SIEMENS

SIMATIC PCS 7

SIMATIC PCS 7
Process Control System

Volume 2: Technology components

Catalog
ST PCS 7 T

Edition
2018

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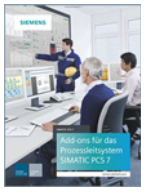

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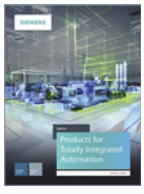

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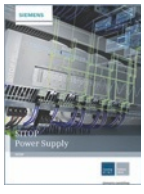

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SIMATIC PCS 7 Process Control System

Technology components

SIMATIC PCS 7

Catalog ST PCS 7 T · 2018

Supersedes:
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The products contained in this catalog can also be found in the Interactive Catalog CA 01.
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SIMATIC PCS 7 Technology components

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
- Editors and function blocks for the efficient configuration of small or medium-sized automation systems with simple parameter control and materials management
- 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)
- 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 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.

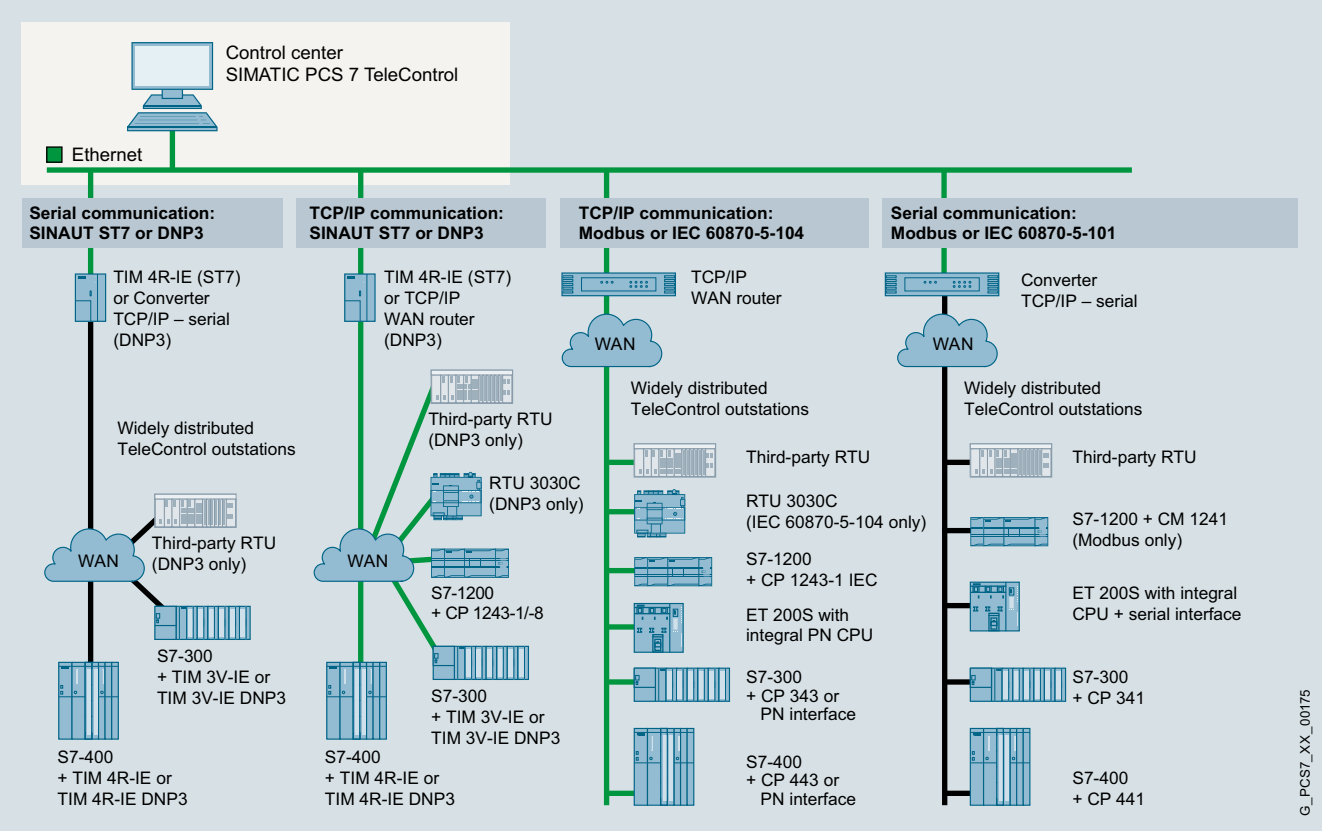
All the products of this portfolio, as well as the associated processes and services, are coordinated over their entire lifecycle, starting from planning and design, through product launch, operation, maintenance and modernization, as far as removal from the market by professional product lifecycle management.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

Overview



Integration and communication options with SIMATIC PCS 7 TeleControl

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.

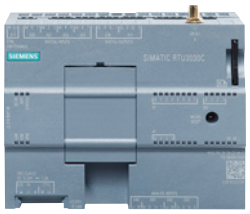
Overview (continued)

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:

RTU type[1]		RTU category	Possible telecontrol protocols
	Compact telecontrol station SIMATIC RTU3030C with independent energy supply, e.g. from batteries, rechargeable batteries, solar panels	**Very small with up to 16 I/Os** For very small applications	• DNP3 • IEC 60870-5-104
	Controller integrated in SIMATIC ET 200S	**Small with 30 … 200 I/Os[2]** For small applications	• Modbus RTU • IEC 60870-5-101 • IEC 60870-5-104
	Controller SIMATIC S7-1200/S7-1200F	**Small with 30 … 150 I/Os[2]** For small applications	• DNP3 • Modbus RTU • IEC 60870-5-104
	SIMATIC S7-300/S7-300F controller	**Medium with 100 … 2 000 I/Os[2]** For medium sized applications	• 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[2]** For larger applications requiring higher performance	• 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 Telecontrol, Telecontrol with SIPLUS RIC (telecontrol protocols IEC 60870-5-101/104)
- Catalog IK PI, Industrial Communication SIMATIC NET, Industrial Remote Communication, TeleControl Professional for substations (substations for ST7 protocol, DNP3 protocol and IEC protocol)

Note:

SIMATIC PCS 7 TeleControl V9.0 can be operated in combination with the OS Engineering and OS Runtime software SIMATIC PCS 7 V9.0 and with PCS 7 PowerControl V9.0 (see chapter 2 "Switchgear automation") and PCS 7 OPEN OS V9.0 (see chapter 10 "Controller integration"). The SIMATIC PCS 7 software must be ordered from Catalog ST PCS 7.

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 CO_2 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.

Design (continued)

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

Telecontrol protocol		**SINAUT ST7**		**Modbus**		**DNP3**		**IEC 60870-5-101**	**IEC 60870-5-104**
Type of communication		Serial	Ethernet TCP/IP	Serial	Ethernet TCP/IP	Serial	Ethernet TCP/IP	Serial	Ethernet TCP/IP
Interface on the PCS 7 TeleControl OS		TIM 4R-IE	TCP/IP WAN router or/and TIM 4R-IE	TCP/IP serial converter	TCP/IP WAN router	TCP/IP serial converter	TCP/IP WAN router	TCP/IP serial converter	TCP/IP WAN router
RTU/ interface	RTU3030C	–	–	–	–	–	UMTS integrated modem	–	UMTS integrated modem
	RTU3010C	–	Integrated	–	–	–	Integrated	–	Integrated
	ET 200S with integrated CPU (corresponds to S7-314)	–	–	IM 151-7 CPU or IM 151-8 PN/DP CPU as well as 1 SI Modbus module	IM 151-8 PN/DP CPU + S7 OpenModbus software/TCP PN-CPU	–	–	IM 151-7 CPU or IM 151-8 PN/DP CPU as well as 1 SI module + SIPLUS RIC library	IM 151-8 PN/DP CPU + SIPLUS RIC library
	S7-1200/ S7-1200F	CP 1243-8 IRC	CP 1243-8 IRC	CM 1241 + SW library	CPU + SW library	–	CP 1243-1 DNP3	–	CP 1243-1 IEC
	S7-300/ S7-300F	TIM 3V-IE	TIM 3V-IE	CP 341 + SW library	CP 343 + SW library	TIM 3V-IE DNP3	TIM 3V-IE DNP3	CP 341 + SIPLUS RIC library	CP 343 + SIPLUS RIC library or integrated PN interface + SIPLUS RIC library
	S7-400/ S7-400F	TIM 4R-IE	TIM 4R-IE	CP 441 + SW library	CP 443 + SW library	TIM 4R-IE DNP3	TIM 4R-IE DNP3	CP 441 + SIPLUS RIC library	CP 443 + SIPLUS RIC library or integrated PN interface + SIPLUS RIC library
	S7-400H/ S7-400FH	TIM 4R-IE	TIM 4R-IE	ET 200M + 2 × CP 341 + SW library	CP 443 + SW library	TIM 4R-IE DNP3	TIM 4R-IE DNP3	ET 200M + 2 × CP 341 + SIPLUS RIC library	CP 443 + SIPLUS RIC library or integrated PN interface + SIPLUS RIC library
	Third-party station	–	–	Depends on type of station		Depends on type of station		Depends on type of station	
Dialup lines		●	–	–	–	–	–	–	–
Dedicated lines and radio networks		●	●	●	●	●	●	●	●
Master/slave		●	●	●	●	●	●	●	●
Peer-to-peer		●	●	–	–	–	–	●	●
Mesh networks		●	●	–	–	●	●	●	●
Time tagging in RTU		●	●	–	–	●	●	●	●
RTU time synchronization		●	●	–	–	●	●	●	●
Data buffering in RTU		●	●	–	–	●	●	●	●
S7 routing		●	●	–	–	–	●	–	●
International standard		–	–	● (many variants)	● (many variants)	●	●	●	●

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, multipoint, 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

For 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 for 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.

Special blocks in combination with SINAUT ST7 and IEC 60870-5-104 enable integral use of the Industry Library in S7-300 as well as S7-400 RTUs.

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.

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). Switchover 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).

More information

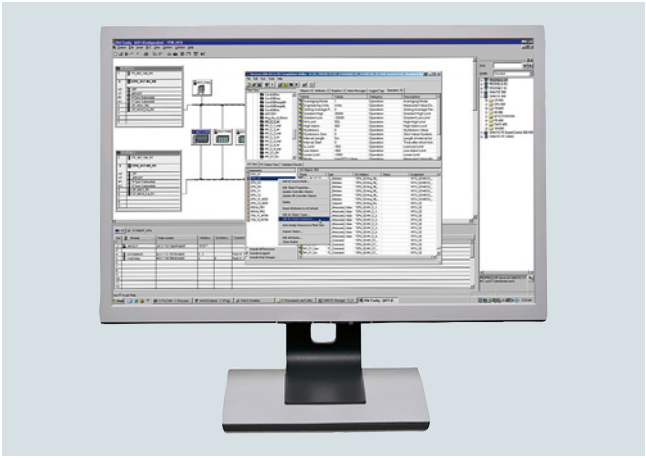
Additional information is available on the Internet at:

www.siemens.com/simatic-pcs7/telecontrol

1

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.

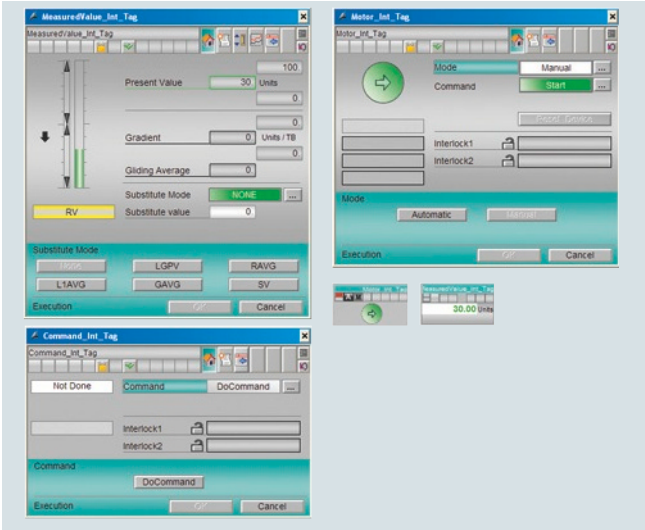
The PCS 7 TeleControl OS symbols, faceplates and diagnostics displays created in conformance with SIMATIC PCS 7 take into account the specific features of telecontrol applications. This is demonstrated, for example, by the example of the counter block which offers versatile conditioning options for information 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.x can be upgraded to V9.0 using the SIMATIC PCS 7 TeleControl Upgrade Package. This SIMATIC PCS 7 TeleControl Upgrade Package is also suitable for upgrading SIMATIC PCS 7 TeleControl OS Runtime software V8.x. The SIMATIC PCS 7 ES and OS software V8.x should be upgraded separately to V9.0 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. Special routing blocks support integral use of the Industry Library and SINAUT ST7 as well as IEC 60870-5-104.

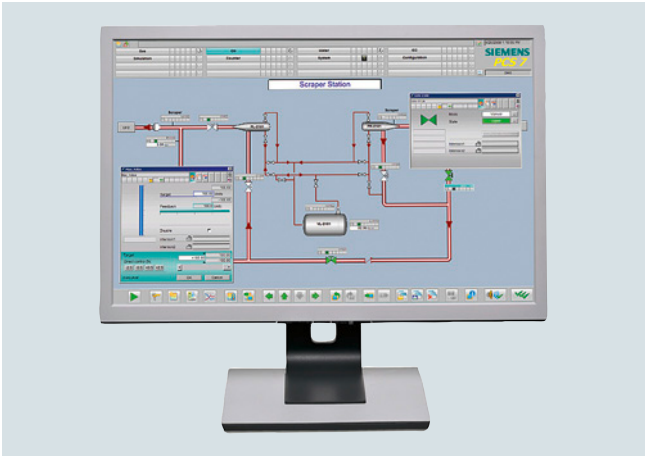
For information about the SIMATIC PCS 7 Industry Library and ordering data, refer to the Chapter "Technology libraries".

Ordering data

	Article No.
Engineering software	
PCS 7 TeleControl OS Engineering V9.0 Software package without SIMATIC PCS 7 engineering software; for expanding a SIMATIC PCS 7 Engineering Station V9.0 for the PCS 7 TeleControl OS Engineering Engineering software, 2 languages (German, English), software class A, operating systems according to SIMATIC PCS 7 Engineering Station V9.0, floating license for 1 user Delivery form package (without SIMATIC PCS 7 Software Media Package): • License key USB flash drive, certificate of license • Software and electronic documentation in 2 languages (German and English) on DVD	**6ES7658-7JX58-0YA5**

	Article No.
Upgrade Package	
SIMATIC PCS 7 TeleControl Upgrade Package V8.x to V9.0 Software package without SIMATIC PCS 7 ES/OS software V9.0 Engineering and runtime software, 2 languages (German, English), software class A, operating systems according to SIMATIC PCS 7 Engineering Station V9.0 or SIMATIC PCS 7 Operator Station V9.0, single license for 1 installation Delivery form package (without SIMATIC PCS 7 Software Media Package): • License key USB flash drive, certificate of license • Software and electronic documentation in 2 languages (German and English) on DVD Note: SIMATIC PCS 7 ES and OS software V8.x should be upgraded to V9.0 using separate upgrade packages (see Catalog ST PCS 7, Chapter "Update/Upgrade Packages").	**6ES7652-5GX58-0YE0**

Overview



Uniform process control for central and remote units

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.

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:

Required software		SIMATIC PCS 7 architecture			
		OS single station	Client - server		
			Client	Server not redundant	Server redundant
PCS 7 OS Software Single Station	See Catalog ST PCS 7, section "Operator System", "OS software"	●	–	–	–
PCS 7 OS Software Server		–	–	●	–
PCS 7 OS Software Server Redundancy		–	–	–	●
PCS 7 OS Software Client		–	●	–	–
PCS 7 TeleControl OS Runtime		●	–	●	● (2 licenses)
PCS 7 TeleControl Driver (alternative)	SINAUT	●	–	●	● (2 licenses)
	DNP3	●	–	●	● (2 licenses)
	IEC 60870-5-101/-104	●	–	●	● (2 licenses)
	Modbus RTU	●	–	●	● (2 licenses)
	S7 EDC	●	–	●	● (2 licenses)

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".

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 section "Operator system", "OS software", and the SIMATIC PCS 7 OS software for a redundant OS server pair in the section "Operator system", "OS software".

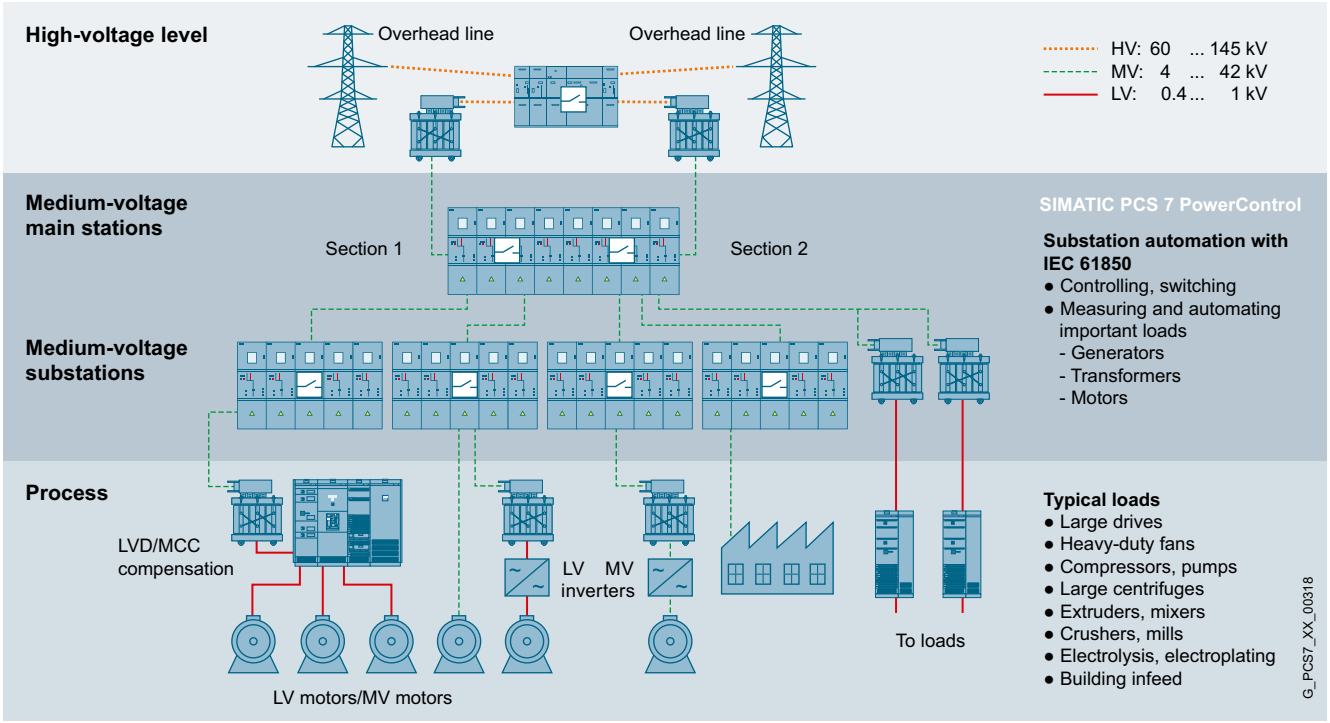
Upgrade

Existing SIMATIC PCS 7 TeleControl OS Runtime software V8.x can be upgraded to V9.0 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.x. The SIMATIC PCS 7 ES and OS software V8.x should be upgraded separately to V9.0 using the upgrade packages in Catalog ST PCS 7, sections "Upgrades for engineering system" and "Upgrades for operator system".

Ordering data	Article No.
Runtime software	
PCS 7 TeleControl OS Runtime V9.0 Software package without SIMATIC PCS 7 OS software; for expanding a SIMATIC PCS 7 OS V9.0 (server/ single station) for PCS 7 TeleControl Runtime software, 2 languages (German, English), software class A, operating systems according to SIMATIC PCS 7 Operator Station V9.0, single license for 1 installation Delivery form package (without SIMATIC PCS 7 Software Media Package): • License key USB flash drive, certificate of license • Software and electronic documentation in 2 languages (German and English) on DVD	**6ES7658-7KX58-0YA0**
Telecontrol protocol driver	
PCS 7 TeleControl SINAUT driver Runtime software, license for OS single station or OS server, software class A, single license for 1 installation Requirement: Software PCS 7 TeleControl OS Runtime Delivery form package (without SIMATIC PCS 7 Software Media Package): License key USB flash drive, certificate of license	**6DL5101-8AX00-0XB0**
PCS 7 TeleControl DNP3 driver Runtime software, license for OS single station or OS server, software class A, single license for 1 installation Requirement: Software PCS 7 TeleControl OS Runtime Delivery form package (without SIMATIC PCS 7 Software Media Package): License key USB flash drive, certificate of license	**6DL5101-8EX00-0XB0**
PCS 7 TeleControl IEC 60870-5-101/-104 driver Runtime software, license for OS single station or OS server, software class A, single license for 1 installation Requirement: Software PCS 7 TeleControl OS Runtime Delivery form package (without SIMATIC PCS 7 Software Media Package): License key USB flash drive, certificate of license	**6DL5101-8CX00-0XB0**
PCS 7 TeleControl Modbus RTU driver Runtime software, license for OS single station or OS server, software class A, single license for 1 installation Requirement: Software PCS 7 TeleControl OS Runtime Delivery form package (without SIMATIC PCS 7 Software Media Package): License key USB flash drive, certificate of license	**6DL5101-8BX00-0XB0**
PCS 7 TeleControl S7 EDC driver Runtime software, license for OS single station or OS server, software class A, single license for 1 installation Requirement: Software PCS 7 TeleControl OS Runtime Delivery form package (without SIMATIC PCS 7 Software Media Package): License key USB flash drive, certificate of license	**6DL5101-8DX00-0XB0**
Upgrade Package	
SIMATIC PCS 7 TeleControl Upgrade Package V8.x to V9.0 Software package without SIMATIC PCS 7 ES/OS software V9.0 Engineering and runtime software, 2 languages (German, English), software class A, operating systems according to SIMATIC PCS 7 Engineering Station V9.0 or SIMATIC PCS 7 Operator Station V9.0, single license for 1 installation Delivery form package (without SIMATIC PCS 7 Software Media Package): • License key USB flash drive, certificate of license • Software and electronic documentation in 2 languages (German and English) on DVD Note: SIMATIC PCS 7 ES and OS software V8.x should be upgraded to V9.0 using separate upgrade packages (see Catalog ST PCS 7, Chapter "Update/Upgrade Packages").	**6ES7652-5GX58-0YE0**

Notes

Overview



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 taken of changes to the network topology in the event of faults, as well as the isolation and grounding of equipment for maintenance work.

SIMATIC PCS 7 PowerControl puts an end to the strict separation between process automation and the automation of the electrical switchgear for power generation for the process. With SIMATIC PCS 7 PowerControl, now enables you 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 PROFIBUS 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 PROFIBUS 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:

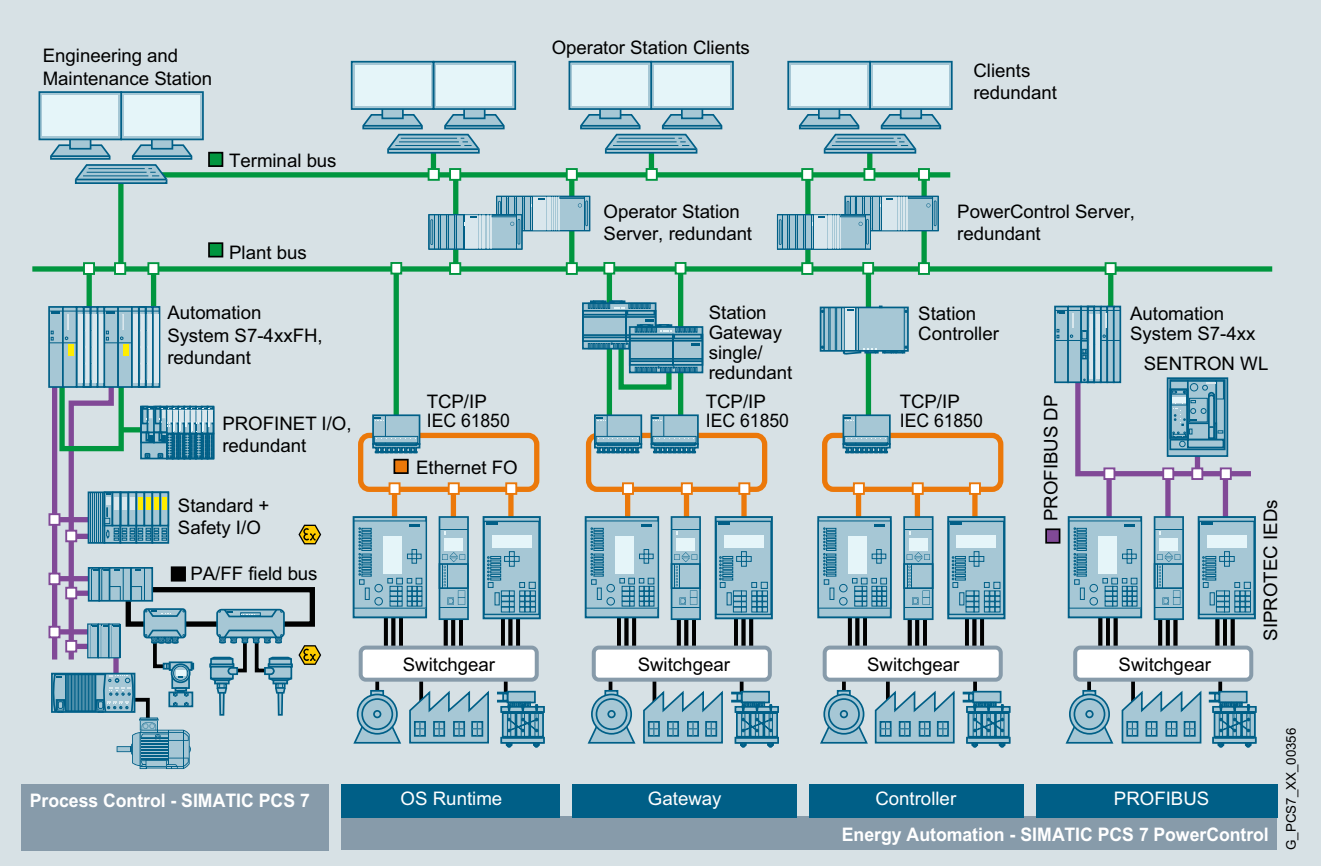
SIMATIC PCS 7 PowerControl V9.0 can be operated in combination with the OS Engineering software and OS Runtime software SIMATIC PCS 7 V9.0 as well as with SIMATIC PCS 7 TeleControl V9.0 (see section "Telecontrol") and SIMATIC PCS 7 OPEN OS V9.0 (see section "Controller integration"). The SIMATIC PCS 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 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.

2

Design (continued)

PCS 7 PowerControl Library

The PCS 7 PowerControl Library which can be ordered separately supports connection of switchgear via a station controller, station gateway or PROFIBUS DP with AS blocks, symbols (small and large) 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.

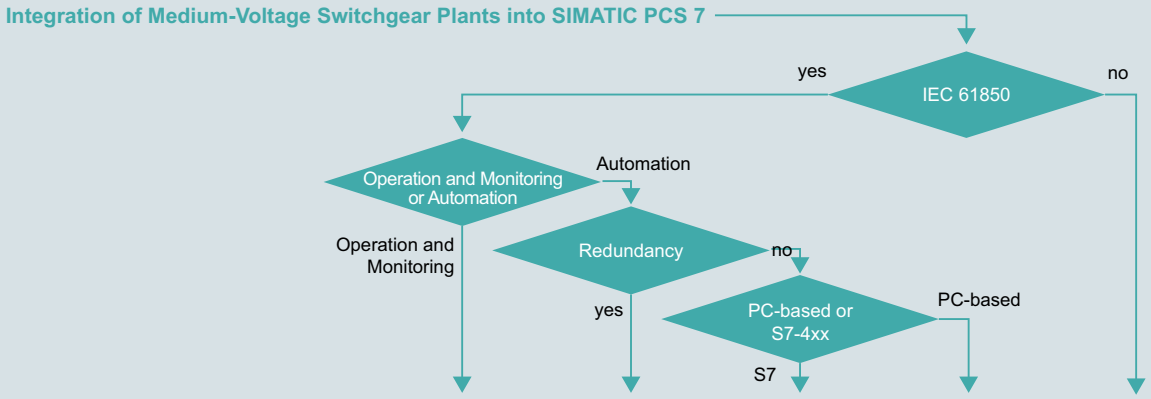
The library supports a wide range of SIPROTEC protection devices, e.g. the 7SJ, 6MD, 7UM, 7UT, 7VE series.

