IT systems

SIMATIC IT

Overview

Integration and synchronization of all business processes with SIMATIC IT

In order to remain competitive, companies in the process industry are continuously required to optimize the supply chains and all operation sequences of their production sites, which may be distributed worldwide, to shorten the time-to-production and time-to-market, and also to increase the productivity and quality while keeping the costs low and with observation of the applicable directives.

These targets can be achieved extremely well by using Manufacturing Execution Systems (MES) at the interface between production and management.

With SIMATIC IT, Siemens has one of the most powerful and flexible MES systems on the market. As a component of Totally Integrated Automation, SIMATIC IT is based on consistent standardization of interfaces and clear ISA 95-compatible structuring and works homogeneously with all commonly available ERP and process control systems. Modeling of the entire product manufacturing know-how, precise definition of the operating processes, and real-time data acquisition from the ERP and the production level enable SIMATIC IT to control operating processes more effectively, to minimize downtimes, production waste and follow-up work, and to optimize stockholding. At the same time, the company as a whole becomes much more flexible.

A model of the business and production processes created using SIMATIC IT is transparent, understandable, and independent of the automation level. Even complex business and production processes are easy to model. Subsequent modifications can be incorporated efficiently and without problems. Modeling allows complete documentation as well as effective protection of know-how.

Models can also be saved in libraries, and then used again in other projects. The best practices are then available at every company location for the standardization of sequences. This shortens the configuration time, prevents implementation errors, and reduces launching and maintenance costs.

Benefits

- Safe, standard-compliant and flexible, from design to delivery
- Greater flexibility and efficiency thanks to open standards
- Complete integration of regulatory and quality-related requirements
- Synchronized production processes for optimum supply chain management
- Sustainable reduction in operating costs
- Greater performance thanks to systematic opening up of hidden capacities
Interfacing IT systems

Design

Summary of SIMATIC IT architecture

The product architecture and functionality of SIMATIC IT conform to ISA-95, the internationally recognized standard for Manufacturing Execution Systems and Manufacturing Operation Management.

With three SIMATIC IT suites, independent components, and SIMATIC IT libraries (reusable MES applications), SIMATIC IT can be quickly and flexibly aligned to the specific requirements of companies in different sectors of the process and life sciences industry.

SIMATIC IT Suites

- **SIMATIC IT Production Suite** is a manufacturing execution system in accordance with ISA-95 that combines ERP systems with process control technology, and visualizes production performance in real time at the corporate management level. The SIMATIC IT Production Suite offers the complete material genealogy, seamless tracking and tracing capability for cost-effective compliance with statutory directives, as well as material management and plant performance analysis for optimizing production costs.

- **SIMATIC IT R&D Suite** combines research and development with production for system-wide optimization of research and development processes, and for reducing product launch times.

- **SIMATIC IT Intelligence Suite** analyzes the production data acquired in real time in combination with the business data and derives improvement measures from this.

SIMATIC IT Components

The following SIMATIC IT components provide MES basic functionality in accordance with ISA-95 for specific task areas such as order management, materials management, message management, personnel management or report management:

- **SIMATIC IT Product Definition Manager**
- **SIMATIC IT Production Order Manager**
- **SIMATIC IT Material Manager**
- **SIMATIC IT Personnel Manager**
- **SIMATIC IT Historian**
- **SIMATIC IT OEE**
- **SIMATIC IT SPC**
- **SIMATIC IT PDS-I**
- **SIMATIC IT Data Integration Service**
- **SIMATIC IT Client Application Builder (CAB)**
- **SIMATIC IT Reporting Framework**

Other SIMATIC IT components can be used in stand-alone mode or can also be combined with other MES functionalities:

- **SIMATIC IT Historian: PIMS (Plant Information Management System)**
- **SIMATIC IT Unilab: LIMS (Laboratory Information Management System)**
- **SIMATIC IT Interspec: Product specification management**
- **SIMATIC IT Unicam: Solution for manufacturers of electronic components**
Interfacing IT systems

SIMATIC IT

Design (continued)

**Sector-specific SIMATIC IT function packages**

SIMATIC IT also offers specific function packages for various sectors of the process industry. Pre-configured best-practice applications in SIMATIC IT Vertical Packages already cover 80% of sector-specific customer requirements as standard.

**SIMATIC IT Service&Support**

As well as normal technical support, the range of services for SIMATIC IT also encompasses predictive and preventive service and support. It supports optimization of the availability of IT resources in production, whether by automatic management of software updates or by predicting potential server problems.

More information

E-mail: marketing.simatic-it@siemens.com
Additional information is available on the Internet at: www.siemens.com/simatic-it
Controller-Integration

10/2 PCS 7/OPEN OS
10/2 Introduction
10/3 PCS 7/OPEN OS Engineering Station
10/4 PCS 7/OPEN OS Operator System
Controller integration
PCS 7/OPEN OS

Introduction

Overview

Example for SIMATIC PCS 7 integration of third-party controllers and package units with PCS 7/OPEN OS

Process control systems that have evolved over a number of years frequently feature heterogeneous structures combining components from different manufacturers. One of the goals of modernization is, therefore, to increase the efficiency of process control by standardizing the operations management level.

In the case of plant expansions where control desks are merged or where existing plants are migrated step-by-step, the plant operator aims to integrate different types of controller in one HMI system.

The SIMATIC PCS 7 process control system supports this with PCS 7/OPEN OS, an expansion for the SIMATIC PCS 7 operator system, that allows the following controller types to be integrated into the process control:

- Third-party controllers of control systems (DCS)
- PLCs from Siemens and other manufacturers
- Package units

Depending on the technical situation of the controller to be integrated, connection to the PCS 7/OPEN OS operator station (single station, server or redundant pair of servers) is possible via OPC (OPC DA and OPC A&E) or the existing WinCC channels (e.g. S7 channel or Modbus TCP channel). In the case of OPC communication, the OPC server can be executed on separate hardware or together with the OPC client on the PCS 7/OPEN OS operator station.

The existing engineering system of the controller can continue to be used for configuration of the automation functions.

Note:
PCS 7/OPEN OS V8.1 can be operated in combination with OS Engineering Software and OS Runtime Software SIMATIC PCS 7 V8.1. The SIMATIC PCS 7 software is to be ordered separately from Catalog ST PCS 7 (SIMATIC PCS 7 system components).
Controller integration
PCS 7/OPEN OS

PCS 7/OPEN OS Engineering Station

Design

PCS 7/OPEN OS Engineering Component Option V8.1

The Database Automation (DBA) tool set is the basis for OS engineering using the SIMATIC PCS 7 engineering system which is installed with the PCS 7/OPEN OS engineering component option on the SIMATIC PCS 7 engineering station. This allows OS objects to be created for the controller quickly and easily in SIMATIC PCS 7 design. Manual inputs are required for organization of the project, the creation of static display elements, archive definition, user management, and customized adaptations.

The PCS 7/OPEN OS Engineering Component Option contains engineering software and licenses for the integration of various different controller types/package units in the process control of the SIMATIC PCS 7 process control system.

This can be used to expand SIMATIC PCS 7 engineering stations configured in accordance with Catalog ST PCS 7 (unlimited POs) to PCS 7/OPEN OS engineering stations.

Appropriate basic hardware for an exclusive PCS 7 Engineering Station (unlimited POs) can be found in the section "Industrial Workstation/IPC" of Catalog ST PCS 7.

Ordering data for the SIMATIC PCS 7 Engineering Software and for further SIMATIC PCS 7 software components can be found in the "Engineering system" chapter, "ES software" section of Catalog ST PCS 7.

PCS 7/OPEN OS Engineering Upgrade Package V8.0 to V8.1

Existing PCS 7/OPEN OS Engineering Software V8.0 can be upgraded to V8.1 using the SIMATIC PCS 7 Engineering Upgrade Package.

SIMATIC PCS 7 Engineering Software V8.0 must be upgraded to V8.1 by means of a separate upgrade package (see Catalog ST PCS 7, Chapter "Update/Upgrade Packages").

Ordering data

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Note:
SIMATIC PCS 7 ES software V8.0 must be upgraded to V8.1 by means of a separate upgrade package (see Catalog ST PCS 7, Chapter "Update/Upgrade Packages").
Controller integration
PCS 7/OPEN OS

PCS 7/OPEN OS Operator System

Overview
The PCS 7/OPEN OS software packages offered for the integration of third-party controllers into the process management of the SIMATIC PCS 7 process control system are tailored to the architecture of the SIMATIC PCS 7 operator system. They support single station systems as well as multi-user systems in a client-server architecture.

Design

**PCS 7/OPEN OS Runtime Component Option V8.1**
Using the PCS 7/OPEN OS Runtime Component Option, a SIMATIC PCS 7 Operator Station of single station design or server variant configured in accordance with Catalog ST PCS 7 can be expanded with PCS 7/OPEN OS runtime software and licenses for the integration of various controller types/package units. For each PCS 7/OPEN OS single station or PCS 7/OPEN OS server, one PCS 7/OPEN OS Runtime Component Option is required; two are required for each redundant PCS 7/OPEN OS single station or PCS 7/OPEN OS server pair.

PCS 7/OPEN OS clients are based exclusively on the SIMATIC PCS 7 OS software client.

Appropriate basic hardware for a SIMATIC PCS 7 operator station (single station or server) can be found in the section "Industrial Workstation/IPC" of Catalog ST PCS 7.

The ordering data for SIMATIC PCS 7 OS software as well as additive SIMATIC PCS 7 OS runtime licenses for expanding the runtime PO volume can be found in the chapter "Operator System" of Catalog ST PCS 7.

**PCS 7/OPEN OS Runtime Upgrade Package V8.0 to V8.1**
Existing PCS 7/OPEN OS Runtime software V8.0 can be upgraded from V8.0 to V8.1 using the SIMATIC PCS 7 OS Runtime Upgrade Package.

SIMATIC PCS 7 OS software V8.0 must be upgraded to V8.1 by means of a separate upgrade package (see Catalog ST PCS 7, Chapter "Update/Upgrade Packages").

Cumulative SIMATIC PCS 7 OS runtime licenses for expanding the runtime PO volume, as well as further software for PCS 7/OPEN OS operator systems can be ordered from Catalog ST PCS 7, Chapter "Operator System", Section "OS Software" or 'OS redundancy'.

Appropriate basic hardware for a PCS 7/OPEN OS operator station as a single station, server, or client version can be found in the "Industrial Workstation/IPC" chapter of Catalog ST PCS 7.

Function
The PCS 7/OPEN OS Runtime Software enables the SIMATIC PCS 7 operator system to:
- Exchange data with a third-party controller, PLC or package unit
- save the collected information in the runtime database
- organize and display the process data and message/alarms in accordance with the configured plant hierarchy
- Make the data available for the OS clients and the central archive server
- synchronize the data between OS servers

### Ordering data

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<td>TELEPERM M migration</td>
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Introduction

Overview

The TELEPERM M process control system from Siemens has proven itself worldwide in many different industry sectors in the past 30 years. More than 15,000 installed systems have proven their performance, reliability and user-friendliness in many years of service, even under extreme operating conditions.

The installed platform represents an immense investment in hardware and application software as well as a wealth of valuable and complex know-how accumulated by operating and maintenance personnel.

However, many users are now faced with the need to adapt their production operations to market requirements, which means having to expand or modernize their plants.

Process control system SIMATIC PCS 7, the modern process control system, offers new plants and plant expansions an open platform for modern, forward-looking and economical automation solutions in all industries.

Individually tailored migration of TELEPERM M to SIMATIC PCS 7 enables modernization of the existing process control system while securing the investments already made. In doing so, the financial and technical risks must be minimized and the various life cycles of the system components must be taken into consideration, for example, 5 years for PC-based workstations, 15 years for controllers and 25 years for input/output components and wiring.

The first and most important task of an optimal migration concept for a plant is to analyze the starting point and to derive the goals of the modernization therefrom.

For very old systems, complete replacement by the SIMATIC PCS 7 process control system is usually the preferred method. If my be practical to keep using components if they continue to be available for order or if sufficient spare parts still remain. Integrating components worth keeping into the migration concept reduces conversion times and provides significant investment savings.
Options

Migration services

For a migration project to succeed it is not enough just to have a technical solution that is optimally adapted to the customer’s needs and the individual conditions of the plant in question. Equally important is the fast and punctual implementation of this solution at a high level of quality. This is where we support you optionally by means of:

- Services for individual phases of the migration process, e.g. AS conversion with retention of the I/Os or substitution of the operator systems including conversion of the user software.
- Complete migration of your plant as a service from a single source

Our migration specialists have extensive knowledge of the systems technology behind TELEPERM M and SIMATIC PCS 7 and many years of experience in engineering, commissioning and service. They will analyze your plant, inform and advise you individually about the migration options and finally draw up a detailed quotation for your migration project.

Short stoppage times call for exact planning, which is why our migration specialists join you in organizing and coordinating the smooth performance of all the activities itemized in the quotation.

The user software represents a large portion of the total investment and know-how. Hence the quality of its conversion into the new system world is a key criterion for the migration’s economic efficiency.

For migration, we provide you with fast and reliable conversion of your user software for operation on the new SIMATIC PCS 7 system platform. In doing so we make allowance for sector-specific properties as well as special plant solutions. The modern tools we have developed ourselves give you the benefit of software with that is consistently high-quality, reliable and verifiable. All the conversion steps performed are documented, as are the manual reconfigurations occasionally required.

Finally, we will draw up detailed documentation of your plant as soon as the re-start is completed. We even see to the proper disposal of any replaced system components.

For information, consulting, analysis and a quotation, please contact your local Siemens representative.

More information

You can find detailed information, technical specifications and ordering data for individual TELEPERM M migration products in the following sections: "Automation", "Engineering", "HMI" and "Communication".

You can find additional information in the Internet at: www.siemens.com/teleperm
Migration products
TELEPERM M migration

Automation

Overview

The PCS 7/TM-IO migration package combines in a migration rack a SIMATIC PCS 7 automation system with the components required for connecting the TELEPERM I/Os. The associated conversion services offered for it have facilitated the gradual changeover from the TELEPERM I/O to distributed SIMATIC PCS 7 process I/O since 1999.