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 can find the SIMATIC PCS 7 OS software for the OS single station and OS server in the "Operator System", "OS software" section of the ST PCS 7 catalog. You can also find the SIMATIC PCS 7 OS software for a redundant OS server pair in the "Operator System", "OS redundancy" section of the catalog.

Selection guide for SIMATIC PCS 7 PowerControl



		OS Option	Gateway (red.)	Gateway	Controller	PROFIBUS
Hardware	Station Controller (< 64 IEDs)	–	–	–	×	–
	Station Gateway (< 128 IEDs)	–	×	×	–	–
	SIMATIC PCS 7 OS Server	×	×	×	×	×
	SIMATIC PCS 7 Automation System	–	×	×	–	×
Software	PowerControl Library (PCL)	–	×	×	×	×
	PowerControl OS Runtime	×	–	–	–	–
	PowerControl OS Engineering	×	–	–	–	–
	PowerControl PROFIBUS DP Driver	–	–	–	–	×

Upgrade

Existing SIMATIC PCS 7 PowerControl OS Engineering V8.x and SIMATIC PCS 7 PowerControl OS Runtime V8.x can be upgraded to V9.0 using the SIMATIC PCS 7 PowerControl Upgrade Package OS.

For upgrading the SIMATIC PCS 7 PowerControl Library from V8.x to V9.0, we also offer the SIMATIC PCS 7 PowerControl Upgrade Package Library.

The SIMATIC PCS 7 ES and OS software should be upgraded separately to V9.0 using the upgrade packages in Catalog ST PCS 7, (system components) sections "Upgrades for engineering system" and "Upgrades for operator system".

Function

Specific functional and performance features of SIMATIC PCS 7 PowerControl

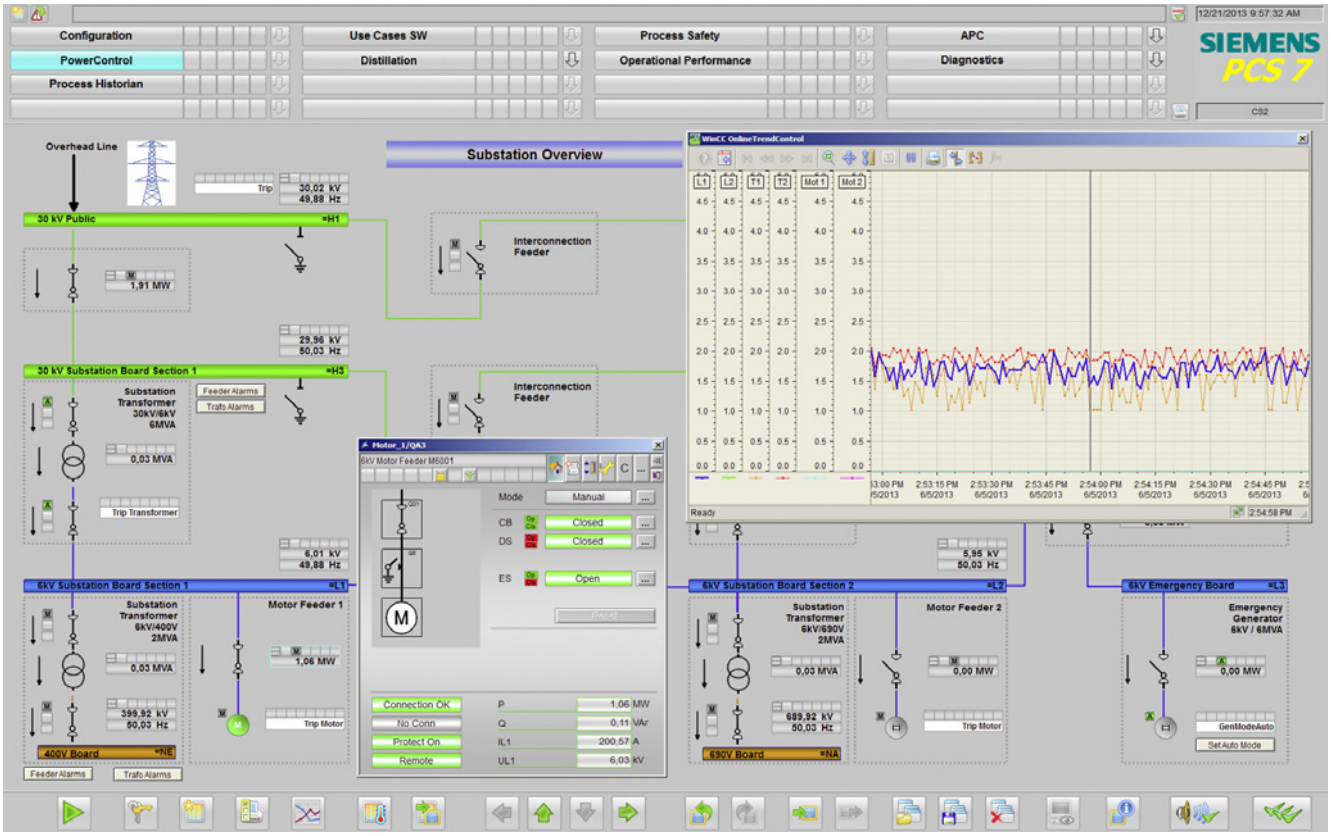
Engineering station and operator station functions (OS single station/OS server) of the SIMATIC PCS 7 process control system have been expanded by SIMATIC PCS 7 PowerControl.

Functional and performance features for SIMATIC PCS 7 Engineering

- Object library with function blocks, symbols (small and large) 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)
- Additives library with technological blocks for electrical equipment such as feeders, machines, transformers, cables, busbars
- Use of the IED time stamp even for associated values from other sources

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
- Reading and storing IED fault records; analysis with external tools



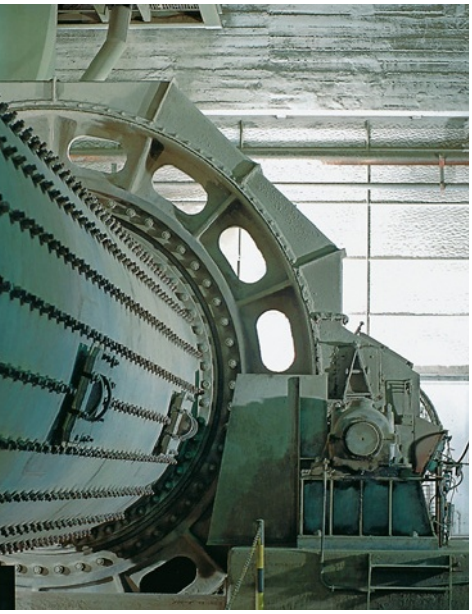
Example of a plant display for medium-voltage switchgear with trend window and faceplate of a medium-voltage motor

More information

Additional information is available on the Internet at:

www.siemens.com/simatic-pcs7/powercontrol

Ordering data	Article No.
PCS 7 PowerControl OS Engineering V9.0 Software package without SIMATIC PCS 7 engineering software; for expanding a SIMATIC PCS 7 Engineering Station V9.0 (unlimited POs) for PCS 7 PowerControl OS Engineering Engineering software, 2 languages (German, English), software class A, operating systems according to SIMATIC PCS 7 Engineering Station V9.0, floating license for 1 user Delivery form package (without SIMATIC PCS 7 Software Media Package): • License key USB flash drive, certificate of license • Software and electronic documentation in 2 languages (German and English) on DVD	**6ES7658-7LX58-0YA5**
PCS 7 PowerControl Library V9.0 AS blocks, symbols and faceplates for integrating electrical equipment via a station controller/station gateway Runtime software, software class A, 2 languages (German, English), operating systems according to SIMATIC PCS 7 Engineering Station V9.0, 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	**6ES7658-7NX58-2YA0**
PCS 7 PowerControl PROFIBUS Driver Library V9.0 AS driver blocks for integrating SIPROTEC protection devices on PROFIBUS DP Runtime software, software class A, 2 languages (German, English), operating systems according to SIMATIC PCS 7 Engineering Station V9.0, 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	**6ES7658-7PX58-2YA0**
PCS 7 PowerControl OS Runtime V9.0 PCS 7 PowerControl OS Runtime software including PCS 7 PowerControl IEC 61850 Driver Software package without SIMATIC PCS 7 OS software; for expanding a SIMATIC PCS 7 OS V9.0 (server/single station) for PCS 7 PowerControl Runtime software, 2 languages (German, English), software class A, operating systems according to SIMATIC PCS 7 Operator Station V9.0, single license for 1 installation Delivery form package (without SIMATIC PCS 7 Software Media Package): • License key USB flash drive, certificate of license • Software and electronic documentation in 2 languages (German and English) on DVD	**6ES7658-7MX58-0YA0**
Upgrade packages	
SIMATIC PCS 7 PowerControl Upgrade Package OS V8.x to V9.0 Software package without SIMATIC PCS 7 ES/OS software Engineering and runtime software, 2 languages (German, English), software class A, operating systems according to SIMATIC PCS 7 Engineering Station V9.0 or SIMATIC PCS 7 Operator Station V9.0, single license for 1 installation Delivery form package (without SIMATIC PCS 7 Software Media Package): • License key USB flash drive, certificate of license • Software and electronic documentation in 2 languages (German and English) on DVD Note: SIMATIC PCS 7 ES and OS software should be upgraded to V9.0 using separate upgrade packages (see Catalog ST PCS 7, Chapter "Update/Upgrade Packages").	**6ES7652-5JX58-0YE0**
SIMATIC PCS 7 PowerControl Upgrade Package Library V8.x to V9.0 Software package without SIMATIC PCS 7 ES/OS software Engineering and runtime software, 2 languages (German, English), software class A, operating systems according to SIMATIC PCS 7 Engineering Station V9.0, single license for 1 installation 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 Note: SIMATIC PCS 7 ES and OS software should be upgraded to V9.0 using separate upgrade packages (see Catalog ST PCS 7, Chapter "Update/Upgrade Packages").	**6ES7652-5JX58-2YE0**



Overview

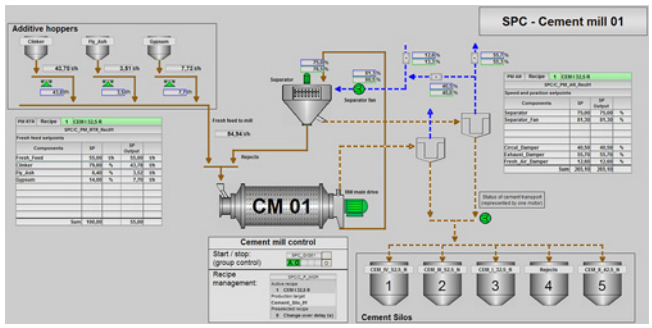
CEMAT is an enhancement of the SIMATIC PCS 7 process control system that was designed for the special requirements in the cement and mining industry and has proved successful in many years of use worldwide in the tough environmental conditions of cement works.

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. CEMAT utilizes the basic functionality, open system interfaces, flexibility and 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 requirements in lime and cement works as well as in mining. This industry software was developed in close collaboration with cement manufacturers and mine operators and is the product of over 40 years of experience in the cement industry.

Note:

The current CEMAT V9.0 version uses SIMATIC PCS 7 V9.0 as the system platform. SIMATIC PCS 7 V9.0 is not supplied with CEMAT, but can be ordered separately (see Catalog ST PCS 7).

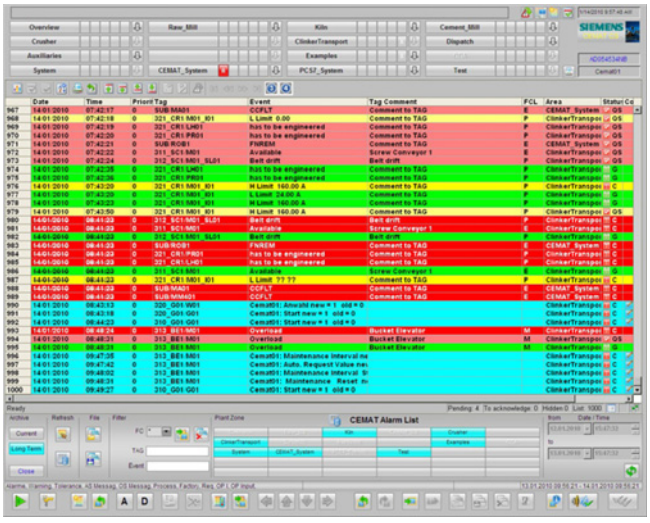
Function



Example of a cement mill with CEMAT functionality SPC (Scalable Production Control) for easy recipe and material management

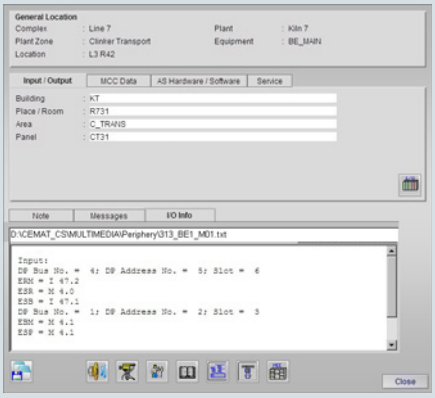
The functionality for the cement and mining industry supplied by CEMAT is integrated into the system structure of SIMATIC PCS 7 during installation, and can be classified as follows:

- Software blocks for automation tasks typical at customers in the cement and mining industry
- Modules for controlling motors, valves, and flaps and for processing of analog and binary signals
- Modules for structuring and simplified operation of the plant in groups and paths
- Scalable Production Control (SPC) for recipe-based control strategies
- HMI components with:
  - 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
- Maintenance function with:
  - Definition of maintenance intervals for analog and binary modules
  - Recording of maintenance actions
- Comprehensive multimedia support, e.g. from:
  - 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



Message display with sector-specific information and message selection area

Function (continued)

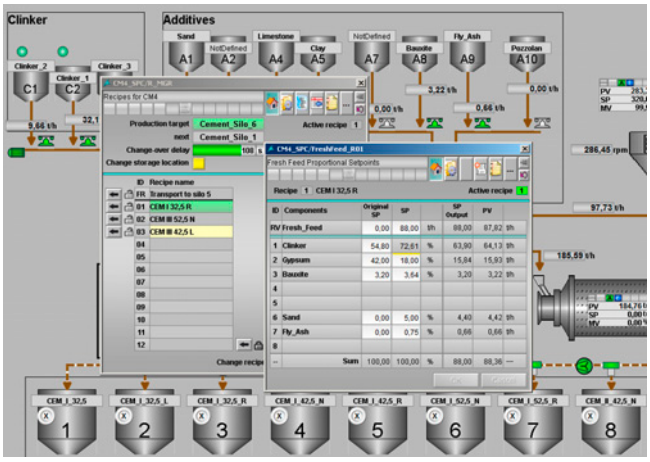


Object-based information area with I/O information

Scalable Production Control (SPC)

SPC modules can be used in the automation system to save, import and export parameters for recipe-based control strategies. There are various SPC block types for the various data types of the parameters. These block types can be freely interconnected depending on the scale and requirements. Recipes can therefore be structured from verified CEMAT modules depending on the requirements of the plant and the configuration limits. Symbols and faceplates are available for the visualization.

The operator can also use one of these standard faceplates to switch between recipes. This enables an automated type change, taking into account the configurable boundary conditions, such as delay time, etc. The SPC Material Manager, which also supports online operation via WinCC, enables flexible assignment of materials to storage locations.



Scalable Production Control with SPC Manager and SPC Material Manager

Note on the upgrade

Existing installations in CEMAT V6.1 and higher can be upgraded to CEMAT V9.0 with the CEMAT upgrade package V9.0. One CEMAT upgrade package is required for each existing CEMAT engineering, server or single station installation.

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

Ordering data	Article No.
MINERALS AUTOMATION STANDARD CEMAT V9.0	
CEMAT Engineering Software	
CEMAT Engineering V9.0 Engineering software, software class A, 2 languages (English, German), operating systems according to SIMATIC PCS 7 Engineering Station V9.0, single license for 1 installation Goods delivery package: Software and documentation in 2 languages (English and German) on DVD, license key USB stick, certificate of license	**6DL5436-8AX58-0XA0**
CEMAT ES/OS Software for Single Station including AS Runtime licenses (PLC)	
CEMAT Single Station V9.0 (3 AS) OS software Single Station Runtime including 3 Runtime licenses for AS (PLC), software class A, 2 languages (English, German), operating systems according to SIMATIC PCS 7 ES/OS Single Station V9.0, single license for 1 installation Goods delivery package: Software and documentation in 2 languages (English and German) on DVD, license key USB stick, certificate of license	**6DL5434-8AA58-0XA0**
CEMAT Single Station V9.0 (1 AS) OS software Single Station Runtime including 1 Runtime license for AS (PLC), software class A, 2 languages (English, German), operating systems according to SIMATIC PCS 7 ES/OS Single Station V9.0, single license for 1 installation Goods delivery package: Software and documentation in 2 languages (English and German) on DVD, license key USB stick, certificate of license	**6DL5438-8AA58-0XA0**
CEMAT OS software for client	
CEMAT Client V9.0 OS software Client Runtime, software class A, 2 languages (English, German), operating systems according to SIMATIC PCS 7 OS Client V9.0, single license for 1 installation Goods delivery package: Software and documentation in 2 languages (English and German) on DVD, license key USB stick, certificate of license	**6DL5435-8AX58-0XA0**
CEMAT OS software for redundant server pair including AS runtime licenses (PLC)	
CEMAT Server Redundancy V9.0 (3 AS) OS software Runtime for redundant server pair including Runtime licenses for 3 AS (PLC), software class A, 2 languages (English, German), operating systems according to SIMATIC PCS 7 OS Server V9.0, single license for 2 installations Goods delivery package: Software and documentation in 2-languages (English and German) on DVD, 2 license key USB sticks, certificate of license	**6DL5433-8AA58-0XA0**
CEMAT Server Redundancy V9.0 (6 AS) OS software Runtime for redundant server pair including Runtime licenses for 6 AS (PLC), software class A, 2 languages (English, German), operating systems according to SIMATIC PCS 7 OS Server V9.0, single license for 2 installations Goods delivery package: Software and documentation in 2-languages (English and German) on DVD, 2 license key USB sticks, certificate of license	**6DL5433-8AB58-0XA0**
CEMAT Server Redundancy V9.0 (9 AS) OS software Runtime for redundant server pair including Runtime licenses for 9 AS (PLC), software class A, 2 languages (English, German), operating systems according to SIMATIC PCS 7 OS Server V9.0, single license for 2 installations Goods delivery package: Software and documentation in 2-languages (English and German) on DVD, 2 license key USB sticks, certificate of license	**6DL5433-8AC58-0XA0**
CEMAT Server Redundancy V9.0 (unlimited AS) OS software Runtime for redundant server pair including Runtime licenses for unlimited AS (PLC), software class A, 2 languages (English, German), operating systems according to SIMATIC PCS 7 OS Server V9.0, single license for 2 installations Goods delivery package: Software and documentation in 2-languages (English and German) on DVD, 2 license key USB sticks, certificate of license	**6DL5433-8AD58-0XA0**
CEMAT OS PowerPacks for redundant server pair	
CEMAT Server Redundancy PowerPack V9.0 For expansion of the AS runtime licenses of a redundant server pair Software class A, 2 languages (German, English), single license for 2 installations Goods delivery package: 2 license key USB sticks, certificate of license	
• For expansion from 3 to 6 AS	**6DL5433-8AB58-0XD0**
• For expansion from 6 to 9 AS	**6DL5433-8AC58-0XD0**
• For expansion from 9 to unlimited AS	**6DL5433-8AD58-0XD0**
CEMAT upgrade package V9.0 For upgrading existing CEMAT engineering, server or single station installations, V6.1 and higher. Engineering and Runtime software, software class A, 2 languages (English, German), operating systems according to corresponding SIMATIC PCS 7 V9.0 system (ES/OS), single license for 1 installation Goods delivery package: Software and documentation in 2 languages (English and German) on DVD, license key USB stick for WinCC User Archive Upgrade, certificate of license Can only be used together with a valid CEMAT license.	**6DL5430-8AX58-0XE0**

Overview

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 functionality for automating cement plants with the automation functions typically required in mining.

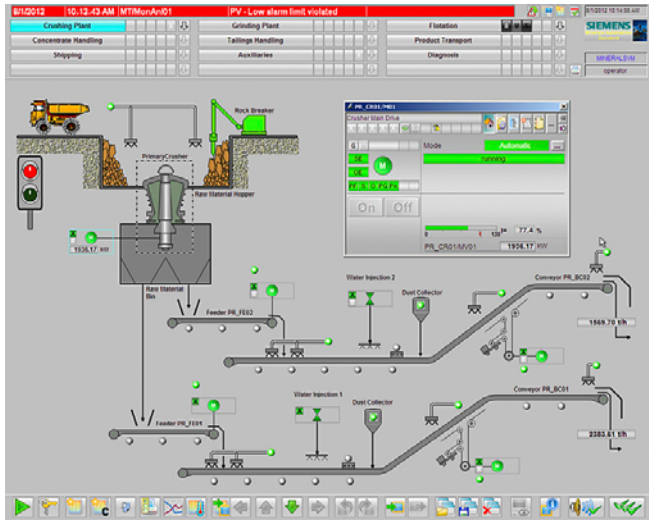
CEMAT is an enhancement of the SIMATIC PCS 7 process control system that was designed for the special requirements in the cement and mining industry and has proved successful in many years of use worldwide in the tough environmental conditions of cement works.

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. CEMAT utilizes the basic functionality, open system interfaces, flexibility and 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 requirements in lime and cement works as well as in mining. This industry software was developed in close collaboration with cement manufacturers and mine operators and is the product of over 40 years of experience in the cement industry.

Note:

The latest MINERALS AUTOMATION STANDARD V9.0 is based on CEMAT V9.0. CEMAT V9.0 uses SIMATIC PCS 7 V9.0 as the system platform. SIMATIC PCS 7 V9.0 is not supplied with CEMAT, but can be ordered separately (see Catalog ST PCS 7).

Function

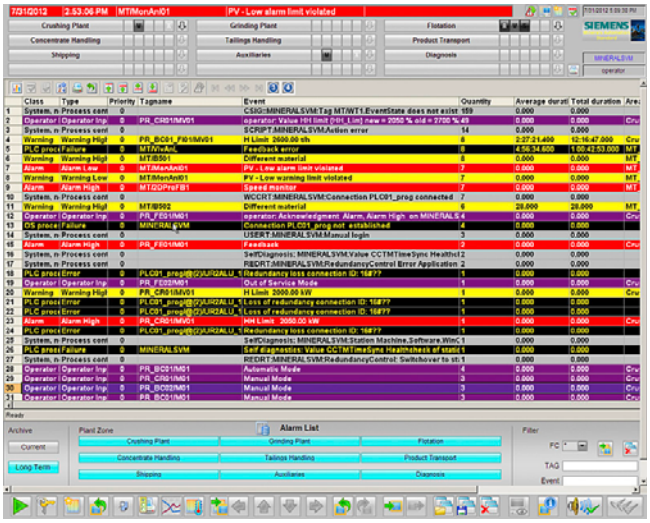


Drive faceplate

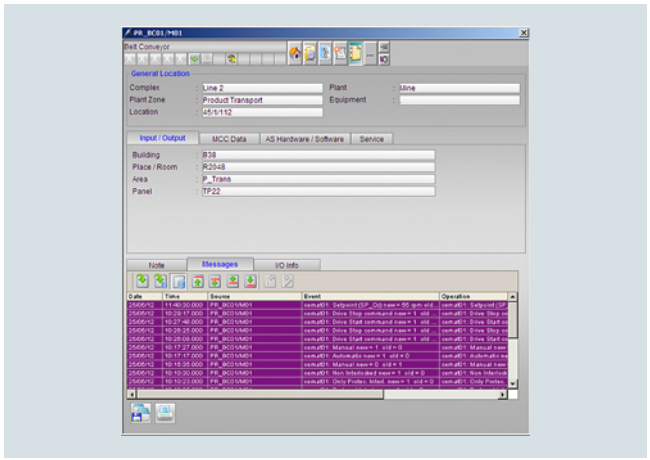
The functionality for the mining industry supplied in the form of the MINERALS AUTOMATION STANDARD is integrated into the system structure of SIMATIC PCS 7 during the installation, and can be classified as follows:

- Software blocks for automation tasks typical at customers in the cement and mining industry
- Modules for controlling motors, valves, and flaps and for processing of analog and binary signals
- Modules for structuring and simplified operation of the plant in groups and paths
- Scalable Production Control (SPC) for recipe-based control strategies
- HMI components with:
  - 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
- Maintenance function with:
  - Definition of maintenance intervals for analog and binary modules
  - Recording of maintenance actions
- Comprehensive multimedia support, e.g. from:
  - 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

Function (continued)



Message display with sector-specific information and message selection area

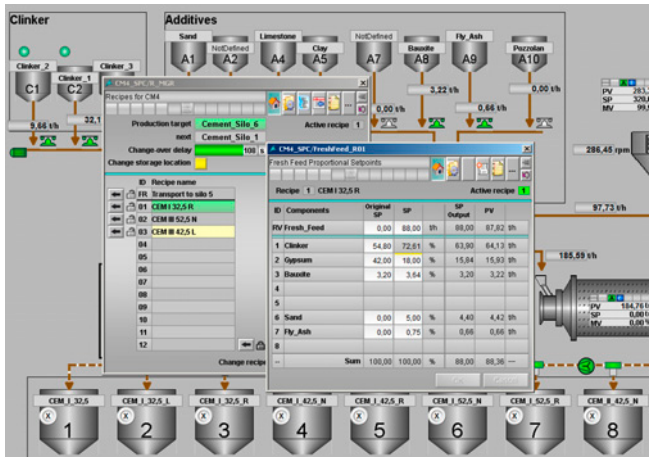


Object-based information area with I/O information

Scalable Production Control (SPC)

SPC modules can be used in the automation system to save, import and export parameters for recipe-based control strategies. There are various SPC block types for the various data types of the parameters. These block types can be freely interconnected depending on the scale and requirements. Recipes can therefore be structured from verified CEMAT modules depending on the requirements of the plant and the configuration limits. Symbols and faceplates are available for the visualization.

The operator can also use one of these standard faceplates to switch between recipes. This enables an automated type change, taking into account the configurable boundary conditions, such as delay time, etc. The SPC Material Manager, which also supports online operation via WinCC, enables flexible assignment of materials to storage locations.



Scalable Production Control with SPC Manager and SPC Material Manager

Note on the upgrade

Existing installations in CEMAT V6.1 and higher can be upgraded to CEMAT V9.0 with the CEMAT upgrade package V9.0. One CEMAT upgrade package is required for each existing CEMAT engineering, server or single station installation.

More information

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

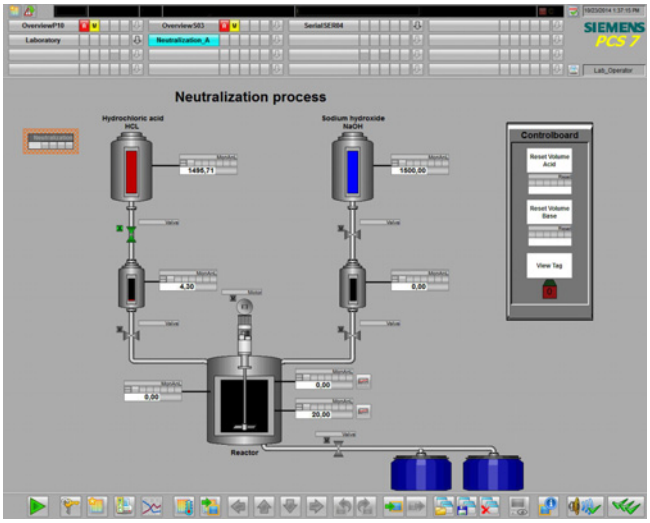
E-mail: cemat.industry@siemens.com

Additional information is available on the Internet at:
www.siemens.com/MinAS

Ordering data

	Article No.
MINERALS AUTOMATION STANDARD CEMAT V9.0	
CEMAT Engineering Software	
CEMAT Engineering V9.0 Engineering software, software class A, 2 languages (English, German), operating systems according to SIMATIC PCS 7 Engineering Station V9.0, single license for 1 installation Goods delivery package: Software and documentation in 2 languages (English and German) on DVD, license key USB stick, certificate of license	**6DL5436-8AX58-0XA0**
CEMAT ES/OS Software for Single Station including AS Runtime licenses (PLC)	
CEMAT Single Station V9.0 (3 AS) OS software Single Station Runtime including 3 Runtime licenses for AS (PLC), software class A, 2 languages (English, German), operating systems according to SIMATIC PCS 7 ES/OS Single Station V9.0, single license for 1 installation Goods delivery package: Software and documentation in 2 languages (English and German) on DVD, license key USB stick, certificate of license	**6DL5434-8AA58-0XA0**
CEMAT Single Station V9.0 (1 AS) OS software Single Station Runtime including 1 Runtime license for AS (PLC), software class A, 2 languages (English, German), operating systems according to SIMATIC PCS 7 ES/OS Single Station V9.0, single license for 1 installation Goods delivery package: Software and documentation in 2 languages (English and German) on DVD, license key USB stick, certificate of license	**6DL5438-8AA58-0XA0**
CEMAT OS software for client	
CEMAT Client V9.0 OS software Client Runtime, software class A, 2 languages (English, German), operating systems according to SIMATIC PCS 7 OS Client V9.0, single license for 1 installation Goods delivery package: Software and documentation in 2 languages (English and German) on DVD, license key USB stick, certificate of license	**6DL5435-8AX58-0XA0**
CEMAT OS software for redundant server pair including AS runtime licenses (PLC)	
CEMAT Server Redundancy V9.0 (3 AS) OS software Runtime for redundant server pair including Runtime licenses for 3 AS (PLC), software class A, 2 languages (English, German), operating systems according to SIMATIC PCS 7 OS Server V9.0, single license for 2 installations Goods delivery package: Software and documentation in 2-languages (English and German) on DVD, 2 license key USB sticks, certificate of license	**6DL5433-8AA58-0XA0**
CEMAT Server Redundancy V9.0 (6 AS) OS software Runtime for redundant server pair including Runtime licenses for 6 AS (PLC), software class A, 2 languages (English, German), operating systems according to SIMATIC PCS 7 OS Server V9.0, single license for 2 installations Goods delivery package: Software and documentation in 2-languages (English and German) on DVD, 2 license key USB sticks, certificate of license	**6DL5433-8AB58-0XA0**
CEMAT Server Redundancy V9.0 (9 AS) OS software Runtime for redundant server pair including Runtime licenses for 9 AS (PLC), software class A, 2 languages (English, German), operating systems according to SIMATIC PCS 7 OS Server V9.0, single license for 2 installations Goods delivery package: Software and documentation in 2-languages (English and German) on DVD, 2 license key USB sticks, certificate of license	**6DL5433-8AC58-0XA0**
CEMAT Server Redundancy V9.0 (unlimited AS) OS software Runtime for redundant server pair including Runtime licenses for unlimited AS (PLC), software class A, 2 languages (English, German), operating systems according to SIMATIC PCS 7 OS Server V9.0, single license for 2 installations Goods delivery package: Software and documentation in 2-languages (English and German) on DVD, 2 license key USB sticks, certificate of license	**6DL5433-8AD58-0XA0**
CEMAT OS PowerPacks for redundant server pair	
CEMAT Server Redundancy PowerPack V9.0 For expansion of the AS runtime licenses of a redundant server pair Software class A, 2 languages (German, English), single license for 2 installations Goods delivery package: 2 license key USB sticks, certificate of license	
• For expansion from 3 to 6 AS	**6DL5433-8AB58-0XD0**
• For expansion from 6 to 9 AS	**6DL5433-8AC58-0XD0**
• For expansion from 9 to unlimited AS	**6DL5433-8AD58-0XD0**
CEMAT upgrade package V9.0 For upgrading existing CEMAT engineering, server or single station installations, V6.1 and higher. Engineering and Runtime software, software class A, 2 languages (English, German), operating systems according to corresponding SIMATIC PCS 7 V9.0 system (ES/OS), single license for 1 installation Goods delivery package: Software and documentation in 2 languages (English and German) on DVD, license key USB stick for WinCC User Archive Upgrade, certificate of license Can only be used together with a valid CEMAT license.	**6DL5430-8AX58-0XE0**

Overview



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:

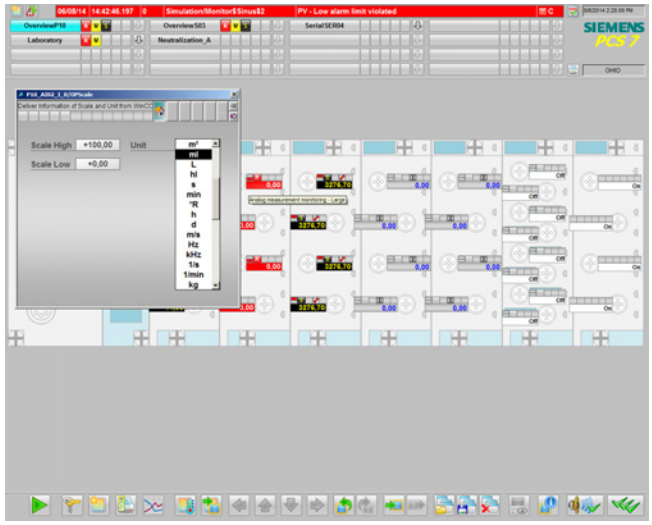
The SIMATIC PCS 7 Software V8.2 in the configuration lists is supplied with the latest service pack as it becomes available.

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

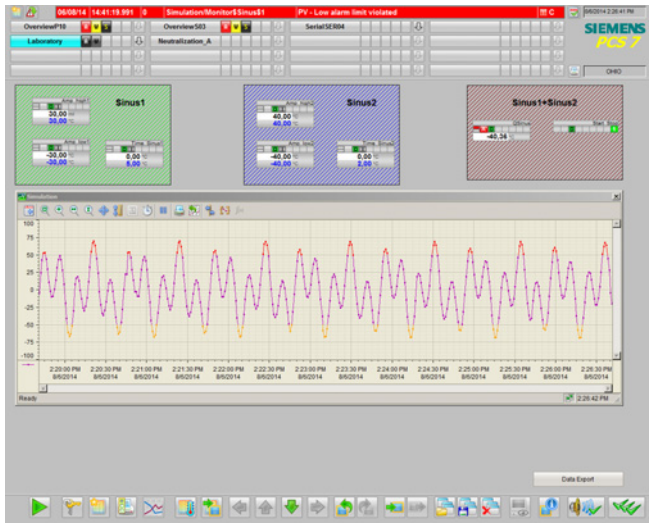
Design



PCS 7 LAB Collection

The PCS 7 LAB Collection is preconfigured for the SIMATIC PCS 7 system platform defined in the following section. It supports the laboratory automation with SIMATIC PCS 7 by means of:

- Setting the measurement ranges and units for analog values on the operator interface (OS)
- Source code for the connection of serially communicating devices, e.g.
  - Sartorius scales
  - Huber thermostats
  - Bronkhorst coriolis flow meters
  - Example for creating a device-specific driver as CMT (Control Module Type)
- Examples for typical basic laboratory functions such as dosing, inerting, temperature monitoring etc.
- Sample macros for
  - Data export to Microsoft Excel
  - SFC control from Microsoft Excel
- Functions for the definition of different access rights for laboratory personnel (Lab_Assistant) and laboratory operators (Lab_Operator)
- Function blocks (including sample programs) for recording values up to a recording cycle time of 10 ms
- Documented application examples



Application (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, 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

Quantity	Article number	Designation
1	6ES7650-·····-····	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 V8.2 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 V8.2 Software Media Package
	-4B**A**00-2L··	Intel Core i3-4330TE processor (2 cores/4 threads, 2.4 GHz, 4 MB cache, VT-x); main memory 8 GB, DDR3 1600, DIMM; 250 GB HDD SATA; DVD±R/RW
	-4B**B**00-2L··	Xeon E3-1268Lv3 processor (4 cores/8 threads, 2.3 (3.3) GHz, 8 MB cache, VT-d, AMT); main memory 8 GB DDR3 1600, DIMM; 240 GB SSD; DVD±R/RW
	-4B**C**00-2L··	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
	-4B·00-2L**A**	Without panel
	-4B·00-2L**B**	22" Single Touch Panel, 1920 × 1080 pixels
	-4B·00-2L·**0/1/2/3/4/5**	110/230 V AC industrial power supply to NAMUR; European power cable (0), Great Britain (1), Switzerland (2), USA (3), Italy (4), China (5)
	-4B·00-2L·**6**	24 V DC industrial power supply
1	6ES7652-0XD28-2YB5/-2YH5	SIMATIC PCS 7 SFC Visualization V8.2 for display and operation of SFC sequence controls on an operator station; 6 languages (German, English, French, Italian, Spanish, Chinese) Delivery form package (...-2YB5) / online delivery (...-2YH5)

Optional accessories

Quantity	Article number	Designation
1	6ES7648-0CB00-0YA0	SIMATIC PC keyboard (USB connection); keyboard layout German/international
1	6AV2181-8AT00-0AX0	SIMATIC HMI USB mouse; optical mouse with scroll wheel and USB connection, color anthracite

Additional accessories

Possible additional accessories (to be provided by customer):

- PROFIBUS cable

Application (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

Quantity	Article number	Designation
1	6ES7650-·····-····	SIMATIC PCS 7 BOX ES/OS System with SIMATIC PCS 7 system functionality ES and OS, assembled and pre-installed; based on SIMATIC IPC627D with operating system Windows 7 Ultimate 64-bit, multi-language (German, English, French, Italian, Spanish, Chinese) and with SIMATIC PCS 7 ES Single Station V8.2 including 250 AS/OS Runtime PO, 5 languages (German, English, French, Italian, Spanish), SIMATIC PCS 7 BCE V8.2 runtime license and SIMATIC PCS 7 V8.2 Software Media Package
	-4B**A**81-2N··	Intel Core i3-4330TE processor (2 cores/4 threads, 2.4 GHz, 4 MB cache, VT-x); main memory 8 GB, DDR3 1600, DIMM; 250 GB HDD SATA; DVD±R/RW
	-4B**B**81-2N··	Xeon E3-1268Lv3 processor (4 cores/8 threads, 2.3 (3.3) GHz, 8 MB cache, VT-d, AMT); main memory 8 GB DDR3 1600, DIMM; 240 GB SSD; DVD±R/RW
	-4B**C**81-2N··	Xeon E3-1268Lv3 processor (4 cores/8 threads, 2.3 (3.3) GHz, 8 MB cache, VT-d, AMT); main memory 8 GB DDR3 1600, DIMM, ECC; RAID1, 2 × 320 GB SATA (2.5"); DVD±R/RW
	-4B·81-2N**A**	Without panel
	-4B·81-2N**B**	22" Single Touch Panel, 1920 × 1080 pixels
	-4B·81-2N·**0/1/2/3/4/5**	110/230 V AC industrial power supply to NAMUR; power cable Europe (0); Great Britain (1), Switzerland (2), USA (3), Italy (4), China (5)
	-4B·81-2N·**6**	24 V DC industrial power supply
1	6ES7654-0UE23-0XX0	SIMATIC PCS 7 AS RTX Assembled and pre-installed automation system based on SIMATIC IPC427D with Windows 7 Ultimate 32-bit operating system, multi-language (English, German, French, Italian, Spanish, Chinese), WinAC RTX 2010 controller software and SIMATIC IPC DiagMonitor diagnostic software, pre-installed on SSD 80 GB and restore DVD SIMATIC PCS 7 AS Runtime License for 100 PO
1	6ES7653-2BA00-0XB5/-0XH5	SIMATIC PCS 7 AS Runtime License for 100 POs accumulative, language-neutral Delivery form package (...-0XB5) / online delivery (...-0XH5)
1	6ES7652-0XD28-2YB5/-2YH5	SIMATIC PCS 7 SFC Visualization V8.2 for display and operation of SFC sequence controls on an operator station; 6 languages (German, English, French, Italian, Spanish, Chinese) Delivery form package (...-2YB5) / online delivery (...-2YH5)

Application (continued)

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:

Quantity	Article number	Designation
1		SIMATIC PCS 7 ES/OS system as alternative to SIMATIC PCS 7 BOX ES/OS system (included with product or article number of a SIMATIC PCS 7 Industrial Workstation selected using Configurator)
1	6ES7654-0UE23-0XX0	SIMATIC PCS 7 AS RTX Assembled and pre-installed automation system based on SIMATIC IPC427D with Windows 7 Ultimate 32-bit operating system, multi-language (English, German, French, Italian, Spanish, Chinese), WinAC RTX 2010 controller software and SIMATIC IPC DiagMonitor diagnostic software, pre-installed on SSD 80 GB and restore DVD SIMATIC PCS 7 AS Runtime License for 100 PO
1	6ES7653-2BA00-0XB5/-0XH5	SIMATIC PCS 7 AS Runtime License for 100 POs accumulative, language-neutral Delivery form package (...-0XB5) / online delivery (...-0XH5)
1	6ES7652-0XD28-2YB5/-2YH5	SIMATIC PCS 7 SFC Visualization V8.2 for display and operation of SFC sequence controls on an operator station; 6 languages (German, English, French, Italian, Spanish, Chinese) Delivery form package (...-2YB5) / online delivery (...-2YH5)
1	6ES7658-5AX28-0YA5/-0YH5	SIMATIC PCS 7 AS/OS Engineering Software V8.2 Unlimited POs, 5 languages (English, German, French, Italian, Spanish) Delivery form package (...-0YA5) / online delivery (...-0YH5)
1	6ES7658-2AA28-0YA0/-0YH0	SIMATIC PCS 7 OS Software Single Station V8.2 including 100 OS Runtime PO, 5 languages (German, English, French, Italian, Spanish) Delivery form package (...-0YA0) / online delivery (...-0YH0)
1	6ES7658-2XA00-0XB0/-0XH0	SIMATIC PCS 7 OS Runtime License 100POs for adding OS Runtime POs, accumulative, language-neutral Delivery form package (...-0XB0) / online delivery (...-0XH0)

Optional accessories

Quantity	Article number	Designation
1	6ES7648-0CB00-0YA0	SIMATIC PC keyboard (USB connection); keyboard layout German/international
1	6AV2181-8AT00-0AX0	SIMATIC HMI USB mouse; optical mouse with scroll wheel and USB connection, color anthracite

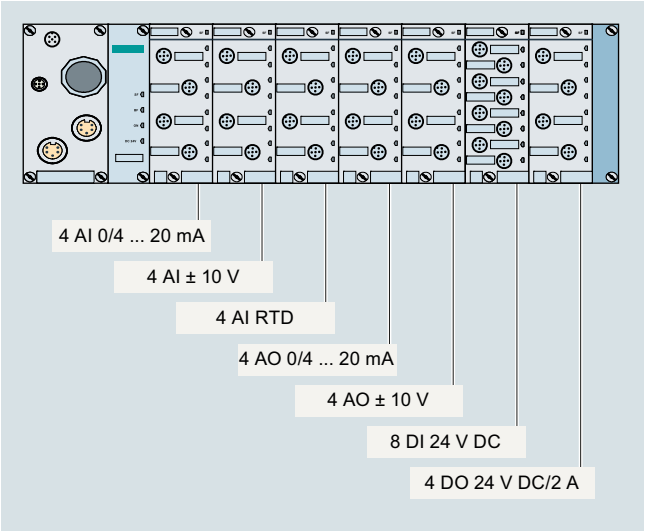
Further accessories:

Possible additional accessories (to be provided by customer):

- PROFIBUS cable

Application (continued)

Configuration list for ET 200pro I/O system



Arrangement of the ET 200pro modules to match the configuration

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

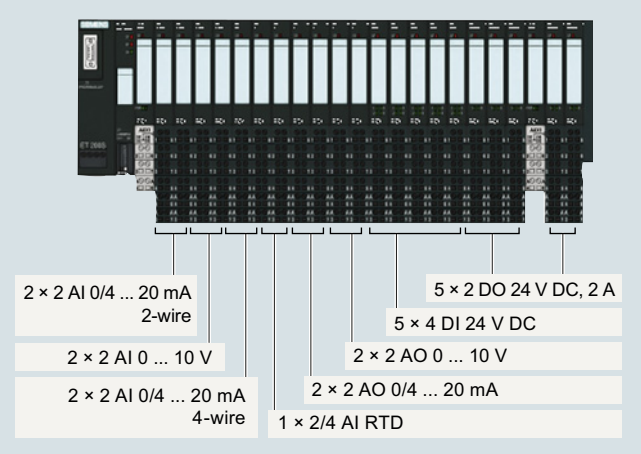
Quantity	Article number	Designation
1	6ES7141-4BF00-0AB0	Digital input module 8 DI for ET 200pro High Feature, 24 V DC, with module diagnostics; including bus module
1	6ES7142-4BD00-0AB0	Digital output module 4 DO for ET 200pro High Feature, 24 V DC, 2 A, with module diagnostics; including bus module
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

Quantity	Article number	Designation
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

Application (continued)

Configuration list for ET 200S I/O system



Arrangement of the ET 200S modules to match the configuration

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

Quantity	Article number	Designation
1	6ES7131-4BD01-0AB0	DI 4 × 24 V DC, High Feature; Digital input module for ET 200S with diagnostics; short-circuit monitoring; ordering unit 5 units
1	6ES7132-4BB31-0AB0	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
2	6ES7134-4FB01-0AB0	AI 2 × U (± 5 V, 1 ... 5 V, ± 10 V) /13-bit, standard analog module for ET 200S; module-internal diagnostics, overflow/underflow diagnostics
2	6ES7134-4GB01-0AB0	AI 2 × I, 2-wire MU (4 ... 20 mA)/ 13-bit, standard analog module for ET 200S; module-internal diagnostics, overflow/underflow diagnostics, wire-break monitoring
2	6ES7134-4GB11-0AB0	AI 2 × I, 4-wire MU (± 20 mA, 4 ... 20 mA) / 13-bit, standard analog module for ET 200S; module-internal diagnostics, overflow/underflow diagnostics, wire-break monitoring
1	6ES7134-4JB51-0AB0	AI 2/4 × RTD standard for resistance thermometer or resistance measurement analog module for ET 200S • 2 inputs (3-wire and 4-wire connection) / 4 inputs (2-wire connection) • Max. resolution 15 bits + sign • Resistance thermometer Pt100, Ni100 • Module diagnostics: Overflow/underflow, internal fault, parameterization error • Channel-based wire-break monitoring
2	6ES7135-4LB02-0AB0	AO 2 × U (1 ... 5 V, ± 10 V) /15-bit, High Feature analog output module for ET 200S • Diagnostics inside module • Parameterizable connection of substitute value in case of CPU stop • Short-circuit monitoring
2	6ES7135-4MB02-0AB0	AO 2 × I (± 20 mA, 4 ... 20 mA) / 15-bit, High Feature analog output module for ET 200S • Diagnostics inside module • Parameterizable connection of substitute value in case of CPU stop • Short-circuit monitoring
1	6ES5710-8MA11	SIMATIC S5, 35 mm DIN rail, length 483 mm for 19" cabinets
5	6ES7193-4CA40-0AA0	Terminal module TM-E15S26-A1 2 × 6 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, screw-type terminal; ordering unit 5 units
2	6ES7138-4CA01-0AA0	PM-E power module; 24 V DC/10 A • Monitoring of the load voltage
2	6ES7193-4CC20-0AA0	Terminal module TM-P15S23-A1 2 × 3 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, screw-type terminal; ordering unit 1 unit
1	6ES7151-1BA02-0AB0	Interface module IM 151-1 for ET 200S, High Feature

Optional accessories

Quantity	Article number	Designation
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

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.

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

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

	Article No.
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	**6DL5408-8AX01-0XL1**

Note:

The certificate of license authorizes the user to download the PCS 7 LAB Collection software from the following Internet address:
http://support.automation.siemens.com/WW/view/en/43884296

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 application examples

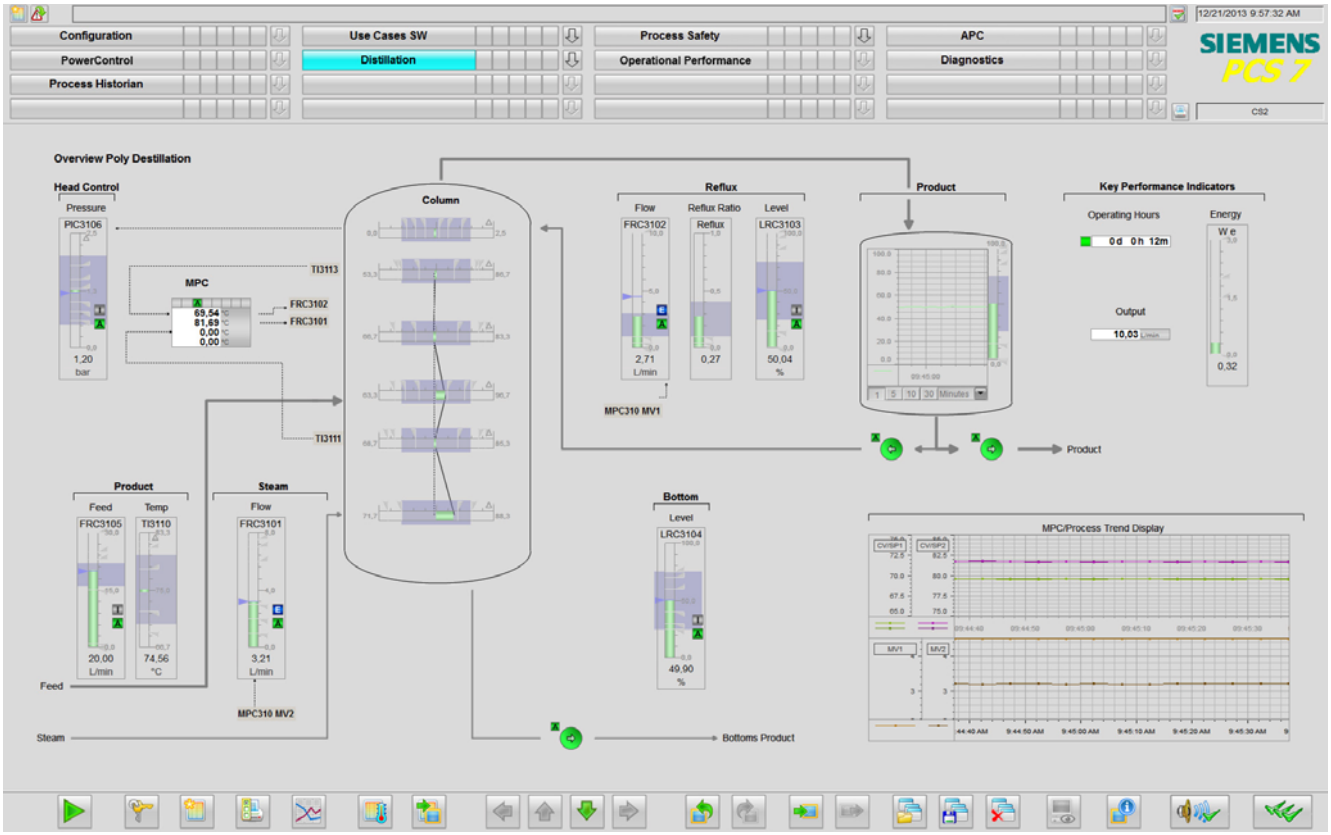
More information

Additional information is available on the Internet at:

www.siemens.com/simatic-pcs7-lab

Efficient process control

Overview



Process visualization with graphic objects of the PCS 7 Advanced Process Graphics

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).

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 V9.0 can be used in combination with SIMATIC PCS 7 V9.0 (including PCS 7 Advanced Process Library V9.0).

Benefits

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

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.:

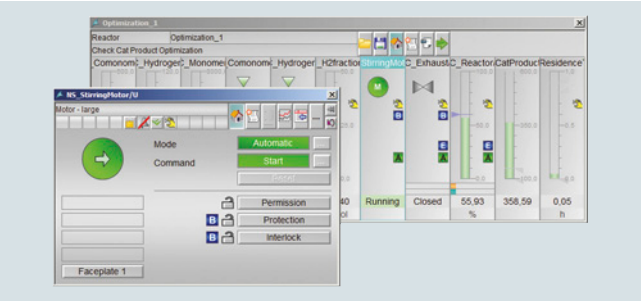
- Chemical industry
- Pharmaceutical industry
- Water and wastewater
- Glass and solar industry
- Oil & gas
- Food and beverage industry
- Mining

Function

Process visualization with APG objects focuses the attention of the operator on the most important points and supports decision-making in accordance with the plant situation. It is based on data collected by the APG Connector block in the automation system. The APG objects can be connected to a process tag using the dynamic wizard.

The following functions are implemented in PCS 7 Advanced Process Graphics:

- Hybrid display with bar graph and 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
- "Group View" function for combination of process tags in a group view
- "Normalize" for normalizing a group of bar graphs or a spider chart to a single working point



Example for a group view of selected process tags

Ordering data

	Article No.
PCS 7 Advanced Process Graphics V9.0 Engineering and runtime software with engineering and runtime licenses, valid for all ESes, ASes and OSes of a SIMATIC PCS 7 project 2 languages (German, English), software class A, operating systems according to SIMATIC PCS 7 Engineering System V9.0 No SIMATIC PCS 7 Software Media Package • Physical delivery certificate of license; software and electronic documentation in 2 languages (English, German) on DVD	**6DL5410-8BX58-0YA0**
PCS 7 Advanced Process Graphics Upgrade Package V8.x to V9.0 Engineering and runtime software with engineering and runtime licenses, valid for all ESes, ASes and OSes of a SIMATIC PCS 7 project 2 languages (German, English), software class A, operating systems according to SIMATIC PCS 7 Engineering System V9.0 No SIMATIC PCS 7 Software Media Package • Physical delivery certificate of license; software and electronic documentation in 2 languages (English, German) on DVD	**6DL5410-8BX58-0YE0**

Overview

Process control keyboard for SIMATIC PCS 7

The process control keyboard enables customized operation and control of your particular production process. Fast access to key functions by means of configurable settings is often a requirement for optimizing process management.

Typical application examples include:

- Selection of specific process descriptions
- Selection of and feedback from interrupts and messages
- Rising and falling control variables
- Sequential control

Functions can be instantly called up with a single keystroke, avoiding time-consuming navigation through the menu. This is all made possible with the process control keyboard for SIMATIC PCS 7, which combines a standard PC keyboard with 90 function keys.

Design

With the process control keyboard, you can use a SIMATIC PCS 7 control station to operate and control an ongoing production process that is automated with the SIMATIC PCS 7.

The process control keyboard is connected to the SIMATIC PCS 7 Operator Station via a USB port; in the delivery state it can be used as a standard keyboard. It is possible to configure the keys for many different operations by installing driver software on the SIMATIC PCS 7 Engineering Station (ES) and the operator station (client). The functions of certain runtime operator controls can then be executed using the additional keys on the process control keyboard. The symbols on the additional keys are based on the symbols for runtime operator controls.