If you assume that the process I/O of a process cell, including transmitters and actuators, should function for at least 10 years without a new loopcheck, then the preservation of the TELEPERM I/O in an upcoming migration project appears less attractive today than in the past.

In view of the discontinuation of the TELEPERM I/O products announced for 2014, we recommend that complete replacement of existing TELEPERM M automation systems and I/Os with corresponding SIMATIC PCS 7 system components and new software.

For this reason, the different versions of the PCS 7/TM-IO migration package are no longer offered as standard products in the current catalog. The PCS 7/TM-IO migration package and its individual components continue to be available for order.

SIMATIC PCS 7 system components suitable for plant modernization can be found in the chapters ‘Automation Systems’ and ‘Process I/O’ of the ST PCS 7 Catalog.
**Overview**

The PCS7/TM-OS operator systems offered in this catalog can be used for the migration of older operator systems of TELEPERM M. This is simply done by replacing the OS 252, OS 26x or OS 52x operator systems already installed in existing TELEPERM M process cells/units with the SIMATIC PCS 7 operator systems, which are designed for connection to the TELEPERM M plant bus CS 275.

**Application**

The PCS 7/TM-OS operator system with dual-channel functionality, which is designed to be operated simultaneously on the TELEPERM M CS 275 plant bus and the PCS 7 Industrial Ethernet plant bus, can be used in combination with the GT104CS gateway (see section on "Communication") to effectively link existing TELEPERM M process cells/units with the SIMATIC PCS 7 operator systems, which are designed for connection to the TELEPERM M plant bus CS 275.

**Design**

**SIMATIC PCS 7 Industrial Workstation V8.1**

The SIMATIC PCS 7 Industrial Workstations V8.1 with Basic Communication Ethernet (BCE) and Windows 7 Ultimate SP1 64-bit or Windows Server 2008 R2 SP1 64-bit operating system from Catalog ST PCS 7 can be used as basic hardware for:

- PCS 7/TM-OS single stations (single station systems)
- PCS 7/TM-OS servers and clients (multi-user systems)

They can be expanded depending on their use and on the defined scope of delivery by means of:

- SIMATIC PCS 7 OS Software V8.1
- Software package PCS 7/TM-OCX (NORA) V5.1

Furthermore, add-on/extension components from the "Industrial Workstation/IPC" section of the current ST PCS 7 catalog are also relevant for the configuration of PCS 7/TM-OS, for example, network cables, mouse and keyboard, smart card reader, signal modules or components for operation of multiple monitors. You can find components for redundant operator systems in the chapter "Operator System", section "Redundant Operator Systems" of the ST PCS 7 catalog.

**Dual-channel operation**

The SIMATIC PCS 7 Industrial Workstation with BCE, server version, with its associated expansion components typical for servers, already meets all the requirements for dual-channel operation of the PCS 7/TM-OS.

Interfacing to the SIMATIC PCS 7 Industrial Ethernet plant bus can also be implemented via CP 1613 A2/CP 1623 as an alternative to BCE communication. Interfacing via CP 1613 A2/CP 1623 is only required for communication with more than 8 automation systems and when using redundant automation systems.

The communication software for CP 1623 or CP 1613 A2 is generally supplied with the SIMATIC PCS 7 software and is installed as appropriate for the operating system.

In order to activate this communication software you need licenses for the

- SIMATIC NET HARDNET-IE S7,
- SIMATIC NET HARDNET-IE S7-REDCONNECT or
- SIMATIC NET HARDNET-IE S7 REDCONNECT PowerPack communication products.

SIMATIC PCS 7 Industrial Workstations with BCE communication can also be subsequently upgraded to CP 1613/1623 communication. As well as the CP 1613 A2/CP 1623 module, one of the following two licenses is required:

- SIMATIC NET HARDNET-IE S7 license
- SIMATIC NET HARDNET-IE S7-REDCONNECT license (for communication with redundant automation systems).

The SIMATIC NET HARDNET-IE S7-REDCONNECT PowerPack license can be used at a later point to expand a CP 1613 A2/CP 1623 module with SIMATIC NET HARDNET-IE S7 for communication with redundant automation systems.

For additional information, refer to Catalog ST PCS 7, Chapter "Operator System", Section "Redundant Operator Systems".
Migration products
TELEPERM M migration

PCS 7/TM-OS

Function

Coupling package PCS 7/TM-OS V5.1

The "PCS 7/TM-OS coupling package for AS 23x/AS x88" enables SIMATIC PCS 7 operator systems to exchange information with the following automation systems via the CS 275 plant bus:

- AS 215
- AS 230, AS 230 K
- AS 235, AS 235 K, AS 235 H
- AS 388/TM, AS 488/TM
- SIMATIC S5-150U/S5-155U

The coupling package contains a bus-specific channel DLL and a TM Manager. The channel DLL adapts the TELEPERM M message frames to the OS-specific data structures and procedures by converting the protocol. The TM Manager is a configuration assistant that supports the following configuration functions:

ORPA Import

In accordance with the AS data defined in the PROGRAF AS configuration tool, the ORPA import function creates structured tags in the operator system for TELEPERM M standard and user blocks. The selection of parameters to be imported can be modified using filters and a dialog box.

Block Import

In the operator system, the block import function creates block instances of the block types defined in PROGRAF AS for TELEPERM M standard and user blocks. The selection of parameters to be imported can be modified using filters and a dialog box.

Connection Import

The connection import function generates connections in the TELEPERM M channel CS 275. Here, it is possible to define whether status and plain text messages are to be transmitted and whether the automation system is to be linked to the operator system.

Message Generator

The Message Generator function determines the block instances which were imported into the operator system and generates messages for these in the AlarmLogging. The message texts can be parameterized. Message class and message type can be defined bit-specifically for MKS blocks.

Batch Import

The Batch Import function prepares the data for the internal data of SIMATIC BATCH. SIMATIC BATCH can then communicate with the interface blocks in TELEPERM M automation systems in the same manner as with SIMATIC PCS 7 automation systems.

Coupling package upgrade to PCS 7/TM-OS V5.1

Various upgrade packages are available to upgrade existing WinCC/TM V1.0x, PCS 7/TM-OS V2.x, V3.x, V4.x or V5.0 coupling packages. The PCS 7/TM-OCX software package is also included in the upgrade offer.

The article number of the upgrade must be selected according to the installed platform (PCS 7/TM-OS coupling package and/or PCS 7/TM-OCX (NORA) program package). The upgrade package without license for process coupling and PCS 7/TM-OCX can be used to upgrade from V5.0 to V5.1. One upgrade package with licensing is required for each SIMATIC PCS 7/TM-OS single station system, operator terminal (OS client) or server.

Where the total cost of the upgrade is concerned, it is an advantage if the basic hardware and the operating system of the existing PCS 7/TM-OS single stations, servers, and clients can continue to be used. The PCS 7/TM-OS V5.1 coupling packages support PCS 7/TM-OS stations with the following operating systems:

- Windows 7 Ultimate/Enterprise SP1 (32-bit)
- Windows 7 Ultimate/Enterprise SP1 (64-bit)
- Windows Server 2008 R2 Standard Edition SP1 (64-bit)
Function (continued)

Software package PCS 7/TM-OCX (NORA) V5.1

Faceplate (here for the RN block) in the TELEPERM M NORA display (left) and the PCS 7 layout (right)

The PCS 7/TM-OCX (NORA) program package comprises:

- Faceplates for the standardized display of operable TELEPERM M AS function blocks in various hierarchy levels (icon display/group display/loop display)
- Faceplates for the visualization of PCS 7 driver blocks of the TELEPERM M I/Os

The faceplates for the AS standard function blocks are comparable with the standardized displays of the TELEPERM M OS 525 operator system or with the SIMATIC PCS 7 faceplates. They are of multi-lingual design, i.e. the user can choose between the languages German, English and French. The electronic documentation is supplied on CD in German and English.

The process connection is made by linking the faceplate to the AS standard function block. The Object Control ActiveX (OCX) interactive graphics element performs the logic operation with the process tags.

As a result, the PCS 7/TM-OCX (NORA) program package not only makes the configuration of pictures easier, it also does much to simplify and speed up the entire OS configuration process.

For some AS standard function blocks the PCS 7/TM-OCX (NORA) program package offers not only faceplates in the TELEPERM M NORA presentation but also faceplates in the PCS 7 layout. Both faceplate types can be used simultaneously on the same computer. However, you can use the displays of only one block type for the function “Select display using process tag”.

Intelligent alarm management

The PCS 7/TM-OS V5.1 coupling packages support the intelligent alarm management for the SIMATIC PCS 7 V8.1 operator system. By means of intelligent alarm management, those messages which are of less significance for safe and fault-free plant operation during specific plant states can be visually and audibly hidden. These messages are still logged and archived as before. This saves a noticeable amount of work for the operators. Insignificant messages can be hidden in two ways:

- Dynamically, i.e. depending on preconfigured definition for up to 32 operating states (Smart Alarm Hiding)
- Manually, with time limit

In the case of Smart Alarm Hiding, the status (commissioning, startup, service, etc.) of the unit is transferred to PCS 7/TM-OS by means of the function block "SRAH" (Status Representation for Alarm Hiding) and its status message. Depending on this status of the process cell, messages which are irrelevant for the operator are hidden there.

The function block for AS 23x and AS x88/TM with the fixed type name SRAH is a user block which can be downloaded to the corresponding automation system during operation. It is supplied on the software CD of PCS 7/TM-OS V5.1.

Integration

Connecting systems with TELEPERM M basic functions to SIMATIC BATCH V8.1

Using the coupling packages for PCS 7/TM-OS it is possible to connect AS 23x or AS 488/TM automation systems, whose functional process areas are automated with GF blocks of the basic functions software package up to version V1.3 (6DS5305-8AA; released for delivery in 08/89), to SIMATIC BATCH V8.1. Connection takes place through the UNIB, TR1B and EM1B interface blocks, which are inserted in the AS structure. It can only be implemented with client/server-based multi-user systems. Single station systems (single stations) are not suitable for this. The interface blocks enable SIMATIC BATCH to dock on in order to forward control strategies, setpoints and phase change commands to the master recipe phase, and to read its status.

The dual-channel functionality of the operator system also supports connection to SIMATIC BATCH, i.e. plant units can be used by different systems within a recipe. It is irrelevant for the recipe whether a plant unit is on a SIMATIC PCS 7 automation system or on a TELEPERM M automation system. This is a great advantage particularly with plant expansions.
## Migration products

**TELEPERM M migration**

### PCS 7/TM-OS

#### Ordering data

<table>
<thead>
<tr>
<th>OS Single Station</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIMATIC PCS 7 Industrial Workstation for ES/OS Single Station</td>
<td>See Catalog ST PCS 7, Chapter &quot;Industrial Workstation/IPC&quot;, SIMATIC Rack PC</td>
</tr>
<tr>
<td></td>
<td>Other items required:</td>
</tr>
<tr>
<td></td>
<td>• Interface module for CS 275 incl. local bus connecting cable</td>
</tr>
<tr>
<td></td>
<td>• SIMATIC PCS 7 OS Software Single Station V8.1 including 100 OS Runtime PO (for licensing)</td>
</tr>
<tr>
<td></td>
<td>• SIMATIC PCS 7 OS Runtime License for adding OS Runtime POs (can be cumulated)</td>
</tr>
<tr>
<td></td>
<td>• Coupling package PCS 7/TM-OS V5.1</td>
</tr>
<tr>
<td></td>
<td>• Optional:</td>
</tr>
<tr>
<td></td>
<td>- Signal module</td>
</tr>
<tr>
<td></td>
<td>- PCS 7/TM-OCX (NORA) V5.1</td>
</tr>
</tbody>
</table>

#### Add-on/expansion components

<table>
<thead>
<tr>
<th>OS Server</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIMATIC PCS 7 Industrial Workstation for OS Server</td>
<td>See Catalog ST PCS 7, Chapter &quot;Industrial Workstation/IPC&quot;, SIMATIC Rack PC</td>
</tr>
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<td></td>
<td>Other items required:</td>
</tr>
<tr>
<td></td>
<td>• Interface module for CS 275 incl. local bus connecting cable</td>
</tr>
<tr>
<td></td>
<td>• SIMATIC PCS 7 OS Software Server V8.1 including 100 OS Runtime PO (for licensing)</td>
</tr>
<tr>
<td></td>
<td>• SIMATIC PCS 7 OS Runtime License for adding OS Runtime POs (can be cumulated)</td>
</tr>
<tr>
<td></td>
<td>• Coupling package PCS 7/TM-OS V5.1</td>
</tr>
<tr>
<td></td>
<td>• Optional:</td>
</tr>
<tr>
<td></td>
<td>- Signal module</td>
</tr>
<tr>
<td></td>
<td>- For process visualization on the server: PCS 7/TM-OCX (NORA) V5.1</td>
</tr>
</tbody>
</table>

#### OS Client

| SIMATIC PCS 7 Industrial Workstation for OS Client | See ST PCS 7 catalog, section "Industrial Workstation/IPC", SIMATIC Rack PC |
| | Other items required: |
| | • SIMATIC PCS 7 OS Software Client V8.1 (for licensing) |
| | • Optional: |
| | - Signal module |
| | - PCS 7/TM-OCX (NORA) V5.1 |

### Other items required:

- Interface module for CS 275 incl. local bus connecting cable
- SIMATIC PCS 7 OS Software Single Station V8.1 including 100 OS Runtime PO (for licensing)
- SIMATIC PCS 7 OS Runtime License for adding OS Runtime POs (can be cumulated)
- Coupling package PCS 7/TM-OS V5.1
- Optional: Signal module, PCS 7/TM-OCX (NORA) V5.1

### Optional:

- Signal module
- PCS 7/TM-OCX (NORA) V5.1

### Note:

When the PCS 7/TM-OCX (NORA) is used, a 6DS5040-1AX software package has to be ordered for each single station system (OS single station) and for each operator terminal (OS client) of a multi-user system. A program package is also required for the process visualization module if it is used on the server.