The process control keyboard allows for various installation options:

- Installation as a keyboard only
- Installation as a keyboard and USB hub for connecting another USB device
- Installation as a keyboard and for connecting speakers
- Complete installation with mouse and speakers
- Installation of the keyboard into a work surface/operator panel

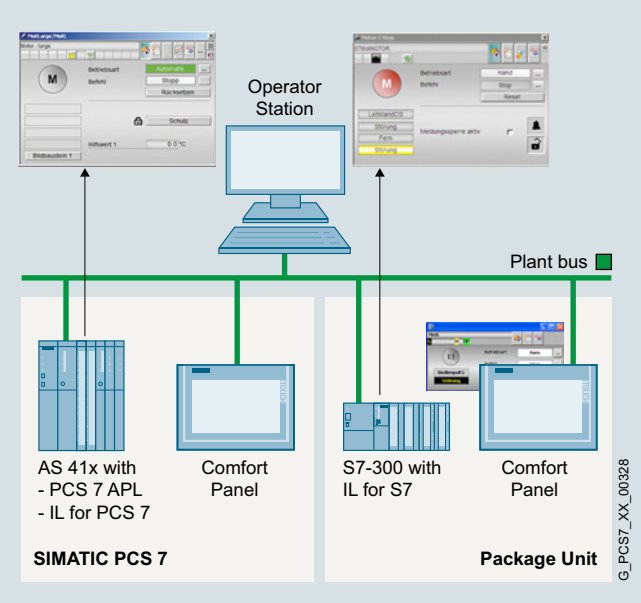
Technical specifications

Process control keyboard for SIMATIC PCS 7	
Layout	Membrane keyboard with 104 standard keys and 90 programmable function keys with LEDs
Speakers	2 built into the keyboard housing
Interfaces	
• USB 2.0 (cable length: typically 2 m, max. 5 m)	1 × USB for connecting to SIMATIC PCS 7 station
	1 × USB for mouse/trackball (can be switched off)
• Audio	1 × audio output (can be switched off), 3.5 mm cinch, 60 mW/16 Ω
Power supply (for operating internal speakers or USB extension cable)	12 ... 24 V DC
Max. current consumption	400 mA (all LEDs in operation)
Dimensions (L x W x H) in mm	604 × 230 × 44
Weight, approx.	2.4 kg
Ambient temperature	
• Operation	0 ... 50 °C
• Storage/transport	-20 ... +80 °C
Humidity	20 ... 80 % at 25 °C, no condensation
Degree of protection	
• Freely positionable on the desktop	IP40
• Built into a console	IP65
Theft protection	Connection for Kensington lock
Standards, approvals, certificates	CE mark
	Additional certifications available upon request

Ordering data

	Article No.
Process control keyboard for SIMATIC PCS 7 with USB connection, featuring 104 standard keys and 90 programmable function keys with LEDs including a USB cable for connecting to a SIMATIC PCS 7 station and connector for power supply cable	**9AE4270-1AA00**

Overview



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 in APL design. It thereby supports the implementation of a wide variety of technological and industry-specific functions, operator control and monitoring via SIMATIC HMI Comfort Panels on site as well as the integration of SIMATIC S7 package units into SIMATIC PCS 7 applications.

The foundation of the SIMATIC PCS 7 Industry Library is formed by tried-and-tested industry libraries, for example, from areas such as water/wastewater and building automation.

The core functions of the SIMATIC PCS 7 Industry Library are:

- Integration of SIMATIC S7-300 controllers (Package Units, Remote Terminal Units)
- Integration of SIMATIC HMI Comfort Panels (SIMATIC PCS 7 and SIMATIC S7-300)
- Functions for building automation (SIMATIC PCS 7 and SIMATIC S7-300)
- Connection of external Advanced Process Control (APC) applications (SIMATIC PCS 7)
- Multiple control room design (hierarchical structure) for SIMATIC PCS 7
- Communication between controllers (S7-400 Standard and redundant or S7-300)
- Energy management for SIMATIC PCS 7

Note:

The SIMATIC PCS 7 Industry Library V9.0 can be used together with SIMATIC PCS 7 V9.0. The SIMATIC PCS 7 Industry Library V9.0 supports all operating systems approved for the SIMATIC PCS 7 Engineering System V9.0.

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
- Electronics (semiconductors, solar, LED, LCD)
- Food and beverages

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 SIMATIC 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 booked for the technological blocks of the SIMATIC PCS 7 Industry Library. You can determine the required number of SIMATIC PCS 7 Runtime POs per block instance in the manual.

Function

Overview of technological blocks

Block types and functions	IL for PCS 7	IL for S7
Operator control blocks		
• Aggregate switchover of 8/16 aggregates	●	●
• Blocks for handling smaller numbers of parameters and parameter sets	●	–
• Jump distributor for up to 5 jump destinations	●	–
• User administration for managing operating rights from 8 levels	●	●
• Operator control of an analog measured value	–	●
• Operator control of a binary measured value	–	●
Building automation blocks		
• Calculation of thermal power and emitted energy	●	●
• Calculation of enthalpy, absolute humidity and humidity at saturation according to Molier	●	●
• Optimization of operating time depending on outdoor temperature	●	–
• Conversion of unit of temperature from °C to °F or vice versa	●	●
• Conversion of humidity from absolute to relative or vice versa	●	●
• Calculation of setpoints for temperature and humidity controller of a ventilation system managed by an Hx diagram	●	–
Communication blocks		
• For connections between controllers (S7-400 Standard or redundant and S7-300)	●	●
• For connections between controllers (S7-400 Standard or redundant and S7-1500)	●	●
• For connections between controllers (S7-400 Standard and S7-400 redundant)	●	●
Logic blocks		
• Selectors for String, Real, Boolean, Integer, Byte, Word, DWord, DInteger and Char values	●	–
• Selector for Real, Boolean and Integer values	–	●
• Monitoring of up to 8 analog process values to increase security or availability	●	–
• Monitoring of up to 8 digital process values to increase security or availability	●	–
Mathematical blocks		
• Measured value / accumulation with specific factor, e.g. specific heat	●	●
• Formation of the mean/minimum/maximum value with plausibility check	–	●
Motor and valve blocks		
• Path diverter for up to 9/8 paths	●	–
• Double seat valve	●	–
• Valve control	–	●
• Single-stage motor	–	●
• Reversing motor	–	●
• Two-stage motor	–	●
• Frequency-controlled motor	–	●
• 3-point final controlling element	–	●
• Motor valve control	–	●
Panel blocks		
• For visualization of plant units on site	●	●

Block types and functions	IL for PCS 7	IL for S7
Control blocks		
• Polyline with up to 8 interpolation points	●	–
• Polyline with variable number of curve points	●	–
• Setpoint encoder with a variable number of setpoints	●	–
• Time switch with 8 switching values	●	●
• Signal splitter (SplitRange) for the output signal of a PID controller	●	●
• Continuous PID controller	–	●
• Retrieval of manipulated variable for the controller	–	●
System blocks		
• Output of CPU time in BCD format	●	●
Monitoring blocks		
• Measured value monitoring for 8 limits	●	●
• Measured value monitoring for 4 analog and binary limits	●	●
• Measured value monitoring	–	●
• Measured value monitoring with gradient function	–	●
• Monitoring of a binary process tag	–	●
• Monitoring of 8 binary process tags	–	●
Interlocking blocks		
• Interlocking with 8 input signals and 4×3 logic	●	–
• Interlocking with 16 input signals and 8×4 logic	●	–
APC connection of higher-level controller	●	–
Energy management blocks		
• Load management for coordination of maximum 8 consumers	●	–
• Acquisition and calculation of energy consumption values	●	–
• Acquisition and extrapolation of consumption peaks at the plant power feed	●	–
• Pulse converters for processing the pulse output of a totalizer	●	–
Maintenance blocks		
• Simulation block for analog values	●	–
• Simulation block for digital values	●	–

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

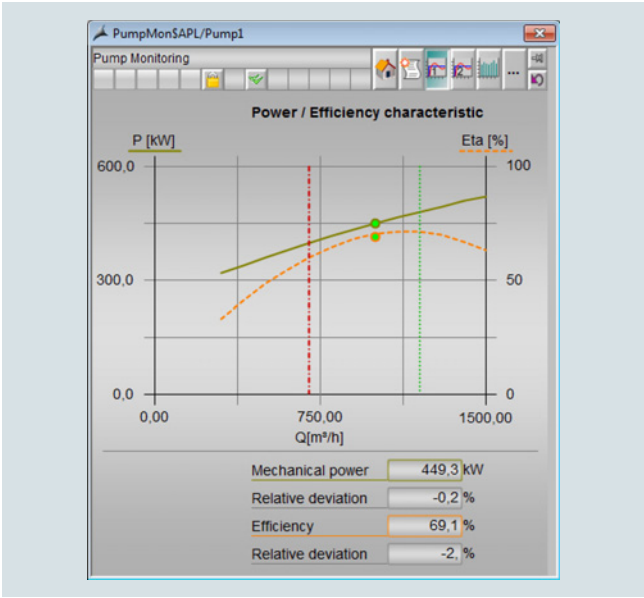
Operator control and monitoring on a SIMATIC HMI Comfort Panel can be configured with the panel blocks of the "Industry Library for PCS 7" and "Industry Library for S7" sub libraries. Configuration takes place in the CFC parallel to the technological block (e.g. a motor). Taking operating rights and 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.

Ordering data

	Article No.
SIMATIC PCS 7 Industry Library Engineering and Runtime	
SIMATIC PCS 7 Industry Library Engineering V9.0 Block library for SIMATIC PCS 7 and SIMATIC S7 with function blocks and faceplates as well as electronic documentation	
Engineering and runtime software, software class A, 2 languages (German, English), operating systems according to SIMATIC PCS 7 Engineering System V9.0, single license for 1 installation	
• Engineering license for one engineering station 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	**6DL5410-8AX58-0YA0**
• Engineering license for one engineering station combined with runtime license for one automation system 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	**6DL5410-8AA58-0YA0**
SIMATIC PCS 7 Industry Library Runtime V9.0 Language-neutral, single license	
Delivery form package (without SIMATIC PCS 7 Software Media Package): Certificate of license	
• Runtime license for 1 automation system	**6DL5410-8AA58-0XL1**
• Runtime licenses for 30 automation systems	**6DL5410-8AB58-0XL1**

	Article No.
SIMATIC PCS 7 Industry Library Upgrade	
SIMATIC PCS 7 Industry Library Upgrade Package V8.x to V9.0 Block library for SIMATIC PCS 7 and SIMATIC S7 with upgrade license for all engineering and runtime licenses of a project	**6DL5410-8AA58-0YE0**
Engineering and runtime software, software class A, 2 languages (German, English), operating systems according to SIMATIC PCS 7 Engineering System V9.0, single license for 1 installation	
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	

Overview



Power and efficiency characteristic of a pump

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
- PrDrpMon for monitoring pressure loss/pressure drop, e.g. in filters
- VlvMon for monitoring of control valves
- SteadyState for detection of stationary states in a dynamic process
- PST for valve test during operation

Notes:

- The installation software of the SIMATIC PCS 7 Condition Monitoring Library V9.0 is available as a download file: https://support.industry.siemens.com/cs/ww/en/view/109751047
- The SIMATIC PCS 7 Condition Monitoring Library V9.0 can be used in combination with SIMATIC PCS 7 V9.0 (incl. SIMATIC PCS 7 Advanced Process Library). SIMATIC PCS 7 V9.0 (including SIMATIC PCS 7 Advanced Process Library) must be installed before the SIMATIC PCS 7 Condition Monitoring Library V9.0.
- To implement a Partial Stroke Test application, S7 F systems V6.1+SP2 must be installed before the PST block.

Function

PumpMon block

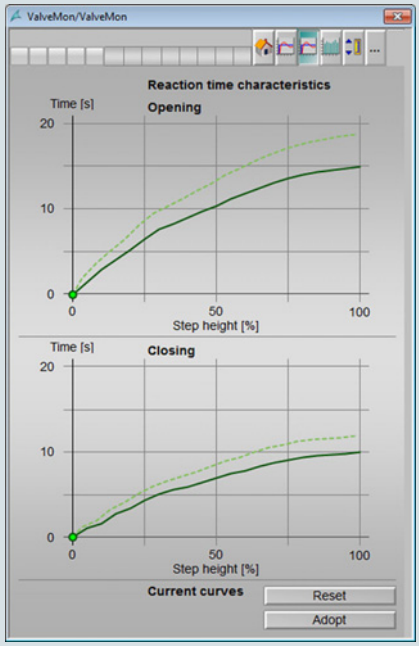
The PumpMon block suitable for electric centrifugal pumps with both constant and variable speeds provides the following functions:

- 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

PrDrpMon block

Based on the flow resistance, the PrDrpMon 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.

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:

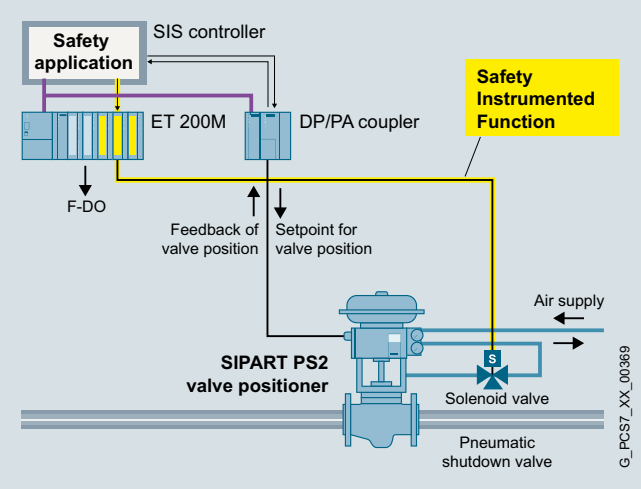
- Detection and monitoring of wear-related movement data (added movement distance, number of direction changes)
- Early detection of imminent valve damage (e.g. deposits or caking, wear) through monitoring of reaction times and flow characteristic curves
- Warning of valve damage when approaching wear 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
- Long-term optimization of valve dimensioning by means of statistical analysis of the operational data (frequency distribution of the valve positions)

Function (continued)

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.

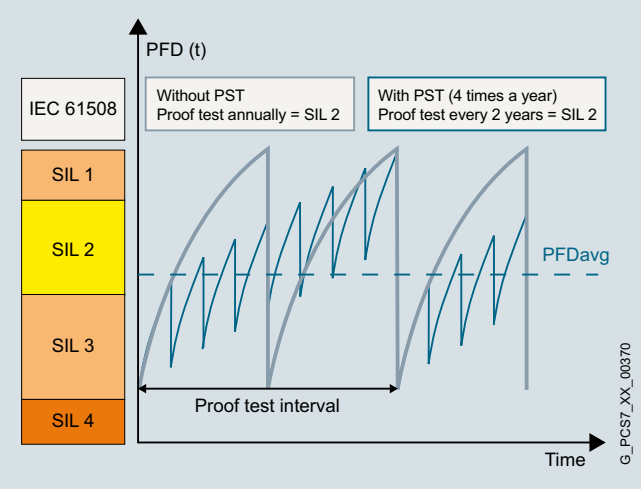
PST block



Configuration example of the Partial Stroke Test (PST)

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



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

License information

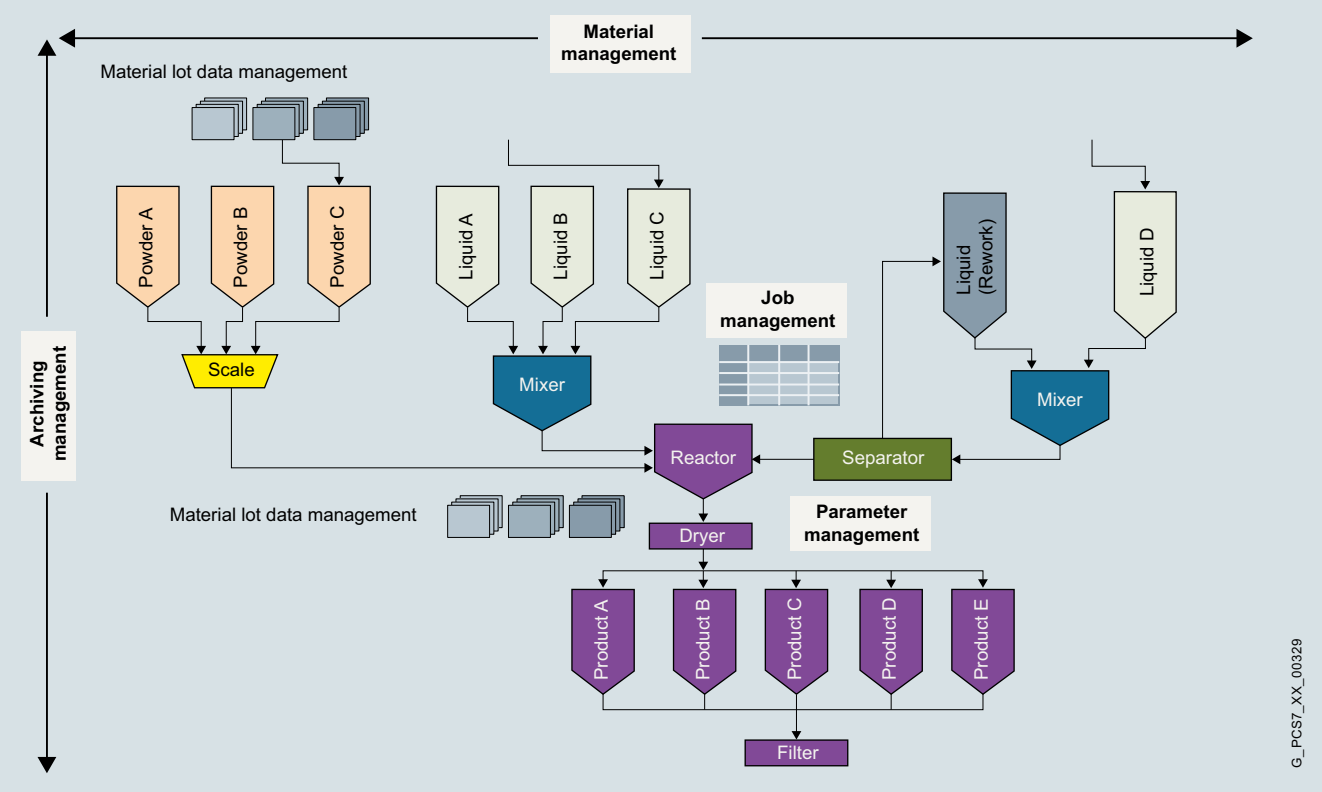
The SIMATIC PCS 7 Condition Monitoring Library is available free of charge. Depending on the block type used, the following number of process objects (PO) for "SIMATIC PCS 7 AS Runtime" and "SIMATIC PCS 7 OS Runtime" apply per block instance:

- PumpMon: 20 POs
- PrDrpMon: 10 POs
- VlvMon: 10 POs
- SteadyState: 2 POs
- PST: 30 POs

Ordering data

	Article No.
SIMATIC PCS 7 Condition Monitoring Library V9.0 Engineering and runtime software with electronic documentation (Readme file, manual and online help); 2 languages (English and German)	Free download at http://support.automation.siemens.com/WW/view/en/109751047

Overview



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) V2.1 require SIMATIC PCS 7 V8.2 OS engineering and OS runtime software. An update package is required for operation with SIMATIC PCS 7 V9.0; it is available for download in the Industry Online Support (see section "More information"). SIMATIC PCS 7 system components are not supplied with the APF products, but must be ordered separately (see ST PCS 7 catalog).
- 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

Design

APF modules

Material management

The material management module combines management of material master data and material batches.

Material master data management supplies the material properties for the automation system (AS) and operator stations (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

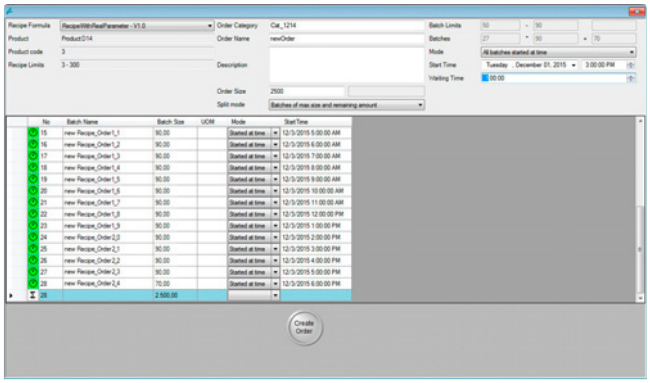
The parameter management module supplies the parameter data for the AS and OS. It has an OS editor for editing the parameter records, as well as an interface for loading and comparing data. The current parameter record can be displayed in a special faceplate. The parameters can be normalized or recalculated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



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.

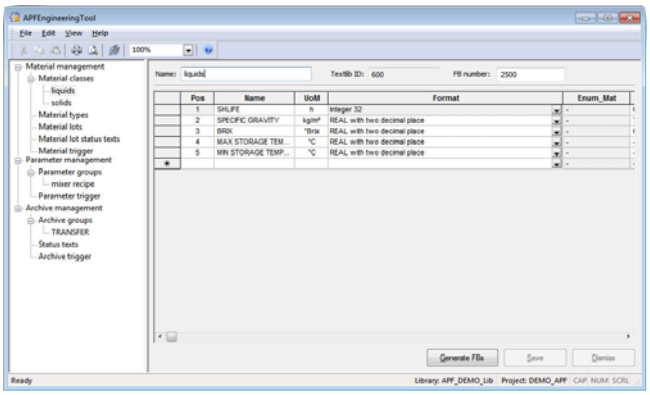
Storage location management

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.



APF Engineering Tool

APF Engineering Tool

The APF engineering tool is used to define project-specific data set structures for the APF modules for material management, parameter management, order management and archive management which are then saved in user archives, for example:

- Material classes and their properties
- Material types
- Material lot characteristics
- Parameter set properties

Access from the automation system to the user archive is supported by AS function blocks generated and interconnected by the user specifically for this purpose. Preconfigured display objects (process displays and faceplates) allow the configured data to be operated and monitored during process control.

Ordering data	Article No.
Advanced Process Functions Engineering Package	
PCS 7 APF Engineering Basic Package V2.1[1)] For expansion of an engineering station based on SIMATIC PCS 7 V8.2 Engineering software, software class A, 2 languages (English, German), runs under SIMATIC PCS 7 AS/OS Engineering Software V8.2; on operating system Windows 7 Ultimate SP1 64-bit incl. MUI, Windows Server 2008 R2 SP1 64-bit incl. MUI, Windows Server 2012 R2 Update Standard Edition 64-bit, floating license for 1 user Delivery form package (without SIMATIC PCS 7 Software Media Package): Software and documentation in 2 languages (English and German) on DVD, license key USB stick, certificate of license	**6DL5423-8AX12-0YA0**
Advanced Process Functions Runtime Package	
PCS 7 APF Runtime Package V2.1[1)] For expansion of an operator station based on SIMATIC PCS 7 V8.2 (OS single station or OS server) Runtime software, software class A, 2 languages (English, German), runs under SIMATIC PCS 7 OS Software Single Station/Server V8.2; on operating system Windows 7 Ultimate SP1 64-bit incl. MUI, Windows Server 2008 R2 SP1 64-bit incl. MUI, Windows Server 2012 R2 Update Standard Edition 64-bit, Windows 10 Enterprise 2015 LTSB 64-bit with OS client; floating license for 1 user Delivery form package (without SIMATIC PCS 7 Software Media Package): Software and documentation in 2 languages (English and German) on DVD, license key USB stick, certificate of license	**6DL5423-8BX12-0YA0**
Advanced Process Functions Upgrade Packages	
PCS 7 APF Engineering Basic Package Upgrade V2.0 to V2.1[1)] Software package without SIMATIC PCS 7 ES Software V8.2 Engineering software, software class A, 2 languages (English, German), runs under SIMATIC PCS 7 AS/OS Engineering Software V8.2; on operating system Windows 7 Ultimate SP1 64-bit incl. MUI, Windows Server 2008 R2 SP1 64-bit incl. MUI, Windows Server 2012 R2 Update Standard Edition 64-bit; floating license for 1 user Delivery form package (without SIMATIC PCS 7 Software Media Package): Software and documentation in 2 languages (English and German) on DVD, license key USB stick, certificate of license	**6DL5423-8AX12-0YE0**
PCS 7 APF Runtime Package Upgrade V2.0 to V2.1[1)] Software package without SIMATIC PCS 7 OS Software V8.2 Runtime software, software class A, 2 languages (English, German), runs under SIMATIC PCS 7 OS Software Single Station/Server V8.2; on operating system Windows 7 Ultimate SP1 64-bit incl. MUI, Windows Server 2008 R2 SP1 64-bit incl. MUI, Windows Server 2012 R2 Update Standard Edition 64-bit, Windows 10 Enterprise 2015 LTSB 64-bit with OS client; floating license for 1 user Delivery form package (without SIMATIC PCS 7 Software Media Package): Software and documentation in 2 languages (English and German) on DVD, license key USB stick, certificate of license	**6DL5423-8BX12-0YE0**
PCS 7 APF Engineering Basic Package Upgrade V1.4 to V2.1[1)] Software package without SIMATIC PCS 7 ES Software V8.2 Engineering software, software class A, 2 languages (English, German), runs under SIMATIC PCS 7 AS/OS Engineering Software V8.2; on operating system Windows 7 Ultimate SP1 64-bit incl. MUI, Windows Server 2008 R2 SP1 64-bit incl. MUI, Windows Server 2012 R2 Update Standard Edition 64-bit; floating license for 1 user Delivery form package (without SIMATIC PCS 7 Software Media Package): Software and documentation in 2 languages (English and German) on DVD, license key USB stick, certificate of license	**6DL5423-8CX12-0YE0**
PCS 7 APF Runtime Package Upgrade V1.4 to V2.1 Software package without SIMATIC PCS 7 OS Software V8.2 Runtime software, software class A, 2 languages (English, German), runs under SIMATIC PCS 7 OS Software Single Station/Server V8.2; on operating system Windows 7 Ultimate SP1 64-bit incl. MUI, Windows Server 2008 R2 SP1 64-bit incl. MUI, Windows Server 2012 R2 Update Standard Edition 64-bit, Windows 10 Enterprise 2015 LTSB 64-bit with OS client; floating license for 1 user Delivery form package (without SIMATIC PCS 7 Software Media Package): Software and documentation in 2 languages (English and German) on DVD, license key USB stick, certificate of license	**6DL5423-8DX12-0YE0**

[1)] An update package is required for operation with SIMATIC PCS 7 V9.0. See section "More information".

More information

Operation with SIMATIC PCS 7 V9.0

APF V2.1 Update 1 is required for operation with SIMATIC PCS 7 V9.0.

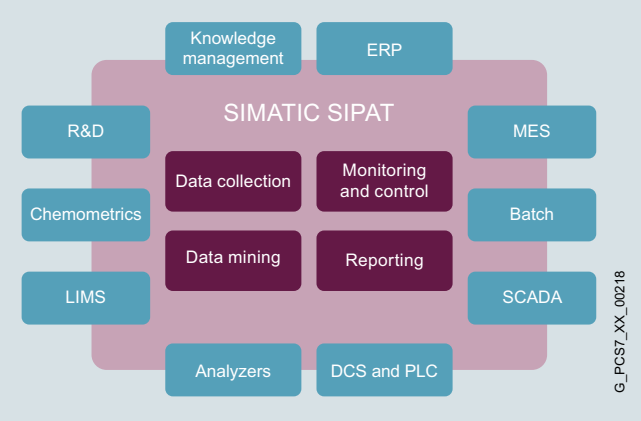
Software requirements for this update:

- Operating system
  - Windows 7 Ultimate 64-bit incl. MUI
  - Windows Server 2012 R2 Update Standard Edition, 64-bit
  - Windows 10 Enterprise 2015 LTSB (64-bit) as ES/OS client
- WinCC option "WinCC/User Archives" V7.4 SP1 Upd1
- When using OS Web option: on the OS Web server only Windows Server 2012 R2 Update Standard Edition 64-bit

APF V2.1 Update 1 is available for download in the Industry Online Support:
https://support.industry.siemens.com/cs/ww/en/view/109749534

Notes

Overview



SIMATIC SIPAT, 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 maintaining the same level of 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 V5.0 can be used in combination with SIMATIC PCS 7 V8.1+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:

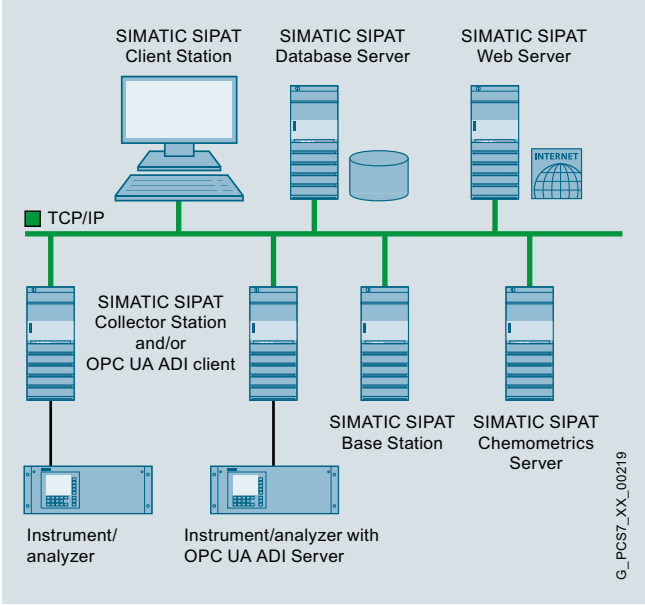
- Considerable cost reductions
  - Avoidance of rejects/reworking
  - Reduced stocks of raw materials, intermediate products and end products
  - Reduction in offline laboratory costs
  - Flexible adaptation of production quantities depending on demand
- Better quality and overall performance
  - Product 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 process scalability
  - 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



Example of a distributed SIMATIC SIPAT architecture

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)

SIMATIC SIPAT Workflow Service

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

Application (continued)

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:

Hardware component (IPC) - functional name	SIMATIC SIPAT software component	Comments
SIMATIC SIPAT Database Server	SIMATIC SIPAT Central Database	Microsoft SQL is supported.
SIMATIC SIPAT Base Station	SIMATIC SIPAT Station Service	Typically for up to four methods
	SIMATIC SIPAT Productivity Pack	
	SIMATIC SIPAT Watchdog Service	
	SIMATIC SIPAT Data Logger Service	
	SIMATIC SIPAT Workflow Service	
	SIMATIC SIPAT Umetrics Server	Can also be installed on a separate Chemometrics server; one SIMATIC SIPAT Umetrics/Camo/Matlab server per basic operation is preferred.
	SIMATIC SIPAT CAMO Server	
	SIMATIC SIPAT Matlab Server	
SIMATIC SIPAT Collector Station	SIMATIC SIPAT Productivity Pack	
	SIMATIC SIPAT Watchdog Service	
	SIMATIC SIPAT Workflow Service	
SIMATIC SIPAT Client Station	SIMATIC SIPAT Client	
SIMATIC SIPAT OPC Server	SIMATIC SIPAT OPC Services	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.
SIMATIC SIPAT Archive Server	SIMATIC SIPAT Archiver Service	Can also be installed on an existing archive server.
SIMATIC SIPAT Chemometrics Server	SIMATIC SIPAT Umetrics Server, SIMATIC SIPAT CAMO Server or SIMATIC SIPAT Matlab Server	Alternative, customer-specific

Application (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. 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/Analyser)

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
- 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 Analyser

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 Analyser
- 4 × SIMATIC SIPAT Productivity Pack OPC UA Analyser
- 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 Analyser Type
- 8 × SIMATIC SIPAT Productivity Pack Analyser
- 8 × SIMATIC SIPAT Productivity Pack OPC UA Analyser
- 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 (Analyser Type/ Analyser)

OEM version of the SIMATIC SIPAT Productivity Pack (Analyser Type/Analyser)

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.

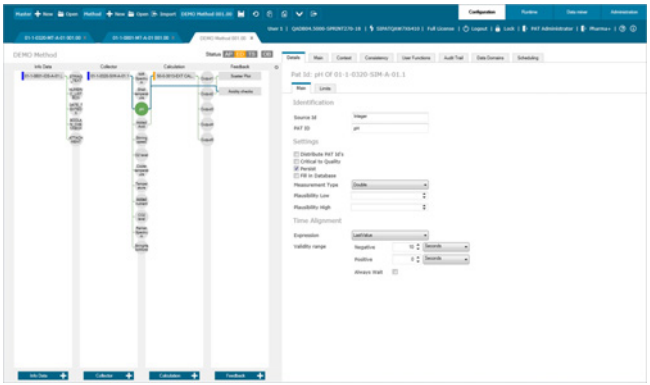
SIMATIC SIPAT EXPRESS Engineering Station

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

Function

Important functions of SIMATIC SIPAT:

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 can not only be used for data acquisition, but also for configuration of the analyzer, including calibration and system suitability testing.

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.

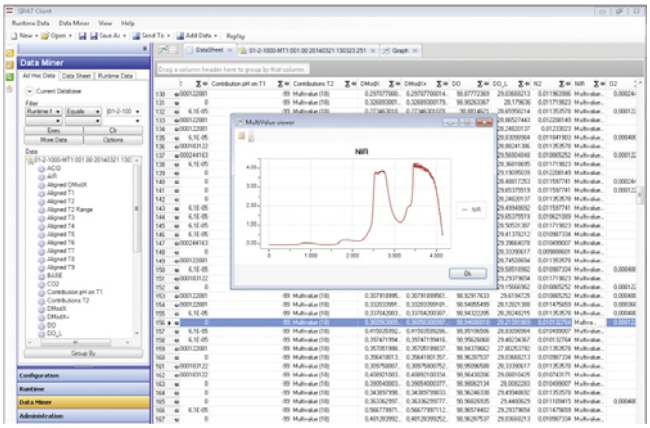
In addition to the online data of analyzers and the SIMATIC PCS 7 process control system, SIMATIC SIPAT can also use quality parameters from ERP systems, LIMS systems such as SIMATIC IT Unilab, or MES systems such as SIMATIC IT Production Suite, such as the results of a raw material analysis.

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.

Design (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 one model of an analyzer or perhaps to an additional model of a single procedure, a general process model can be developed with SIMATIC SIPAT that allows prediction of the end product quality parameters.

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.

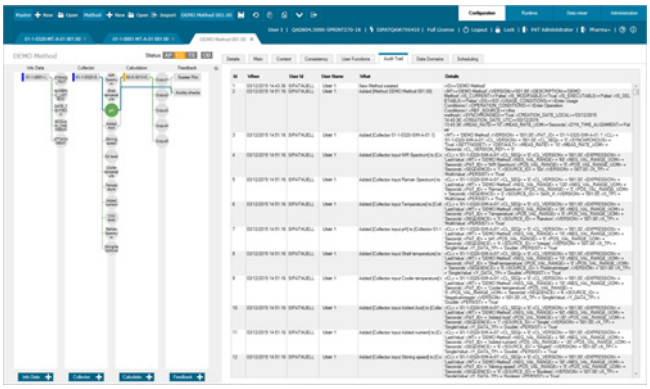
Feedback for SCADA/process control system

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

	Article No.
SIMATIC SIPAT V5.0 Software and Licenses	
SIMATIC SIPAT Base Station (4 methods) V5.0 for simultaneous use of up to 4 SIMATIC SIPAT methods on a distributed SIMATIC SIPAT Base Station Engineering and Runtime software, 1 language (English), software class A, runs with Windows 7 Enterprise SP1 64-bit or Windows Server 2008 R2 SP1 64-bit, floating license for 1 user Including 4 × SIMATIC SIPAT Concurrent Method and 1 × SIMATIC SIPAT Productivity Pack Analyzer Type Electronic documentation on DVD "SIMATIC SIPAT", 1 language (English) Requirement: available only with a SIMATIC SIPAT support contract. Delivery form: License key on USB flash drive, certificate of license, product information, and DVD "SIMATIC SIPAT"	**6DL5422-8XB05-0BA5**
SIMATIC SIPAT Basic Package (1 method) V5.0 for simultaneous use of one SIMATIC SIPAT method on a distributed SIMATIC SIPAT Base Station Engineering and Runtime software, 1 language (English), software class A, runs with Windows 7 Enterprise SP1 64-bit or Windows Server 2008 R2 SP1 64-bit, floating license for 1 user Including 1 × SIMATIC SIPAT Productivity Pack Analyzer Type and 1 × SIMATIC SIPAT Data Miner Electronic documentation, 1 language (English), on DVD "SIMATIC SIPAT" Requirement: available only with a SIMATIC SIPAT support contract. Delivery form: License key on USB flash drive, certificate of license, product information, and DVD "SIMATIC SIPAT"	**6DL5422-8XA05-0BA5**

Ordering data	Article No.
SIMATIC SIPAT Base Station (w/o methods) V5.0 Engineering and Runtime software, 1 language (English), software class A, runs with Windows 7 Enterprise SP1 64-bit or Windows Server 2008 R2 SP1 64-bit, floating license for 1 user Electronic documentation on DVD "SIMATIC SIPAT", 1 language (English) Requirement: available only with a SIMATIC SIPAT support contract. Delivery form: License key on USB flash drive, certificate of license, product information, and DVD "SIMATIC SIPAT"	**6DL5422-1AX05-0BA5**
SIMATIC SIPAT EXPRESS Base Station V5.0 OEM version of SIMATIC SIPAT Base Station V5.0	**6DL5422-4AX05-0BA5**
SIMATIC SIPAT Concurrent Method (1 method) V5.0 for simultaneous use of one SIMATIC SIPAT method Runtime software, 1 language (English), software class A, runs with 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 Delivery form: License key on USB flash drive, certificate of license, and product information Note: available only with a SIMATIC SIPAT support contract.	**6DL5422-1BA05-0BB5**
SIMATIC SIPAT EXPRESS Concurrent Method (1 method) V5.0 OEM version of SIMATIC SIPAT Concurrent Method (1 method) V5.0	**6DL5422-4BA05-0BB5**
SIMATIC SIPAT Concurrent Method (unlimited) V5.0 for simultaneous use of an unlimited number of SIMATIC SIPAT methods Runtime software, 1 language (English), software class A, runs with 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 Delivery form: License key on USB flash drive, certificate of license, and product information	**6DL5422-1BX05-0BB5**

	Article No.
SIMATIC SIPAT Data Miner V5.0 for one simultaneous user per SIMATIC SIPAT database Engineering software, 1 language (English), software class A, runs with 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 Delivery form: License key on USB flash drive, certificate of license, and product information	**6DL5422-1CA05-0BB5**
SIMATIC SIPAT EXPRESS Data Miner V5.0 OEM version of SIMATIC SIPAT Data Miner V5.0	**6DL5422-4CA05-0BB5**
SIMATIC SIPAT Productivity Pack Analyzer Type V5.0 for installation of the first analyzer of a type Runtime software, 1 language (English), software class A, runs with 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 Delivery form: License key on USB flash drive, certificate of license, and product information	**6DL5422-1DA05-0BB5**
SIMATIC SIPAT EXPRESS Productivity Pack Analyzer Type V5.0 OEM version of SIMATIC SIPAT Productivity Pack Analyzer Type V5.0	**6DL5422-4DA05-0BB5**
SIMATIC SIPAT Productivity Pack Analyzer V5.0 for installation of an additional analyzer of the same type following installation of the first analyzer Runtime software, 1 language (English), software class A, runs with 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 Delivery form: License key on USB flash drive, certificate of license, and product information	**6DL5422-1DA05-1BB5**
SIMATIC SIPAT EXPRESS Productivity Pack Analyzer V5.0 OEM version of SIMATIC SIPAT Productivity Pack Analyzer V5.0	**6DL5422-4DA05-1BB5**

Ordering data

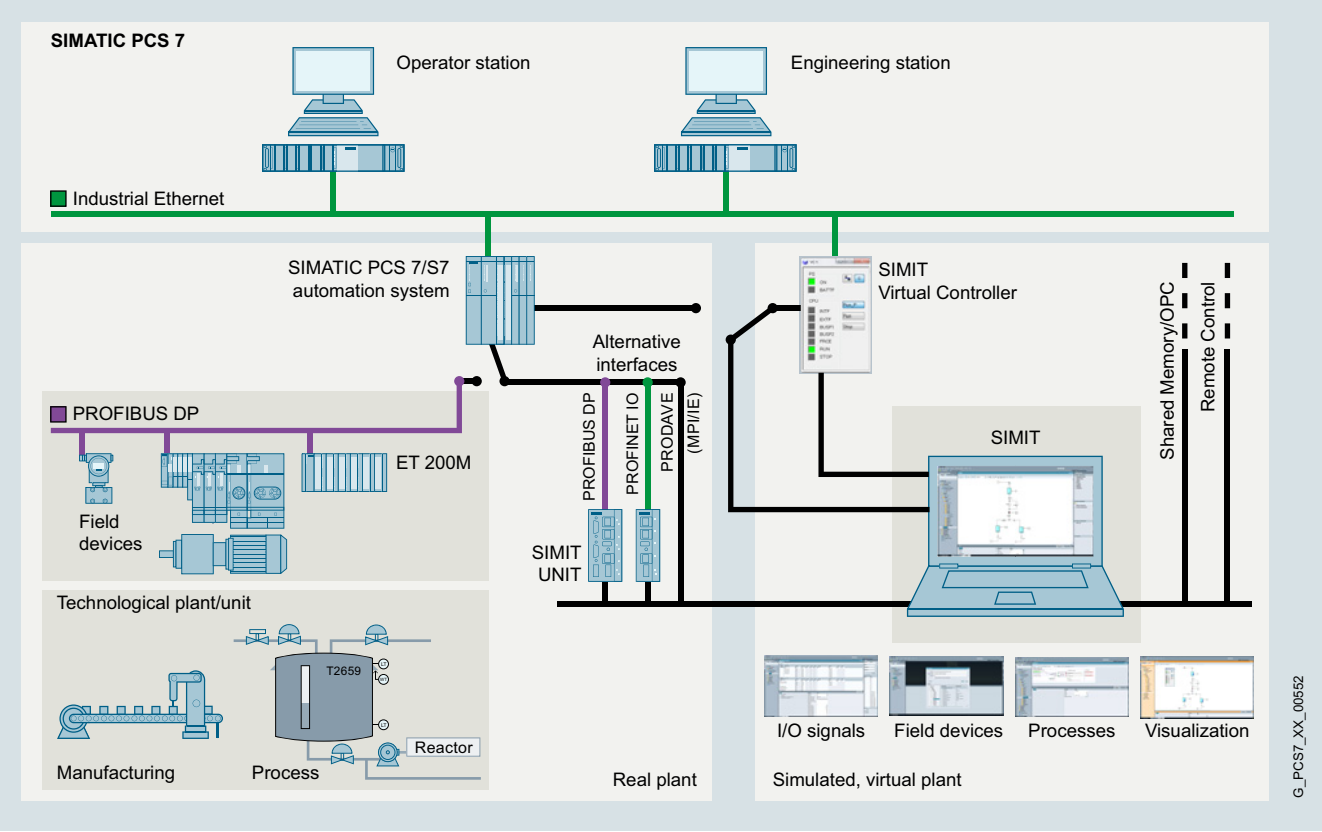
	Article No.
SIMATIC SIPAT Productivity Pack OPC UA Analyser V5.0 for installation of an analyzer connected via OPC UA ADI Runtime software, 1 language (English), software class A, runs with Windows 7 Enterprise SP1 64-bit or Windows Server 2008 R2 SP1 64-bit, floating license for 1 user Requirement: 1 × SIMATIC SIPAT Base Station Delivery form: License key on USB flash drive, certificate of license, and product information	**6DL5422-1DA05-2BB5**
SIMATIC SIPAT EXPRESS Productivity Pack OPC UA Analyser V5.0 OEM version of SIMATIC SIPAT Productivity Pack OPC UA Analyzer V5.0	**6DL5422-4DA05-2BB5**
SIMATIC SIPAT Demo Version V5.0 Engineering and Runtime software, 180 language (English), software class A, runs with Windows 7 Enterprise SP1 64-bit or Windows Server 2008 R2 SP1 64-bit, demo license for 180 days Including: • 1 × SIMATIC SIPAT Base Station (4 methods) • 2 × SIMATIC SIPAT Productivity Pack Analyser Type • 4 × SIMATIC SIPAT Productivity Pack Analyser • 4 × SIMATIC SIPAT Productivity Pack OPC UA Analyser • 1 × SIMATIC SIPAT Data Miner Electronic documentation on DVD "SIMATIC SIPAT", 1 language (English) Delivery form: License key on USB flash drive, certificate of license, product information, and DVD "SIMATIC SIPAT"	**6DL5422-8XD05-0BT7**
SIMATIC SIPAT Test Environment V5.0 Engineering and Runtime software, 1 language (English), software class A, runs with Windows 7 Enterprise SP1 64-bit or Windows Server 2008 R2 SP1 64-bit, floating license for 1 user Including: • 1 × SIMATIC SIPAT Base Station (unlimited methods) • 4 × SIMATIC SIPAT Productivity Pack Analyser Type • 8 × SIMATIC SIPAT Productivity Pack Analyser • 8 × SIMATIC SIPAT Productivity Pack OPC UA Analyser • 1 × SIMATIC SIPAT Data Miner Electronic documentation on DVD "SIMATIC SIPAT", 1 language (English) Delivery form: License key on USB flash drive, certificate of license, product information, and DVD "SIMATIC SIPAT"	**6DL5422-8XC05-0BA5**

	Article No.
SIMATIC SIPAT Productivity Pack SIPAT EXPRESS V5.0 for integration of a SIMATIC SIPAT EXPRESS Base Station Runtime software, 1 language (English), software class A, runs with 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 and 1 × SIMATIC SIPAT EXPRESS Base Station Delivery form: License key on USB flash drive, certificate of license, and product information	**6DL5422-1EA05-0BB5**
SIMATIC SIPAT EXPRESS Engineering Station V5.0 Engineering software, 1 language (English), software class A, runs with Windows 7 Enterprise SP1 64-bit or Windows Server 2008 R2 SP1 64-bit, floating license for 1 user Including: • 1 × SIMATIC SIPAT Base Station (4 methods) and 1 × SIMATIC SIPAT EXPRESS Base Station • 2 × SIMATIC SIPAT Productivity Pack Analyser Type and 2 × SIMATIC SIPAT EXPRESS Productivity Pack Analyser Type • 4 × SIMATIC SIPAT Productivity Pack Analyser and 4 × SIMATIC SIPAT EXPRESS Productivity Pack Analyser • 4 × SIMATIC SIPAT Productivity Pack OPC UA Analyser and 4 × SIMATIC SIPAT EXPRESS Productivity Pack OPC UA Analyser • 1 × SIMATIC SIPAT Data Miner and 1 × SIMATIC SIPAT EXPRESS Data Miner Electronic documentation on DVD "SIMATIC SIPAT", 1 language (English) Requirement: available only with a SIMATIC SIPAT support contract. Delivery form: License key on USB flash drive, certificate of license, product information, and DVD "SIMATIC SIPAT"	**6DL5422-8EA05-0BA5**
SIMATIC SIPAT Support Contracts	
SIMATIC SIPAT Concurrent Method Support incl. SUS 5 days/week (Monday to Friday) in the corresponding time period: 8 am to 5 pm CET Must be ordered 1 × per SIMATIC SIPAT Concurrent Method and always for all SIMATIC SIPAT Concurrent Methods Including SIPAT Software Update Service (SUS) Delivery form: SIPAT SUS contract, product information	**6DL5422-1BA00-0BL8**

More information

More information can be found on the Internet at:
www.siemens.com/sipat

Overview



Application area and integration options of SIMIT

Bringing products to the market faster and with consistently high quality requires an optimized engineering workflow in the automation and the shortest possible assembly and commissioning times for new production lines. The SIMIT simulation software permits real-time simulation and emulation for comprehensive examination of automation solutions.

SIMIT simulates what SIMATIC automates

SIMIT is based on a uniform simulation platform that enables not only the virtual commissioning of the automation engineering of systems, machines and processes, but also realistic training environments for plant operators. This can be easily done directly at the workplace, even without requiring equipment or the need for in-depth knowledge of simulation. 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 V9.1 can be used in combination with SIMATIC PCS 7 V7, V8 and V9.

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 runs on the latest notebooks or desktop computers with the Microsoft Windows operating system as well as on virtual systems (VMware ESXi Server V6.0). 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 can be linked to the real automation technology ("Hardware in the loop"). The SIMIT unit is used for connection via PROFINET or PROFIBUS. A "Software in the loop" test is also possible through virtualization of the automation system using the S7-PLCSIM or S7-PLCSIM Advanced emulation software or the integrated SIMIT Virtual Controller.

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

Additional simulation models can be coupled to SIMIT:

- Data exchange via standardized interfaces such as OPC DA, OPC UA (client) and shared memory
- Synchronization via the remote control interface

In the case of coupling via the remote control interface, SIMIT 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 Platform

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

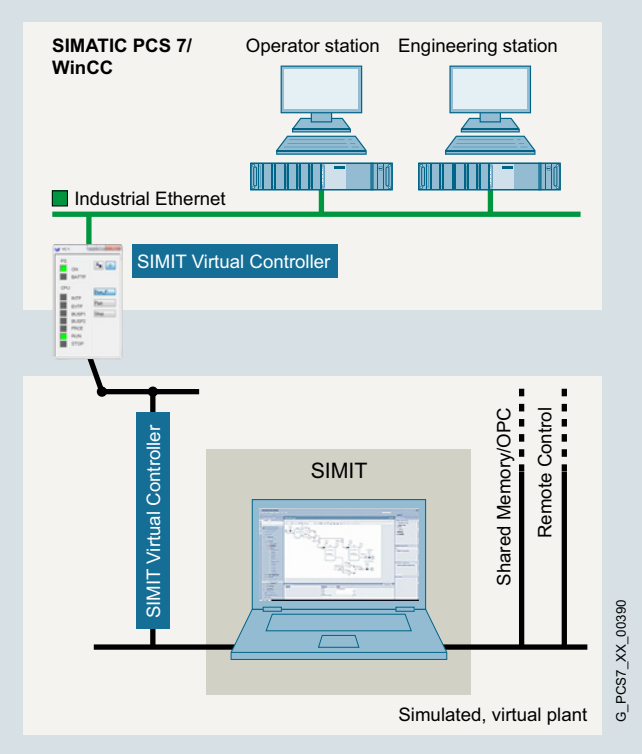
- **SIMIT Standard**
  - Portal view with workflow management for creation of simulation project
  - Standard component library
  - 3D viewer based on VRML (Virtual Reality Modeling Language)
  - Interfaces for PROFIBUS DP, PROFINET IO and PRODAVE
  - Interface for SIMIT Virtual Controller and OPC DA
  - 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 Ultimate
- **SIMIT Professional**
  Range of features of SIMIT Standard, plus:
  - S7-PLCSIM, S7-PLCSIM Advanced, OPC UA and Remote Control interfaces
  - Modification of simulation model during runtime
  - Simulation in virtual time
  - Engineering efficiency for SIMATIC PCS 7 (SMD)
  - Automatic model generation based on templates
  - Bulk engineering
- **SIMIT Ultimate**
  Range of features of SIMIT 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 extension libraries

The following extension libraries make available specific technological components:

- SIMIT FLOWNET Library
  Library for simulation of flow networks with homogeneous media (water/gases) including pressures, temperatures and flow rates
- SIMIT CONTEC Library
  Library for 2D simulation of material handling equipment
- SIMIT CHEM BASIC Library
  For simplified creation of simulations in the chemical and pharmaceutical industries. By connecting components of these libraries, a SIMIT model of a pipeline network (so-called flow network) is created and can be used to simulate the thermodynamic processes in pipeline networks. The flow networks then connect components with storage characteristics, e.g. containers. The CHEM-BASIC library enables use of a special solution method in SIMIT that calculates the flow rates, pressures and specific enthalpies during simulation of pipeline networks.

SIMIT Virtual Controller



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.

Design (continued)

To do so, the SIMIT 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 or SIMATIC PCS 7 automation project on the latest notebooks or desktop computers with the Microsoft Windows operating system or in a virtual environment (ESXi Server V6.0).

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
- One SIMIT Standard, Professional or Ultimate is required for each simulation system (not included in the SIMIT Virtual Controller scope of delivery)

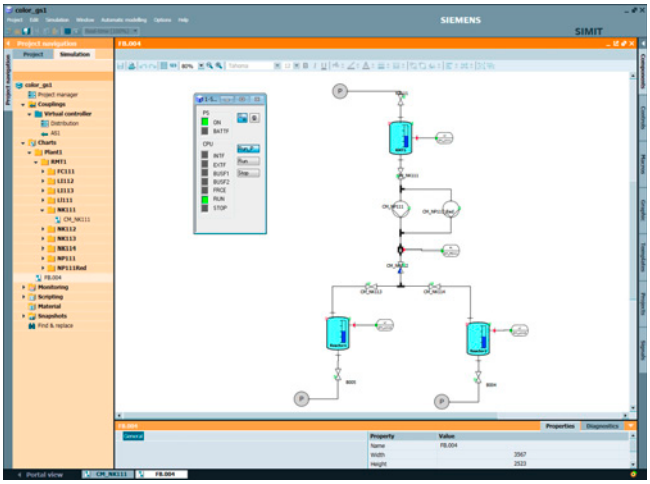
SIMIT UNIT

Coupling with SIMIT allows an efficient engineering workflow for hardware-in-the-loop simulation. The execution of load and safety tests before actual commissioning adds greater protection for personnel and machines/plants and a time/cost reduction through early error detection.

The following products are offered for simulating PROFINET and PROFIBUS:

- SIMIT UNIT PB-2
- SIMIT UNIT PN-128
- SIMIT UNIT PN-256

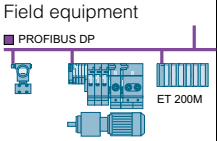
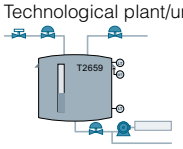
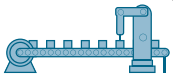
Function



SIMIT, Graphical User Interface (GUI)

Component-based, signal flow oriented modeling of the plant is performed through the graphical user interface of SIMIT supported by expandable 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. Beyond this, the simulation model can be generated with an export of the engineering data from COMOS. 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.

Physical plant	Simulation with SIMIT	
Field equipment 	Signals	Import (e.g. symbol table)
	Devices	Base library for • DRIVES • SENSORS
Technological plant/unit 	Technological response	Additive libraries • FLOWNET • CHEM BASIC
Production technology 		• CONTEC

Abstraction levels of the simulation

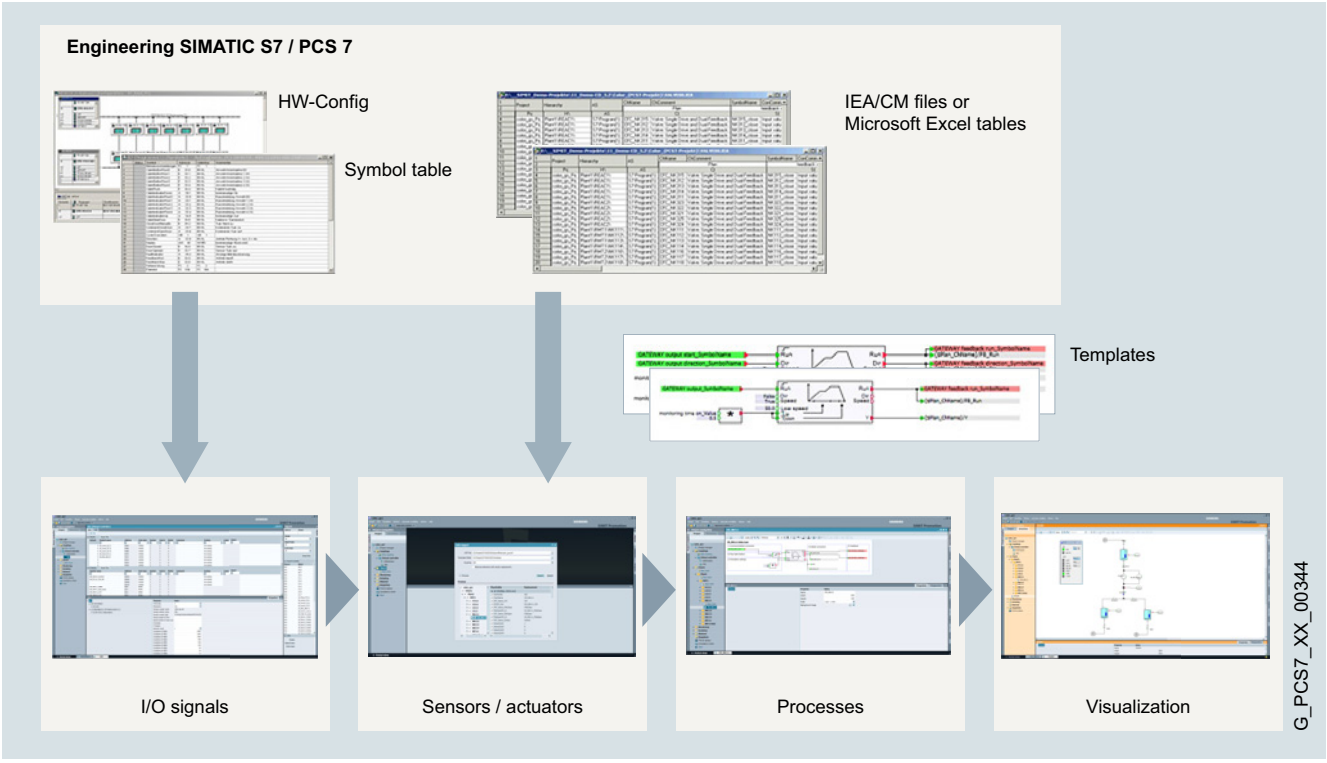
The signal couplings can be created easily by importing the symbol table or a list of signal names. Files of the import/export wizard, control module (CM) files (SIMATIC PCS 7), or suitable Microsoft Excel files (SIMATIC S7) can be used together with simulation templates from the base library to simulate 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.
- With CHEM BASIC you can simulate models of pipeline networks in the chemical and pharmaceutical industries quickly and easily. Using CHEM BASIC, the models from COMOS P&ID can be automatically generated via the generic import.