### Upgrade coupling package

<table>
<thead>
<tr>
<th>PCS 7/TM-OS V1.x/V2.x/V3.x/V4.x/ V5.0 to V5.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software package PCS 7/TM-OCX V5.1 for AS 23x/AS x88</td>
</tr>
<tr>
<td>2 languages (English, German), software class A, runs with Windows 7 Ultimate/Enterprise SP1 32/64-bit or Windows Server 2008 R2 Standard SP1 64-bit</td>
</tr>
<tr>
<td>Type of delivery: License key on USB flash drive and certificate of license; software and electronic documentation on CD</td>
</tr>
<tr>
<td>3 languages (English, German, French), software class A, runs with Windows 7 Ultimate/Enterprise SP1 32/64-bit or Windows Server 2008 R2 Standard SP1 64-bit</td>
</tr>
<tr>
<td>Type of delivery: License key USB flash drive and certificate of license; electronic documentation (German, English) and software on CD</td>
</tr>
<tr>
<td>Note: If the PCS 7/TM-OCX (NORA) is used, a 6DS5040-1AX software package has to be ordered for each single station system (OS single station) and for each operator terminal (OS client) of a multi-user system. A program package is also required for the process visualization module if it is used on the server.</td>
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</table>

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<table>
<thead>
<tr>
<th>PCS 7/TM-OS V1.x/V2.x/V3.x/V4.x/ V5.0 to V5.1</th>
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<tbody>
<tr>
<td>Software class A, runs under Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 64-bit</td>
</tr>
<tr>
<td>Comprising software CD and:</td>
</tr>
<tr>
<td>- without license for process coupling and PCS 7/TM-OCX</td>
</tr>
<tr>
<td>- License for PCS 7/TM-OS AS 23x/AS x88 coupling package</td>
</tr>
<tr>
<td>- License for PCS 7/TM-OCX</td>
</tr>
<tr>
<td>- License for PCS 7/TM-OS AS 23x/AS x88 coupling package and PCS 7/TM-OCX</td>
</tr>
</tbody>
</table>

### Upgrade coupling package

<table>
<thead>
<tr>
<th>PCS 7/TM-OS V1.x/V2.x/V3.x/V4.x/ V5.0 to V5.1</th>
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<tbody>
<tr>
<td>Software class A, runs under Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 64-bit</td>
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<tr>
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<tr>
<td>- License for PCS 7/TM-OS AS 23x/AS x88 coupling package and PCS 7/TM-OCX</td>
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</table>

### Upgrade coupling package

<table>
<thead>
<tr>
<th>PCS 7/TM-OS V1.x/V2.x/V3.x/V4.x/ V5.0 to V5.1</th>
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<tbody>
<tr>
<td>Software class A, runs under Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 64-bit</td>
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<tr>
<td>Comprising software CD and:</td>
</tr>
<tr>
<td>- without license for process coupling and PCS 7/TM-OCX</td>
</tr>
<tr>
<td>- License for PCS 7/TM-OS AS 23x/AS x88 coupling package</td>
</tr>
<tr>
<td>- License for PCS 7/TM-OCX</td>
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<tr>
<td>- License for PCS 7/TM-OS AS 23x/AS x88 coupling package and PCS 7/TM-OCX</td>
</tr>
</tbody>
</table>
### Ordering data

<table>
<thead>
<tr>
<th>Interfacing to Industrial Ethernet plant bus, upgrading from BCE communication to CP 1613/CP 1623 communication</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CP 1613 A2</strong> PCI card for connection to Industrial Ethernet, with ITP and RJ45 connections</td>
<td>6GK1161-3AA01</td>
</tr>
<tr>
<td><strong>CP 1623</strong> PCI Express x1 card for connection to Industrial Ethernet (10/100/1,000 Mbit/s), with 2-port switch (RJ45)</td>
<td>6GK1162-3AA00</td>
</tr>
</tbody>
</table>

### Communication software activation licenses for CP 1613/CP 1623
- **SIMATIC NET HARDNET-IE S7 V12** (for S7 communication, except with redundant AS) runtime software, 2 languages (English, German), software class A license for up to 4 CP 1613 A2/CP 1623, Single license for 1 installation Type of delivery package (without SIMATIC PCS 7 Software Media Package): Software and electronic manual on CD, license key on USB flash drive
- **SIMATIC NET HARDNET-IE S7-REDCONNECT V12** (for S7 communication with redundant AS) runtime software, 2 languages (English, German), software class A license for up to 4 CP 1613 A2/CP 1623, Single license for 1 installation Type of delivery package (without SIMATIC PCS 7 Software Media Package): Software and electronic manual on CD, license key on USB flash drive

### Activation license for subsequent expansion of S7 communication software for CP 1613/CP 1623 for communication with redundant AS
- **SIMATIC NET HARDNET-IE S7-REDCONNECT PowerPack V12** Runtime software, 2 languages (English, German), software class A License for up to 4 CP 1613 A2/CP 1623, single license for one installation Type of delivery package (without SIMATIC PCS 7 Software Media Package): Software and electronic manual on CD, license key on USB flash drive

### Components for OS connection to the CS 275 plant bus
- Refer to following section "CS 275 bus system"

**Note:**
In the ST PCS 7 catalog, you can find further add-on/expansion components such as a network cables, mouse, keyboard, signal modules, smart card readers or components for operating multiple monitors. In this catalog you can also select components for redundant operator systems as well as the SIMATIC PCS 7 OS software for the various versions of the PCS 7/TM operator station (OS single station, OS server or OS client).
Migration products
TELEPERM M migration

Engineering with PROGRAF AS

Overview

Based on the SIMATIC PCS 7 Industrial Workstation, single station or server version, a universal PCS 7/TELEPERM AS/OS Engineering Station can be implemented by the addition of hardware and software components; this can then be used for the engineering of all subsystems networked by means of TELEPERM M plant bus CS 275 and SIMATIC PCS 7 Industrial Ethernet plant bus.

Design

PCS 7/TELEPERM AS/OS Engineering Station V8.1

The SIMATIC PCS 7 Industrial Workstations V8.1 single station/server versions are suitable for use as basic hardware for a PCS 7/TELEPERM AS/OS Engineering Station V8.1. These are already equipped with interface modules for connection to the plant bus and the terminal bus of SIMATIC PCS 7.

Detailed information about the technology, scope of delivery, and order information of all versions of the SIMATIC PCS 7 Industrial Workstation V8.1 as well as add-ons/expansions, can be found in the "Industrial Workstation/IPC" section of the current ST PCS 7 catalog.

Additional components are required for configuration as PCS 7/TELEPERM AS/OS Engineering Station V8.1:
- CS 275 interface module N-PCI and local bus connecting cable (see Section "CS 275 bus system")
- PROGRAF AS+/NT V4.04 program package, Article No. 6DL5255-1CX
- Coupling package PCS 7/TM-OS V5.1 for AS 23x/AS x88 (for details see section "PCS 7/TM-OS")
- SIMATIC PCS 7 AS/OS Engineering Software V8.1, PO unlimited

The software package PCS 7/TM-OCX (NORA) V5.1 can be optionally used (for details, see section "Operation and Monitoring").

Note:
The SIMATIC PCS 7 AS/OS Engineering Software V8.1 is activated in OS test mode for 2 hours. Continuous use in OS productive operation is not possible.

Interfacing to the SIMATIC PCS 7 plant bus

The connection of the SIMATIC PCS 7 Industrial Workstations to the SIMATIC PCS 7 plant bus Industrial Ethernet is implemented via RJ45 network adapter 10/100/1000 Mbps and Basic Communication Ethernet (BCE).

An alternative to the BCE communication is higher-performance communication using CP 1613 A2/CP 1623. However, this is only required for communication with more than 8 automation systems and when redundant automation systems are used.

The communication software for CP 1623 or CP 1613 A2 is generally supplied with the SIMATIC PCS 7 software and is installed as appropriate for the operating system. In order to activate this communication software you need licenses for the
- SIMATIC NET HARDNET-IE S7
- SIMATIC NET HARDNET-IE S7-REDCONNECT or
- SIMATIC NET HARDNET-IE S7 REDCONNECT PowerPack communication products.

SIMATIC PCS 7 Industrial Workstations with BCE communication can also be subsequently upgraded to CP 1613/1623 communication. As well as the CP 1613 A2/CP 1623 module, one of the following two licenses is required:
- SIMATIC NET HARDNET-IE S7 license
- or SIMATIC NET HARDNET-IE S7-REDCONNECT license (for communication with redundant automation systems).

The SIMATIC NET HARDNET-IE S7-REDCONNECT PowerPack license can be used at a later point to expand a CP 1613 A2/CP 1623 module with SIMATIC NET HARDNET-IE S7 for communication with redundant automation systems.
Design (continued)

Engineering software PROGRAF AS

The PROGRAF AS+/NT software package is a version of the PROGRAF AS engineering software that can execute on the following operating systems:

- Windows XP Professional SP3 32-bit
- Windows Server 2003 SP2 32-bit
- Windows Server 2003 R2 SP2 32-bit
- Windows 7 SP1 32-bit or 64-bit
- Windows Server 2008 SP2 32-bit
- Windows Server 2008 R2 SP1 64-bit

As a component of a PCS 7/TELEPERM AS/OS Engineering Station V8.1 single station or server version, PROGRAF AS+/NT V4.04 can be used for:

- Engineering, testing and commissioning of the automation systems
  - AS 230, AS 230 K
  - AS 235, AS 235 K, AS 235 H
  - AS 388/TM and AS 488/TM (incl. the technical design versions AS 488 S and AS 488 K)
- Software maintenance and documentation

A powerful function block diagram (FBD) editor with autorouter that can also represent dynamic values and curves, libraries for reusable elements, rational import and export functions, as well as practical commissioning and test functions offer you effective support for the graphical structuring, testing, optimizing and documentation of the user software of your TELEPERM M automation systems. Structures of existing installed automation systems can be read into PROGRAF AS+/NT, re-compiled and then graphically processed or documented.

Note:
PROGRAF AS+/NT V4.04 is still available for TELEPERM M migration projects, Article No. 6DL5255-1CX.

Integration

Converting existing user software

The user software represents a large portion of the total investment and know-how. Hence the quality of its conversion into the new system world is a key criterion for a migration’s economic efficiency. We provide you with fast and reliable conversion of your user software for use on the new SIMATIC PCS 7 system platform. In doing so we make allowance for sector-specific properties as well as special plant solutions. As a result of the modern tools that we developed ourselves, you profit from software of constant quality, reliability and verifiability. All the conversion steps performed are documented, as are the manual reconfigurations occasionally required.

For quotations and additional information, please contact your regional Siemens representative.

Ordering data

<table>
<thead>
<tr>
<th>PCS 7/TELEPERM AS/OS Engineering Station</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIMATIC PCS 7 Industrial Workstation for ES/OS Single Station</td>
<td>See Catalog ST PCS 7, Chapter “Industrial Workstation/IPC”, SIMATIC Rack PC</td>
</tr>
<tr>
<td>SIMATIC PCS 7 Industrial Workstation for OS Server</td>
<td>See Catalog ST PCS 7, Chapter “Industrial Workstation/IPC”, SIMATIC Rack PC</td>
</tr>
<tr>
<td>SIMATIC PCS 7 AS/OS Engineering Software V8.1 (PO unlimited)</td>
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</table>
# Engineering with PROGRAF AS

## Migration products

### TELEPERM M migration

### Ordering data

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Article No.</th>
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</thead>
<tbody>
<tr>
<td>Coupling package PCS 7/TM-OS V5.1 for AS 23x/AS x88</td>
<td>6DS5145-1AX</td>
</tr>
<tr>
<td>2 languages (English, German), software class A, runs with Windows 7 Ultimate/Enterprise SP1 32/64-bit or Windows Server 2008 R2 Standard SP1 64-bit</td>
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</tr>
<tr>
<td>Type of delivery: License key on USB flash drive and certificate of license, software and electronic documentation on CD</td>
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</tr>
<tr>
<td>Software package PCS 7/TM-OCX (NORA) V5.1</td>
<td>6DS5040-1AX</td>
</tr>
<tr>
<td>Standardized displays for operable TELEPERM M function blocks and for PCS 7 driver blocks of the TELEPERM M I/O</td>
<td></td>
</tr>
<tr>
<td>3 languages (English, German, French), software class A, runs with Windows 7 Ultimate/Enterprise SP1 32/64-bit or Windows Server 2008 R2 Standard SP1 64-bit</td>
<td></td>
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<tr>
<td>Type of delivery: License key USB flash drive and certificate of license, electronic documentation (German, English) and software on CD</td>
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<tr>
<td>Upgrade coupling package PCS 7/TM-OS V1.x/V2.x/V3.x/V4.x/V5.0 to V5.1</td>
<td>6DS5128-1XX00-2XX4</td>
</tr>
<tr>
<td>Software class A, runs under Windows 7 Ultimate/Enterprise SP1 32/64-bit or Windows Server 2008 R2 Standard SP1 64-bit</td>
<td></td>
</tr>
<tr>
<td>Comprising software CD as well as:</td>
<td></td>
</tr>
<tr>
<td>• without license for process coupling and PCS 7/TM-OCX</td>
<td></td>
</tr>
<tr>
<td>• License for PCS 7/TM-OS AS 23x/AS x88 coupling package</td>
<td></td>
</tr>
<tr>
<td>• License for PCS 7/TM-OCX</td>
<td></td>
</tr>
<tr>
<td>• License for PCS 7/TM-OS AS 23x/AS x88 coupling package and PCS 7/TM-OCX</td>
<td></td>
</tr>
<tr>
<td>PROGRAF AS+/NT V4.04</td>
<td>6DL5255-1CX</td>
</tr>
<tr>
<td>Type of delivery: CD with program package in German and English</td>
<td></td>
</tr>
<tr>
<td>• Software protection (dongle)</td>
<td></td>
</tr>
<tr>
<td>Update PROGRAF AS+/NT V4.0.x to current version</td>
<td>6DL5255-1CX00-4XX3</td>
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<tr>
<td>Still available for TELEPERM M migration, article no.</td>
<td></td>
</tr>
<tr>
<td>Upgrade PROGRAF AS+ Version 2 or 3 (with Windows 3.11) to current version with return of dongle</td>
<td>6DL5255-1CX00-4XX4</td>
</tr>
<tr>
<td>Components for connection of the AS/OS engineering station to the CS 275 plant bus</td>
<td></td>
</tr>
<tr>
<td>Refer to following section &quot;CS 275 bus system&quot;</td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td></td>
</tr>
<tr>
<td>In the ST PCS 7 catalog, you can find further add-on/expansion components such as a network cables, mouse, keyboard or components for operating multiple monitors in addition to add-on SIMATIC PCS 7 engineering software.</td>
<td></td>
</tr>
</tbody>
</table>
**Overview**

Through connection to the TELEPERM M CS 275 plant bus, PCS 7/TM-OS operator systems and engineering stations with PROGRAF AS+/NT have access to all types of the following automation systems of an existing TELEPERM M plant:

- AS 230, AS 235, AS 488/TM
- S5-150U, S5-155U

Characteristic features of the CS 275 bus architecture:

- Participants within a local range or a cabinet group are connected together at distances up to 20 m by means of the 20-m local bus.
- The transition from the 20-m local bus to the remote bus is made using inductive bus converters UI.
- Up to 9 participants (each UI counts as 1 participant) can be connected into a local bus island using the 20-m local bus.
- The remote bus combines distributed systems/local bus islands over distances up to 4 km.
- The local bus is redundant as standard, a redundant design for the remote bus is optional.

There are various possibilities for connecting the engineering/operator stations to the CS 275 plant bus (see design) depending on the respective initial situation and on the type and scope of migration project.

---

**Design**

The following picture and the associated product overview show the basic possibilities for the CS 275 connection of the engineering/operator stations as well as the connection components required in each case.

The N-PCI interface module that acts as a CS 275 interface is not yet integrated into the SIMATIC PCS 7 Industrial Workstations, single station or server versions, that can be used as the basic hardware for an engineering/operator station. It must therefore be ordered separately and retrofitted there.

The current N-PCI interface module can be used with:

- PCS 7/TM-OS V3.1 SP1 and later and
- PROGRAF AS+/NT V4.03 and later.

It operates with 3.3 V and 5 V PCI bus signal voltage. The N-PCI driver V1.4 or higher that it requires, is part of the scope of delivery of PCS 7/TM-OS in V3.1 SP1 or higher.

---

Basic possibilities for ES/OS connection to the CS 275 plant bus
## Design (continued)

### Overview of connecting cables for ES/OS connection to the CS 275 plant bus

<table>
<thead>
<tr>
<th>Connector type (see graphic)</th>
<th>Number of connectors</th>
<th>Field of application</th>
<th>Preassembly, length</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>To connect the N-PCI interface module to a remote bus connection unit (UI1, UI2 and AV)</td>
<td>Sub-D socket ← 0.3 m → ES 902 ← 0.3 m → ES 902 ← 0.3 m → ES 902</td>
<td>6DS8210-8MB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub-D socket ← 3 m → ES 902 ← 0.3 m → ES 902 ← 0.3 m → ES 902</td>
<td>6DS8210-8MC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub-D socket ← 5 m → ES 902 ← 0.3 m → ES 902 ← 0.3 m → ES 902</td>
<td>6DS8210-8SC</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>To connect the N-PCI to a local bus island; connection to an existing ES 902 connector, e.g. to UI or N-AS</td>
<td>Sub-D socket ← 0.5 m → cable end free</td>
<td>6DS8211-8SB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub-D socket ← 5 m → cable end free</td>
<td>6DS8211-8SC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub-D socket ← 10 m → cable end free</td>
<td>6DS8211-8AD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub-D socket ← 15 m → cable end free</td>
<td>6DS8211-8ED</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>To connect the N-PCI to a local bus island; connection on distributor (AV) in remote bus connection unit or TELEPERM M AS cabinet</td>
<td>Sub-D socket ← 2.5 m → ES 902</td>
<td>6DS8208-8KC</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>To extend a connecting cable 1, 2, 3 or 4 in order to connect more than two ES/OS systems to local bus island</td>
<td>Sub-D socket ← 0.3 m → Sub-D socket ← 0.3 m → Sub-D plug</td>
<td>6DS8212-8MB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub-D socket ← 1.5 m → Sub-D socket ← 0.3 m → Sub-D plug</td>
<td>6DS8212-8EC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub-D socket ← 3 m → Sub-D socket ← 0.3 m → Sub-D plug</td>
<td>6DS8212-8MC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub-D socket ← 5 m → Sub-D socket ← 0.3 m → Sub-D plug</td>
<td>6DS8212-8SC</td>
</tr>
</tbody>
</table>

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<tr>
<th>Article No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6DP1724-8BA</td>
<td>N-PCI interface module for the ES/OS connection to the CS 275 local bus, suitable for 3.3 V and 5 V PCI bus signal voltage</td>
</tr>
<tr>
<td>6DS8210-8MB</td>
<td>Connecting cable between N-PCI and remote bus connection unit with 4 connectors (1 Sub-D socket, 3 ES 902); for distances between N-PCI and UI up to:</td>
</tr>
<tr>
<td>6DS8210-8MC</td>
<td>• 0.3 m</td>
</tr>
<tr>
<td>6DS8210-8SC</td>
<td>• 3 m</td>
</tr>
<tr>
<td>6DS8211-8SB</td>
<td>• 5 m</td>
</tr>
<tr>
<td>6DS8211-8SC</td>
<td>Connecting cable between N-PCI and local bus island (ES 902 connector) with 1 connector (Sub-D socket) and one open cable end for connection to ES 902 connector; length:</td>
</tr>
<tr>
<td>6DS8211-8AD</td>
<td>• 0.5 m</td>
</tr>
<tr>
<td>6DS8211-8ED</td>
<td>• 5 m</td>
</tr>
<tr>
<td>6DS8211-8SC</td>
<td>• 10 m</td>
</tr>
<tr>
<td>6DS8211-8EC</td>
<td>• 15 m</td>
</tr>
</tbody>
</table>

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**Accessories**

<table>
<thead>
<tr>
<th>Article No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6DS9200-8AA</td>
<td>ES 902 connector for combination with CS 275 local bus connecting cables with open cable end, e.g. 6DS8 211-8.</td>
</tr>
</tbody>
</table>
Overview

SIMATIC PCS 7 process cells on the Industrial Ethernet plant bus can be linked perfectly with existing TELEPERM M process cells on the CS 275 plant bus by a combination of the PCS7/TM-OS operator system with dual-channel functionality and GT104CS gateway.

Application

The cross-bus communication load can be evenly distributed:
- The PCS 7/TM-OS with dual-channel functionality handles AS-OS communication with the automation systems on the CS 275 and Industrial Ethernet plant buses, as well as time-of-day synchronization for the TELEPERM M unit.
- The cross-bus AS-AS communication operates via the GT104CS gateway. The gateway behaves like a virtual automation system.

In connection with the GT104CS gateway, the automation systems AS 488/TM, AS 235 and AS 230 can be used on the TELEPERM M side. The gateway has a bus and node address on the TELEPERM M CS 275 plant bus, via which the cyclic data can be exchanged with as many as 32 automation systems on the SIMATIC PCS 7 Industrial Ethernet plant bus (TCP/IP protocol). The communication is configured in the participating function blocks of the TELEPERM M and SIMATIC PCS 7 automation systems and can also be performed online. Once the connection is set up, the gateway couples the configured transmission and reception blocks.

Function

The Gateway GT104CS is capable of processing the cyclic data exchange between the TELEPERM M automation systems on the plant bus CS 275 and up to 32 SIMATIC PCS 7 automation systems on the Industrial Ethernet plant bus.

The CPU of a SIMATIC PCS 7 automation system can process transmitted or received data of at least 10 AKS- + 10 AKE- + 10 BKS- + 10 BKE-blocks in a 1s cycle. This corresponds to 280 analog values and 1280 binary values per second in each communication direction.

Configuration

At the GT104CS gateway, the bus and bus node address are to be set on the plant bus CS 275 by means of DIP switches. For communication with the SIMATIC PCS 7 automation system, the gateway requires only a few parameters (IP address). The connection between the SIMATIC PCS 7 automation systems and the gateway is configured using the SIMATIC Manager.

The necessary configuration work for this is minimal. For the SIMATIC PCS 7 automation systems, function blocks for the TELEPERM M standard functions AKS, BKS, AKE and BKE are also supplied, as well as central communications block TM_LINK.

By means of the TM_LINK communications block and the GT104CS gateway, the AKS, BKS, AKE and BKE blocks of the SIMATIC PCS 7 automation systems communicate with the AKS, BKS, AKE and BKE blocks in the TELEPERM M automation systems, which are assigned by addressing. The function block TM_LINK uses the S7 system functions USEND and URECV internally for communication with the gateway.

Ordering data

GT104CS gateway: for the AS-AS bus communication between TELEPERM M and SIMATIC PCS 7
Hardware incl. memory card with gateway system software, AKS/BKS/AKE/BKE function blocks

GT104CS gateway: Article No. 9AE4100-1EA00

More information

If you have any questions concerning the gateway GT104CS, please contact your regional Siemens representative or the department responsible for the product: The product manager can be contacted at the following address:
Siemens AG
Karlsruhe
Tel.: +49 (721) 595-6380
E-mail: gateway.solutions@siemens.com
Migration products
TELEPERM M migration

TELEPERM M Manual Collection

Overview

TELEPERM M Manual Collection

The TELEPERM M Manual Collection is a collection of TELEPERM M manuals available on CD. Updated manuals of current migration products are provided as electronic documentation together with the respective product. In addition, they can also be downloaded from the Internet via "SIMATIC Guide Manuals" (refer to "SIMATIC PCS 7 Migration manuals" there):

www.siemens.com/pcs7-documentation

Ordering data

<table>
<thead>
<tr>
<th>Ordering data</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TELEPERM M Manual Collection</td>
<td>6DL5900-8AX03-8YX8</td>
</tr>
<tr>
<td>Electronic manuals on CD, in 2 languages (German, English)</td>
<td>6DL5900-8AX03-8YX8</td>
</tr>
</tbody>
</table>
Introduction

Overview

The APACS+ process control system has been used successfully worldwide for over 20 years. Its functionality, reliability and user-friendliness have been demonstrated in more than 10,000 installed systems. Migration of the process control system based on APACS+/QUADLOG controllers with the innovative SIMATIC PCS 7 OS operation and monitoring systems from Siemens provides the opportunity for retaining proven functions and for significantly increasing the functionality and performance at the same time through specific modernization. With its open system platform, SIMATIC PCS 7 provides an ideal basis for modern, future-oriented and economical automation solutions in all sectors.

Migration strategy

Depending on the plant size, the hardware and user software of an installed APACS+ system represent a considerable investment volume and, together with the know-how of the operating and maintenance personnel, an enormous value. To preserve and expand the installed basis and to increase its value, Siemens developed a migration strategy which aims to modernize existing operator and engineering systems with SIMATIC PCS 7 while retaining the APACS+/QUADLOG controllers and the lower-lying I/O level. With this strategy, customers can migrate their existing systems efficiently and economically without having to replace any controllers, I/O devices or their wiring, and without any loss of associated investment in the system configuration. In addition, excellent alternatives are provided at the controller level by the AS 41x of SIMATIC PCS 7, especially with plant expansions. These are supported by the controller-controller communication via Industrial Ethernet Modules (IEM) and by PCS 7/APACS+ operator systems which can communicate with both APACS+/QUADLOG controllers and AS 41x by dual channel.
Migration products
APACS+/QUADLOG migration

Introduction

Benefits
By migrating to SIMATIC PCS 7, APACS+ customers also profit from the numerous advantages provided by Totally Integrated Automation (TIA) and the facilities already provided by the system for integration into the corporate information network. These include connection of the SIMATIC IT Manufacturing Execution System as well as monitoring via the World Wide Web or OPC data exchange with IT other applications.

In addition to the above-mentioned technical aspects, future compatibility is also an important argument in favor of APACS+/QUADLOG migration. This is achieved by Siemens investing in continuous product development and the long-term, global servicing for its range of SIMATIC products.

Options
Converting OS user software
The modern Siemens DBA technology permits fast and secure implementation of your user software. Your investment in the configuration of the existing system is therefore safeguarded.

It goes without saying that we also offer this conversion as a service. But you can call upon the services of our experienced migration specialists not only for this reason, but also when generating new graphics. We would be pleased to provide you with an individual quotation.

For quotations and additional information, please contact your regional Siemens representative.

More information
Additional information is available on the Internet at: www.siemens.com/simatic-pcs7/migration
Overview

The PCS 7/APACS+ OS software offered for migration of APACS+ operator systems is tailored to the architecture of the SIMATIC PCS 7 operator system. It supports both single station systems as well as multi-user systems in client-server architecture.

Data from different systems can be displayed in one process image on the OS clients of a multiuser system, both from APACS/QUADLOG controllers on the M bus and from the SIMATIC PCS 7 automation systems on the Industrial Ethernet. The multi-client architecture of the operator systems enables a client to retrieve data from different servers.

With smaller client-server systems it is possible to use a PCS 7/APACS+ OS server with dual-channel functionality. This implements the communication with the APACS/QUADLOG controllers and the SIMATIC PCS 7 automation systems via two separate communication channels.

A PCS 7/APACS+ plant configuration with automation systems (controllers), engineering system and operator system can be expanded by batch clients and batch servers for automation of batch processes using SIMATIC BATCH. Batch clients and OS clients can be operated together on one SIMATIC PCS 7 Industrial workstation or on separate basic hardware. Batch servers are usually set up on a separate SIMATIC PCS 7 Industrial workstation, separated from the OS server.

Notes:
The Runtime Software PCS 7/APACS+ OS V8.1 is based on the SIMATIC PCS 7 Operator System V8.1.