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

Design (continued)



Workflow to create a simulation

SIMIT supports two types of virtual commissioning:

Software in the loop: Pretesting without a physical plant

When SIMIT is used in conjunction with the virtual controller or coupled to 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, S7-PLCSIM or S7-PLCSIM Advanced without modifications and started. It obtains the simulated I/O signals 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 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 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 high-performance emulation systems for the SIMATIC S7-300, S7-400 and S7-410 automation systems which are integrated in SIMIT.

Special features

- High degree of reusability of the information from the engineering system
- 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

System and communication functions

For detailed information on supported SIMATIC S7/SIMATIC PCS 7 system and communication functions as well as communication services, see the SIMIT V9.1 manual:
(manual not yet available)

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, TRECV

Function (continued)

SIMIT UNIT

Coupling with SIMIT allows an efficient engineering workflow for the Hardware-in-the-Loop simulation. The execution of load and safety tests before actual commissioning adds more protection for personnel and machines/plants and a time/cost reduction through early error detection.

PROFINET simulation

Using the SIMIT UNIT PN hardware interface, you can simulate the complete behavior of up to 256 PROFINET I/O devices on the field bus reaction-free in real time.

PROFIBUS simulation

Using the SIMIT UNIT PB hardware interface, you can simulate the complete behavior of up to 125 PROFIBUS slaves on the field bus reaction-free in real time.

SIMIT project handling

You or your customers require a simulation solution based on SIMIT and the automation (SIMATIC S7, SIMATIC PCS 7 and SPPA-T3000) with specific properties for Hardware-in-the-Loop or Software-in-the-Loop. We execute the projects for you and achieve the best results possible based on our decades of experience with simulation projects. We offer:

- Complete simulators and process models for virtual commissioning and training simulators
- High-precision process simulators for various industries
- Customer-specific simulation libraries

SIMIT consulting and training courses

You or your customers require support or training for a simulation project based on SIMIT and the automation (SIMATIC S7/PCS 7) with specific properties for Hardware-in-the-Loop or Software-in-the-Loop. To help you complete your task optimally, we can support and advise you during the corresponding phases of the automation project using our decades of experience in simulation projects. You can also have our experts support you with your simulation from the planning phase to project setup right up to automation testing. We offer:

- Predefined consulting packages
- Specific packages, depending on customer requirements
- Customer-specific trainings

SIMIT Rental components

The option of renting portfolio elements from the range of SIMIT products reduces the costs for a simulation environment. If these components are required for validation or testing of the automation for only a limited time, it is often more economical to rent them. The rental components are always supplied with the latest hardware and software versions. We offer:

- Rental licenses for SIMIT and SIMIT Virtual Controller
- Rental of SIMIT UNIT

If you are interested in this offer and would like to receive additional information, please contact:

Siemens AG
Process Industries and Drives
Process Automation
Automation and Engineering
PD PA AE SO SIM
Horst Jäckisch
Werner-von-Siemens-Str. 60
91052 Erlangen

Tel.: +49 172 8442167
Fax.: +49 9131 7-44060

E-mail: horst.jaeckisch@siemens.com

Ordering data	Article No.
SIMIT software packages Note: Use only in conjunction with valid license/dongle V9.1	
SIMIT Standard V9.1 Engineering software, 2 languages (English, German), software class A, runs on Windows 7 Professional/ Ultimate, Windows 10 Professional/ Enterprise, Windows Server 2008 R2, Windows Server 2012 R2 or Windows Server 2016, floating license for 1 user Delivery form package: Software and documentation in 2 languages (German and English) on CD, certificate of license, license key dongle	**6DL5260-0AX68-0YA5**
SIMIT Professional V9.1 Engineering software, 2 languages (English, German), software class A, runs on Windows 7 Professional/ Ultimate, Windows 10 Professional/ Enterprise, Windows Server 2008 R2, Windows Server 2012 R2 or Windows Server 2016, floating license for 1 user Delivery form package: Software and documentation in 2 languages (German and English) on CD, certificate of license, license key dongle	**6DL5260-0BX68-0YA5**
SIMIT Ultimate V9.1 Engineering software, 2 languages (English, German), software class A, runs on Windows 7 Professional/ Ultimate, Windows 10 Professional/ Enterprise, Windows Server 2008 R2, Windows Server 2012 R2 or Windows Server 2016, floating license for 1 user Delivery form package: Software and documentation in 2 languages (German and English) on CD, certificate of license, license key dongle	**6DL5260-0CX68-0YA5**

	Article No.
SIMIT Extension libraries Note: Use only in conjunction with a valid SIMIT license/dongle V9.1; activation through SIMIT license hotline required.	
SIMIT FLOWNET Library V9.1 Engineering software, 2 languages (English, German), software class A, runs on Windows 7 Professional/ Ultimate, Windows 10 Professional/ Enterprise, Windows Server 2008 R2, Windows Server 2012 R2 or Windows Server 2016, floating license for 1 user Delivery form package: Certificate of license	**6DL5260-1AX68-2YB5**
SIMIT CONTEC Library V9.1 Engineering software, 2 languages (English, German), software class A, runs on Windows 7 Professional/ Ultimate, Windows 10 Professional/ Enterprise, Windows Server 2008 R2, Windows Server 2012 R2 or Windows Server 2016, floating license for 1 user Delivery form package: Certificate of license	**6DL5260-1BX68-2YB5**
SIMIT CHEM BASIC Library V9.1 Engineering software, 2 languages (English, German), software class A, runs on Windows 7 Professional/ Ultimate, Windows 10 Professional/ Enterprise, Windows Server 2008 R2, Windows Server 2012 R2 or Windows Server 2016, floating license for 1 user Delivery form package: Certificate of license	**6DL5260-1CX68-2YB5**
SIMIT Virtual Controller Note: Use only in conjunction with a valid SIMIT license/dongle V9.1; activation through SIMIT license hotline required.	
SIMIT Virtual Controller Software (1 controller) V9.1 Engineering software, 2 languages (English, German), software class A, runs on Windows 7 Professional/ Ultimate, Windows 10 Professional/ Enterprise, Windows Server 2008 R2, Windows Server 2012 R2 or Windows Server 2016, floating license for 1 user	**6DL5260-0DA68-2YA5**
SIMIT Virtual Controller Software (5 controllers) V9.1 Engineering software, 2 languages (English, German), software class A, runs on Windows 7 Professional/ Ultimate, Windows 10 Professional/ Enterprise, Windows Server 2008 R2, Windows Server 2012 R2 or Windows Server 2016, floating license for 1 user	**6DL5260-0DB68-2YA5**
Demonstration software Note: Limited functionality (see product information); no liability or warranty	
SIMIT Demo Version V9.1	Download in the Siemens Industry Online Support portal

Ordering data	Article No.
Software Update Service (SUS) Note: Under this contract, you receive all current software versions for a period of 1 year. The contract is automatically extended by a further year unless canceled three months prior to expiration. Period of delivery and service: 1 year from date of invoice	
SUS SIMIT Standard Software Update Service for SIMIT Standard; subscription contract for 1 year, with automatic renewal; requirement: current software version	**6DL5260-0AX00-0YL8**
SUS SIMIT Professional Software Update Service for SIMIT Professional; subscription contract for 1 year, with automatic renewal; requirement: current software version	**6DL5260-0BX00-0YL8**
SUS SIMIT Ultimate Software Update Service for SIMIT Ultimate; subscription contract for 1 year, with automatic renewal; requirement: current software version	**6DL5260-0CX00-0YL8**
SUS SIMIT Virtual Controller (1 controller) Software Update Service for 1 controller instance; subscription contract for 1 year, with automatic renewal; requirement: current software version	**6DL5260-0DA00-2YL8**
SUS SIMIT Virtual Controller (5 controllers) Software Update Service for 5 controller instances; subscription contract for 1 year, with automatic renewal; requirement: current software version	**6DL5260-0DB00-2YL8**
SIMIT upgrades from V9.0 to V9.1 Note: Use only in conjunction with a valid SIMIT license/dongle; activation through SIMIT license hotline required.	
SIMIT Standard upgrade from V9.0 to V9.1 Engineering software, 2 languages (English, German), software class A, runs on Windows 7 Professional/ Ultimate, Windows 10 Professional/ Enterprise, Windows Server 2008 R2, Windows Server 2012 R2 or Windows Server 2016, floating license for 1 user Delivery form package: Software and documentation in 2 languages (German and English) on CD, certificate of license	**6DL5260-0AX68-0YE5**
SIMIT Professional upgrade from V9.0 to V9.1 Engineering software, 2 languages (English, German), software class A, runs on Windows 7 Professional/ Ultimate, Windows 10 Professional/ Enterprise, Windows Server 2008 R2, Windows Server 2012 R2 or Windows Server 2016, floating license for 1 user Delivery form package: Software and documentation in 2 languages (German and English) on CD, certificate of license	**6DL5260-0BX68-0YE5**
SIMIT Ultimate upgrade from V9.0 to V9.1 Engineering software, 2 languages (English, German), software class A, runs on Windows 7 Professional/ Ultimate, Windows 10 Professional/ Enterprise, Windows Server 2008 R2, Windows Server 2012 R2 or Windows Server 2016, floating license for 1 user Delivery form package: Software and documentation in 2 languages (German and English) on CD, certificate of license	**6DL5260-0CX68-0YE5**
SIMIT upgrades from V8.1 to V9.1 Note: Use only in conjunction with a valid SIMIT license/dongle; activation through SIMIT license hotline required.	
SIMIT Standard upgrade from V8.1 to V9.1 Engineering software, 2 languages (English, German), software class A, runs on Windows 7 Professional/ Ultimate, Windows 10 Professional/ Enterprise, Windows Server 2008 R2, Windows Server 2012 R2 or Windows Server 2016, floating license for 1 user Delivery form package: Software and documentation in 2 languages (German and English) on CD, certificate of license	**6DL5260-0AX68-0YF5**
SIMIT Professional upgrade from V8.1 to V9.1 Engineering software, 2 languages (English, German), software class A, runs on Windows 7 Professional/ Ultimate, Windows 10 Professional/ Enterprise, Windows Server 2008 R2, Windows Server 2012 R2 or Windows Server 2016, floating license for 1 user Delivery form package: Software and documentation in 2 languages (German and English) on CD, certificate of license	**6DL5260-0BX68-0YF5**
SIMIT Ultimate upgrade from V8.1 to V9.1 Engineering software, 2 languages (English, German), software class A, runs on Windows 7 Professional/ Ultimate, Windows 10 Professional/ Enterprise, Windows Server 2008 R2, Windows Server 2012 R2 or Windows Server 2016, floating license for 1 user Delivery form package: Software and documentation in 2 languages (German and English) on CD, certificate of license	**6DL5260-0CX68-0YF5**

Ordering data

	Article No.
SIMIT Virtual Controller upgrades from V9.0 to V9.1 Note: Use only in conjunction with a valid SIMIT license/dongle; activation through SIMIT license hotline required.	
SIMIT Virtual Controller upgrade (1 controller) from V9.0 to V9.1 Engineering software, 2 languages (English, German), software class A, runs on Windows 7 Professional/ Ultimate, Windows 10 Professional/ Enterprise, Windows Server 2008 R2, Windows Server 2012 R2 or Windows Server 2016, floating license for 1 user	**6DL5260-0DA68-0YF5**
SIMIT Virtual Controller upgrade (5 controllers) from V9.0 to V9.1 Engineering software, 2 languages (English, German), software class A, runs on Windows 7 Professional/ Ultimate, Windows 10 Professional/ Enterprise, Windows Server 2008 R2, Windows Server 2012 R2 or Windows Server 2016, floating license for 1 user	**6DL5260-0DB68-0YF5**
SIMIT Virtual Controller upgrades from V3.0 to V9.1 Note: Use only in conjunction with a valid SIMIT license/dongle; activation through SIMIT license hotline required.	
SIMIT Virtual Controller upgrade (1 controller) from V3.0 to V9.1 Engineering software, 2 languages (English, German), software class A, runs on Windows 7 Professional/ Ultimate, Windows 10 Professional/ Enterprise, Windows Server 2008 R2, Windows Server 2012 R2 or Windows Server 2016, floating license for 1 user	**6DL5260-0DA68-0YE5**
SIMIT Virtual Controller upgrade (5 controllers) from V3.0 to V9.1 Engineering software, 2 languages (English, German), software class A, runs on Windows 7 Professional/ Ultimate, Windows 10 Professional/ Enterprise, Windows Server 2008 R2, Windows Server 2012 R2 or Windows Server 2016, floating license for 1 user	**6DL5260-0DB68-0YE5**

	Article No.
SIMIT UNIT	
SIMIT UNIT PB-2 2-channel interface for SIMIT for simulation of PROFIBUS DP slaves in a DP master system; maximum of 125 DP slaves per channel	**9AE4122-2AA00**
SIMIT UNIT PN-128 1-channel interface for SIMIT for simulation of 128 PROFINET I/O devices	**9AE4120-2AA00**
SIMIT UNIT PN-256 1-channel interface for SIMIT for simulation of 256 PROFINET I/O devices	**9AE4120-2AB00**
Consulting and training offers	
SIMIT consulting Analysis, designing, project setup and test operation on a daily basis Customer-specific training: Software-in-the-loop simulation platform, hardware-in-the-loop simulation platform and SIMIT VC interfaces Delivery package: Written contract	**9AP1471-2AD00**

More information

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

Notes

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.

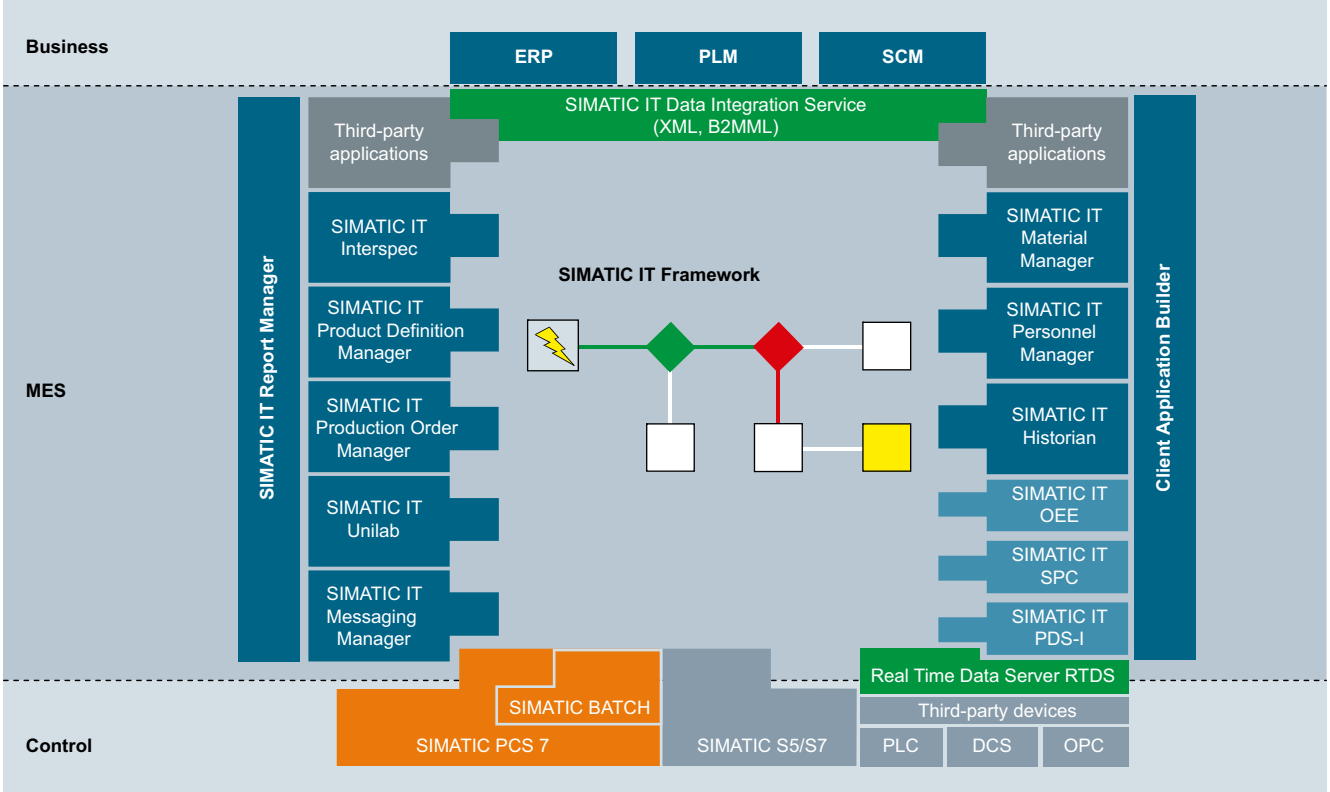
A model of the business and production processes created using SIMATIC IT is transparent, understandable, and independent of the automation level. Even complex business and production processes are easy to model. Subsequent modifications can be incorporated efficiently and without problems. Modeling 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

Design



Summary of SIMATIC IT architecture

The product architecture and functionality if 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 Messaging Manager
- 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

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.

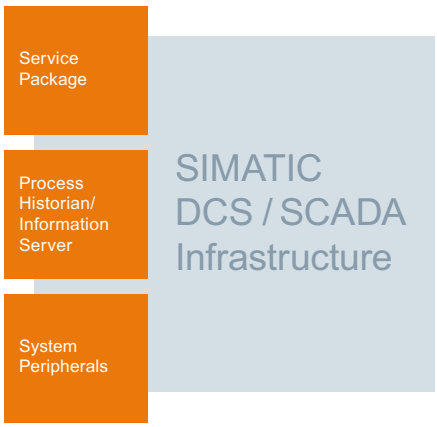
More information

E-mail: marketing.simatic-it@siemens.com

Additional information is available on the Internet at:

www.siemens.de/simatic-it

Overview



Historical data from the plant provides a central key to increased productivity. Tapping into the considerable volume of data for plant optimization requires a powerful archiving and reporting system. Siemens Industry Services supplies a comprehensive solution: an archiving system comprising server hardware and software, and process control keyboard, together with the necessary services – all from a single source.

SIMATIC DCS/SCADA infrastructure is a powerful, preconfigured IT infrastructure with preinstalled SIMATIC automation software. The hardware system is preconfigured in line with the specific requirements of the given application. The fully integrated archiving system comprises:

- A high-performance hardware platform
- Microsoft Windows Server installations and licenses
- Installation and configuration of Process Historian/Information Server software
- Optional: Individually configurable process control keyboard, see page 4/4

This offer includes a 5-year comprehensive service package. A dedicated service contact person will provide you with professional assistance throughout the term of the contract and coordinate all support activities.

Benefits

- System configuration as required and preinstallation of software (Siemens and third-party software)
- Fully integrated long-term archiving solution for large volumes of data without additional engineering
- Plant expansion without disruption to operation
- Fast and easy access to historical plant data from an Office environment and rapid reporting
- Technical support for all components installed and for the complete system

Ordering data

The offer comprises:

- Basic server hardware, preinstalled and preconfigured
- Service package

Basic systems	
HP standard host for Process Historian (6Cx1P)	**9LA1110-6PH00-0DA6**
HP "build to order" host for Process Historian Configuration on basis of order	**9LA1110-6PH***
Service packages	
Five-year service contract for the standard host	**9LA1110-6PH01-0DA6**
Five-year service contract for "built to order" host	**9LA1110-6PH***
System peripherals	
Process control keyboard for SIMATIC PCS 7 with USB connection, featuring 104 standard keys and 90 programmable function keys with LEDs including a USB cable for connecting to a SIMATIC PCS 7 station and connector for power supply cable	**9AE4270-1AA00**

More information

More information is available online at:

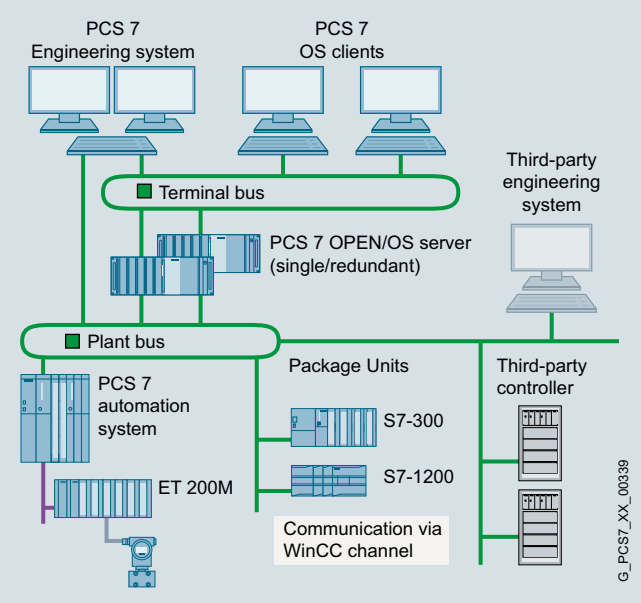
www.siemens.com/sidsi

Notes

Controller integration

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 a single 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 V9.0 is operated together with SIMATIC PCS 7 OS Engineering and OS Runtime Software V9.0. The SIMATIC PCS 7 software is to be ordered separately from Catalog ST PCS 7 (SIMATIC PCS 7 system components).

Design

PCS 7/OPEN OS Engineering Component Option V9.0

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.x to V9.0

Existing PCS 7/OPEN OS Engineering Software V8.x can be upgraded to V9.0 using the PCS 7/OPEN OS Engineering Upgrade Package.

The SIMATIC PCS 7 ES Software V8.x can be upgraded to V9.0 with a separate upgrade package (see Catalog ST PCS 7, Chapter "Update/Upgrade Packages").

Ordering data

Ordering data	Article No.
PCS 7/OPEN OS Engineering Software	
PCS 7/OPEN OS Engineering Component Option V9.0 Software package without SIMATIC PCS 7 Engineering Software V9.0; for expanding a SIMATIC PCS 7 Engineering Station V9.0 (unlimited POs) with PCS 7/ OPEN OS V9.0 Engineering software, 1 language (English), software class A, operating systems according to SIMATIC PCS 7 Engineering Station V9.0, floating license for 1 user No SIMATIC PCS 7 Software Media Package • Physical delivery License key on USB flash drive, certificate of license; software and electronic documentation on CD	**6EQ2001-1XX58-3BA5**
PCS 7/OPEN OS Engineering Upgrade Package V8.x to V9.0 Software Upgrade Package without SIMATIC PCS 7 Engineering Software V9.0 Engineering software, 1 language (English), software class A, operating systems according to SIMATIC PCS 7 Engineering Station V9.0, floating license for 1 user No SIMATIC PCS 7 Software Media Package • Physical delivery License key on USB flash drive, certificate of license; software and electronic documentation on CD Note: SIMATIC PCS 7 ES software V8.x must be upgraded to V9.0 using a separate upgrade package (see ST PCS 7 catalog, "Update/ Upgrade Packages" section).	**6EQ2001-1XX58-3BE5**

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 V9.0

Using the PCS 7/OPEN OS Runtime Component Option, a SIMATIC PCS 7 Operator Station of single station design or a server configured in accordance with the ST PCS 7 catalog 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.x to V9.0

Existing PCS 7/OPEN OS Runtime Software V8.x can be upgraded to V9.0 using the SIMATIC PCS 7 OS Runtime Upgrade Package.

SIMATIC PCS 7 OS software V8.x must be upgraded to V9.0 using a separate upgrade package (see ST PCS 7 catalog, "Update/Upgrade Packages" section).

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:

- Data exchange with a third-party controllers, programmable logic controllers (PLC) or package units
- 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

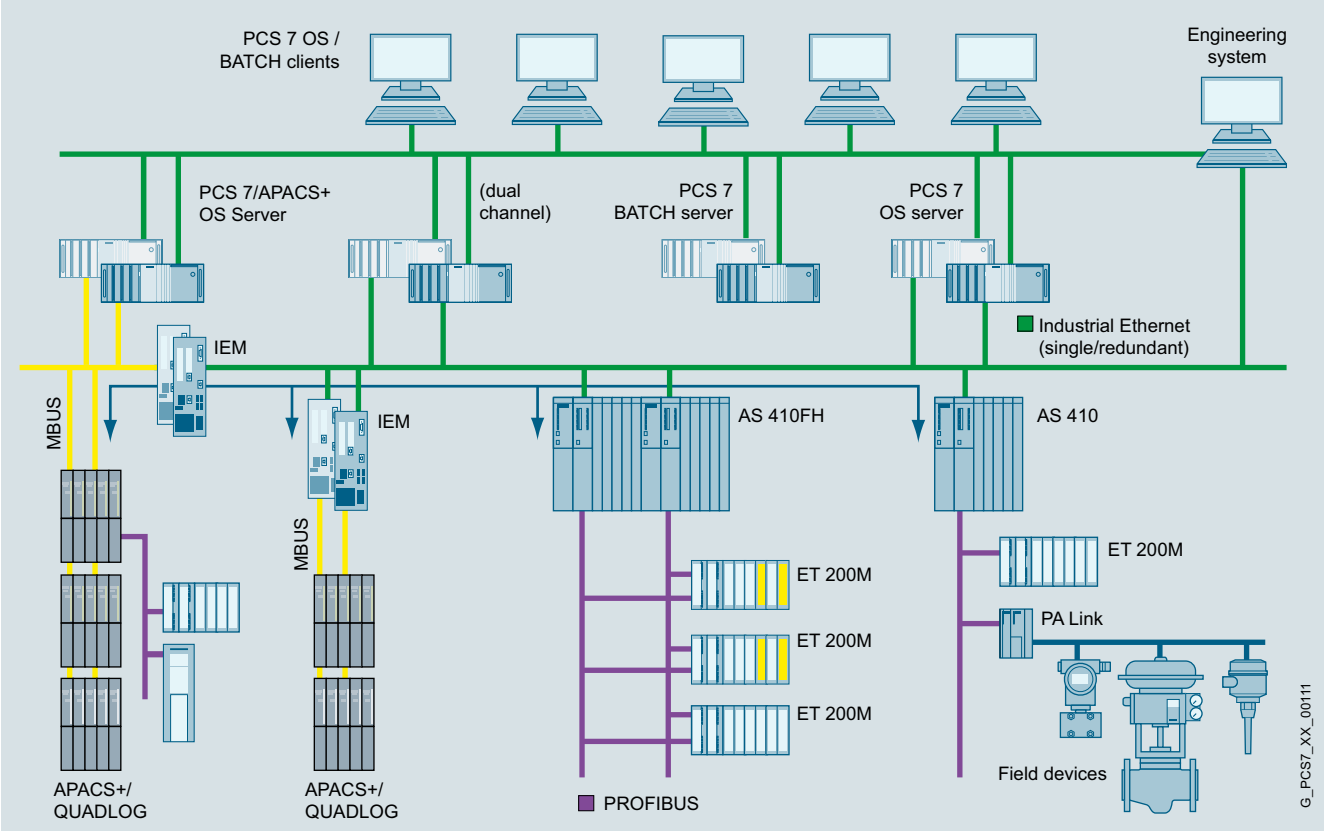
Ordering data	Article No.
PCS 7/OPEN OS Runtime Software	
PCS 7/OPEN OS Runtime Component Option V9.0 Software package without SIMATIC PCS 7 OS software V9.0; for expanding a SIMATIC PCS 7 OS V9.0 (server/single station) with PCS 7/OPEN OS V9.0 Runtime software, 1 language (English), software class A, operating systems according to SIMATIC PCS 7 Operator Station V9.0, single license for 1 installation No SIMATIC PCS 7 Software Media Package • Physical delivery License key on USB flash drive, certificate of license; software and electronic documentation on CD	**6EQ2001-2XX58-3BA0**
PCS 7/OPEN OS Runtime Upgrade Package V8.x to V9.0 Software Upgrade Package without SIMATIC PCS 7 OS Software V9.0 Runtime software, 1 language (English), software class A, operating systems according to SIMATIC PCS 7 Operator Station V9.0, single license for 1 installation No SIMATIC PCS 7 Software Media Package • Physical delivery License key on USB flash drive, certificate of license; software and electronic documentation on CD Note: SIMATIC PCS 7 OS software V8.x must be upgraded to V9.0 using separate upgrade packages (see ST PCS 7 catalog, section "Update/Upgrade Packages").	**6EQ2001-2XX58-3BE0**

10

Migration products

Introduction

Overview



Configuration example of APACS+/QUADLOG migration

Migration of a process control system based on APACS+/QUADLOG controllers with the innovative SIMATIC PCS 7 OS operator control 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. Existing operator and engineering systems can be modernized with SIMATIC PCS 7 while retaining the APACS+/QUADLOG controllers and the nested I/O levels. This enables customers to migrate their existing systems efficiently and economically without having to replace any controllers, I/O devices or their wiring, and without any loss of investment into the system configuration.