You can find information on the product range and the ordering data for SIMATIC PCS 7 V8.1 in Catalog ST PCS 7.

Design

The following software components are required depending on the configuration of the PCS 7/APACS+ operator system as a single station or client/server combination (single or redundant server):

<table>
<thead>
<tr>
<th>Required software</th>
<th>PCS 7 architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OS Single Station</td>
</tr>
<tr>
<td>PCS 7/APACS+ OS Software Single Station V8.1 (2 000 POs)</td>
<td></td>
</tr>
<tr>
<td>PCS 7/APACS+ OS Software Server V8.1 (2 000 POs)</td>
<td></td>
</tr>
<tr>
<td>PCS 7/APACS+ OS Software Server Redundancy V8.1 (2 000 POs)</td>
<td></td>
</tr>
<tr>
<td>PCS 7 OS Software Client V8.1 (See section &quot;OS Software&quot; in Catalog ST PCS 7)</td>
<td></td>
</tr>
</tbody>
</table>

When used with SIMATIC BATCH

| PCS 7/APACS+ SIMATIC BATCH Runtime License V7.0 | |

1) The PCS 7/APACS+ SIMATIC BATCH runtime license V7.0 is suitable for PCS 7/APACS+ plants with SIMATIC BATCH that are based on SIMATIC PCS 7 V7.0, V7.1, V8.0 or V8.1+SP1.

The number of process objects (PO) supplied with the software components in the table is expandable with SIMATIC PCS 7 OS Runtime licenses from the "OS Software" section of Catalog ST PCS 7. In this section of the Catalog you can also select additional software for PCS 7/APACS+ operator systems.

Appropriate basic hardware for a PCS 7/APACS+ operator station as a single station, server or client version can be found in the section "Industrial Workstation/IPC" of Catalog ST PCS 7.

Communication between the APACS+/QUADLOG controllers on the M-Bus and the PCS 7/APACS+ OS on the Industrial Ethernet plant bus usually takes place via the Industrial Ethernet Module IEM (see last section of this chapter). In the case of small configurations with limited expansion, a PCS 7/APACS+ OS station can also be directly linked to an APACS+ MBUS segment by means of an APACS+/QUADLOG MBI PCI card.
Migration products
APACS+/QUADLOG migration

PCS 7/APACS+ Operator System

Design (continued)

PCS 7/APACS+ OS V8.1
(single station/server/redundant server)

For the configuration of PCS 7/APACS+ OS operator stations the following software products are available:

- PCS 7/APACS+ OS Software Single Station V8.1 (2 000 POs) for a single station
- PCS 7/APACS+ OS Software Server V8.1 (2 000 POs)\(^1\) for one server
- PCS 7/APACS+ OS Software Server Redundancy V8.1 (2 000 POs)\(^1\) for a redundant pair of servers

\(^1\) The standard OS client of SIMATIC PCS 7 V8.1 is used to expand PCS 7/APACS+ client/server architectures.

They are equipped with:

- PCS 7 OS Runtime Software V8.1 (2 000 POs, incl. 512 archive tags)
- APACS+ OS channel for communication with the APACS+/QUADLOG controllers
- Library with PCS 7/APACS+ OS icons and OS faceplates
- OS software for redundant operation (PCS 7/APACS+ OS Software Server Redundancy)

The APACS+ OS channel DLL implements reliable communication with the APACS+/QUADLOG controllers using an original SIMATIC PCS 7 driver, and simultaneously permits communication with the AS 41x controllers by dual channel. It supports the Industrial Ethernet interfacing via the CP 1613/CP 1623 communications processor as well as the connection to the MBUS of APACS+ via Industrial Ethernet and IEM.

The PCS 7/APACS+ OS icons and faceplates developed in line with the SIMATIC PCS 7 standard take into account the special properties of the APACS+/QUADLOG controllers.

PCS 7/APACS+ SIMATIC BATCH Runtime License V7.0

Together with the APACS+ OS server channel DLL, the PCS 7/APACS+ SIMATIC BATCH runtime license allows exchange of runtime information between SIMATIC BATCH and an APACS+/QUADLOG controller. SIMATIC BATCH servers always communicate with the APACS+/QUADLOG controllers by means of a PCS 7/APACS+ OS server. Therefore a PCS 7/APACS+ SIMATIC BATCH Runtime license is required for each PCS 7/APACS+ OS Server which exchanges data with SIMATIC BATCH.

Note:

The PCS 7/APACS+ SIMATIC BATCH Runtime License V7.0 is suitable for PCS 7/APACS+ plants with SIMATIC BATCH that are based on SIMATIC PCS 7 V7.0, V7.1, V8.0 or V8.1+SP1. The PCS 7/APACS+ SIMATIC BATCH Runtime License V7.0 requires the installation of SIMATIC BATCH. The SIMATIC BATCH software should be ordered additionally. Information about the SIMATIC BATCH product range and its advanced functions can be found in Catalog ST PCS 7 under “SIMATIC BATCH software.”
## Ordering data

<table>
<thead>
<tr>
<th>Ordering data</th>
<th>Article No.</th>
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</thead>
<tbody>
<tr>
<td><strong>PCS 7/APACS+ Operator System</strong></td>
<td>6EQ2000-2AB18-3BA0</td>
</tr>
</tbody>
</table>
| **PCS 7/APACS+ OS Single Station software V8.1 (2 000 POs)** | Software and electronic documentation on CD/DVD, English, executes with Windows 7 Ultimate/Enterprise SP1 (32/64-bit), single license for 1 installation  
Runtime software, software class A  
Type of delivery:  
- License key USB stick and certificate of license  
- PCS 7/APACS+ Option V8.1  
- PCS 7 Software Media Package V8.1  
- PCS 7 Product Information V8.1 | 6EQ2000-2BB18-3BA0 |
| **PCS 7/APACS+ OS Server software V8.1 (2 000 POs)** | Software and electronic documentation on CD/DVD, English, executes with Windows Server 2008 R2 Standard SP1 64-bit, single license for 1 installation  
Runtime software, software class A  
Type of delivery:  
- License key USB stick and certificate of license  
- PCS 7/APACS+ Option V8.1  
- PCS 7 Software Media Package V8.1  
- PCS 7 Product Information V8.1 | 6EQ2000-2DB18-3BA0 |
| **PCS 7/APACS+ SIMATIC BATCH Runtime License V7.0** | For PCS 7/APACS+ plants with SIMATIC BATCH that are based on SIMATIC PCS 7 V7.0, V7.1, V8.0 or V8.1+SP1  
English, runs with Windows XP Professional (32-bit), Windows Server 2003 (32-bit), Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit), single license for 1 installation  
Runtime software, software class A  
Type of delivery: License key USB stick and certificate of license  
Note: In order to use this product, you also require SIMATIC BATCH software. You can find this in Catalog ST PCS 7, in the “SIMATIC BATCH software” section. | 6EQ2000-6XX07-2BB0 |

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### SIMATIC PCS 7

**OS Software Client V8.1**

- 5 languages (English, German, French, Italian, Spanish), software class A, runs with Windows 7 Ultimate/Enterprise SP1 (32/64-bit), floating license for 1 user  
(See section 'OS Software' in Catalog ST PCS 7)
  - Delivery form package (without SIMATIC PCS 7 Software Media Package)  
  - License key USB stick, certificate of license
  - Delivery form online (without SIMATIC PCS 7 Software Media Package)
  - License key download, online certificate of license
  - Note: E-mail address required!

<table>
<thead>
<tr>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6ES7658-2CX18-0YBS</td>
</tr>
<tr>
<td>6ES7658-2CX18-0YHS</td>
</tr>
</tbody>
</table>

### Upgrade software

**PCS 7/APACS+ OS Single Station Upgrade Package V8.0 to V8.1**

- Software and electronic documentation on CD/DVD, English, executes with Windows 7 Ultimate/Enterprise SP1 (32/64-bit), single license for 1 installation  
Runtime software, software class A  
Type of delivery:  
- PCS 7 OS Single Station Upgrade Package V8.0 to V8.1  
- PCS 7/APACS+ OS Upgrade Package V8.0 to V8.1 incl. PCS 7 Software Media Package V8.1  
- PCS 7 Software Support Package V8.1

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<th>Article No.</th>
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<tbody>
<tr>
<td>6EQ2000-001X8-3BH0</td>
</tr>
</tbody>
</table>

**PCS 7/APACS+ OS Server Upgrade Package V8.0 to V8.1**

- Software and electronic documentation on CD/DVD, English, executes with Windows Server 2008 R2 Standard SP1 (64-bit), single license for 1 installation  
Runtime software, software class A  
Type of delivery:  
- PCS 7 OS Server Upgrade Package V8.0 to V8.1  
- PCS 7/APACS+ OS Upgrade Package V8.0 to V8.1 incl. PCS 7 Software Media Package V8.1  
- PCS 7 Software Support Package V8.1

<table>
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<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6EQ2000-1EX18-3BH0</td>
</tr>
</tbody>
</table>
Migration products
APACS+/QUADLOG migration

PCS 7/APACS+ OS Engineering Station

Design

**PCS 7/APACS+ OS Engineering Software V8.1 (unlimited POs)**

For configuring a PCS 7/APACS+ OS Engineering Station, the PCS 7/APACS+ OS Engineering Software V8.1 (unlimited POs) is available. The software covers the OS engineering and OS interfacing of the APACS+/QUADLOG controller. It also supports a 2-hour OS runtime test mode. It is, however, not suitable for continuous OS runtime operation during production.

The PCS 7/APACS+ OS Engineering Software V8.1 comprises the following components:

- SIMATIC PCS 7 AS/OS Engineering Software V8.1 according to Catalog ST PCS 7, Section "ES software"
- PCS 7/APACS+ OS DBA
  - Database Engineering Package for the migration of user data
- APACS+ OS Server Channel DLL
  - for communication with APACS+/QUADLOG controllers
- PCS 7/APACS+ OS library
  - with OS icons and OS faceplates
- OPC Engineering plug-in
  - for interfacing third-party controllers (e.g. Allen-Bradley)

Other SIMATIC PCS 7 engineering software must be ordered separately from Catalog ST PCS 7, Section "ES software".

Appropriate basic hardware for a PCS 7/APACS+ engineering station can be found in the section "Industrial Workstation/IPC" of Catalog ST PCS 7.

**PCS 7/APACS+ OS DBA**

Database Automation (DBA) tool for generation of the PCS 7 OS database

A core component for the PCS 7/APACS+ OS Engineering is the Database Automation PCS 7/APACS+ OS DBA. This automatically generates the OS database with the display hierarchy, required tags, alarm messages and alarm priorities as well as the specific block icons and faceplates from the data of the APACS+/QUADLOG controllers. The display hierarchy is the basis for navigation between the process pictures and for alarm management. PCS 7/APACS+ OS DBA automatically positions the type-specific block icons, e.g. for controllers or analog inputs (AI), in the generated process pictures. These block icons are linked to the associated function blocks and faceplates through the database. Manual configuration is mainly limited to the design and positioning of the static graphic elements, for example, tubes or tanks.

**APACS+ OS Server Channel DLL**

The APACS+ OS server channel DLL implements reliable communication with the APACS+/QUADLOG controllers using an original SIMATIC PCS 7 driver, and simultaneously permits communication with the AS 41x controllers by dual channel. It supports the Industrial Ethernet interfacing of APACS+/QUADLOG controllers using the CP 1613/CP 1623 communications module in conjunction with the Industrial Ethernet Module IEM, as well as direct connection to the MBUS using an APACS+/QUADLOG MBI PCI card.
**Design (continued)**

PCS 7/APACS+ OS library

The PCS 7/APACS+ OS library contains the following types of symbols and faceplates:

<table>
<thead>
<tr>
<th>Symbol and faceplate types of the PCS 7/APACS+ OS library</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process control functions</strong></td>
</tr>
<tr>
<td>Single loop</td>
</tr>
<tr>
<td>Single loop SS</td>
</tr>
<tr>
<td>External setpoint</td>
</tr>
<tr>
<td>Ratio setpoint</td>
</tr>
<tr>
<td>Cascade</td>
</tr>
<tr>
<td>Primary</td>
</tr>
<tr>
<td>Secondary</td>
</tr>
<tr>
<td><strong>Process I/O functions</strong></td>
</tr>
<tr>
<td>Analog alarm</td>
</tr>
<tr>
<td>Discrete alarm</td>
</tr>
<tr>
<td><strong>Controller diagnostics</strong></td>
</tr>
<tr>
<td>Resource status</td>
</tr>
<tr>
<td><strong>Process objects</strong></td>
</tr>
<tr>
<td>Block valve 1 out</td>
</tr>
<tr>
<td>Block valve 2 out</td>
</tr>
<tr>
<td>Valve A</td>
</tr>
<tr>
<td>Valve A alarm</td>
</tr>
<tr>
<td>Motor 1 out</td>
</tr>
<tr>
<td>Motor 2 out</td>
</tr>
<tr>
<td>Motor A</td>
</tr>
<tr>
<td>Motor A alarm</td>
</tr>
</tbody>
</table>

The PCS 7/APACS+ OS icons and faceplates developed in line with the SIMATIC PCS 7 standard take into account the special properties of the APACS+/QUADLOG controllers.

OPC engineering plug-in

An additional component in DBA enables engineering of OPC connections to any third-party systems, e.g. for interfacing Allen-Bradley controllers. In addition to process values, this can be used to also integrate messages and alarms from third-party systems into the PCS 7 OS database. Analogous to APACS+, the OPC component supports automatic generation of the OS plant hierarchy as well as positioning of the corresponding block icons. The engineering overhead for integrating third-party systems can thus be drastically reduced.

**PCS 7/APACS+ SIMATIC BATCH DBA Engineering V7.0**

Optional package for configuration of PCS 7 OS and SIMATIC BATCH for interfacing of APACS+/QUADLOG controllers

The optional package PCS 7/APACS+ SIMATIC BATCH DBA Engineering contains:

- Licenses with which the batch information for a batch project saved in the APACS+ Engineering System 4-mation can be imported into DBA and translated for SIMATIC BATCH.
- License for exchange of information between SIMATIC BATCH and a PCS 7/APACS+ OS Server during runtime

**Note:**

PCS 7/APACS+ SIMATIC BATCH DBA Engineering V7.0 is suitable for PCS 7/APACS+ plants with SIMATIC BATCH that are based on SIMATIC PCS 7 V7.0, V7.1, V8.0 or V8.1+SP1.

A prerequisite for use of the PCS 7/APACS+ SIMATIC BATCH DBA Engineering V7.0 is the installation of SIMATIC BATCH. The SIMATIC BATCH software should be ordered separately. Information and ordering data for SIMATIC BATCH can be found in Catalog ST PCS 7, in the “SIMATIC BATCH software” section.
# Migration products

## APACS+/QUADLOG migration

### PCS 7/APACS+ OS Engineering Station

<table>
<thead>
<tr>
<th>Ordering data</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PCS 7/APACS+ OS Engineering</strong></td>
<td>6EQ2000-2EB18-3BA5</td>
</tr>
</tbody>
</table>
| Software for exclusive engineering station with unlimited OS engineering license  
Without OS Runtime license for productive operation as an operator station (2-hour OS test mode possible) | |
| **PCS 7/APACS+ OS Engineering Software V8.1 (unlimited POS)** | |
| Software and electronic documentation on CD/DVD, English, runs with Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit), floating license for 1 user  
Engineering software, software class A  
Type of delivery:  
- License key USB stick and certificate of license  
- PCS 7/APACS+ Option V8.1  
- PCS 7 Software Media Package V8.1  
- PCS 7 Product Information V8.1 | |
| **PCS 7/APACS+ SIMATIC BATCH DBA Engineering V7.0** | 6EQ2000-5XX07-2BB0 |
| For PCS 7/APACS+ plants with SIMATIC BATCH that are based on SIMATIC PCS 7 V7.0, V7.1, V8.0 or V8.1+SP1  
English, runs with Windows XP Professional (32-bit), Windows Server 2003 (32-bit), Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit), single license for 1 installation  
Engineering software, software class A  
Type of delivery: License key disk, certificate of license  
Note: In order to use this product, you also require SIMATIC BATCH software. You can find this in Catalog ST PCS 7, in the “SIMATIC BATCH software” section. | |

### Upgrade Packages

<table>
<thead>
<tr>
<th>Upgrade Packages</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PCS 7/APACS+ OS Engineering Upgrade Package from V8.0 to V8.1</strong></td>
<td>6EQ2000-1AX18-3BHS</td>
</tr>
</tbody>
</table>
| Software and electronic documentation on CD/DVD, English, runs with Windows 7 Ultimate/Enterprise SP1 (32/64-bit) or Windows Server 2008 R2 Standard SP1 (64-bit), floating license for 1 user  
Engineering and runtime software, software class A  
Type of delivery:  
- PCS 7 Engineering Upgrade Package AS/OS V8.0 to V8.1  
- PCS 7/APACS+ OS Upgrade Package V8.0 to V8.1 incl. PCS 7 Software Media Package V8.1  
- PCS 7 Software Support Package V8.1 | |

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Migration products
APACS+/QUADLOG migration

Industrial Ethernet Module (IEM)

**Overview**

The Industrial Ethernet Module (IEM) is a flexible network gateway for APACS+/QUADLOG systems.

In system architectures with higher availability requirements, redundant network gateways can also be implemented on the basis of the IEM.

**Note:**

A USB flash memory medium (min. 1 MB) is required in addition for the IEM configuration, e.g. SIMATIC IPC USB FlashDrive.

**Function**

IEM supports the three following architectures at the same time:

- **Peer-to-peer communication between ACM/CCM and S7-41x controllers**

  The IEM implements a communications interface between the APACS+/QUADLOG systems on the MBUS and SIMATIC PCS 7 AS controllers on the SIMATIC PCS 7 plant bus Industrial Ethernet. One IEM supports up to 8 communication links with SIMATIC PCS 7 AS.

- **Peer-to-peer communication between ACM/CCM controllers on different MBUS segments**

  The IEM implements a communications interface between APACS+/QUADLOG controllers that are installed on different MBUS segments. This enables existing MNET installations to be replaced. One IEM can communicate with up to 12 different MBUS segments. The communication blocks supplied support the forwarding of the following APACS+ data types between the controllers:
  - REAL
  - BOOLEAN
  - WORD
  - STRING

- **Conversion from MBUS to Ethernet communication for APACS+/QUADLOG systems**

  In existing plants, the IEM can replace an RNI (rack-mounted network interface) or the MBUS/MNET communication links between APACS+/QUADLOG controllers and PCS 7/APACS+ OS operator stations. When standard cables are used (MBI Cable Kit A/B), the length of a bus segment, and therefore the maximum distance between APACS+/QUADLOG MODULRAC and IEM, is limited to 18 m. The optional MBUS extension cables can be used to install the IEM at a distance of up to 168 m from the APACS+/QUADLOG MODULRAC.
### Industrial Ethernet Module (IEM)

#### Technical specifications

<table>
<thead>
<tr>
<th>Design and equipment features</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Design</strong></td>
<td>Rack-mountable device with rugged metal enclosure, suitable for wall and portrait mounting</td>
</tr>
<tr>
<td><strong>Degree of protection to EN 60529</strong></td>
<td>IP20</td>
</tr>
<tr>
<td><strong>CPU</strong></td>
<td>Intel Core i3-330E 2.13 GHz</td>
</tr>
<tr>
<td>• Processor</td>
<td>3 MB</td>
</tr>
<tr>
<td>• Second Level Cache</td>
<td></td>
</tr>
<tr>
<td><strong>Work memory</strong></td>
<td>2 GB DDR3 SDRAM</td>
</tr>
<tr>
<td><strong>Chipset</strong></td>
<td>Mobile Intel QM57 Express</td>
</tr>
<tr>
<td><strong>MBI/MBUS communications module</strong></td>
<td>MBI card UPH:16413-16 + MBI Y-cable UPH:16137-215</td>
</tr>
<tr>
<td><strong>Drives</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Hard disk</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>CompactFlash (CF) Card</strong></td>
<td>Front panel, CF card can be plugged in from the outside</td>
</tr>
<tr>
<td><strong>Optical drives</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>Floppy disk drive</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>Interfaces</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Ethernet</strong></td>
<td>2 x 10/100/1000 Mbps (RJ45) integrated.</td>
</tr>
<tr>
<td><strong>PROFIBUS DP</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>USB 2.0</strong></td>
<td>4 terminals, 2 of which high current</td>
</tr>
<tr>
<td><strong>Serial</strong></td>
<td>1 x COM1</td>
</tr>
<tr>
<td><strong>Software and licenses</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Operating system</strong></td>
<td>Microsoft Windows Embedded Standard 2009 on 2 GB CF card</td>
</tr>
<tr>
<td><strong>Licenses</strong></td>
<td>SIMATIC NET/APACS+ NIM32</td>
</tr>
<tr>
<td><strong>Communications software and documenta-</strong></td>
<td>Communication modules for APACS+/QUADLOG and SIMATIC PCS 7 AS as well as electronic documentation in PDF format on CD</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>110 ... 230 V AC</td>
</tr>
<tr>
<td></td>
<td>Power cable for USA, 3 m long</td>
</tr>
<tr>
<td><strong>Climatic conditions in operation</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td>+5 ... +45 °C</td>
</tr>
<tr>
<td><strong>Relative humidity</strong></td>
<td>5 ... 80 % at 25 °C (no condensation)</td>
</tr>
<tr>
<td><strong>Dimensions and weights</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions (W x H x D in mm)</strong></td>
<td>297 x 267 x 80</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>approx. 6 kg</td>
</tr>
</tbody>
</table>

#### Ordering data

<table>
<thead>
<tr>
<th>Article No.</th>
<th>Ordering data</th>
</tr>
</thead>
<tbody>
<tr>
<td>6EQ2020-0AC03-SXX0</td>
<td>Industrial Ethernet Module IEM V3.0 for peer-to-peer communication</td>
</tr>
<tr>
<td>6ES7648-0DC50-0AA0</td>
<td>Flash memory medium for IEM configuration:</td>
</tr>
<tr>
<td>UPH:16137-194A</td>
<td>SIMATIC IPC USB FlashDrive</td>
</tr>
<tr>
<td>UPH:16137-172A</td>
<td>6 GB, USB 2.0, metal enclosure, bootable</td>
</tr>
<tr>
<td>UPH:16137-178A</td>
<td>Bus cable for connection of MOD-ULRAC and IEM</td>
</tr>
<tr>
<td>UPH:16137-196A</td>
<td>Standard cables:</td>
</tr>
<tr>
<td>UPH:16137-175A</td>
<td>• MBI Cable Kit A</td>
</tr>
<tr>
<td>UPH:16137-180A</td>
<td>- 1 m long</td>
</tr>
<tr>
<td>UPH:16137-186</td>
<td>- 4 m long</td>
</tr>
<tr>
<td>UPH:16137-187A</td>
<td>- 15 m long</td>
</tr>
<tr>
<td>UPH:16137-186</td>
<td>• MBI Cable Kit B</td>
</tr>
<tr>
<td>UPH:16137-187A</td>
<td>- 1 m long</td>
</tr>
<tr>
<td>UPH:16137-186</td>
<td>- 4 m long</td>
</tr>
<tr>
<td>UPH:16137-187A</td>
<td>- 15 m long</td>
</tr>
<tr>
<td>UPH:16137-186</td>
<td>MBUS extension cables</td>
</tr>
<tr>
<td>UPH:16137-187A</td>
<td>• MBUS Extension Cable A, 150 m long</td>
</tr>
<tr>
<td>UPH:16137-186</td>
<td>• MBUS Extension Cable B, 150 m long</td>
</tr>
<tr>
<td>UPH:16137-187A</td>
<td>Accessories</td>
</tr>
<tr>
<td>UPH:16137-194A</td>
<td>Flash memory medium for IEM configuration:</td>
</tr>
<tr>
<td>UPH:16137-172A</td>
<td>SIMATIC IPC USB FlashDrive</td>
</tr>
<tr>
<td>UPH:16137-178A</td>
<td>6 ES7648-0DC50-0AA0</td>
</tr>
<tr>
<td>UPH:16137-196A</td>
<td>Bus cable for connection of MOD-ULRAC and IEM</td>
</tr>
</tbody>
</table>

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Many of the process control systems installed worldwide, including the Bailey INFI 90, are approaching the end of their life cycle. As individual components become obsolete or are no longer repairable, there is an urgent need to modernize these systems. Since the hardware, user software and know-how of the operating and maintenance personnel represent enormous value, a gradual migration is often preferred to a complete “rip-out and replace” procedure of the plant.

The migration strategy developed by Siemens on the basis of the innovative SIMATIC PCS 7 process control system supports many different types of scenarios, so that you can minimize the investment requirements for your individual automation project.

Through modernization of the process control with SIMATIC PCS 7, the functionality and performance capability of existing Bailey INFI 90/NET 90 systems can be significantly increased without the need to replace the controller and the lower-level I/O level. Plant expansions also allow you to use SIMATIC PCS 7 AS 41x automation systems and SIMATIC process I/O.

Note:
PCS 7/90 OS V8.1 can be operated in combination with SIMATIC PCS 7 V8.1 OS engineering software and OS runtime software. The SIMATIC PCS 7 software must be ordered separately from the ST PCS 7 catalog.
Migration products
Bailey INFI 90/NET 90 migration

Introduction

Design
In the course of migration, the existing Bailey consoles are being replaced with PCS 7/90 Operator Systems (single stations or client-server systems). The Bailey Plant Loop/INFI-NET can be connected in each case to a PCS 7/90 operator station (single station/server) via a Computer Interface Unit (CIU) with a serial RS 232 or SCSI interface.

Supported Bailey system components
The PCS 7/90 OS migration products support the following Bailey system components:

<table>
<thead>
<tr>
<th>Bailey consoles</th>
<th>Computer Interface Units (CIU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OIU</td>
<td>NSPM01</td>
</tr>
<tr>
<td>PCView</td>
<td>IMSPM01</td>
</tr>
<tr>
<td>MCS and MCS PLUS</td>
<td>IMCPM02</td>
</tr>
<tr>
<td>OIS Series 1x</td>
<td>IMCPM03</td>
</tr>
<tr>
<td>OIS Series 2x</td>
<td>NCIU01</td>
</tr>
<tr>
<td>OIS Series 3x</td>
<td>NCIU02</td>
</tr>
<tr>
<td>OIS Series 4/41/42</td>
<td>NCIU03</td>
</tr>
<tr>
<td>OIS Series 43/45</td>
<td>NCIU04</td>
</tr>
<tr>
<td>Process Portal A or B</td>
<td>NCIC01</td>
</tr>
<tr>
<td>Conductor NT</td>
<td>INPCI01</td>
</tr>
<tr>
<td></td>
<td>INPCI02</td>
</tr>
<tr>
<td></td>
<td>IMCP01</td>
</tr>
<tr>
<td></td>
<td>IMCP02</td>
</tr>
<tr>
<td></td>
<td>INCI01</td>
</tr>
<tr>
<td></td>
<td>INCI12</td>
</tr>
<tr>
<td></td>
<td>INCI03</td>
</tr>
</tbody>
</table>

Note:
PCS 7/90 OS migration products have been tested and released with representative configurations on the basis of Network 90 controllers (NMPC01, NMFC01-NMFC05) and INFI-NET 90 controllers (IMMF01). If you are using other types of controller we recommend that you seek support from the Technical Consulting department of Customer Support. You will find information about the range of services of Customer Support and details of regional contacts in the appendix to this catalog.

Options

Conversion of existing graphics from Bailey consoles
The modern DBA technology of Siemens permits fast and secure implementation of your user software. Your investment in the configuration of the existing system is therefore safeguarded.

It goes without saying that we also offer this conversion as a service. But you can call upon the services of our experienced migration specialists not only for this reason, but also when generating new graphics. We would be pleased to provide you with an individual quotation.

For quotations and additional information, please contact your regional Siemens representative.