In addition, excellent alternatives are provided at the controller level by the SIMATIC PCS 7 AS 410 automation system, especially for plant expansions. These are supported by the controller-controller communication via Industrial Ethernet Modules (IEM) and by SIMATIC PCS 7/APACS+ operator systems which can communicate with both APACS+/QUADLOG controllers and AS 410 systems by dual channel.

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.

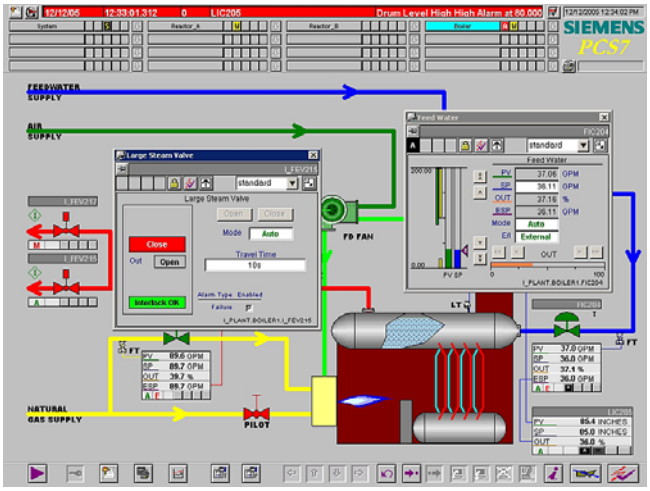
It goes without saying that we also offer this conversion as a service. But you can call upon the services of our experienced migration specialists not only for this reason, but also when generating new graphics. We would be pleased to provide you with an individual quotation.

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 SIMATIC 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-user systems as well as multi-user systems in client-server architecture.

Data from different systems can be displayed in one process picture 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 SIMATIC 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.

Notes:

The SIMATIC PCS 7/APACS+ OS V9.0 runtime software is based on the SIMATIC PCS 7 V9.0 operator system.

You can find information on the product range and the ordering data for SIMATIC PCS 7 V9.0 in the ST PCS 7 catalog.

Design

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

Required software	SIMATIC PCS 7 architecture		
	OS single station	Client/server (non-redundant server)	Client/server (redundant server)
SIMATIC PCS 7/APACS+ OS Single Station Pack V9.0 (2 000 PO)	●		
SIMATIC PCS 7/APACS+ OS Server Pack V9.0 (2 000 PO)		●	
SIMATIC PCS 7/APACS+ OS Redundant Server Pack V9.0 (2 000 PO)			●
SIMATIC PCS 7 OS Software Client V9.0 (See section "OS Software" in ST PCS 7 catalog)		●	●

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 the ST PCS 7 catalog. In this section of the catalog, you can also select additional software for SIMATIC 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 the ST PCS 7 catalog.

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

SIMATIC PCS 7/APACS+ OS V9.0 (Single Station/Server/Redundant Server)

The following software products are available for configuration of SIMATIC PCS 7/APACS+ OS operator stations:

- SIMATIC PCS 7/APACS+ OS Single Station Pack V9.0 (2 000 PO) for a single station
- SIMATIC PCS 7/APACS+ OS Server Pack V9.0 (2 000 PO)[1] for one server
- SIMATIC PCS 7/APACS+ OS Redundant Server Pack V9.0 (2 000 POs)[1] for a redundant pair of servers

They are equipped with:

- SIMATIC PCS 7 OS Software Runtime V9.0 (2 000 PO, including 512 archive tags)
- APACS+ OS channel for communication with the APACS+/QUADLOG controllers
- Library with SIMATIC PCS 7/APACS+ OS symbols and OS faceplates
- OS software for redundant operation (SIMATIC 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 1623 communications processor as well as the connection to the MBUS of APACS+ via Industrial Ethernet and IEM.

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

[1] The standard OS client of SIMATIC PCS 7 V9.0 is used to expand SIMATIC PCS 7/APACS+ client/server architectures.

SIMATIC PCS 7/APACS+ Operator System

Ordering data

	Article No.
SIMATIC PCS 7/APACS+ Operator System	
SIMATIC PCS 7/APACS+ OS Single Station Pack V9.0 (2 000 PO) Software and electronic documentation on CD/DVD, English, operating systems according to SIMATIC PCS 7 OS Single Station V9.0, 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 V9.0 • PCS 7 Software Media Package V9.0 • PCS 7 Product Information V9.0	**6EQ2000-2AB58-3BA0**
SIMATIC PCS 7/APACS+ OS Server Pack V9.0 (2 000 PO) Software and electronic documentation on CD/DVD, English, operating systems according to SIMATIC PCS 7 OS Server V9.0, 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 V9.0 • PCS 7 Software Media Package V9.0 • PCS 7 Product Information V9.0	**6EQ2000-2BB58-3BA0**
SIMATIC PCS 7/APACS+ OS Redundant Server Pack V9.0 (2 000 PO) Software and electronic documentation on CD/DVD, English, operating systems according to SIMATIC PCS 7 OS Server V9.0, single license for 2 installations Runtime software, software class A Type of delivery: • License keys on USB stick and certificate of license • PCS 7/APACS+ Option V9.0 • PCS 7 Software Media Package V9.0 • PCS 7 Product Information V9.0	**6EQ2000-2DB58-3BA0**
SIMATIC PCS 7 OS Software Client V9.0 5 languages (English, German, French, Italian, Spanish), software class A, operating systems according to SIMATIC PCS 7 OS Client V9.0, floating license for 1 user (See section "OS Software" in the ST PCS 7 catalog)	
• Physical delivery (without SIMATIC PCS 7 Software Media Package) License key USB stick, certificate of license	**6ES7658-2CX58-0YB5**
• Online delivery (without SIMATIC PCS 7 Software Media Package) License key download, online certificate of license Note: Email address required!	**6ES7658-2CX58-0YH5**

	Article No.
Maintenance and Support Contract	
SIMATIC PCS 7/APACS+ OS Engineering Maintenance and Support Software Update Service	**6EQ2000-1XX00-0YL8**
SIMATIC PCS 7/APACS+ OS Single Station Maintenance and Support Software Update Service	**6EQ2000-2XX00-0YL8**
SIMATIC PCS 7/APACS+ OS Server Maintenance and Support Software Update Service	**6EQ2000-3XX00-0YL8**
Upgrade software	
SIMATIC PCS 7/APACS+ OS Single Station Upgrade Package V8.x to V9.0 Software and electronic documentation on CD/DVD, English, operating systems according to SIMATIC PCS 7 OS Single Station V9.0, single license for 1 installation Runtime software, software class A Type of delivery: • Certificate of license • SIMATIC PCS 7 OS Single Station Upgrade Package V8.x to V9.0 • SIMATIC PCS 7/APACS+ OS Upgrade Package V8.x to V9.0 including PCS 7 Software Media Package V9.0	**6EQ2000-1CX58-3BH0**
SIMATIC PCS 7/APACS+ OS Server Upgrade Package V8.x to V9.0 Software and electronic documentation on CD/DVD, English, operating systems according to SIMATIC PCS 7 OS Server V9.0, single license for 1 installation Runtime software, software class A Type of delivery: • Certificate of license • SIMATIC PCS 7 OS Server Upgrade Package V8.x to V9.0 • SIMATIC PCS 7/APACS+ OS Upgrade Package V8.x to V9.0 including PCS 7 Software Media Package V9.0	**6EQ2000-1EX58-3BH0**

More information

Maintenance and Support Contract

SIMATIC PCS 7/APACS+ OS V9.0 is only available in conjunction with a Maintenance and Support Contract. This contract is valid for one year and is available for APACS+ OS Engineering, APACS+ OS Server and APACS+ OS Single Station.

By signing the Maintenance and Support Contract, you will automatically receive all upgrades and service packs for the referenced software for 1 year. Standard technical support is also available.

The contract is automatically renewed for one more year unless it is canceled three months prior to its expiration.

Design

SIMATIC PCS 7/APACS+ OS Engineering Software V9.0 (PO unlimited)

The SIMATIC PCS 7/APACS+ OS Engineering Software (PO unlimited) is available for configuring SIMATIC PCS 7/ APACS+ OS engineering stations. The software covers the OS engineering and OS connection of the APACS+/QUADLOG controllers. It also supports a 2-hour OS runtime test mode. It is, however, not suitable for continuous OS runtime operation during production.

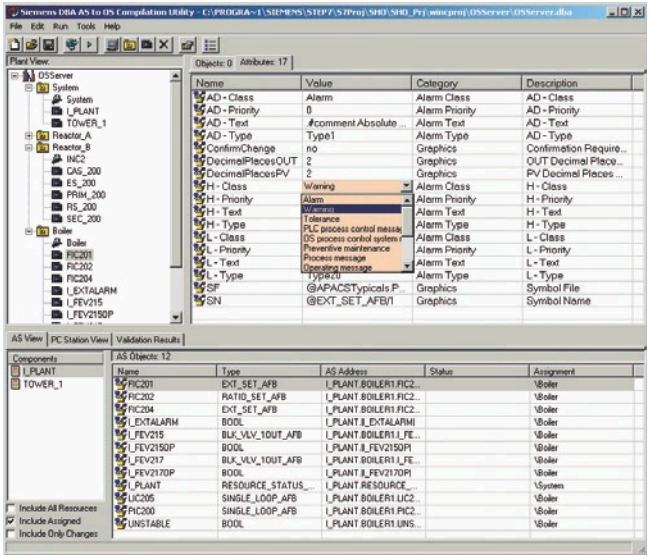
The SIMATIC PCS 7/APACS+ OS Engineering Software V9.0 contains the following components:

- SIMATIC PCS 7 AS/OS Engineering Software V9.0 according to the ST PCS 7 catalog, section "ES Software"
- SIMATIC 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
- SIMATIC PCS 7/APACS+ OS Library
  with OS symbols and OS faceplates
- OPC Engineering plug-in
  for connection of third-party controllers (e.g. Allen-Bradley)

Other SIMATIC PCS 7 engineering software must be ordered separately from the ST PCS 7 catalog, section "ES software".

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

SIMATIC PCS 7/APACS+ OS DBA



Data Base Automation (DBA) tool for generation of the SIMATIC PCS 7 OS database

A core component for the SIMATIC PCS 7/APACS+ OS Engineering is the Data Base Automation SIMATIC PCS 7/ APACS+ OS DBA. It 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. SIMATIC 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, pipes 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 connection of APACS+/ QUADLOG controllers using the CP 1623 communications processor in conjunction with the Industrial Ethernet module IEM, as well as direct connection to the MBUS using an APACS+/QUADLOG MBI PCI card.

SIMATIC PCS 7/APACS+ OS Library

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

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

The PCS 7/APACS+ OS symbols 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, the plug-in can be used to 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.

SIMATIC PCS 7/APACS+ OS Engineering Station

Ordering data	Article No.
SIMATIC PCS 7/APACS+ OS Engineering	
Software for exclusive engineering station with unlimited OS engineering license Without OS Runtime license for productive operation as an operator station (2-hour test mode possible)	
SIMATIC PCS 7/APACS+ OS Engineering Pack V9.0 (PO unlimited) Software and electronic documentation on CD/DVD, English, operating systems according to SIMATIC PCS 7 Engineering Station V9.0 with engineering PO unlimited, floating license for 1 user Engineering software, software class A Type of delivery: • License key USB stick and certificate of license • SIMATIC PCS 7/APACS+ Option V9.0 • SIMATIC PCS 7 Software Media Package V9.0 • SIMATIC PCS 7 Product Information V9.0	**6EQ2000-2EB58-3BA5**

Ordering data	Article No.
Upgrade packages	
SIMATIC PCS 7/APACS+ OS Upgrade Package Engineering from V8.x to V9.0 (PO unlimited) Software and electronic documentation on CD/DVD, English, operating systems according to SIMATIC PCS 7 Engineering Station V9.0 with engineering PO unlimited, floating license for 1 user Engineering software, software class A Type of delivery: • Certificate of license • SIMATIC PCS 7 Upgrade Package Engineering AS/OS V8.x to V9.0 • SIMATIC PCS 7/APACS+ OS Upgrade Package V8.x to V9.0 including SIMATIC PCS 7 Software Media Package V9.0	**6EQ2000-1AX58-3BH5**

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)

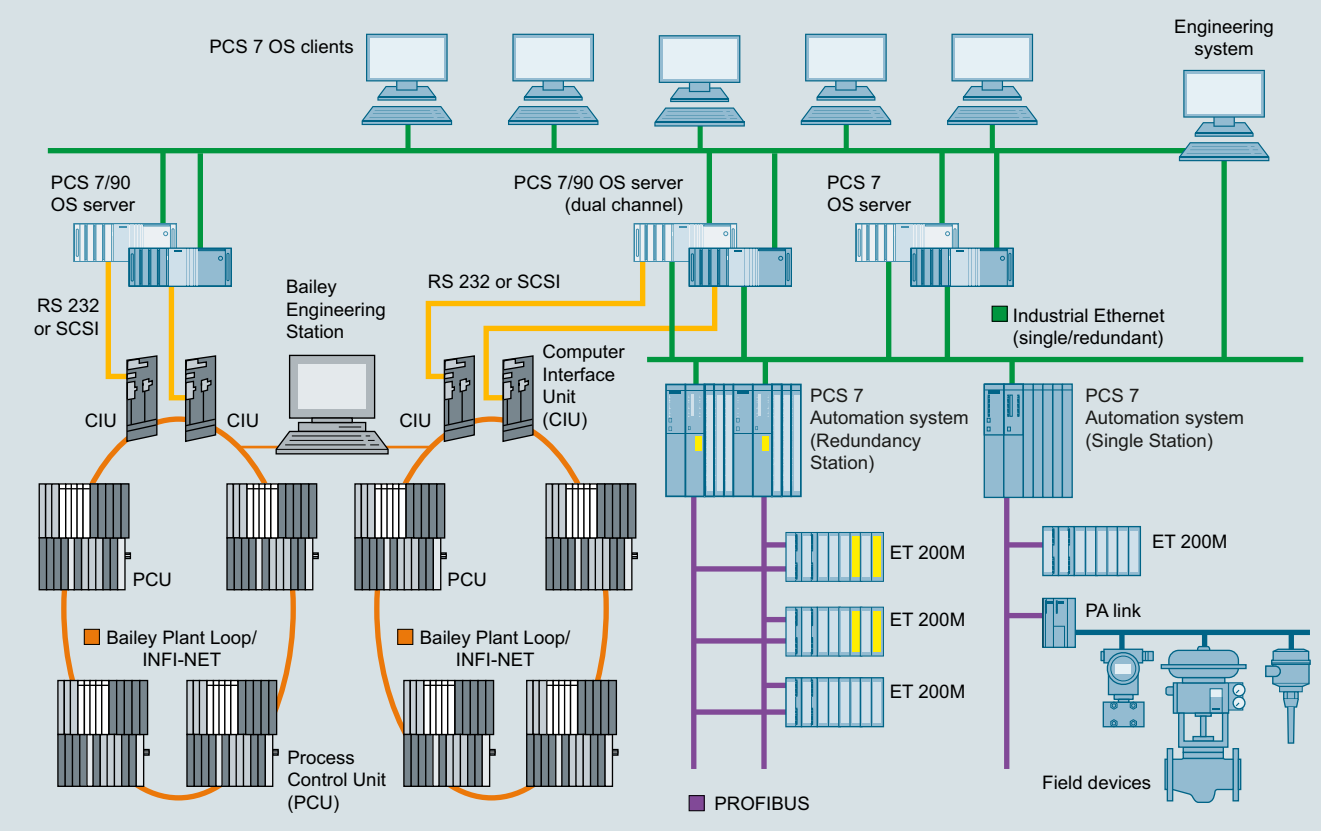
Technical specifications

Design and equipment features	
Design	Rack-mountable device with rugged metal enclosure, suitable for wall and portrait mounting
Degree of protection to EN 60529	IP20
CPU	
• Processor	Intel Core i3-330E 2,13 GHz
• Second Level Cache	3 MB
Work memory	2 GB DDR3 SDRAM
Chipset	Mobile Intel QM57 Express
MBI/MBUS communications module	MBI card UPH:16413-16 + MBI Y-cable UPH:16137-215
Drives	
Hard disk	No
CompactFlash (CF) Card	Front panel, CF card can be plugged in from the outside
Optical drives	No
Floppy disk drive	No
Interfaces	
Ethernet	2 × 10/100/1000 Mbps (RJ45) integrated
PROFIBUS DP	No
USB 2.0	4 terminals, 2 of which high current
Serial	1 × COM1
Software and licenses	
Operating system	Microsoft Windows Embedded Standard 2009 on 2 GB CF card
Licenses	SIMATIC NET/APACS+ NIM32
Communications software and documentation	Communication modules for APACS+/QUADLOG and SIMATIC PCS 7 AS as well as electronic documentation in PDF format on CD
Power supply	110 ... 230 V AC Power cable for USA, 3 m long
Climatic conditions in operation	
Temperature	+5 ... +45 °C
Relative humidity	5 ... 80 % at 25 °C (no condensation)
Dimensions and weights	
Dimensions (W x H x D in mm)	297 × 267 × 80
Weight	approx. 6 kg

Ordering data

	Article No.
Industrial Ethernet Module IEM V3.0 for peer-to-peer communication	**6EQ2020-0AC03-5XX0**
Accessories	
Flash memory medium for IEM configuration	
SIMATIC IPC USB FlashDrive 16 GB, USB 3.0, metal enclosure, boot capability	**6ES7648-0DC60-0AA0**
Bus cable for connection of MODULRAC and IEM	
Standard cables	
• MBI Cable Kit A	
- 1 m long	**UPH:16137-194A**
- 4 m long	**UPH:16137-172A**
- 15 m long	**UPH:16137-178A**
• MBI Cable Kit B	
- 1 m long	**UPH:16137-196A**
- 4 m long	**UPH:16137-175A**
- 15 m long	**UPH:16137-180A**
MBUS extension cables	
• MBUS Extension Cable A, 150 m long	**UPH:16137-186**
• MBUS Extension Cable B, 150 m long	**UPH:16137-187**

Overview



Configuration example for migration of Bailey INFI 90/NET 90 systems

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:

SIMATIC PCS 7/90 OS V9.0 can be operated in combination with SIMATIC PCS 7 V9.0 OS engineering software and OS runtime software. The SIMATIC PCS 7 software must be ordered separately from the ST PCS 7 catalog.

Introduction

Design

During the migration, the existing Bailey consoles will be replaced with SIMATIC 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 SIMATIC 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 SIMATIC PCS 7/90 OS migration products support the following Bailey system components:

Bailey consoles	Computer Interface Units (CIU)
OIU	NSPM01
PCView	IMSPM01
MCS and MCS PLUS	IMCPM02
OIS series 1x	IMCPM03
OIS series 2x	NCIU01
OIS series 3x	NCIU02
OIS series 40/41/42	NCIU03
OIS series 43/45	NCIU04
Process Portal A or B	NCIC01
Conductor NT	INPCI01
	INPCI02
	IIMCP01
	IIMCP02
	INICI01
	INICI12
	INICI03

Note:

SIMATIC 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 (IMMFP01). If you are using other controller types, we recommend that you seek support from the Technical Consulting department of Customer Support.

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.

Of course, we also offer this conversion as a service. However, you can call upon the services of our experienced migration specialists not only for this, 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 find additional information in the Internet under:
www.siemens.com/simatic-pcs7/migration

Design

SIMATIC PCS 7/90 OS Engineering Component Option V9.0

The SIMATIC 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 SIMATIC 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.

SIMATIC PCS 7/90 OS Engineering Upgrade Package V8.x to V9.0

The SIMATIC PCS 7/90 OS Engineering Upgrade Package upgrades an existing SIMATIC PCS 7/90 OS Engineering Station V8.x to V9.0.

The SIMATIC PCS 7 ES Software V8.x can be upgraded to V9.0 with a separate upgrade package (see Catalog ST PCS 7, Chapter "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 picture 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. controllers or analog inputs (AI), in the generated process pictures. These are linked to the corresponding function blocks and faceplates via the database. Manual configuration is mainly limited to the design and positioning of the static graphic elements, for example, pipes 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:

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

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 easily and seamlessly integrated into the process control system.

SIMATIC PCS 7/90 OS Engineering Station

Ordering data

	Article No.
SIMATIC PCS 7/90 OS Engineering Software	
C SIMATIPCS 7/90 OS V9.0 Engineering Component Option Software package without SIMATIC PCS 7 Engineering Software V9.0; for expanding a SIMATIC PCS 7 Engineering Station V9.0 (unlimited POs) for PCS 7/90 OS Engineering Engineering software, 1 language (English), software class A, operating systems according to SIMATIC PCS 7 Engineering Station V9.0, floating license for 1 user Physical delivery (without SIMATIC PCS 7 Software Media Package): • License key USB flash drive, certificate of license • Software and electronic documentation on CD	**6EQ2003-1XX58-3BA5**
Maintenance and Support Contract	
SIMATIC PCS 7/90 OS V9.0 Engineering Maintenance and Support Software Update Service	**6EQ2003-1XX00-0YL8**

	Article No.
Upgrade software	
SIMATIC PCS 7/90 OS V9.0 Upgrade Package Engineering V8.x to V9.0 Software Upgrade Package without SIMATIC PCS 7 Engineering Software V9.0 Engineering software, 1 language (English), software class A, operating systems according to SIMATIC PCS 7 Engineering Station V9.0, floating license for 1 user Physical delivery (without SIMATIC PCS 7 Software Media Package): • License key USB flash drive, certificate of license • Software and electronic documentation on CD Note: The SIMATIC PCS 7 ES Software V8.x can be upgraded to V9.0 with a separate upgrade package (see ST PCS 7 catalog, section "Update/Upgrade Packages").	**6EQ2003-1XX58-3BE5**

More information

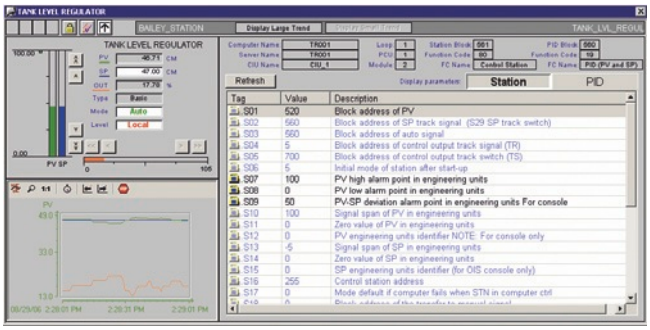
Maintenance and Support Contract

SIMATIC PCS 7/90 OS V9.0 is only available in conjunction with a Maintenance and Support Contract. This contract is valid for one year and is available for Engineering Component Option and Runtime Component Option.

By signing the Maintenance and Support Contract, you will automatically receive all upgrades and service packs for the referenced software for 1 year. Standard technical support is also available.

The contract is automatically renewed for one more year unless it is canceled three months prior to its expiration.

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

SIMATIC PCS 7/90 OS Runtime Component Option V9.0

Using the SIMATIC 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 SIMATIC PCS 7/90 OS software for operation and monitoring of Bailey controllers (PCUs). One SIMATIC PCS 7/90 OS Runtime component add-on is required for each SIMATIC PCS 7/90 OS single station or SIMATIC PCS 7/90 OS server. Two are required for each redundant SIMATIC PCS 7/90 OS single station or SIMATIC PCS 7/90 OS server pair.

SIMATIC 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 SIMATIC PCS 7 OS runtime software licenses for expanding the runtime PO volume 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 SIMATIC PCS 7/90 OS servers or SIMATIC 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 "High-availability process control systems")

SIMATIC PCS 7/90 OS Runtime Upgrade Packages

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

- SIMATIC PCS 7/90 OS Runtime Upgrade Package V8.x to V9.0
  for upgrading a SIMATIC PCS 7/90 OS single station, a SIMATIC PCS 7/90 OS server or a redundant pair of SIMATIC PCS 7/90 OS servers
- SIMATIC PCS 7 OS Client/SFC Visualization Upgrade Package V8.x to V9.0 for upgrading a SIMATC PCS 7/90 OS client (see ST PCS 7 catalog, section "Update/Upgrade Packages").

SIMATIC PCS 7 OS Software Single Station/Server should be upgraded from V8.x to V9.0 using separate upgrade packages (see ST PCS 7 catalog, section "Update/Upgrade Packages").

Function

SIMATIC PCS 7/90 OS Software

The SIMATIC PCS 7/90 OS software is used for the OS connection of Bailey controllers (PCUs) using an engineering system (SIMATIC PCS 7/90 ES), as well as for operation and monitoring of the PCUs (Process Control Units) using an operator system (SIMATIC 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 SIMATIC PCS 7/90 OS software supports hardware 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 picture:

- Data from Bailey controllers (PCUs) on the Bailey Plant Loop/INFINET
- 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 SIMATIC 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.

SIMATIC PCS 7/90 Operator System

Ordering data

	Article No.
Runtime software for single station/server	
SIMATIC PCS 7/90 OS V9.0 Runtime Component Option Software package including RoviSys Unlimited OPC90 Server, but not including SIMATIC PCS 7 OS software V9.0; for expanding a SIMATIC PCS 7 OS V9.0 (server/single station) for SIMATIC PCS 7/90 OS process control Runtime software, 1 language (English), software class A, operating systems according to SIMATIC PCS 7 Operator Station V9.0, single license for 1 installation Physical delivery (without SIMATIC PCS 7 Software Media Package): • Certificate of license • Software and electronic documentation on CD	**6EQ2003-2XX58-3BA0**
Runtime software for client	
SIMATIC PCS 7 OS Software Client V9.0	See ST PCS 7 catalog, chapter "Operator System", section "OS software"
Maintenance and Support Contract	
SIMATIC PCS 7/90 OS V9.0 Runtime Maintenance and Support Software Update Service	**6EQ2003-2XX00-0YL8**

	Article No.
Upgrade software	
SIMATIC PCS 7/90 OS V9.0 Upgrade Package Runtime V8.x to V9.0 Software Upgrade Package including RoviSys OPC90 Server Software Upgrade, but without SIMATIC PCS 7 OS software V9.0 Runtime software, 1 language (English), software class A, operating systems according to SIMATIC PCS 7 Operator Station V9.0, single license for 1 installation Physical delivery (without SIMATIC PCS 7 Software Media Package): • Certificate of license • Software and electronic documentation on CD Note: The SIMATIC PCS 7 OS software V8.x can be upgraded to V9.0 with separate upgrade packages (see ST PCS 7 catalog, section "Update/Upgrade Packages").	**6EQ2003-2XX58-3BE0**
SIMATIC PCS 7 OS Client/ SFC Visualization Upgrade Package V8.x to V9.0	See ST PCS 7 catalog under "Update/ Upgrade Packages, Upgrades from SIMATIC PCS 7 V8.x to V9.0, Upgrades for Operator System"

More information

Maintenance and Support Contract

SIMATIC PCS 7/90 OS V9.0 is only available in conjunction with a Maintenance and Support Contract. This contract is valid for one year and is available for Engineering Component Option and Runtime Component Option.