More information
Detailed information, ordering data and technical specifications on individual migration products can be found in the following sections “PCS 7/90 Engineering Station” and “PCS 7/90 Operator System”.

You can find more information on the Internet at: www.siemens.com/simatic-pcs7/migration
### Design

**PCS 7/90 OS Engineering Component Option V8.1**

The PCS 7/90 OS Engineering component add-on required for OS engineering and for OS connection of Bailey controllers contains the following components:

- PCS 7/90 OS DBA Database Engineering Package for migration of user data
- PCS 7/90 OS library with OS block icons and OS faceplates

This can be used to expand a SIMATIC PCS 7 engineering station (Engineering PO unlimited) configured with the ST PCS 7 catalog to a PCS 7/90 OS engineering station.

Suitable basic hardware for an exclusive SIMATIC PCS 7 engineering station (Engineering PO unlimited) can be found in the section "Industrial Workstation/IPC" of the ST PCS 7 catalog.

Ordering information for the SIMATIC PCS 7 engineering software and for additional SIMATIC PCS 7 software components can be found under "Engineering System, ES Software" in the ST PCS 7 catalog.

**PCS 7/90 OS Engineering Upgrade Packages**

The various PCS 7/90 OS Engineering Upgrade Packages enable a PCS 7/90 OS Engineering Station to be upgraded from:

- V7.1 to V8.0
- V8.0 to V8.1

SIMATIC PCS 7 ES software must be upgraded using a separate upgrade package (see ST PCS 7 catalog, section "Update/Upgrade Packages").

### Function

**PCS 7/90 OS DBA**

The PCS 7/90 OS DBA database automation software automatically generates the OS database with the display hierarchy, required tags, alarm messages and alarm priorities as well as the specific block icons and faceplates. It uses the Bailey Engineering Workstation with Composer or WinTools as the data source.

PCS 7/90 OS DBA automatically places the type-specific block icons, e.g. controller or analog input (AI), in the generated process images. These icons are then linked to the corresponding function blocks and faceplates using the database. Manual configuration is mainly limited to the design and positioning of the static graphic elements, for example, tubes or tanks.

The PCS 7/90 OS symbols, faceplates and diagnostic displays created in line with the SIMATIC PCS 7 standard take into account the special properties of the Bailey controllers (PCUs).

The following functions are supported:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Bailey Block No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process I/O functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANALOG</td>
<td>Analog exception report tag</td>
<td>FC 30, 70, 158</td>
</tr>
<tr>
<td>DAANG</td>
<td>Data acquisition analog tag</td>
<td>FC 177</td>
</tr>
<tr>
<td>DADIG</td>
<td>Data acquisition digital tag</td>
<td>FC 211</td>
</tr>
<tr>
<td>DD</td>
<td>Device driver tag</td>
<td>FC 123</td>
</tr>
<tr>
<td>DIGITAL</td>
<td>Digital exception report tag</td>
<td>FC 45</td>
</tr>
<tr>
<td>MSDD</td>
<td>Multi-state device driver tag</td>
<td>FC 129</td>
</tr>
<tr>
<td>Process control functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RCM</td>
<td>Remote control memory tag</td>
<td>FC 62</td>
</tr>
<tr>
<td>RMCB</td>
<td>Remote motor control tag</td>
<td>FC 136</td>
</tr>
<tr>
<td>RMSC</td>
<td>Remote manual set constant tag</td>
<td>FC 68</td>
</tr>
<tr>
<td>Diagnostics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STATION</td>
<td>Control station exception report tag</td>
<td>FC 21, 22, 23, 80</td>
</tr>
<tr>
<td>N90STA</td>
<td>INFI 90 status tag; reads status and</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>problem reports from modules</td>
<td></td>
</tr>
<tr>
<td>CIU Device</td>
<td>CIU status</td>
<td>--</td>
</tr>
<tr>
<td>Display functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TEXT</td>
<td>Text selector tag</td>
<td>FC 151</td>
</tr>
<tr>
<td>TEXTSTR</td>
<td>Text string tag</td>
<td>FC 194</td>
</tr>
<tr>
<td>Harmony Blocks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog Input (HAI)</td>
<td></td>
<td>FC 222</td>
</tr>
<tr>
<td>Analog Output (HAO)</td>
<td></td>
<td>FC 223</td>
</tr>
<tr>
<td>Digital Input (HDI)</td>
<td></td>
<td>FC 224</td>
</tr>
<tr>
<td>Digital Output (HDO)</td>
<td></td>
<td>FC 225</td>
</tr>
</tbody>
</table>

**Engineering interface for third-party controllers**

DBA enables the import of a CSV file for defining AS objects. In this way, data that originates from third-party OPC servers, e.g. tags for a third-party controller, can be integrated easily and seamlessly into the process control system.
## Migration products

**Bailey INFI 90/NET 90 migration**

### PCS 7/90 OS Engineering Station

<table>
<thead>
<tr>
<th>Ordering data</th>
<th>Article No.</th>
<th>Upgrade software</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCS 7/90 OS Engineering Upgrade Package V8.0 to V8.1</td>
<td></td>
<td>PCS 7/90 OS Engineering Upgrade Package V7.1 to V8.0 Software Upgrade Package without SIMATIC PCS 7 Engineering Software V8.0+SP Engineering software, 1 language (English), runs on Windows XP Professional 32-bit, Windows 7 Ultimate 32/64-bit, Windows Server 2003 R2 Standard 32-bit, Windows Server 2008 R2 Standard 64-bit, Floating license for 1 user</td>
<td></td>
</tr>
<tr>
<td>PCS 7/90 OS Engineering Upgrade Package V7.1 to V8.0</td>
<td></td>
<td>PCS 7/90 OS Engineering Upgrade Package V8.0 to V8.1 Software Upgrade Package without SIMATIC PCS 7 Engineering Software V8.1 Engineering software, 1 language (English), runs with Windows XP Professional 32-bit, Windows 7 Ultimate/Enterprise SP1 32/64-bit or Windows Server 2008 R2 Standard SP1 64-bit, Floating license for 1 user</td>
<td></td>
</tr>
</tbody>
</table>

*Note: SIMATIC PCS 7 ES Software V7.1 including SP must be upgraded to V8.0 using a separate upgrade package (see ST PCS 7 catalog, section "Update/Upgrade Packages").*
Migration products  
Bailey INFI 90/NET 90 migration  

PCS 7/90 Operator System

**Overview**

Example faceplate with adjustable parameters

The software components offered for migration of existing Bailey INFI 90/NET 90 systems are tailored to the architecture of the SIMATIC PCS 7 operator system. They support single station systems as well as multi-user systems with client-server architecture.

**Design**

**PCS 7/90 OS Runtime Component Option V8.1**

Using the PCS 7/90 OS Runtime Component Option, a SIMATIC PCS 7 Operator Station of single station version or server variant configured in accordance with the ST PCS 7 catalog can be expanded with specific PCS 7/90 OS software for operation and monitoring of Bailey controllers (PCUs). One PCS 7/90 OS Runtime component add-on is required for each PCS 7/90 OS single station or PCS 7/90 OS server. Two required for each redundant PCS 7/90 OS single station or PCS 7/90 OS server pair.

PCS 7/90 OS clients are based exclusively on the SIMATIC PCS 7 OS software client.

Suitable basic hardware for a SIMATIC PCS 7 operator station as a single station, server or client version can be found in the section "Industrial Workstation/IPC" of the ST PCS 7 catalog.

Ordering information for the SIMATIC PCS 7 OS software and for accumulative OS runtime software licenses for expanding the runtime PO volumes can be found in the "Operator System" section of the ST PCS 7 catalog.

Note on COM interfaces of redundant single stations or servers

Note that each of the following functions use a COM port in each station with redundant PCS 7/90 OS servers or PCS 7/90 OS single stations:

- Optimization of the internal communication via RS 232 connection between the two redundant stations
- RS 232 connection of the Bailey Plant Loop/INFI-NET per Computer Interface Unit (CIU).

If the basic hardware of the redundant stations does not include two COM ports, you have the following alternatives:

- Use of an additive interface expansion card
- Optimization of the internal redundancy communication via a separate Ethernet connection instead of the serial RS 232 connection (for details, see the SIMATIC PCS 7 manual "Fault-Tolerant Process Control Systems")

**PCS 7/90 OS Runtime Upgrade Packages**

The following upgrade packages are available for upgrading a PCS 7/90 OS operator station:

- **PCS 7/90 OS Runtime Upgrade Package**
  - for upgrading a PCS 7/90 OS single station, a PCS 7/90 OS server or a redundant pair of PCS 7/90 OS servers from:
    - V7.1 to V8.0
    - V8.0 to V8.1

- **PCS 7 OS Client/SFC Visualization Upgrade Package**
  - for upgrading a PCS 7/90 OS client from:
    - V7.1 to V8.1
    - V8.0 to V8.1

SIMATIC PCS 7 OS software must be upgraded using a separate upgrade package (see ST PCS 7 catalog, section "Update/Upgrade Packages").

**Function**

**PCS 7/90 OS Software**

The PCS 7/90 OS Software is used for the OS interfacing of Bailey controllers (PCUs) using an engineering system (PCS 7/90 ES), as well as for operation and monitoring of the PCUs (Process Control Units) using an operator system (PCS 7/90 OS) based on SIMATIC PCS 7.

It contains the following components:

- RoviSys OPC server, configured with DBA
- Library with block icons, faceplates and diagnostics displays, for reading and writing the available Bailey function block information
- ES/OS communication with the Bailey controllers is carried out via OPC (OLE for Process Control). The PCS 7/90 OS Software physically supports communication via RS 232 or SCSI.

**Multi-client and dual-channel functionality**

Data from different systems can be displayed on the OS clients in a process screen:

- Data from Bailey controllers (PCUs) on the Bailey Plant Loop/INFI-NET
- Data from the SIMATIC PCS 7 automation systems on the SIMATIC PCS 7 plant bus Industrial Ethernet.

The multi-client architecture of the operator systems enables a client to retrieve data from different servers.

With smaller systems it is also possible to use a PCS 7/90 OS server with dual-channel functionality. This implements the communication with the Bailey controllers and the SIMATIC PCS 7 automation systems via two separate channels DLLs.
## Migration products
### Bailey INFI 90/NET 90 migration

### PCS 7/90 Operator System

<table>
<thead>
<tr>
<th>Ordering data</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Runtime software for single station/server</td>
<td>6EQ2003-2XX18-3BA0</td>
</tr>
<tr>
<td><strong>PCS 7/90 OS Runtime Component Option V8.1</strong> Software package including RoviSys Unlimited OPC90 Server, but not including SIMATIC PCS 7 OS Software V8.1, for expanding a SIMATIC PCS 7 OS V8.1 (server/single station) for PCS 7/90 OS process control</td>
<td></td>
</tr>
<tr>
<td>Runtime software, 1 language (English), software class A, runs under Windows 7 Ultimate/Enterprise SP1 32/64-bit or Windows Server 2008 R2 Standard SP1 64-bit, Single license for 1 installation</td>
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<tr>
<td>Type of delivery package (without SIMATIC PCS 7 Software Media Package):</td>
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<tr>
<td>• Certificate of license</td>
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<tr>
<td>• Software and electronic documentation on CD</td>
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<tr>
<td>Runtime software for client</td>
<td>See ST PCS 7 catalog, chapter &quot;Operator System&quot;, section &quot;OS software&quot;</td>
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<td><strong>SIMATIC PCS 7 OS Software Client V8.1</strong></td>
<td>6EQ2003-2XX08-3BE0</td>
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<td><strong>PCS 7/90 OS Runtime Upgrade Package V8.0 to V8.1</strong> Software Upgrade Package including RoviSys OPC90 Server Software Upgrade, but not including SIMATIC PCS 7 OS Software V8.1</td>
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<td>Type of delivery package (without SIMATIC PCS 7 Software Media Package):</td>
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<td>• Certificate of license</td>
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<td>• Software and electronic documentation on CD</td>
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<tr>
<td>Note: SIMATIC PCS 7 OS Software V7.1 must be upgraded to V8.0 using a separate upgrade package (see ST PCS 7 catalog, section &quot;Update/Upgrade Packages&quot;).</td>
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<td>6EQ2003-2XX18-3BE0</td>
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<tr>
<td>Runtime software, 1 language (English), software class A, runs under Windows 7 Ultimate/Enterprise SP1 32/64-bit or Windows Server 2008 R2 Standard SP1 64-bit, Single license for 1 installation</td>
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<td></td>
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<tr>
<td><strong>SIMATIC PCS 7 OS Client/SFC Visualization Upgrade Package V8.0 to V8.1</strong></td>
<td>See ST PCS 7 catalog under &quot;Update/Upgrade Packages, Upgrades from SIMATIC PCS 7 V7.1/V8.0 to V8.1, Upgrades for Operator System&quot;</td>
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<tr>
<td><strong>SIMATIC PCS 7 OS Client/SFC Visualization Upgrade Package V7.1 to V8.1</strong></td>
<td>See ST PCS 7 catalog under &quot;Update/Upgrade Packages, Upgrades from SIMATIC PCS 7 V7.1/V8.0 to V8.1, Upgrades for Operator System&quot;</td>
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### Siemens Industry Training

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<td>12/7</td>
<td>Your machines and plant can do more – with Industry Services. Industry Services for the entire life cycle</td>
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Faster and more applicable know-how: Hands-on training from the manufacturer

Siemens Industry Training provides you with comprehensive support in solving your tasks.

Training by the market leader in the industry enables you to make independent decisions with confidence. 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.

First-class know-how directly pays for itself: In shorter startup times, high-quality end products, faster troubleshooting and reduced downtimes. In other words, increased profits and lower costs.

Achieve more with Siemens Industry Training

- Shorter times for startup, maintenance and servicing
- Optimized production operations
- Reliable configuration and startup
- Minimization of plant downtimes
- Flexible plant adaptation to market requirements
- Compliance with quality standards in production
- Increased employee satisfaction and motivation
- Shorter familiarization times following changes in technology and staff

Highlights Siemens Industry Training

Top trainers

Our trainers are skilled teachers with direct practical experience. Course developers have close contact with product development, and directly pass on their knowledge to the trainers.

Practical experience

The practical experience of our trainers enables them to teach theory effectively. But since theory can be pretty drab, we attach great importance to practical exercises which can comprise up to half of 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. This training approach will give you all the confidence you need.

Wide variety

With a total of about 300 local attendance courses, we train the complete range of Siemens Industry products as well as interaction of the products in systems.

Tailor-made training

We are only a short distance away. You can find us at more than 50 locations in Germany, and in 62 countries worldwide. You wish to have individual training instead of one of our 300 courses? Our solution: 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 a 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. Additional effect: Reduced traveling costs and periods of absence.

Contact

Visit our site on the Internet at:
www.siemens.com/sitrain
or let us advise you personally.

Siemens Industry Training Customer Support Germany:
Phone: +49 911 895-7575
Fax: +49 911 895-7576
E-Mail: info@sitrain.com
At Siemens Industry we are resolutely pursuing the same goal: long-term improvement of your competitive ability. We are committed to this goal. Thanks to our commitment, we continue to set new standards in automation and drive technology. In all industries – worldwide.

At your service locally, around the globe for consulting, sales, training, service, support, spare parts ... on the entire Industry Automation and Drive Technologies range.

Your personal contact can be found in our Contacts Database at: www.siemens.com/automation/partner

You start by selecting
- the required competence,
- products and branches,
- a country,
- a city
or by a
- location search or
- person search.
Appendix
Online Services

Information and Ordering in the Internet and on DVD

Siemens Industry Automation and Drive Technologies 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.

Siemens Industry Automation and Drive Technologies 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

www.siemens.com/industry

you will find everything you need to know about products, systems and services.

Product Selection Using the Interactive Catalog CA 01 of Industry

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 Industry Automation and Drive Technologies 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 01 can be found in the Internet under

www.siemens.com/automation/ca01

or on DVD.

Easy Shopping with the Industry Mall

The Industry Mall is the electronic ordering platform of Siemens AG on the Internet. Here you have online access to a huge range of products presented in an informative and attractive way.

Data transfer via EDIFACT allows the whole procedure from selection through ordering to tracking and tracing of the order to be carried out. Availability checks, customer-specific discounts and preparation of quotes are also possible.

Numerous additional functions are available to support you.

For example, powerful search functions make it easy to select the required products. Configurators enable you to configure complex product and system components quickly and easily. CAx data types are also provided here.

Please visit the Industry Mall on the Internet under:

www.siemens.com/industrymall
Download Catalogs

In addition to numerous other useful documents, you can also find the catalogs listed on the back inside cover of this catalog in the Information and Download Center. Without having to register, you can download these catalogs in PDF format or increasingly as digital page-turning e-books.

The filter dialog box above the first catalog displayed makes it possible to carry out targeted searches. If you enter “MD 3” for example, you will find both the MD 30.1 and MD 31.1 catalogs. If you enter “ST 70” both the ST 70 catalog and the associated news or add-ons are displayed.

Visit us on the web at:
www.siemens.com/industry/infocenter

Social Media

Connect with Siemens through social media: visit our social networking sites for a wealth of useful information, demos on products and services, the opportunity to provide feedback, to exchange information and ideas with customers and other Siemens employees, and much, much more. Stay in the know and follow us on the ever-expanding global network of social media.

Connect with Siemens Industry at our central access point:
www.siemens.com/industry/socialmedia
Or via our product pages at:
www.siemens.com/automation
or
www.siemens.com/drives
To find out more about Siemens’ current social media activities visit us at:
www.siemens.com/socialmedia

Mobile Media

Discover the world of Siemens.
We are also constantly expanding our offering of cross-platform apps for smartphones and tablets. You will find the current Siemens apps at the app store (iOS) or at Google Play (Android).

The Siemens app, for example, tells you all about the history, latest developments and future plans of the company – with informative pictures, fascinating reports and the most recent press releases.
Your machines and plant can do more – with Industry Services.

Whether it is production or process industry - in view of rising cost pressure, growing energy costs, and increasingly stringent environmental regulations, services for industry are a crucial competitive factor in manufacturing as well as in process industries.

All over the world Siemens supports its customers with product, system, and application-related services throughout the entire life cycle of a plant. Right from the earliest stages of planning, engineering, and building, all the way to operation and modernization. These services enable customers to benefit from the Siemens experts’ unique technological and product knowledge and industry expertise.

Thus downtimes are reduced and the utilization of resources is optimized. The bottom line: increased plant productivity, flexibility, and efficiency, plus reduced overall costs.

Discover all advantages of our service portfolio:
www.siemens.com/industry-services

Siemens supports its clients with technology based Services across a plants entire life cycle.
Online Support

Online support is a comprehensive information system for all questions relating to products, systems, and solutions that Siemens has developed for industry over time. With more than 300,000 documents, examples and tools, it offers users of automation and drive technology a way to quickly find up-to-date information. The 24-hour service enables direct, central access to detailed product information as well as numerous solution examples for programming, configuration and application.

The content, in six languages, is increasingly multimedia-based – and now also available as a mobile app. Online support’s “Technical Forum” offers users the opportunity to share information with each other. The “Support Request” option can be used to contact Siemens’ technical support experts. The latest content, software updates, and news via newsletters and Twitter ensure that industry users are always up to date.

Online Support App

Using the Online Support app, you can access over 300,000 documents covering all Siemens industrial products - anywhere, any time. Regardless of whether you need help implementing your project, fault-finding, expanding your system or are planning a new machine.

You have access to FAQs, manuals, certificates, characteristics curves, application examples, product notices (e.g. announcements of new products) and information on successor products in the event that a product is discontinued.

Just scan the product code printed on the product directly using the camera of your mobile device to immediately see all technical information available on this product at a glance. The graphical CAx information (3D model, circuit diagrams or EPLAN macros) is also displayed. You can forward this information to your workplace using the e-mail function.

The search function retrieves product information and articles and supports you with a personalized suggestion list. You can find your favorite pages – articles you need frequently – under “mySupport”. You also receive selected news on new functions, important articles or events in the News section.

Technical Support

The ability to quickly analyze system and error messages and take appropriate action are key factors in ensuring that plants run safely and efficiently. Questions can arise at any time and in any industry, whether it’s an individual product or a complete automation solution. Siemens technical support offers individual technical assistance in matters related to functionality, how to operate, applications, and fault clearance in industrial products and systems – at any time and globally, over the phone, by e-mail, or via remote access. Experienced experts from Siemens answer incoming questions promptly. Depending on the requirements, they first consult specialists in the areas of development, on-site services, and sales. Technical support is also available for discontinued products that are no longer available. Using the support request number, any inquiry can be clearly identified and systematically tracked.
Spare Parts

Drive and automation systems must be available at all times. Even a single missing spare part can bring the entire plant to a standstill – and result in substantial financial losses for the operator. The spare parts services from Siemens protects against such losses – with the aid of quickly available, original spare parts that ensure smooth interaction with all other system components. Spares are kept on hand for up to ten years; defective parts can be returned. For many products and solutions, individual spare parts packages ensure a preventive stock of spare parts on-site. The spare parts services is available around the world and around the clock. Optimum supply chain logistics ensure that replacement components reach their destination as quickly as possible. Siemens' logistics experts take care of planning and management as well as procurement, transportation, customs handling, warehousing, and complete order management for spare parts.

Repair Services

Reliable electrical and electronic equipment is crucial for operating continuous processes. That is why it is essential that motors and converters always undergo highly specialized repair and maintenance. Siemens offers complete customer and repair services – on site and in repair centers – as well as technical emergency services worldwide. The repair services include all necessary measures to quickly restore the functionality of defective units. In addition, services such as spare parts logistics, spare parts storage and rapid manufacturing are available to plant operators in all verticals. With a global network of certified repair shops operated by Siemens as well as third parties, Siemens handles the maintenance and overhaul of motors, converters, and other devices as an authorized service partner.

Field Services

It's a top priority in all industries: the availability of plants and equipment. Siemens offers specialized maintenance services such as inspection and upkeep as well as rapid fault clearance in industrial plants – worldwide, continuously, and even with emergency services as needed. The services include startup as well as maintenance and fault clearance during operation. The startup service includes checking the installation, function tests, parameterization, integration tests for machines and plants, trial operation, final acceptance, and employee training. All services, including remote maintenance of drives, are also available as elements of customized service contracts.
Training

Increasingly, up-to-date knowledge is becoming a determining factor in success. One of the key resources of any company is well-trained staff that can make the right decision at the right moment and take full advantage of the potential. With SITRAIN – Training for Industry, Siemens offers comprehensive advanced training programs. The technical training courses convey expertise and practical knowledge directly from the manufacturer. SITRAIN covers Siemens’ entire product and system portfolio in the field of automation and drives. Together with the customer, Siemens determines the company’s individual training needs and then develops an advanced training program tailored to the desired requirements. Additional services guarantee that the knowledge of all Siemens partners and their employees is always up-to-date.

Technical Consulting & Engineering Support

The efficiency of plants and processes leads to sustainable economic success. Individual services from Siemens help save substantial time and money while also guaranteeing maximum safety. Technical consulting covers the selection of products and systems for efficient industrial plants. The services include planning, consulting, and conceptual design as well as product training, application support, and configuration verification – in all phases of a plant’s lifecycle and in all questions related to product safety. Engineering support offers competent assistance throughout the entire project, from developing a precise structure for startup to product-specific preparation for implementation as well as support services in areas such as prototype development, testing and acceptance.

Energy & Environmental Services

Efficient energy use and resource conservation – these top sustainability concerns pay off – both for the environment and for companies. Siemens offers integrated solutions that unlock all technical and organizational potential for successful environmental management. Customized consulting services are aimed at sustainably lowering the cost of energy and environmental protection and thus increasing plant efficiency and availability. The experts provide support in the conceptual design and implementation of systematic solutions in energy and environmental management, enabling maximum energy efficiency and optimized water consumption throughout the entire company. Improved data transparency makes it possible to identify savings potential, reduce emissions, optimize production processes, and thereby noticeably cut costs.
Industry Services for the entire life cycle

Modernization & Optimization Services
High machine availability, expanded functionality and selective energy savings – in all industries, these are decisive factors for increasing productivity and lowering costs. Whether a company wants to modernize individual machines, optimize drive systems, or upgrade entire plants, Siemens’ experts support the projects from planning to commissioning.

Expert consulting and project management with solution responsibility lead to security and make it possible to specifically identify savings potential in production. This secures investments over the long term and increases economic efficiency in operation.

Plant Maintenance & Condition Monitoring
Modern industrial plants are complex and highly automated. They must operate efficiently in order to ensure the company’s competitive strength. In addition, the steadily increasing networking of machines and plants require consistent security concepts. Maintenance and status monitoring as well as the implementation of integrated security concepts by Siemens’ experts support optimum plant use and avoid downtime. The services include maintenance management as well as consulting on maintenance concepts, including the complete handling and execution of the necessary measures. Complete solutions also cover remote services, including analysis, remote diagnosis, and remote monitoring. These are based on the Siemens Remote Services platform with certified IT security.

Service Contracts
Making maintenance costs calculable, reducing interfaces, speeding up response times, and unburdening the company’s resources – the reduced downtimes that these measures achieve increase the productivity of a plant. Service contracts from Siemens make maintenance and repairs more cost-effective and efficient. The service packages include local and remote maintenance for a system or product group in automation and drive technology. Whether you need extended service periods, defined response times, or special maintenance intervals, the services are compiled individually and according to need. They can be adjusted flexibly at any time and used independently of each other. The expertise of Siemens’ specialists and the capabilities of remote maintenance thus ensure reliable and fast maintenance processes throughout a plant’s entire lifecycle.
**Overview**

Service requirements are just as specific as the uniqueness of each process engineering plant. Based on many years of experience, the service specialists from Siemens have identified four fundamental requirement profiles and developed appropriate service modules which build upon each other:

- **Standard service**: Service and support, standby service, repair
- **Maintenance service**: Inspection and maintenance
- **Basis life cycle service**: Spare parts supply plus obsolescence management
- **Expanded life cycle service**: Update and upgrade service

These service modules can be expanded flexibly, e.g. by:

- Extended service time 24/7
- Software update services
- Extended exchange option
- Asset optimization
- Agreed technical support
- Remote services

The scope of services agreed individually on the basis of service modules and additive supplementary services is stipulated in a contract. The contracts are flexible enough to allow adaptation in the event of plant modifications. The service contract management includes documentation, planning of measures, and performance controlling.

**More information**

For detailed information on our service program SIMATIC PCS 7 Life Cycle Services please contact:
Tel.: +49 721 595 7174
Software Licenses

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 Industry Automation & Drive Technologies offers various types of software license:

- Floating license
- Single license
- Rental license
- Rental floating license
- Trial license
- Demo license
- Demo floating 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 per license.

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 instance, 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 period of time (the operating hours do not have to be consecutive).

One license is required for each installation of the software.

Rental floating license
The rental floating license corresponds to the rental license, except that a license is not required for each installation of the software. Rather, one license is required per object (for example, user or device).

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.

Demo license
The demo license support the "sporadic use" of engineering software in a non-productive context, for example, use for testing and evaluation purposes. It can be transferred to another license. After the installation of the license key, the software can be operated for a specific period of time, whereby usage can be interrupted as often as required.

One license is required per installation of the software.

Demo floating license
The demo floating license corresponds to the demo license, except that a license is not required for each installation of the software. Rather, one license is required per object (for example, user or device).

Certificate of license (CoL)
The 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.
### Overview

**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 Industry Automation & Drive Technologies 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).

---

**Software Update Service (SUS)**
As part of the SUS contract, all software updates for the respective product are made available to you free of charge for a period of one year from the invoice date. The contract will automatically be extended for one year if it is not canceled three months before it expires.

The possession of the current version of the respective software is a basic condition for entering into an SUS contract.

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Further information can be obtained from our branch offices listed at www.siemens.com/automation/partner

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