By signing the Maintenance and Support Contract, you will automatically receive all upgrades and service packs for the referenced software for 1 year. Standard technical support is also available.

The contract is automatically renewed for one more year unless it is canceled three months prior to its expiration.

Appendix

(Fortsetzung)

Your benefit from practical training directly from the manufacturer

SITRAIN – Training for Industry – provides you with comprehensive support in solving your tasks.

Training directly from the manufacturer enables you to make correct decisions with confidence.

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- Reliable configuration and commissioning
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- Shorter familiarization times following changes in technology and staff

Contact

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or let us advise you personally. You can request our latest training catalog from:

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Fax: +49 911 895-7576

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Practical application with practice

Practice, practice, practice! We have designed the trainings with an emphasis on practical exercises. They take up to half of the course time in our trainings. You can therefore implement your new knowledge in practice even faster.

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www.siemens.com/sitrain

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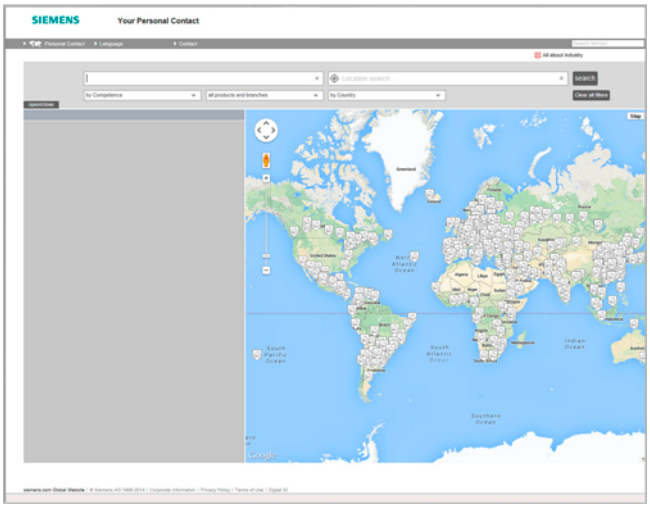
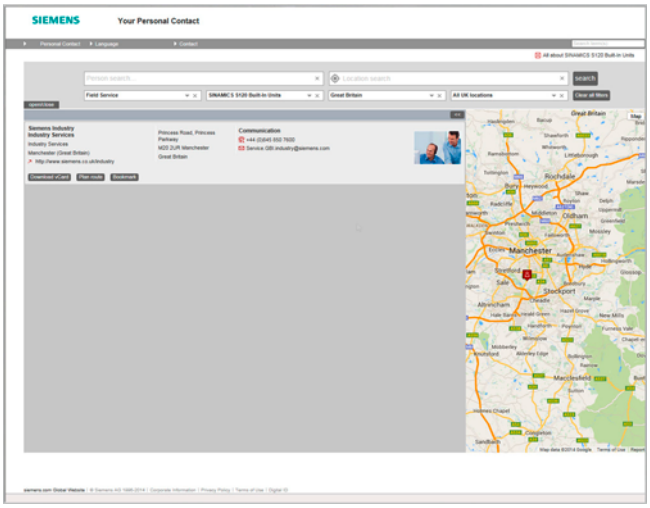
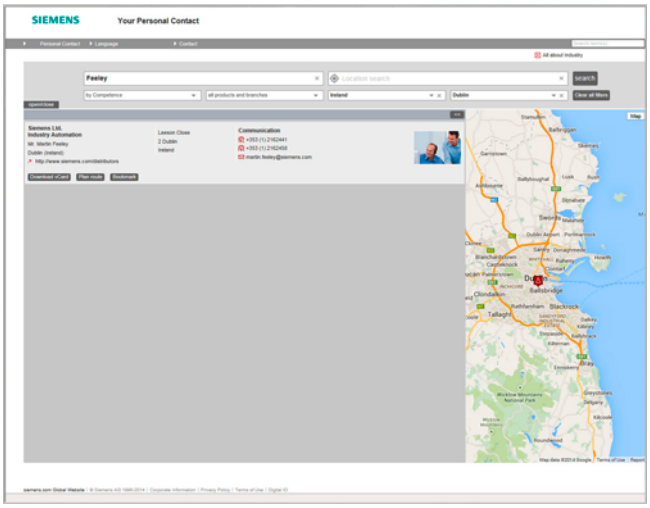






At Siemens we are resolutely pursuing the same goal: long-term improvement of your competitive ability.
We are committed to this goal. Thanks to our commitment, we continue to set new standards in automation and drive technology. In all industries – worldwide.

At your service locally, around the globe for consulting, sales, training, service, support, spare parts on the entire portfolio of Digital Factory and Process Industries and Drives.

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

You start by selecting

- the required competence,
- products and branches,
- a country,
- a city

or by a

- location search or
- person search.

Siemens Partner Program

Overview

Siemens Solution und Approved Partners

Highest competence in automation and drive technology as well as power distribution

Siemens works closely together with selected partner companies around the world in order to ensure that customer requirements for all aspects of automation and drives, as well as power distribution, are fulfilled as best as possible – wherever you are, and whatever the time.

We place great value on our customers acting in accordance with the same ideals which characterize Siemens as a whole: Competence, professionalism and quality. That is why continuous development through qualification and certification measures in line with global standards is a central aspect of our Partner Program. This means that with our partners, you benefit from the same high quality standards all over the world.
The partner emblem is the symbol for tried and tested quality.

Solution Partners and Approved Partners

Our global network of partners includes both Solution Partners and Approved Partners. The latter can be further differentiated into "Value Added Reseller" and "Industry Services".

At present we are working with more than 1,500 Solution Partners worldwide. They are characterized by extensive application, system and sector knowledge, as well as proven project experience, and are able to implement future-proof tailored solutions of the highest quality, based on our product and system portfolio.

With their detailed technical knowledge, Siemens Approved Partners – Value Added Resellers offer a combination of products and services that range from specialist technologies and customized modifications to the provision of high-quality system and product packages. They also provide qualified technical support and assistance.

Approved Partners – Industry Services put their unique expertise entirely at the service of enhancing your productivity and can be instrumental in ensuring the availability of your plants.

Partner Finder

In the Siemens global Solution Partner program, customers are certain to find the optimum partner for their specific requirements - with no great effort. The Partner Finder is basically a comprehensive database that showcases the profiles of all our solution partners.

Easy selection:
Set filters in the search screen form according to the criteria that are relevant to you. You can also directly enter the name of an existing partner.

Skills at a glance:
Gain a quick insight into the specific competencies of any particular partner with the reference reports.

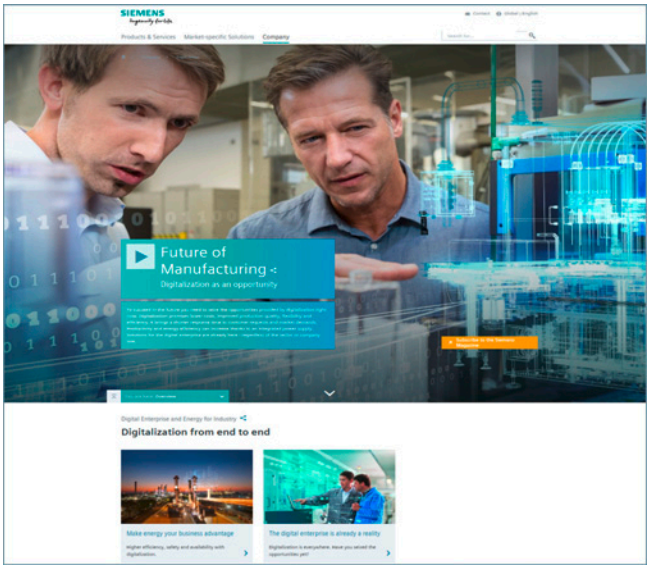
Direct contact option:
Use our electronic query form:

www.siemens.com/partnerfinder

Additional information on the Siemens Solution Partner Program is available online at:

www.siemens.com/partner-program

The Future of Manufacturing on the Internet



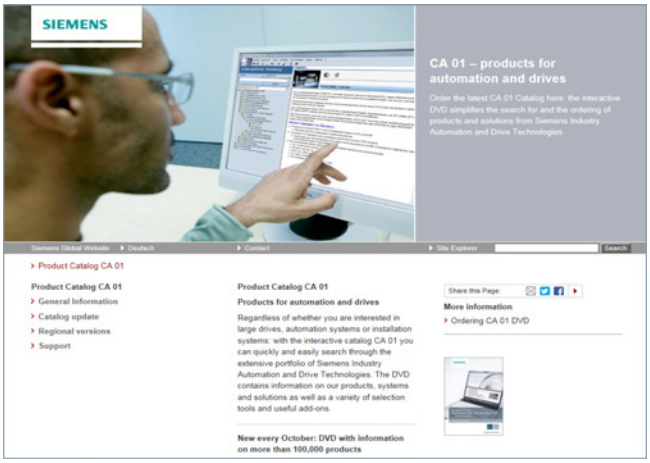
Detailed knowledge of the range of products and services available is essential when planning and engineering automation systems. It goes without saying that this information must always be as up-to-date as possible.

Industry is on the threshold of the fourth industrial revolution as digitization now follows after the automation of production. The goals are to increase productivity and efficiency, speed, and quality. In this way, companies can remain competitive on the path to the future of industry.

You will find everything you need to know about products, systems and services on the internet at:

www.siemens.com/industry

Product Selection Using the Interactive CA 01 Automation and Drives Catalog



Detailed information together with user-friendly interactive functions:
The CA 01 interactive catalog covers more than 100,000 products, thus providing a comprehensive overview of the product range provided by Siemens.

You will find everything you need here for solving tasks in the fields of automation, switching, installation and drives.
All information is provided over a user interface that is both user-friendly and intuitive.

You can order the CA 01 product catalog from your Siemens sales contact or in the Information and Download Center:

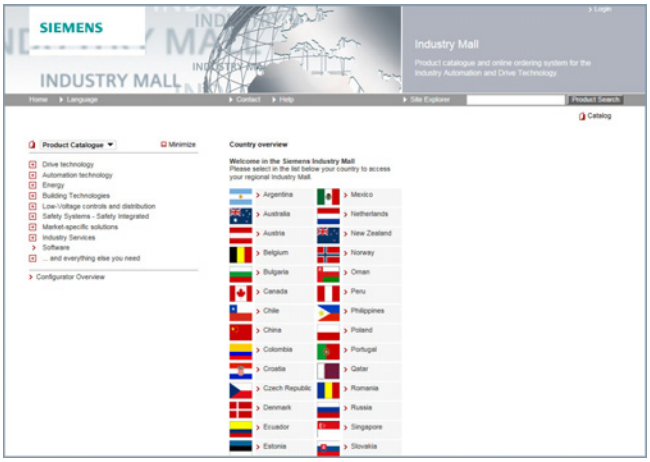
www.siemens.com/industry/infocenter

Information about the CA 01 interactive catalog can be found on the Internet at:

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, to be carried out online. Availability checks, customer-specific discounts and bid creation are also possible.

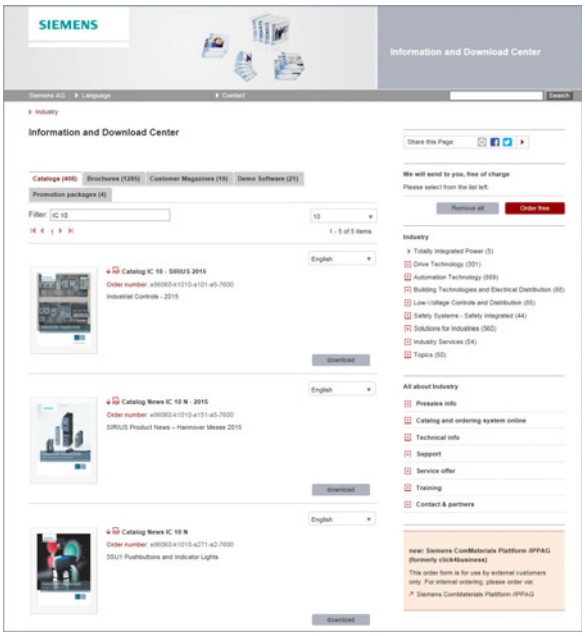
Numerous additional functions are provided for your support. For example, powerful search functions make it easy to select the required products. Configurators enable you to configure complex product and system components quickly and easily. CAx data types are also provided here.

You can find the Industry Mall on the Internet at:

www.siemens.com/industrymall

Information and Download Center, Social Media, Mobile Media

Downloading Catalogs



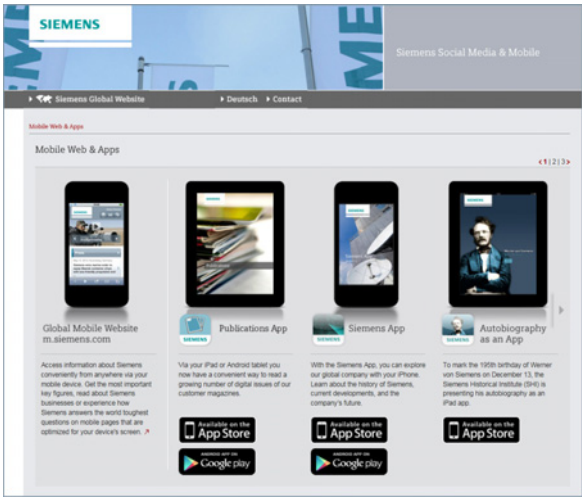
In addition to numerous other useful documents, you can also find the catalogs listed on the back inside cover of this catalog in the Information and Download Center. You can download these catalogs in PDF format without having to register.

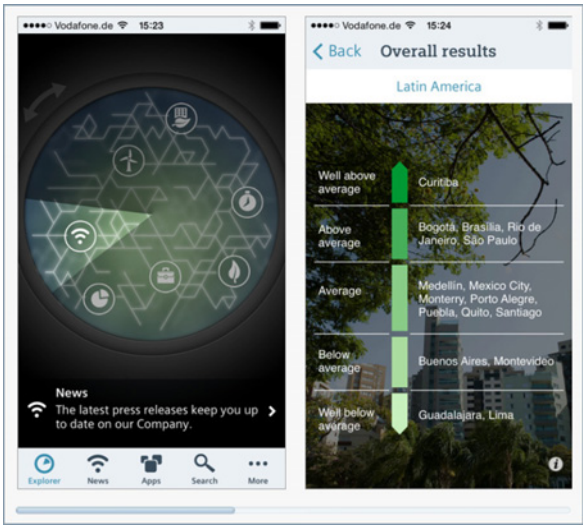
The filter dialog above the first catalog displayed makes it possible to carry out targeted searches. If you enter "MD 3" for example, you will find both the MD 30.1 and MD 31.1 catalogs. If you enter "IC 10", both the IC 10 catalog and the associated news or add-ons are displayed.

Visit us at:

www.siemens.com/industry/infocenter

Social and Mobile 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.

To find out more about Siemens' current social media activities, visit us at:

www.siemens.com/socialmedia

Or via our product pages at:

www.siemens.com/automation or www.siemens.com/drives

Here you can read all the news on the future of the industry, watch current videos and obtain information about all the latest industry developments.

www.siemens.com/future-of-manufacturing

Discover the world of Siemens.

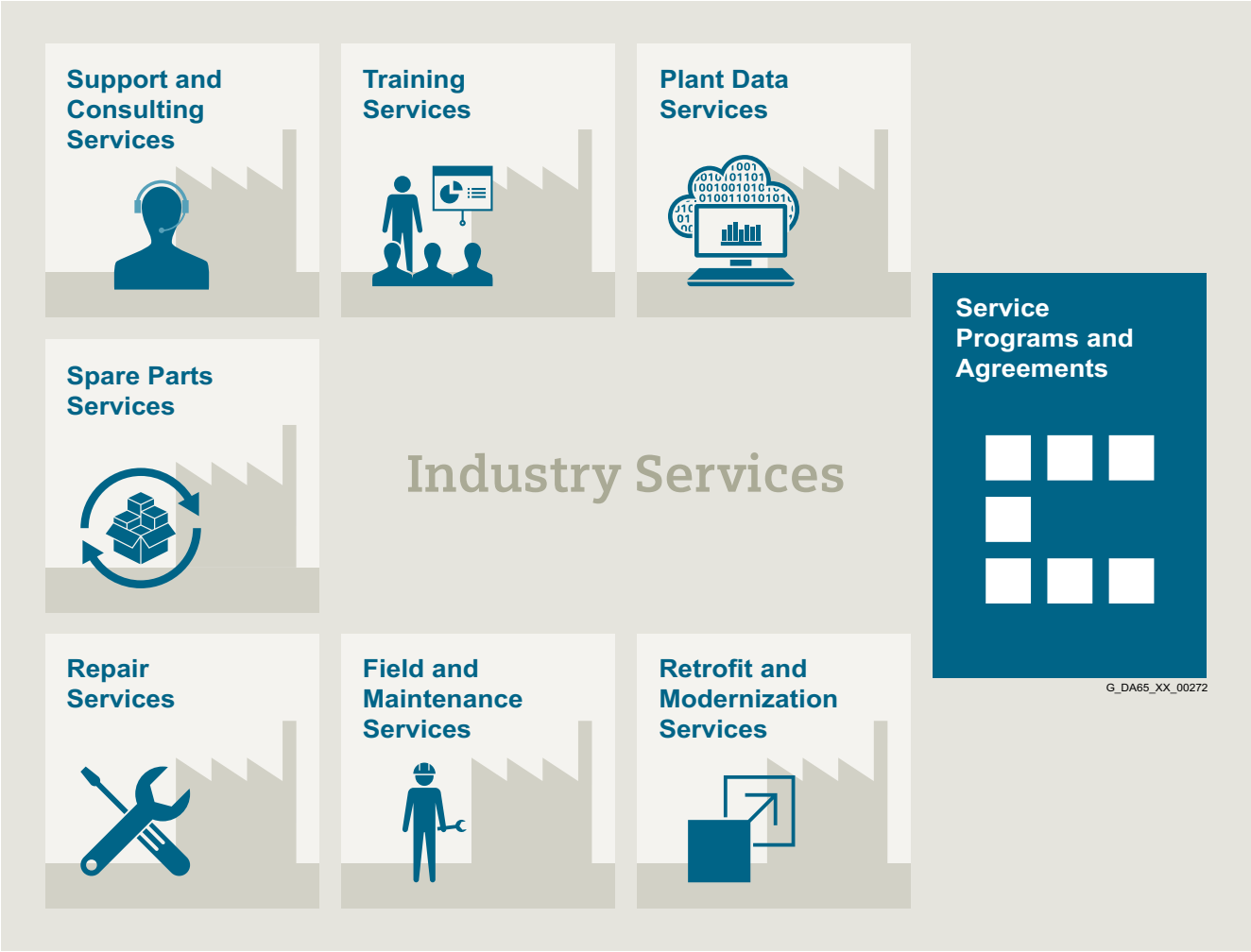
We are also constantly expanding our offering of cross-platform apps for smartphones and tablets. You will find the current Siemens apps at the App Store (iOS) or at Google Play (Android):

https://itunes.apple.com/en/app/siemens/id452698392?mt=8

https://play.google.com/store/search?q=siemens

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.

Overview



Keep your business running and shaping your digital future – with Industry Services

Optimizing the productivity of your equipment and operations can be a challenge, especially with constantly changing market conditions. Working with our service experts makes it easier. We understand your industry's unique processes and provide the services needed so that you can better achieve your business goals.

You can count on us to maximize your uptime and minimize your downtime, increasing your operations' productivity and reliability. When your operations have to be changed quickly to meet a new demand or business opportunity, our services give you the flexibility to adapt. Of course, we take care that your production is protected against cyber threats. We assist in keeping your operations as energy and resource efficient as possible and reducing your total cost of ownership. As a trendsetter, we ensure that you can capitalize on the opportunities of digitalization and by applying data analytics to enhance decision making: You can be sure that your plant reaches its full potential and retains this over the longer lifespan.

You can rely on our highly dedicated team of engineers, technicians and specialists to deliver the services you need – safely, professionally and in compliance with all regulations. We are there for you, where you need us, when you need us.

https://www.siemens.com/global/en/home/products/services/industry.html

Industry Services – Portfolio overview

Overview

Digital Services

Digital Services make your industrial processes transparent to gain improvements in productivity, asset availability, and energy efficiency.

Production data is generated, filtered and translated with intelligent analytics to enhance decision-making.

This is done whilst taking data security into consideration and with continuous protection against cyber-attack threats.
https://www.siemens.com/global/en/home/products/services/industry/digital-services.html

Training Services

From the basics and advanced to specialist skills, SITRAIN courses provide expertise right from the manufacturer – and encompass the entire spectrum of Siemens products and systems for the industry.

Worldwide, SITRAIN courses are available wherever you need a training course in more than 170 locations in over 60 countries.
https://support.industry.siemens.com/cs/ww/en/sc/2226

Support and Consulting Services

Industry Online Support site for comprehensive information, application examples, FAQs and support requests.

Technical and Engineering Support for advice and answers for all inquiries about functionality, handling, and fault clearance. The Service Card as prepaid support for value added services such as Priority Call Back or Extended Support offers the clear advantage of quick and easy purchasing.

Information & Consulting Services, e.g. SIMATIC System Audit; clarity about the state and service capability of your automation system or Lifecycle Information Services; transparency on the lifecycle of the products in your plants.
https://support.industry.siemens.com/cs/ww/en/sc/2235

Spare Parts

Spare Parts Services are available worldwide for smooth and fast supply of spare parts – and thus optimal plant availability. Genuine spare parts are available for up to ten years. Logistic experts take care of procurement, transport, custom clearance, storage and order management. Reliable logistics processes ensure that components reach their destination as needed.

Since not all spare parts can be kept in stock at all times, Siemens offers a preventive measure for spare parts provisioning on the customer's premises with optimized **Spare Parts Packages** for individual products, custom-assembled drive components and entire integrated drive trains – including risk consulting.

Asset Optimization Services help you design a strategy for parts supply where your investment and carrying costs are reduced and the risk of obsolescence is avoided.
https://support.industry.siemens.com/cs/ww/en/sc/2110

Repair Services

Repair Services are offered on-site and in regional repair centers for fast restoration of faulty devices' functionality.

Also available are extended repair services, which include additional diagnostic and repair measures, as well as emergency services.
https://support.industry.siemens.com/cs/ww/en/sc/2154

Field and Maintenance Services

Siemens specialists are available globally to provide expert field and maintenance services, including commissioning, functional testing, preventive maintenance and fault clearance.

All services can be included in customized service agreements with defined reaction times or fixed maintenance intervals.
https://support.industry.siemens.com/cs/ww/en/sc/2265

Retrofit and Modernization Services

Provide a cost-effective solution for the expansion of entire plants, optimization of systems or upgrading existing products to the latest technology and software, e.g. migration services for automation systems.

Service experts support projects from planning through commissioning and, if desired over the entire extended lifespan, e.g. Retrofit for Integrated Drive Systems for an extended lifetime of your machines and plants.
https://support.industry.siemens.com/cs/ww/de/sc/2286

Service Programs and Agreements

A technical Service Program or Agreement enables you to easily bundle a wide range of services into a single annual or multi-year agreement.

You pick the services you need to match your unique requirements or fill gaps in your organization's maintenance capabilities.

Programs and agreements can be customized as KPI-based and/or performance-based contracts.
https://support.industry.siemens.com/cs/ww/de/sc/2275

Overview

Siemens Industry and Online Support with some 1.7 million visitors per month is one of the most popular web services provided by Siemens. It is the central access point for comprehensive technical know-how about products, systems and services for automation and drives applications as well as for process industries.

In connection with the challenges and opportunities related to digitalization you can look forward to continued support with innovative offerings.

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.

You can download explanations concerning license conditions from www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

1. General Provisions

By using this catalog you can acquire hardware and software products described therein from Siemens AG subject to the following Terms and Conditions of Sale and Delivery (hereinafter referred to as "T&C"). Please note that the scope, the quality and the conditions for supplies and services, including software products, by any Siemens entity having a registered office outside Germany, shall be subject exclusively to the General Terms and Conditions of the respective Siemens entity. The following T&C apply exclusively for orders placed with Siemens Aktiengesellschaft, Germany.

1.1 For customers with a seat or registered office in Germany

For customers with a seat or registered office in Germany, the following applies subordinate to the T&C:

- the "General Terms of Payment"[1)] and,
- for software products, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or Registered Office in Germany"[1)] and,
- for other supplies and services, the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"[1)].

1.2 For customers with a seat or registered office outside Germany

For customers with a seat or registered office outside Germany, the following applies subordinate to the T&C:

- the "General Terms of Payment"[1)] and,
- for software products, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or Registered Office outside of Germany"[1)] and
- for other supplies and/or services, the "General Conditions for Supplies of Siemens Industry for Customers with a Seat or Registered Office outside of Germany"[1)].

2. Prices

The prices are in € (Euro) ex point of delivery, exclusive of packaging.

The sales tax (value added tax) is not included in the prices. It shall be charged separately at the respective rate according to the applicable statutory legal regulations.

Prices are subject to change without prior notice. We will charge the prices valid at the time of delivery.

To compensate for variations in the price of raw materials (e.g. silver, copper, aluminum, lead, gold, dysprosium and neodym), surcharges are calculated on a daily basis using the so-called metal factor for products containing these raw materials. A surcharge for the respective raw material is calculated as a supplement to the price of a product if the basic official price of the raw material in question is exceeded.

The metal factor of a product indicates the basic official price (for those raw materials concerned) as of which the surcharges on the price of the product are applied, and with what method of calculation.

An exact explanation of the metal factor can be downloaded at:

www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

To calculate the surcharge (except in the cases of dysprosium and neodym), the official price from the day prior to that on which the order was received or the release order was effected is used.

To calculate the surcharge applicable to dysprosium and neodym ("rare earths"), the corresponding three-month basic average price in the quarter prior to that in which the order was received or the release order was effected is used with a one-month buffer (details on the calculation can be found in the explanation of the metal factor).

3. Additional Terms and Conditions

The dimensions are in mm. In Germany, according to the German law on units in measuring technology, data in inches apply only to devices for export.

Illustrations are not binding.

Insofar as there are no remarks on the individual pages of this catalog - especially with regard to data, dimensions and weights given - these are subject to change without prior notice.

4. Export regulations

We shall not be obligated to fulfill any agreement if such fulfillment is prevented by any impediments arising out of national or international foreign trade or customs requirements or any embargoes and/or other sanctions.

Export of goods listed in this catalog may be subject to licensing requirements. We will indicate in the delivery details whether licenses are required under German, European and US export lists. Goods labeled with "AL" not equal to "N" are subject to European or German export authorization when being exported out of the EU. Goods labeled with "ECCN" not equal to "N" are subject to US re-export authorization.

The export indications can be viewed in advance in the description of the respective goods on the Industry Mall, our online catalog system. Only the export labels "AL" and "ECCN" indicated on order confirmations, delivery notes and invoices are authoritative.

Even without a label, or with label "AL:N" or "ECCN:N", authorization may be required i .a. due to the final disposition and intended use of goods.

If you transfer goods (hardware and/or software and/or technology as well as corresponding documentation, regardless of the mode of provision) delivered by us or works and services (including all kinds of technical support) performed by us to a third party worldwide, you must comply with all applicable national and international (re-)export control regulations.

If required for the purpose of conducting export control checks, you (upon request by us) shall promptly provide us with all information pertaining to the particular end customer, final disposition and intended use of goods delivered by us respectively works and services provided by us, as well as to any export control restrictions existing in this relation.

The products listed in this catalog may be subject to European/German and/or US export regulations. Any export requiring approval is therefore subject to authorization by the relevant authorities.

Errors excepted and subject to change without prior notice.

1) The text of the Terms and Conditions of Siemens AG can be downloaded at
www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

Catalogs

Digital Factory, Process Industries and Drives and Energy Management

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

Digital: These catalogs are only available as a PDF.

Information and Download Center

Digital versions of the catalogs are available on the Internet at:
www.siemens.com/industry/infocenter
There you'll find additional catalogs in other languages.

Please note the section "Downloading catalogs" on page "Online services" in the appendix of this catalog.

Get more information

Comprehensive information concerning the SIMATIC PCS 7 process control system:
www.siemens.com/simatic-pcs7

Siemens AG
Process Industries and Drives
Automation and Engineering Systems
76181 Karlsruhe
Germany

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Produced in Germany

Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit
www.siemens.com/industrialsecurity

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under
www.siemens.com/industrialsecurity